

# **Draft Environmental Impact Statement**

## **Travel Management Project**

**Deschutes National Forest, Ochoco National Forest, and Crooked River National  
Grassland**

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## APPENDICES B-C

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### Appendix B- Resources

#### *B-1 Fisheries*

##### **Current Condition by 4th Field Watershed**

The following will briefly discuss 4<sup>th</sup> field fisheries conditions and identify major areas of concerns within these watersheds for fisheries, streams, and lakes. Some 4<sup>th</sup> field watersheds may not have any “major” areas identified within this analysis as concern areas, but may have small individual access routes that could be of concern.

##### **Deschutes National Forest Watersheds**

###### **Little Deschutes 4<sup>th</sup> Field HUC**

The Little Deschutes River Sub-basin encompasses over 670,000 acres along the eastern edge of the Cascade Mountains in Central Oregon. Of this, 523,000 acres (78%) is administered by the Deschutes National Forest. Elevations in the sub-basin range from 8,665 feet at Diamond Peak above Crescent Lake to 4,166 feet where the river joins the Deschutes River. Major tributaries include Crescent and Paulina Creeks, and headwater tributaries Clover, Hemlock, Rabbit and Big Marsh Creeks. The Little Deschutes River sub-basin contains seven 5<sup>th</sup> field watersheds: Upper Little Deschutes, Crescent, Middle Little Deschutes, Lower Little Deschutes, Long Prairie, and Little Walker Mountain.

Some of the upper Little Deschutes River and tributary streams are protected under the Wild and Scenic Rivers Act. In 1988 congress designated a 12-mile section (RM 84 to RM 97) at the headwaters of the Little Deschutes and a 10-mile section of Crescent Creek (from Crescent Lake dam downstream to County Road 61 crossing) as Wild and Scenic Rivers. Big Marsh Creek from its headwaters to the confluence with Crescent Creek is designated as a Recreation segment.

##### **Fisheries and Aquatic Habitat**

The Little Deschutes River was not historically accessible to anadromous salmonids due to a series of falls on the Deschutes River. Native fish species in the Little Deschutes River were historically native resident trout and sculpin, including redband trout, bull trout, mountain whitefish, and reticulate sculpin (Wise *et al.*, 1996). There are historical accounts of bull trout occurring in Crescent Creek and Crescent Lake (Wise *et al.*, 1996), with the last record of a bull trout in Crescent Lake in 1979. Stocking of various species like brook trout, brown trout and others occurred in the early through mid-1900's. There are 38 miles of fish bearing streams in this 4<sup>th</sup> Field HUC.

Fish distribution surveys show that brook trout are the dominant species in the tributaries and a section of the Little Deschutes River above Highway 58, and brown trout are the dominant species below Highway 58. These surveys also generally indicate that the population has shifted from native redband trout (and possibly bull trout) in these headwater streams to the non-native species. Brook trout now make up 95% of the population in the upper Mount Thielsen Wilderness.

**Distribution of fish species in the Little Deschutes River Sub-basin.**

Stream	Fish Species
Cold Creek	Brook, Redband
Whitefish Creek	Brook; Rainbow (stocked) Brown
Refrigerator Creek	Brook, Brown
Upper Refrigerator Creek	No fish observed
Big Marsh Creek	Brook, redband, brown
Clover Creek	Brook, Brown
Rabbit Creek	Small trout observed
Spruce Creek T	Brook, Brown
L. Deschutes River River mile 95 - 93	Brook, Brown
L. Deschutes River River mile 86 - 93	Brown, Brook -
Paulina Creek	Brook, Rainbow
Crescent Creek	Rainbow

Declining habitat conditions are believed to have allowed the brown and brook trout to out-compete the historically dominant native redband trout. Habitat conditions have been impacted by roads, water withdrawals, riparian impacts that have reduced riparian species, historic grazing, and some timber harvest.

**Aquatic habitat conditions**

Stream	Habitat Conditions
Cold Creek	Riparian zone, streambanks, LWD, and spawning gravel in good condition. Water source –cold-water springs.
Whitefish Creek	Wilderness designation in upper reach limits enhancement.
Refrigerator Creek	Spring-fed, providing cold temperatures. Falls in upper section limits fish distribution. Habitat impacted by RR and road crossings.
Upper Refrigerator Creek	Spring fed, dense undisturbed riparian canopy. Protected by Oregon Cascade Recreation Area.
Big Marsh Creek	Past grazing and dewatering in Big Marsh restoration project in 1997.
Clover Creek	Clover Cr. is in the designated wilderness area. Grazing at time of survey caused limited bank damage.
Crescent Creek	Habitat overall in good condition but evidence of embeddedness in may areas
Rabbit Creek	Small high quality stream provides cold water to Spruce Cr.
Spruce Creek	Low gradient stream, sand substrate. Past grazing practices caused downcutting and entrenchment.
L. Deschutes River River mile 95 - 86	Low gradient, meandering, with sand substrate. Temperatures exceed water quality criteria. Temperatures increase until criteria of 14C exceeded starting at Highway 58.
L. Deschutes River, River mile 80 – 63 Highway 58 to Gilchrist Mill Pond.	Insufficient information.
L. Deschutes River, River mile 63 – 00 Gilchrist Mill Pond to mouth.	Altered flow regime, high temperatures, degraded riparian conditions.
Paulina Creek	Lacks pool habitat, cover & spawning gravel, Falls as migratory barriers.

There are no major concerns areas for fisheries resources for current unregulated off road use and associated dispersed camping within this 4<sup>th</sup> field HUC due to most all of this 4<sup>th</sup> field being heavily timbered.

**Upper Deschutes 4<sup>th</sup> Field HUC**

The Upper Deschutes 4<sup>th</sup> Field HUC covers approximately 1,380,000 acres of which 73% (1 million acres) is managed by the Deschutes National Forest. South Sister is the highest point of elevation in the sub-basin at 10,358 feet and elevation gradually decreases in a general northerly direction down to 1,900 feet where the Deschutes River meets Lake Billy Chinook. The Deschutes River begins at Little Lava Lake. The Deschutes River runs from north to south from its headwaters at Little Lava Lake 8.4 miles down to Crane Prairie Reservoir. Below Crane Prairie, the river runs east through Wickiup reservoir at river mile 226, and then north to Lake Billy Chinook at river mile 120. Above Crane Prairie Dam, the main tributaries to the Deschutes are Snow Creek, Cultus River, Cultus Creek, Quinn River, and Deer Creek. Between Crane Prairie Reservoir and Wickiup, Brown’s Creek contributes water into the Deschutes and Davis Creek drains into Wickiup Reservoir. Additionally, Sheep Springs contributes water into Wickiup Reservoir. The main tributaries between Wickiup Reservoir and the City of Bend are the Little

Deschutes River, Fall River, and Spring River. The major tributaries to the Deschutes between Bend and Lake Billy Chinook are Whychus and Tumalo Creeks.

The primary lakes in the sub-basin are Odell, Davis, Cultus, Little Cultus, Lava, Little Lava, South Twin, North Twin, Hosmer, Elk, and Sparks. There are also over 400 high elevation lakes in the Cascades (ODFW 1996). The general hydro-geologic setting of the assessment area includes lava beds that sit on top of several hundred feet of volcanic and sedimentary rocks. The subsurface geology of the upper Deschutes Sub-basin defines and directs the storage and flow of groundwater. Groundwater travels from high-elevation recharge areas in the Cascades towards the high lakes area, down to the Deschutes River, and then to lower elevation discharge areas near the confluence of the Deschutes, Crooked, and Metolius Rivers.

The waters of the Upper Deschutes Sub-basin contain an interesting blend of indigenous and introduced species of fish. Fish stocking, water management, dams and diversions, and excessive harvesting have combined together over the past hundred years to cultivate a sub-basin that supports many non-indigenous species of fish. Species such as Pacific lamprey, bull trout, and steelhead that were historically native to the area have been almost completely extirpated from the watershed.

Many of the most prevalent and widespread species such as the chub and the three-spined stickleback found throughout the sub-basin were introduced either legally or illegally at some point in the last century. Alternately, many of the fish species that are native to the sub-basin are now relatively rare. Bull trout (*Salvelinus confluentus*) and redband trout (*Onchorhynchus mykiss*) are two native fish species that historically thrived throughout the sub-basin, but today have a more limited and fragmented abundance (ODFW 1996). Currently, native bull trout have been effectively eradicated from much of the sub-basin by dams acting as migration barriers, lack of year-round in-stream water, warm water temperatures, and over harvesting (ODFW 1996). Similarly, the current distribution of redband trout throughout the sub-basin is limited due to natural barriers, severe stream flow alterations from irrigation development, dams lacking any or adequate fish passage, chemical treatment projects, and the competition from introduced non-indigenous trout stocks (ODFW 1996). Redband trout previously inhabited most of the waters connected to the Deschutes River. There are 688 miles of fish bearing streams in this 4<sup>th</sup> Field HUC with 80 miles of bull trout habitat.

**Current Fish Species in the Waters of the Upper Deschutes Watershed**

Common Name	Origin	Waterbody Location
Summer steelhead	Native/Reintroduced	Lower Deschutes, Whychus
Chinook salmon	Native/Reintroduced	Metolius
Kokanee	Introduced *	Lake Billy Chinook, Metolius, Suttle Lake, Lake Creek, Odell Lake, Trapper Creek, Crystal Creek, Davis Lake, Elk Lake, Wickiup and Crane Prairie Reservoirs, Browns Creek
Atlantic salmon	Introduced *	Hosmer Lake
Redband trout	Native	Deschutes River and all Tributaries and lakes
Bull trout	Native	Lake Billy Chinook, Metolius River and tribs, Whychus Creek, Odell Lake Odell Creek and tribs, Trapper Creek
Mountain whitefish	Native	Deschutes River and all Tributaries and most lakes
Rainbow trout	Introduced	Crane Prairie
Brown trout	Introduced	Deschutes River from Crane Prairie to Lake Bill Chinook, Spring River, Fall River,
Brook trout	Introduced *	Most tributaries and the mainstem of the Deschutes. Most high lakes and reservoirs
Cutthroat trout	Introduced *	Sparks Lake
Lake trout	Introduced	Odell Lake, Cultus Lake
Largemouth bass	Introduced	Crane Prairie Reservoir, Wickiup Reservoir, Davis Lake

\*Indicate species that are still stocked annually in the sub-basin

Habitat for streams and lakes across this 4<sup>th</sup> field is highly varied. Since many of the streams are spring fed in this watershed there are numerous areas where habitat area at or near nature levels of flow, pools, woody debris, and spawning habitat. Other systems have been degraded due to flow reduction, roads, timber harvest, wildfire, and other management implementation impacts. General habitat conditions are outlined in the following table.

**Aquatic habitat conditions**

Stream	Habitat Conditions
Deschutes River – Little Lava Lake to Wickiup Res.	Riparian zone, streambanks, LWD, and spawning gravel in good condition. Water source –cold-water springs.
Deschutes River – Wickiup Res to Bend	Habitat is poor condition due to extensive flow alteration, log drives, channel widening, wave action from power boats
Spring River	Spring-fed, providing cold temperatures. Habitat in good condition
Fall River	Spring fed, habitat in excellent condition
Tumalo Creek	Habitat in moderate to good condition. Recent rehabilitation below Falls has improved habitats overall.
Whychus Creek	Habitat above TSID and below Alder Springs in good condition. Habitat below TSID in poor condition due to water withdrawals, channel incision,
Indian Ford Creek	Habitat in moderate condition. Road Crossings, grazing, diversions all contributing to
Metolius River and tribs except Lake Creek	Spring fed – excellent habitats for fish even with recent fire activity. Most all barrier culverts have been recently replaced. Working on adding woody debris to the Metolius River
Lake Creek	Habitat is quality is moderate. Influenced by diversions, barrier culverts and diversions.

Areas of concern from impacts of either access to dispersed camping or motorized travel off of designated routes in this 4<sup>th</sup> field are located in variety of places throughout the watershed. In the southern end of the watershed both Wickiup and Crane Prairie Reservoirs and the surrounding areas have extensive dispersed camping and areas of high impact from the access to those dispersed sites and resulting motorized travel off of designated routes. Large areas have been denuded of riparian vegetation and erosion from these areas is evident in a number of areas. Compaction of soils is a concern in these areas also as excessive compaction contributes to increased runoff and therefore increased erosion.

In the middle to northern sections of the sub-basin the Meadow Lakes area west of Sisters has had extensive use of the area for both access for dispersed camping and for motorized travel off of designated routes. While this area is mainly small closed basins surrounding a series of small lakes, impacts include high erosion rates into these small basins and reduced riparian vegetation. In addition to this area, the Metolius watersheds have some site specific areas where access to dispersed camping is causing some erosion. Many of these sites have been reduced in size by active management from the district in defining where vehicles can drive and where camping is allowed.

The one other major area of concern is the crossing of Whychus Creek on Forest Road 6360. This crossing is currently a ford and has dispersed camping associated with it. Much of the area has been impacted by cross country travel and riparian vegetation has been lost as a result and erosion has increased at this site.

## **Ochoco National Forest and Crooked River National Grassland Watersheds**

### **Lower Deschutes 4<sup>th</sup> field HUC:**

The Lower Deschutes 4<sup>th</sup> field HUC encompasses 1.4 million acres adjacent to and downstream of Lake Billy Chinook. However, only 3% of the land falls under Forest Service ownership and amounts to about 44,000 acres on the Crooked River National Grassland. There is only one 5<sup>th</sup> Field watershed (Willow Creek) that is managed by the Grassland and within that watershed Grizzly Mountain is the highest point 5,480 feet and the lowest point is about 1,500 feet at Lake Simtustus.

Willow Creek is the only perennial stream within this 4<sup>th</sup> field on this section of the Grassland and contains native redband trout. Willow Creek is a small tributary to the Deschutes River at Lake Simtustus. Habitat is limited to 11 miles of stream on the Grassland and is in good condition in most areas due mostly to isolation from use by both people and grazing activities. Because Willow Creek is located in a small deep canyon and has poor access there are no known dispersed sites on the stream and there are no unauthorized access routes adjacent to it.

### **Lower Crooked 4<sup>th</sup> field HUC:**

The Lower Crooked 4<sup>th</sup> field HUC includes approximately 1.2 million acres and includes the area upstream of Lake Billy Chinook along the Crooked River to Prineville Reservoir, the McKay, Mill and Upper Ochoco Creek watershed areas, and areas east of the Newberry National Volcanic Monument around Pine Mountain and Dry River.

Only 28% (330,000 acres) is within the National Forest or Grassland boundaries. The land that is east of Newberry National Volcanic Monument does not have perennial streams and has no fisheries concerns. The area where the Crooked River flows through the Grassland between Prineville and Lake Billy Chinook has very poor access for the public due to the canyon that the river flows through, therefore dispersed camping is not a concern in this area either.

Native fish species in this sub-basin historically included redband, steelhead, spring Chinook and bull trout. Currently species are limited to redband and a small section of Lake Billy Chinook that has bull trout. Recent efforts as a result of the Pelton Round Butte Dam relicensing have included the reintroduction of steelhead into the McKay Creek drainage and in the lower Crooked. Overall in the 5<sup>th</sup> field HUC's there are 123 miles of fish bearing stream within the National Forest areas. Habitats overall are in moderate to good condition impacted by roads, grazing, wildfire, and timber harvest that have resulted in some areas having channel incision, reduced floodplain width and reduction in woody debris.

Of greatest concern from access to dispersed camping and motorized access off of designated routes is the McKay Creek watershed. Historically this area has had numerous areas where access for dispersed camping has been directly adjacent to streams, occasionally crossing the stream to access dispersed sites across the stream. In addition forest access by ATV's has been extensive in this watershed. A Watershed Analysis in the McKay Creek watershed in 2006 found the following. Particle size data were collected from riffles in each reach surveyed on main McKay Creek, (RM 19.5 to RM 23.5) in 1997. In 2003, particle size information was collected again from riffles in the same reaches near areas that were heavily impacted by dispersed recreation activities for comparison. Data comparison shows that the dominant particle size in this stream decreased by a factor of 10 near dispersed campsites and user created vehicle crossings (i.e., the dominant particle size in two sample areas decreased from 40 and 80 mm

respectively to 4.5 and 6.9 mm) over a 5-year period. Thus, 50% of the surface particles in the riffles were comprised of large gravel with few sand/silt particles in 1997 and then 5 years later, 50% of the surface particles in the riffles consisted of pea size gravel and sand/silt particles, reflecting a substantial increase in fine sediment/small particles in the channel.

When fine sediment enters stream channels during low flow periods, the spaces in the gravels where macro invertebrates live are filled in, smothering these insects. This reduces or alters insect populations, which are the primary food source for trout. When this important food source declines, trout are forced to eat each other and compete for available hiding and resting areas, further increasing mortality rates for juvenile trout in particular (Suttle et al, 2004). Excessive amounts of fine sediment in stream channels can also smother trout eggs that are incubating in redds or cause cementing (embeddedness) of stream bed substrate. Pool habitat is affected more than riffle habitat by fine sediment because stream velocities are lower in pools, allowing deposition of finer materials to occur. As fine particles compact within the spaces in the streambed, the bed surface becomes hardened. Adult trout may be unable to excavate gravels for egg deposition in pool tail out areas, which generally provide the correct water depth and oxygenation needed for successful egg incubation.

Cutbanks can also contribute substantial amounts of fine sediment to stream channels and are indicative of channel instability (Rosgen 1996). According to current Forest Plan Standards and Guides, cutbank should be less than 20% of the stream length for any given stream drainage. Cutbank has been measured on McKay Creek and Little McKay Creek and on 17 tributaries contributing to those streams on Forest System lands. The most recent measurements from Little McKay (1997) and main McKay Creek (1997 & 2005) indicated that <1% to 10.2% of the stream banks were actively eroding at the time of the last habitat survey. Cutbank measurements from tributaries however, varied substantially (from 1% to 65%), with 8 of 17 tributaries exceeding the Forest Plan standard at the time of the last survey.

Thus, the amount of fine sediment entering McKay Creek and Little McKay Creek from tributaries is likely outside the historic range of variation. Direct impacts to trout spawning and rearing success are likely, and over time the stream channel morphology will be impacted if cemented stream materials cause increased near bank stress during higher flows.

Currently the district has this watershed closed to cross country travel to protect watershed resources and has implemented numerous projects to pull back dispersed sites and therefore limit where vehicles can drive. These efforts have improved the overall condition of the watershed and the associated streams.

Major streams that are located within the 4<sup>th</sup> field watersheds are as follows.

Stream Name	Fish Species
Crooked River	Redband and Steelhead
McKay Creek	Redband and Steelhead
Little McKay Creek	Redband and Steelhead
Allen Creek	Redband and Steelhead
Mill Creek	Redband
East Fork Mill Creek	Redband
West Fork Mill Creek	Redband
Marks Creek	Redband
Ochoco Creek	Redband
Canyon Creek	Redband

**Upper Crooked 4<sup>th</sup> field HUC:**

The Upper Crooked 4<sup>th</sup> field HUC encompasses approximately 740,000 acres, with the Ochoco National Forest managing about 241,000 acres (32%). It includes the area that is managed as the Maury Mountains and all tributaries to the North Fork of the Crooked River, along with tributaries to the main Crooked River from Prineville Reservoir upstream to the confluence with the South Fork of the Crooked River.

This sub-basin includes 235 miles of fish bearing streams and includes strong holds of redband populations in a number of watersheds and sub-watersheds. Distribution of redband trout in this these watersheds is mainly hampered by poorly designed road crossings that limit upstream fish passage. In addition, there are thermal barriers in late summer associated with the North Fork Crooked River above Deep Creek through Big Summit Prairie that block upstream passage of fish at those locations. Many of the streams in this 4<sup>th</sup> field are small with stringer meadow systems or large meadow/prairie systems. The North Fork of the Crooked River is a designated Wild and Scenic River from its headwaters in Williams Prairie downstream to its confluence with the South Fork of the Crook River.

Of most importance in this area for fisheries and clean, cold water is Deep Creek which is the largest contributor of cold water to the North Fork Crook River. Habitats have again been impacted by roads, wildfire, timber harvest, and grazing. Channel incision is a major concern in those areas with meadows. Some bank erosion has occurred adjacent to some camping sites. Dispersed camping is limited to smaller specific sites along the various streams and meadow areas. There are no large concern areas for dispersed camping in this sub-basin. Most sites either are on ridge top areas (used mostly during hunting season) or are along the streams but are smaller in size with very intermittent use (again more use during hunting seasons). Cross country travel is limited in scope throughout this area due mostly to steep terrain in many areas, and easy access to many streams at road crossings, were most of the dispersed sites area located.

Major streams and associated species include the following:

Stream Name	Fish Species
North Fork Crooked River	Redband
Horseheaven Creek	Redband
Little Horseheaven Creek	Redband
Gray Creek	Redband
Lytle Creek	Redband
Lookout Creek	Redband
Brush Creek	Redband
Howard Creek	Redband
Indian Creek	Redband
Fox Creek	Redband
Allen Creek	Redband
Peterson Creek	Redband
Deep Creek	Redband
Crazy Creek	Redband
Happy Camp Creek	Redband
Jackson Creek	Redband
Derr Creek	Redband
Double Coral Creek	Redband
Little Summit Creek	Redband
Newsome Creek	Redband
Sherwood Creek	Redband
Bear Creek	Redband
Pine Creek	Redband
Shotgun Creek	Redband
Drake Creek	Redband
Double Cabin Creek	Redband
Maury Creek	Redband
Faught Creek	Redband

**South Fork Crooked 4<sup>th</sup> Field HUC:**

The South Fork Crooked sub-basin encompasses approximately 980,000 acres of which only 8%, or about 78,000 acres, is Forest Service managed. This sub-basin includes the area upper areas of the sub-basin that feeds the Crooked River. It includes the South Fork watershed that does not have any Ochoco National Forest lands and the Beaver Creek watersheds that include lands that are administered by the Ochoco.

This area includes about 90 miles of fish bearing streams where redband are native. As is the case with most of the stream systems on the Ochoco, there are the following issues and concerns with habitats. Habitats have been impacted by roads (reduction in floodplain and migration blockages), wildfire, timber harvest, and grazing. Channel incision is a major concern in those areas with meadows. Some bank erosion has occurred adjacent to some camping sites. This area is not dominated by stringer or larger meadows but instead has mostly steeper Rosgen B and C

type channels. There are a few areas that have meadows systems and similar to other areas these have been degraded to due management and therefore have incised channels.

Most dispersed sites are located adjacent to stream systems at road crossings. There are few sites that have impacted the stream system measurably.

The following major streams are located within this sub-basin on the Ochoco National Forest.

Stream Name	Fish Species
Dripping Vat Creek	Redband
Dry Paulina Creek	Redband
Wolf Creek	Redband
Sugar Creek	Redband
Tamarack Creek	Redband
Rager Creek	Redband
Powell Creek	Redband
Heisler Creek	Redband
Beaverdam Creek	Redband

#### Lower John Day 4<sup>th</sup> Field HUC

The Lower John Day 4<sup>th</sup> field HUC is approximately 2 million acres in size of which less than 2% (32,000 acres) is administered by the Ochoco National Forest. It encompasses the Bridge Creek and Bear Creek watersheds that are on the north slopes of the Ochoco.

Native fish in this sub-basin include redband and steelhead. There are 18 miles of redband fish bearing streams and 6 miles of steelhead bearing streams with xx miles of those within 300 feet of a road. Fish species are limited to steelhead and rainbow trout in most of these drainages, although Bear Creek has a barrier to adult passage just off Forest. Most all dispersed camping opportunities exist here at road crossings. Terrain is steep in most sub-watersheds and dispersed camping is limited. This is also true of cross country travel for ATV's.

Streams show impacts from roads paralleling the drainages and in some cases barriers to fish passage are present at these road crossings. Additional impacts from grazing, and timber harvest is evident in many locations, however, overall conditions of these stream is highly variable with high quality habitat evident in areas where roads are not adjacent to the stream.

Major streams that are located within the 5<sup>th</sup> field watersheds are as follows.

Stream Name	Fish Present
Bear Creek	Redband
West Branch Bridge Creek	Redband and Steelhead
Bridge Creek	Redband and Steelhead
Badger Creek	Redband and Steelhead

## Upper John Day 4<sup>th</sup> Field HUC

This sub-basin is approximately 1.37 million acres in size with only 8% (110,000 acres) of the sub-basin administered by the Ochoco National Forest. The area includes the tributaries to the South Fork of the John Day River and the Mountain Creek, Rock Creek and Cottonwood Creek watersheds.

Native fish in this sub-basin include redband steelhead, and spring Chinook salmon. There are 106 miles of redband bearing streams with 90 of those also steelhead bearing. xxx miles of that are within 300 feet of roads. Most all of these drainages are steep Rosgen B or C type stream systems with few stringer meadows except in the very upper elevations of these tributaries. Habitats again are similar to other areas across the forest where grazing, wildfire, and timber harvest have caused impacts to these channels in some areas, although overall impacts are much less here than in other watersheds due to the steep nature of these watersheds. Roads are much less in direct impacts to the stream systems as there are few parallel roads to streams. However, road crossings contribute to isolation of some populations of redband and prevent upstream migration of steelhead in some areas.

Dispersed camping in these watersheds is the most limited of any area across the Ochoco. These watersheds are the most remote and receive use mostly as a result of hunting season in the fall. Due to the nature of the landscape there are few places where large dispersed sites exist near streams. Most sites are located at the few road crossings near streams on flat areas adjacent to the channel. Impacts from dispersed camping are very limited and localized.

Impacts from cross country travel are similarly limited due to the terrain in these watersheds. The steep hill slopes and heavily timbered areas prevent most cross country travel except on some ridge top areas where vegetation is sparse, however these sites far way from streams in most situations.

Major streams in this 4<sup>th</sup> field HUC on Ochoco NF lands are listed in the following table.

Stream Name	Fish Species
Badger Creek	Redband and Steelhead
Indian Creek	Redband and Steelhead
Keeton Creek	Redband and Steelhead
Rock Creek	Redband and Steelhead
Cottonwood Creek	Redband and Steelhead
Black Canyon Creek	Redband and Steelhead
Wind Creek	Redband and Steelhead
Sunflower Creek	Redband

## Trout 4<sup>th</sup> Field HUC

The Trout sub-basin has approximately 443,000 acres within its boundaries, of which about 35,000 (8%) is administered by the Ochoco National Forest. Trout Creek is one of only a handful of important tributaries from the east side of the Deschutes River and contains both redband and steelhead. Within the Trout Creek 4<sup>th</sup> Field HUC there is only one 5<sup>th</sup> Field HUC (Headwaters Trout Creek) that is managed by the Ochoco National Forest. The sub-basin has generally steep timbered slopes. Hydrologically this sub-basin is snow melt dominated and can be very flashy in nature.

Native steelhead and redband fish bearing streams include 21 miles of redband bearing streams with 13 of those also steelhead bearing streams. xxx miles of those are within 300 feet of a road. Habitats overall in are good condition throughout these smaller drainages. The largest impacts to fisheries currently are a result of roads and road crossings. Habitats have been eliminated from access by steelhead over the years due to the numerous road crossings. Over the last decade there has been a large effort to replace culverts with structures that pass fish at all life stages that has opened up additional historical habitat. Grazing continues in this drainage, but has been shifted to sheep over the last 20 years. This has allowed riparian vegetation to reestablish and stream conditions overall to be improved.

Access for dispersed camping is limited to areas adjacent to road crossings where traditional dispersed sites have been located for many years. Most sites are small in size, except near ridge tops where hunting camps have set up larger sites. Cross country access is limited in these watersheds also because of the steep slopes and heavily timbered areas.

Major streams in this 4<sup>th</sup> field HUC on Ochoco NF lands are listed in the following table.

Stream Name	Fish Species
Biglog Creek	Redband and Steelhead
Dutchman Creek	Redband and Steelhead
Cartwright Creek	Redband and Steelhead
Potlid Creek	Redband and Steelhead
Trout Creek	Redband and Steelhead
Dick Creek	Redband and Steelhead
Auger Creek	Redband and Steelhead

## **B-2 Geology**

### B-2.1 Lithology of the Ochoco and Deschutes National Forests

This table displays the lithology broken down according to the susceptibility to chemical and mechanical weathering processes. Chemical weathering refers to the ability of minerals to alter through time. Mechanical weathering refers to freezing, thawing, expansion and contraction of the rocks, which break the rocks down. Some rocks are more resistant to weathering: solid basalt, andesite, intrusions, rhyolites. Rocks highly susceptible to chemical and mechanical weathering processes are generally alluvium, fanglomerates, glacial gravels, landslide terrain, pyroclastics (cinder) and terrace gravels. The intermediate range of resistance tends to be rocks rich in altered clays like the ash flow tuffs and sedimentary rocks.

For the analysis area, the older rocks tend to be located on the Ochoco National Forest and the younger ones are on the Deschutes National Forest and underlie the Crooked River National Grassland.

**Table 2.1.1 Lithology weathering characteristics for the analysis area**

<b>Forest</b>	<b>Lithology Resistant to Chemical and Mechanical Weathering (acres)</b>	<b>Lithology with Intermediate Resistance to Chemical and Mechanical Weathering (acres)</b>	<b>Lithology Highly Susceptible to Chemical and Mechanical Weathering (acres)</b>	<b>Water</b>
Deschutes 1,612,991 acres	Qb, Qba, Qrd, Qta, QTb, QTb?,QTba,QTmv,QTvm,QTvs,Ta, Tat, Tba,Tba?,Tbaa, Tmv,Tmv?,Tob,Tvs,Tvs – <b>947,831 acres</b>	Ts – <b>12,705 acres</b>	Qa, Qal, Qd, Qg, Qgf, Qls, Qma, Qmp, Qs, Qtp, QTps, QTs, QTst, Qyb - <b>622,609 acres</b>	<b>29,846 acres</b>
Crooked River NG – 110, 071 acres	Qb, QTb, Tba, Tob, Tr, Trb,Trh,Tsv – <b>33,025 acres</b>	Tc, Tca, Tca?,Tct,Ts, Tsfj, Tsfj? – <b>72,779 acres</b>	Qal, Qf, Qs, QTp, QTs – <b>3,861 acres</b>	<b>406 acres</b>
Ochoco NF – 613,833 acres	QTb, QTba, Tat, Tcp, Tr, Tvi, Tvm, Twt? – <b>356,495 acres</b>	Kji, Ks, Tca, Tct, Tct?, TRsv, Ts, Tsfj, Tts – <b>219,228 acres</b>	Qal, Qf, Qls, Qt, QTp – <b>37,892 acres</b>	<b>218 acres</b>

B-2.2 Mineral Material Sources

**Mineral Material Sources - Proposed Designated Open in Alternatives 2 and 3**

Table 2.2.1 includes a list of the mineral material sources that do not prohibit motorized access off designated routes in Alternative 1, and are proposed to be designated as areas open to motorized access off designated routes in Alternatives 2 and 3.

**Table 2.2.1 Alternative 2 & 3 –Mineral Material Sources Proposed as Designated Open for motorized access**

<b>Material Source Number</b>	<b>Material Source Name</b>	<b>Acres</b>	<b>Status (Active = mineral material extraction/waste disposal/stockpiles)</b>
<i>Deschutes National Forest</i>			
<i>Bend/Ft. Rock District</i>			
1006	North Siah Cinder Pit	2.32	INACTIVE
1008	Siah Cinder Pit	0.87	INACTIVE
1040	Sprague Gravel Pit	6.44	WASTE DISPOSAL SITE
1057	West Browns Creek Gravel	6.44	INACTIVE
1112	East Spillway Borrow Pit	17.12	ACTIVE
3004	Coyote Butte Cinder Pit	4.91	INACTIVE
3018	Pipeline Cinder Pit	5.35	INACTIVE
3022	Sand Flat Cinder Pit	6.66	INACTIVE
3040	Ground Hog Cinder Pit	1.37	INACTIVE
3041	Sabol Butte Cinder Pit	5.31	INACTIVE
<i>Crescent District</i>			
2003	Maklaks Cinder Pit	1.16	INACTIVE
2004	Black Rock Cinder Pit	16.12	ACTIVE
2005	Mabel Butte Cinder Pit	7.76	INACTIVE
2008	Muttonchop Cinder Pit No. 1	10.54	ACTIVE
2011	Junction Rock Quarry	6.41	INACTIVE

<b>Material Source Number</b>	<b>Material Source Name</b>	<b>Acres</b>	<b>Status (Active = mineral material extraction/waste disposal/stockpiles)</b>
2022	Burlington Pumice Pit	0.59	INACTIVE
2023	Northern Pumice Pit	0.61	INACTIVE
2026	Paunina Pumice Pit	2.95	INACTIVE
2028	Cove Gravel Pit	0.56	INACTIVE
2033	Crescent Creek Gravel Pit	0.61	INACTIVE
<i>Sisters District</i>			
5006	Cache Cinder Pit	2.21	INACTIVE
5008	Zimmerman Cinder Pit	16.72	ACTIVE
5009	Fourmile Cinder Pit	4.93	ACTIVE
5011	Melvin Cinder Pit	4.79	INACTIVE
5015	Whychus Creek Gravel Pit	4.63	ACTIVE
5016	Pole Creek Cinder Pit	3.53	INACTIVE
5019	Garrison Cinder Pit	4.53	INACTIVE
5022	McKenzie Gravel Pit	4.00	INACTIVE
5033	North Sisters Gravel Pit	4.52	INACTIVE
<b>Ochoco National Forest</b>			
<i>Lookout Mountain District</i>			
132009331	AHALT	6.62	Closed (currently dispersed campground, OHV use)
181912133	CHIPMUNK	14.42	Active
132004441	CRYSTAL	1.38	Closed
121715333	HIGHLAND	8.10	Active
121935211	McGINNIS	2.93	Active
142230321	NORTH FORK	15.33	Active
132219331	SCOTT'S CAMP	1.71	Waste Disposal
18192133	SHERWOOD SADDLE	5.27	Waste Disposal
13133241	THUNDER	2.04	Active

Material Source Number	Material Source Name	Acres	Status (Active = mineral material extraction/waste disposal/stockpiles)
	ROCK		
132022441	WALTON LAKE	12.43	Active
121828343	WHISKEY	8.30	Active
<i>Paulina District</i>			
132329422	ASPEN	9.01	Active
152533432	BELLWORM	7.82	Waste Disposal
142336412	FLOW TOP	0.52	Closed
142336442	GRASSHOPPER	0.51	Closed
142336122	JUNIPER	0.57	Closed
142414232	PODO MEADOW	1.43	Stockpile
132314222	REMINGTON	1.84	Closed
142432112	SIX CORNERS	11.89	Active
142408342	THORNTON	19.92	Closed (currently dispersed campground with OHV use)
<i>Crooked River National Grassland</i>			
111336415	METOLIUS	20.66	Active
111213435	ROUND BUTTE	40.49	Active
5045	East Sullivan Rock Quarry	5.70	Active

Table 2.2.2 – Closed Mineral Material Sources include a summary listing of the total number of current mineral material sources that would be closed to motorized access off designated routes in Alternatives 2 and 3. These sources were closed based on the criteria established in Chapter 2. They are noted on the following list based on the primary, but not the only criteria that was considered in not designating these sites as open to motorized access off designated routes.

**Table 2.2.2 Closed Mineral Material Sources – Alternative 2 and 3**

<b>Reason for Closure</b>	<b>Bend/Ft. Rock District</b>	<b>Crescent District</b>	<b>Sisters District</b>	<b>Totals</b>
Deschutes National Forest				
No Road Access	40	9	3	<b>52</b>
No Known Use	60	9	10	<b>79</b>
Gated/Berms/ or signed closed	12	1	2	<b>15</b>
Reclaimed	8	1		<b>9</b>
Small Size	1	1		<b>2</b>
No Definable Boundaries	30	3	8	<b>41</b>
Invasive Plants	11		5	<b>16</b>
Safety	2	1		<b>3</b>
Private Property Adjacency	11		1	<b>12</b>
Special Use Permit with Federal Highway	2			<b>2</b>
Newberry National Volcanic Monument	6			<b>6</b>
Retain for Material Use Only	3		2	<b>5</b>
Other Travel Closure Areas	2		4	<b>6</b>
<b>Total Sources</b>	<b>188</b>	<b>25</b>	<b>35</b>	<b>248</b>
<b>Reason for Closure</b>	<b>Lookout Mtn District</b>	<b>Paulina District</b>	<b>Crooked River National Grassland</b>	<b>Totals</b>
<b>Ochoco National Forest</b>				
No Road Access	33	6		<b>39</b>
No Known Use		5		<b>5</b>
Gated/Berms/ or signed closed	2	4	3	<b>9</b>
Reclaimed	3	28	4	<b>35</b>
Small Size	163	29		<b>192</b>
No Definable Boundaries	2			<b>2</b>
Invasive Plants	10	11	1	<b>22</b>
Private/State Property	1	1	2	<b>4</b>

<b>Reason for Closure</b>	<b>Bend/Ft. Rock District</b>	<b>Crescent District</b>	<b>Sisters District</b>	<b>Totals</b>
Adjacency				
County Road Adjacency			1	<b>1</b>
Middle Deschutes/Lower Crooked Wild and Scenic Rivers' Management Plan, Dec. 1992			1	<b>1</b>
Wilderness Adjacency	1			<b>1</b>
Retain for Material Use Only	7	4		<b>11</b>
<b>Total Sources</b>	<b>222</b>	<b>88</b>	<b>12</b>	<b>322</b>

**B-3 Hydrology**

**Table 3.1. 303(d) Listed Streams on the Deschutes and Ochoco National Forests**

Watershed	Water Body	303 (d) Listing Parameter						
		Temp	Temp (spwn) <sup>1</sup>	Sed	Turb	pH	DO	Chlora
<b>John Day Basin</b>								
<b>Lower John Day Sub Basin</b>								
Bridge Cr	Bear Cr	Y						
	Bridge Cr	Y						
	Gable Cr	Y						
	Nelson Cr	Y						
<b>Upper John Day Sub Basin</b>								
Lwr SFk John Day R	South Fk John Day R	Y						
Mdl SFk John Day R	Murray Cr	Y						
	Porcupine Cr	Y						
	Sunflower Cr	Y						
Mountain Cr	Badger Cr	Y						
Rock Cr	Rock Cr	Y						
Upr Mdl John Day R	Cottonwood Cr	Y						
<b>Deschutes Basin</b>								
<b>Lower Deschutes Sub Basin</b>								
Hdwtrs Deschutes	Lake Simtustus					Y		Y
Willow Cr	Willow Cr	Y						
<b>Trout Creek Sub Basin</b>								
Upr Trout Cr	Auger Cr	Y		Y				
	Big Log Cr	Y		Y				
	Bull Cr	Y		Y				
	Cartwright Cr	Y		Y				
	Dick Cr	Y		Y				
	Dutchman Cr	Y		Y				
	Potlid Cr	Y		Y				
	Trout Cr	Y		Y				
<b>Upper Deschutes Sub Basin</b>								
Wickiup/Browns Cr	Deschutes R	Y						
	Odell Cr	Y				Y		Y
	Odell Lake					Y		Y
Crain Pr/Charleton Cr	Deschutes R	Y						
	Lava Lake						Y	
Fall River	Deschutes R	Y		Y	Y		Y	
Lk Billy Chanook	Lake Billy Chanook					Y		Y
Lwr Metolius R	Lake Billy Chanook					Y		Y

Watershed	Water Body	303 (d) Listing Parameter						
		Temp	Temp (spwn) <sup>1</sup>	Sed	Turb	pH	DO	Chlora
	Metolius R	Y						
Mdl Deschutes/ McKensie Canyon	Deschutes R	Y				Y	Y	
Pilot Butte	Deschutes R	Y		Y	Y		Y	Y
Tumalo Cr	Tumalo Cr	Y						
Upr Metolius R	First Cr		Y <sup>2</sup>					
	Link Cr	Y						
	Metolius R	Y						
	MFk SFk Lake Cr	Y						
	Middle Fk Lake Cr	Y						
Whychus Cr	Indian Ford	Y						
	Whychus Cr	Y						
<b>Little Deschutes Sub Basin</b>								
Crescent Creek	Big Marsh Cr	Y						
	Crescent Cr	Y						
Lwr Ltl Deschutes	Paulina Cr	Y						
Upr Ltl Deschutes	Hemlock Cr	Y						
	Little Deschutes R	Y					Y	
<b>Lower Crooked River Sub Basin</b>								
CR Nat. Crassland	Crooked R. RM 0-51	Y				Y		
	Lake Billy Chanook					Y		Y
McKay Cr	Ltl McKay Cr	Y						
	McKay Cr	Y						
Mill Cr	East Fk Mill Cr	Y						
	Harvey Cr	Y						
	Mill Cr	Y						
	West Fk Mill Cr	Y						
Upr Ochoco Cr	Canyon Cr	Y						
	Hamilton Cr	Y						
	Ltl. Hay Cr	Y						
	Marks Cr	Y						
	Ochoco Cr	Y						
<b>Upper Crooked River Sub Basin</b>								
Bear Cr	Bear Cr	Y						
	Cow Cr	Y						
	Deer Cr	Y						
	Kloutchman Cr	Y						
Camp Cr	Double Cabin Cr	Y						
Deep Cr	Crazy Cr	Y						
	Deep Cr	Y						
	Double Corral Cr	Y						

Watershed	Water Body	303 (d) Listing Parameter						
		Temp	Temp (spwn) <sup>1</sup>	Sed	Turb	pH	DO	Chlora
	Happy Camp Cr	Y						
	Jackson Cr	Y						
	Little Summit Cr	Y						
	Toggle Cr	Y						
Lwr NFk Crooked	Fox Canyon Cr	Y						
	North Fk Crooked R	Y						
Upr NFk Crooked	Allen Cr	Y						
	Fox Cr	Y						
	Gray Cr	Y						
	Howard Cr	Y						
	Indian Cr	Y						
	Lookout Cr	Y						
	Lytle Cr	Y						
	North Fk Crooked R	Y						
	Peterson Cr	Y						
	Porter Cr	Y						
Upr Crooked Valley	Horse Heaven Cr	Y						
	Ltl Horse Heaven Cr	Y						
	Shortgun Cr	Y						
	Wildcat Cr	Y						
<b>South Fork Crooked R Sub Basin</b>								
Lwr Beaver Cr	North Fk Wolf Cr	Y						
	Wolf Cr	Y						
Upr Beaver Cr	Beaverdam Cr	Y						
	Powll Cr	Y						
	Rager Cr	Y						
	Sugar Cr	Y						
Paulina Cr	Dipping Vat Cr	Y						
	Dry Paulina Cr	Y						
	Roba Cr	Y						
S. Fk. Beaver Cr	Begg Cr	Y						

<sup>1</sup> Temperature (spawning) – applies to salmon, steelhead & bull trout waters

<sup>2</sup> Fish Use Map 130B shows that Oregon Water Quality Standard 340-041-0028(4)(a) does not apply to First Creek. First Creek should have been de-listed from the 2004/2006 303(d) List based on criteria change.

## B-4 Vegetation

### B-4.1 Invasive Plants

#### **B-4.1.1 Acres of invasive plant sites that occur on the Deschutes National Forest that are open or closed to motorized travel off of designated routes under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action), and Alternative 3.**

\*\* = Species too abundant to map and data reflect only a specific site(s).

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
** <i>Bromus tectorum</i>	Cheatgrass	26	11	71	29	37	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cardaria pubescens</i>	Hairy whitetop	107	373	22	78	480	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Centaurea diffusa</i>	Diffuse knapweed	9,483	1,415	87	13	10,897	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Centaurea solstitialis</i>	Yellow star-thistle	0.1	0.1	22	78	0.1	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed	14,438	2,475	85	15	16,912	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
										establishment.
<i>Centaurea</i> spp.	Unidentified – either spotted or diffuse knapweed	700	3	99.5	0.5	703	0	100	0	Slight increased ability to prevent spread and establishment.
<i>Cirsium arvense</i>	Canada thistle	2,981	716	81	19	3,696	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cirsium vulgare</i>	Bull thistle	3,707	1,601	70	30	5,309	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Convolvulus arvensis</i>	Field bindweed	231	505	31	69	736	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cynoglossum officinale</i>	Houndstongue	0.1	0	100	0	0.1	0	100	0	No change. Acres remain closed.
<i>Cytisus scoparius</i>	Scotch broom	2,869	100	97	3	2,969	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Elymus repens</i>	Quackgrass	19	20	49	51	19	20	50	50	No change. Part of plant population occurs in a material source site that is a

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
										staging area for OHVs and is proposed to stay that way.
<i>Euphorbia esula</i>	Leafy spurge	1	8	11	89	9	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Hypericum perforatum</i>	St. Johnswort	5,742	954	86	14	6,696	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Isatis tinctoria</i>	Dyer's woad	3	-	100	0	3	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Linaria dalmatICA</i>	Dalmation toadflax	1,306	635	67	33	1,941	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Linaria vulgaris</i>	Butter and eggs	1,069	223	83	17	1,292	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Linaria</i> spp.	Unidentified <i>Linaria</i> species	16	0	100	0	16	0	100	0	No change. Acres remain closed.
<i>Onopordum acanthium</i>	Scotch thistle	1,026	97	91	9	1,124	0	100	0	Alt. 2 increases ability to

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
										prevent invasive plant spread and establishment.
<i>Phalaris arundinacea</i>	Reed canarygrass	2,288	83	96	4	2,371	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Phalaris arundinacea var. picta</i>	Ribbongrass	120	0	100	0	120	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Senecio jacobaea</i>	Tansy ragwort	1,069	876	55	45	1,945	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Taeniatherum caput-medusae</i>	Medusahead	28	0	100	0	28	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<b>Total</b>		<b>48,976</b>	<b>11,742</b>	<b>81</b>	<b>19</b>	<b>60,696</b>	<b>0</b>	<b>100</b>	<b>0</b>	

**B-4.1.2. Acres of invasive plant sites that occur on the Deschutes National Forest that occur within 300 feet of a travel route that is open for Motorized Access for Dispersed Camping (MADC) under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action) and Alternative 3 (similar to Alternative 2 except upland MADC areas have special provisions under Alt. 3).**

Scientific Name	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Results
<i>Bromus tectorum</i> (Cheatgrass)	0	37	0	100	21	10	0	5	57	28	0	15	Increased habitat protection
<i>Cardaria pubescens</i> (Hairy whitetop)	0	0.1	0	100	0.1	0	0	0	100	0	0	0	Increased habitat protection
<i>Centaurea diffusa</i> (Diffuse knapweed)	4,033	6,866	37	63	5,899	2,291	2,109	598	54	21	19	5	Increased habitat protection
<i>Centaurea solstitialis</i> (Yellow star thistle)	0	0.01	0	100	0.01	0	0	0	100	0	0	0	Increased habitat protection
<i>Centaurea stoebe</i> ssp. <i>micranthos</i> (Spotted knapweed)	7,309	9,604	43	57	9,498	4,204	1,966	1,244	56	25	12	7	Increased habitat protection
<i>Centaurea</i> spp. (Unidentified knapweed)	503	201	71	29	441	109	5	148	63	16	1	21	16% open no provisions compared to 29% in Alt. 1
<i>Cirsium arvense</i> (Canada thistle)	802	2,894	22	78	3,409	247	6	35	92	7	0.2	1	Increased habitat protection
<i>Cirsium vulgare</i> (Bull thistle)	1,391	3,917	26	74	4,574	674	2	59	86	13	0.04	1	Increased habitat

Scientific Name	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Results
													protection
<i>Convolvulus arvensis</i> (Field bindweed)	0	0.1	0	100	0.1	0	0	0	100	0	0	0	Increased habitat protection
<i>Cynoglossum officinale</i> (Houndstongue)	0	0.2	0	100	0.2	0	0	0.1	100	0	0	0.4	Increased habitat protection
<i>Cytisus scoparius</i> (Scotch broom)	1,109	1,859	37	63	2,617	211	1	140	88	7	0.03	5	Increased habitat protection
<i>Elymus repens</i> (Quackgrass)	20	19	51	49	39	0	0	0	100	0	0	0	Increased habitat protection
<i>Euphorbia esula</i> (Leafy spurge)	0	9	0	100	2	1	0	6	21	12	4	63	Increased habitat protection
<i>Hypericum perforatum</i> (St. Johnswort)	2,396	4,300	36	64	4,913	653	757	373	73	10	11	6	Increased habitat protection
<i>Isatis tinctoria</i> (Dyer's woad)	0	3	0	100	3	0	0	0	100	0	0	0	Increased habitat protection
<i>Linaria dalmatica</i> (Dalmation toadflax)	254	1,687	13	87	1,769	153	0	19	91	8	0	1	Increased habitat protection
<i>Linaria vulgaris</i> (Butter and eggs)	558	734	43	57	1,270	20	0	2	98	2	0	0.2	Increased habitat protection
<i>Linaria</i> spp. (Unidentified <i>Linaria</i> species)	0	16	0	100	16	0	0	0	100	0	0	0	Increased habitat protection

Scientific Name	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Results
<i>Onopordum acanthium</i> (Scotch thistle)	555	569	49	51	1,121	1	0	2	100	0	0	0	Increased habitat protection
<i>Phalaris arundinacea</i> (Reed canarygrass)	1,282	1,089	54	46	2,335	5	4	27	98	0	0.2	1	Increased habitat protection
<i>Phalaris arundinacea</i> var. <i>picta</i> (Ribbongrass)	5	114	4	96	10	109	0	0	9	91	0	0	Actually all "open" areas would be in riparian buffers. This is a riparian species.
<i>Senecio jacobaea</i> (Tansy ragwort)	574	1,371	30	70	1,554	389	0	3	80	20	0	0	Increased habitat protection
<i>Taeniatherum caput-medusae</i> (Medusahead)	26	2	91	9	18	8	0	3	64	28	0	9	Greater protection under Alt. 1
<b>Total</b>	<b>21,139</b>	<b>39,578</b>	<b>35</b>	<b>65</b>	<b>43,365</b>	<b>9,380</b>	<b>4,859</b>	<b>2,668</b>	<b>72</b>	<b>16</b>	<b>8</b>	<b>4</b>	

**B-4.1.3. Acres of invasive plant sites that occur on the Ochoco National Forest and Crooked River National Grassland (CRNG) that are either in areas open or closed to motorized travel off of designated routes under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action), and Alternative 3.**

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Acroptilon</i>	Russian	41	1	98	2	42	0	100	0	Slight increase in ability to

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>repens</i>	knapweed									prevent spread and establishment.
<i>Arctium minus</i>	Lesser burdock	0.1	0	100	0	0.1	0	100	0	No change. Acres remain closed.
<i>Cardaria draba</i>	Whitetop	33	23	59	41	57	0	100	1	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Carduus nutans</i>	Musk thistle	0	1	0	100	1	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Centaurea diffusa</i>	Diffuse knapweed	858	16	98	2	873	0	100	0	Slight increase in ability to prevent spread and establishment.
<i>Centaurea solstitialis</i>	Yellow star-thistle	0	19	0	100	19	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed	635	132	83	17	765	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cirsium arvense</i>	Canada thistle	75	53	59	41	128	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cirsium vulgare</i>	Bull thistle	15	0.4	98	2	16	0	100	0	Slight increase in ability to prevent spread and establishment.
<i>Convolvulus arvensis</i>	Field bindweed	1	0.3	72	28	1	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cynoglossum officinale</i>	Houndstongue	63	1,474	4	96	1,537	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Cytisus scoparius</i>	Scotch broom	0.1	0.2	40	60	0.4	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Dipsacus fullonum</i>	Teasel	2	1	59	41	4	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Euphorbia esula</i>	Leafy spurge	0	0.3	0	100	0.3	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Hypericum perforatum</i>	St. Johnswort	31	19	62	38	50	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Linaria dalmatica</i>	Dalmation toadflax	1	0.1	91	9	1	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Linaria vulgaris</i>	Butter and eggs	1	0.1	49	51	1	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Onopordum acanthium</i>	Scotch thistle	46	10	82	18	56	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Phalaris arundinacea</i>	Reed canarygrass	10	0	100	0	10	0	100	0	No change. Acres remain closed.
<i>Potentilla recta</i>	Sulphur cinquefoil	0.4	4	8	92	5	0	100	0	Alt. 2 increases ability to prevent invasive plant spread and establishment.
<i>Rubus discolor</i>	Himalayan blackberry	1	0	100	0	1	0	100	0	No change. Acres remain closed.
<i>Taeniatherum caput-medusae</i>	Medusahead	5,239	72	99	1	5,309	0	100	0	Slight increase in ability to prevent spread and establishment.
<b>Total</b>		<b>7,054</b>	<b>1,852</b>	<b>79</b>	<b>21</b>	<b>8,898</b>	<b>0</b>	<b>100</b>	<b>0</b>	

**B-4.1.4. Acres of invasive plant sites that occur on the Ochoco National Forest and Crooked River National Grassland (CRNG) that occur within 300 feet of a travel route that is open for Motorized Access for Dispersed Camping (MADC) under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action) and Alternative 3 (similar to Alternative 2 except upland MADC areas have special provisions under Alt. 3).**

Scientific Name	Alt. 1 closed	Alt. 1 open	Alt. 1 % closed	Alt. 1 % open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Notes
<i>Acroptilon repens</i> (Russian knapweed)	41	1	98	2	34	3	0.4	4	81	8	1	10	Alt. 1 has more acres closed to MADC
<i>Arctium minus</i> (Lesser burdock)	0	0.1	0	100	0	0	0	0.1	0	0	0	100	Increased habitat protection because of riparian special provisions
<i>Cardaria draba</i> (Whitetop)	5	52	8	92	4	29	0.1	23	8	52	0	40	Alt. 2 and 3 increase protection.
<i>Carduus nutans</i> (Musk thistle)	0	1	0	100	1	0	0	0	100	0	0	0	100% now closed. Increased habitat protection
<i>Centaurea diffusa</i> (Diffuse knapweed)	851	23	97	3	640	38	141	55	73	4	16	6	Alt. 1 has more acres closed to MADC

Scientific Name	Alt. 1 closed	Alt. 1 open	Alt. 1 % closed	Alt. 1 % open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Notes
<i>Centaurea solstitialis</i> (Yellow star thistle)	0	19	0	100	6	13	0	0	29	71	0	0	Alt. 2 has more acres closed to MADDC than Alt. 1. Alt. 3 has majority (71%) occupied acres in MADDC with upland provisions
<i>Centaurea stoebe</i> ssp. <i>micranthos</i> (Spotted knapweed)	586	181	76	24	398	189	24	154	52	25	3	20	More acres closed in Alt. 2 & 3. Alt. 3 provides more protection in upland MADDC areas
<i>Cirsium arvense</i> (Canada thistle)	59	69	46	54	59	28	1	39	46	22	1	31	Same amt. acres closed in all 3 alternatives. Alt. 3 provides more protection in upland MADDC areas
<i>Cirsium vulgare</i> (Bull thistle)	15	0.5	97	3	4	1	10	2	26	6	59	9	More acres closed under Alt. 1

Scientific Name	Alt. 1 closed	Alt. 1 open	Alt. 1 % closed	Alt. 1 % open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Notes
<i>Convolvulus arvensis</i> (Field bindweed)	1	1	48	52	0	0.5	0.1	0.6	4	44	4	48	More acres closed under Alt. 1.
<i>Cynoglossum officinale</i> (Houndstongue)	37	1,499	2	98	893	175	77	392	58	11	5	25	Alt. 2 and 3 close more acres over Alt. 1
<i>Cytisus scoparius</i> (Scotch broom)	0	0.3	0	100	0.1	0.2	0.1	0.1	15	41	17	27	Increased habitat protection
<i>Dipsacus fullonum</i> (Teasel)	2	2	56	44	2	1	0.1	0.3	66	23	3	9	Increased habitat protection
<i>Euphorbia esula</i> (Leafy spurge)	0	0.3	0	100	0	0.2	0	0.1	0	82	0	18	Increased habitat protection
<i>Hypericum perforatum</i> (St. Johnswort)	1	49	3	97	3	29	0	18	6	58	0	36	Increased habitat protection
<i>Linaria dalmatica</i> (Dalmation toadflax)	1	0.1	87	13	0.3	0.2	0	0.6	28	15	0	57	More acres closed in Alt. 1
<i>Linaria vulgaris</i> (Butter and eggs)	0	1	46	54	0.5	0.5	0	0	49	51	0	0	3 more acres closed in Alt. 2 & 3; Alt. 3 more protection with upland provisions
<i>Onopordum acanthium</i> (Scotch thistle)	44	13	77	23	47	0.8	3	5	84	1	5	9	More acres closed in Alt. 2 & 3.

Scientific Name	Alt. 1 closed	Alt. 1 open	Alt. 1 % closed	Alt. 1 % open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian	Notes
<i>Phalaris arundinacea</i> (Reed canarygrass)	10	0	100	0	10	0	0	0	100	0	0	0	No change – all acres closed MADC
<i>Potentilla recta</i> (Sulphur cinquefoil)	0	5	1	99	0.2	1	0	3	4	22	1	73	Increased habitat protection
<i>Rubus discolor</i> (Himalayan blackberry)	1	0	100	0	0.7	0	0	0	100	0	0	0	No change – all acres closed MADC
<i>Salvia aethiopsis</i> (Mediterranean sage)	1	20	4	96	5	15	0	0.1	26	74	0	0	Increased habitat protection
<i>Taeniatherum caput-medusae</i> (Medusahea)	5,231	80	98	2	3,353	114	1,347	493	63	2	25	9	Alt. 1 has more acres closed to MADC.
<b>Total</b>	<b>6,887</b>	<b>2,015</b>	<b>77</b>	<b>23</b>	<b>5,467</b>	<b>643</b>	<b>1,664</b>	<b>1,193</b>	<b>61</b>	<b>7</b>	<b>18</b>	<b>13</b>	

**B-4.1.5. Deschutes and Ochoco National Forests and Crooked River National Grassland Invasive Plant Prevention Practices and Letter of Direction from Forest Supervisors, June 2007.**

File Code: 1950-3

Date: June 7, 2007

Route To:

Subject: Invasive Plant Preventative Practices

To: All Employees, Deschutes and Ochoco NFs

The Deschutes and Ochoco National Forests and Crooked River National Grassland have put together a set of Invasive Plant Prevention Practices (IPPP) in response to the Region 6 Invasive Plant EIS Record of Decision (ROD) that was signed in October of 2005. The ROD put an emphasis on invasive plant prevention, and has amended our Forest Plans with several standards related to invasive plant prevention and management. The standards that were included in the R6 Invasive Plant EIS were scheduled to be implemented on March 1, 2006. The Invasive Plant Prevention Practice will help us implement the standards for invasive plant management.

These Invasive Plant Prevention Practices have been reviewed by many of you and your colleagues over the past year.

It is expected that over time these invasive plant prevention practices will become second nature to us and we will apply them to each project that is planned and implemented on the Forests and Grassland.

Remember, preventing weeds is all of our responsibility!

/S/ JEFF WALTER  
JEFF WALTER  
Forest Supervisor, Ochoco National Forest

/S/ CECILIA R. SEESHOLTZ (FOR)  
LESLIE A.C. WELDON  
Forest Supervisor, Deschutes National Forest

cc: Nancy Phelps  
Steve\_Robertson  
Debbie\_Norton

Attachment

# **Deschutes and Ochoco National Forests** **And Crooked River National Grassland** **Invasive Plant Prevention Practices**

## **INTRODUCTION**

In October 2004, Forests in Region 6 were directed to develop local invasive plant prevention practices. This document fulfills that obligation. The Invasive Plant Prevention Practices were developed using the Guide to Noxious Weed Prevention Practices (July 12, 2001).

The practices are preceded in this document by Forest Plan direction that was established with the Pacific Northwest Region Preventing and Managing Invasive Plants Record of Decision (October 2005). When the R-6 Invasive Plant Species FEIS ROD came out in October 2005, it amended R-6 Forest Plans and contained 23 Standards related to prevention and treatment of invasive plants. Additional direction for the management of invasive plants is contained in Forest Service Manual, Section 2080.

The invasive plant prevention practices are provided for use on the Deschutes and Ochoco National Forests and Crooked River National Grassland to minimize the introduction of invasive plants; minimize conditions that favor the establishment or spread of invasive plants; and to facilitate the integration of invasive plant management practices into resource programs. In order to display a complete list of the ways in which invasive plant establishment and spread can be prevented, required actions are also included.

## **DESIRED FUTURE CONDITION**

In National Forest lands across Region Six, healthy native plant communities remain diverse and resilient, and damaged ecosystems are restored. High quality habitat is provided for native organisms throughout the region. Invasive plants do not jeopardize the ability of the National Forests and National Grassland to provide goods and services communities expect. The need for invasive plant treatment is reduced due to the effectiveness and habitual nature or preventative actions, and the success of restoration efforts.

**GOALS AND OBJECTIVES (From the R-6 IPEIS ROD)**

<b>Goal 1- Protect ecosystems from the impacts of invasive plants through an integrated approach that emphasizes prevention, early detection, and early treatment. All employees and users of the National Forest recognize that they play an important role in preventing and detecting invasive plants.</b>	
Objective 1.1	Implement appropriate invasive plant prevention practices to help reduce the introduction, establishment and spread of invasive plants associated with management actions and land use activities.
Objective 1.2	Educate the workforce and the public to help identify, report, and prevent invasive plants
Objective 1.3	Detect new infestations of invasive plants promptly by creating and maintaining complete, up-to-date inventories of infested areas, and proactively identifying and inspecting susceptible areas not infested with invasive plants.
Objective 1.4	Use an integrated approach to treating areas infested with invasive plants. Utilize a combination of available tools including manual, cultural, mechanical, herbicides, biological control.
Objective 1.5	Control new invasive plant infestations promptly, suppress or contain expansion of infestations where control is not practical, conduct follow up inspection of treated sites to prevent reestablishment.
<b>Goal 2- Minimize the creation of conditions that favor invasive plant introduction, establishment and spread during land management actions and land use activities. Continually review and adjust land management practices to help reduce the creation of conditions that favor invasive plant communities.</b>	
Objective 2.1	Reduce soil disturbance while achieving project objectives through timber harvest, fuel treatments, and other activities that potentially produce large amounts of bare ground
Objective 2.2	Retain native vegetation consistent with site capability and integrated resource management objectives to suppress invasive plants and prevent their establishment and growth
Objective 2.3	Reduce the introduction, establishment and spread of invasive plants during fire suppression and fire rehabilitation activities by minimizing the conditions that promote invasive plant germination and establishment.
Objective 2.4	Incorporate invasive plant prevention as an important consideration in all recreational land use and access decisions. Use Forest-level Access and Travel Management planning to manage both on-highway and off-highway travel and travel routes to reduce the introduction, establishment and spread of invasive plants.
Objective 2.5	Place greater emphasis on managing previously “unmanaged recreation” (OHVs, dispersed recreation, etc.) to help reduce creation of soil conditions that favor invasive plants, and reduce transport of invasive plant seeds and propagules.
<b>Goal 3- Protect the health of people who work, visit, or live in or near National Forests, while effectively treating invasive plants. Identify, avoid, or mitigate potential human health effects from invasive plants and treatments.</b>	
Objective 3.1	Avoid or minimize public exposure to herbicides, fertilizer, and smoke
Objective 3.2	Reduce reliance on herbicide use over time in Region Six

<b>Goal 4– Implement invasive plant treatment strategies that protect sensitive ecosystem components, and maintain biological diversity and function within ecosystems. Reduce loss or degradation of native habitat from invasive plants while minimizing adverse effects from treatment projects.</b>	
Objective 4.1	Maintain water quality while implementing invasive plant treatments.
Objective 4.2	Protect non-target plants and animals from negative effects of both invasive plants and applied herbicides. Where herbicide treatment of invasive plants is necessary within the riparian zone, select treatment methods and chemicals so that herbicide application is consistent with riparian management direction, contained in Pacfish, Infish, and the Aquatic Conservation Strategies of the Northwest Forest Plan.
Objective 4.3	Protect threatened, endangered, and sensitive species habitat threatened by invasive plants. Design treatment projects to protect threatened, endangered, and sensitive species and maintain species viability.
<b>Goal 5– Expand collaborative efforts between the Forest Service, our partners, and the public to share learning experiences regarding the prevention and control of invasive plants, and the protection and restoration of native plant communities.</b>	
Objective 5.1	Use an adaptive management approach to invasive plant management that emphasizes monitoring, learning, and adjusting management techniques. Evaluate treatment effectiveness and adjust future treatment actions based on the results of these evaluations.
Objective 5.2	Collaborate with tribal, other federal, state, local and private land managers to increase availability and use of appropriate native plants for all land ownerships.
Objective 5.3	Work effectively with neighbors in all aspects of invasive plant management: share information and resources, support cooperative weed management, and work together to reduce the inappropriate use of invasive plants (landscaping, erosion control, etc.).

## NEW FOREST PLAN STANDARDS (from the R-6 IPEIS ROD)

The following standards and an implementation schedule are from the Pacific Northwest Region Invasive Plant Program Record of Decision (October 2005) which amended Forest Plans in the Pacific Northwest Region.

Standard #	Text of Standard	Implementation Schedule
1	Prevention of invasive plant introduction, establishment and spread will be addressed in watershed analysis; roads analysis; fire and fuels management plans, Burned Area Emergency Recovery Plans; emergency wildland fire situation analysis; wildland fire implementation plans; grazing allotment management plans, recreation management plans, vegetation management plans, and other land management assessments.	This standard will apply to all assessments and analysis documents started or underway as of March 1, 2006; this standard does not apply to assessments and analysis documents signed or completed by February 28, 2006.
2	Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism (including public works and service contracts), require the cleaning of all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering National Forest System Lands. This standard does not apply to initial attack of wildland fires, and other emergency situations where cleaning would delay response time.	<p>This standard will apply to permits and contracts issued after March 1, 2006. Ongoing permits/contracts issued before this date may be amended, but are not required to be amended, to meet this standard.</p> <p>This standard will apply to Forest Service force account operations starting March 1, 2006.</p>
3	Use weed-free straw and mulch for all projects, conducted or authorized by the Forest Service, on National Forest System Lands. If State certified straw and/or mulch is not available, individual Forests should require sources certified to be weed free using the North American Weed Free Forage Program standards (see Appendix O) or a similar certification process.	Forests are already applying this standard on an informal basis; weed-free straw and mulch will be required as available, starting March 1, 2006.

Standard #	Text of Standard	Implementation Schedule
4	Use only pelletized or certified weed free feed on <b>all National Forest System lands</b> . If state certified weed free feed is not available, individual Forests should require feed certified to be weed free using North American Weed Free Forage Program standards or a similar certification process. This standard may need to be phased in as a certification processes are established.	National Forest managers will encourage the use of weed-free feed across the National Forests in the Region. Pelletized feed or certified weed-free feed will be required in all Wilderness areas and Wilderness trailheads starting January 1, 2007. Pelletized or certified weed-free feed will be required on all National Forest System lands when certified feed is available (expected by January 1, 2009). Weed-free (or pelletized) feed requirements will be listed in individual Forest Closure orders.
5	No Standard	N/A
6	Use available administrative mechanisms to incorporate invasive plant prevention practices into rangeland management. Examples of administrative mechanisms include, but are not limited to, revising permits and grazing allotment management plans, providing annual operating instructions, and adaptive management. Plan and implement practices in cooperation with the grazing permit holder.	This standard will apply to grazing permits beginning March 1, 2006.
7	Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport. Treat or require treatment of infested sources before any use of pit material. Use only gravel, fill, sand, and rock that is judged to be weed free by District or Forest weed specialists.	This standard will apply to rock source management beginning March 1, 2006.
8	Conduct road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants in consultation with District or Forest-level invasive plant specialists, incorporate invasive plant prevention practices as appropriate.	This standard will apply to all road blading, brushing and ditch cleaning projects beginning March 1, 2006.
9	No Standard	N/A
10	No Standard	N/A
11	Prioritize infestations of invasive plants for treatment at the landscape, watershed or larger multiple forest/multiple owner scale.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.
12	Develop a long-term site strategy for restoring/revegetating invasive plant sites prior to treatment.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.

Standard #	Text of Standard	Implementation Schedule
13	Native plant materials are the first choice in revegetation for restoration and rehabilitation where timely natural regeneration of the native plant community is not likely to occur. Non-native, non-invasive plant species may be used in any of the following situations: 1) when needed in emergency conditions to protect basic resource values (e.g., soil stability, water quality and to help prevent the establishment of invasive species), 2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, 3) if native plant materials are not available, or 4) in permanently altered plant communities. Under no circumstances will non-native invasive plant species be used for revegetation.	This standard will apply to restoration and rehabilitation projects beginning March 1, 2006.
14	Use only APHIS and State-approved biological control agents. Agents demonstrated to have direct negative impacts on non-target organisms would not be released.	This standard will apply to biological control projects beginning March 1, 2006.
15	Application of any herbicides to treat invasive plants will be performed or directly supervised by a State or Federally licensed applicator.  All treatment projects that involve the use of herbicides will develop and implement herbicide transportation and handling safety plan.	This standard will apply to herbicide treatment projects as of March 1, 2006.

Standard #	Text of Standard	Implementation Schedule
16	<p>Select from herbicide formulations containing one or more of the following 10 active ingredients: chlorsulfuron, clopyralid, glyphosate, imazapic, imazapyr, metsulfuron methyl, picloram, sethoxydim, sulfometuron methyl, and triclopyr. Mixtures of herbicide formulations containing 3 or less of these active ingredients may be applied where the sum of all individual Hazard Quotients for the relevant application scenarios is less than 1.0. <sup>1</sup></p> <p>All herbicide application methods are allowed including wicking, wiping, injection, spot, broadcast and aerial, as permitted by the product label. Chlorsulfuron, metsulfuron methyl, and sulfometuron methyl will not be applied aerially. The use of triclopyr is limited to selective application techniques only (e.g., spot spraying, wiping, basal bark, cut stump, injection).</p> <p>Additional herbicides and herbicide mixtures may be added in the future at either the Forest Plan or project level through appropriate risk analysis and NEPA/ESA procedures.</p>	This standard will be applied to invasive plant projects with NEPA decisions signed after March 1, 2006.
17	No Standard	N/A
18	Use only adjuvants (e.g. surfactants, dyes) and inert ingredients reviewed in Forest Service hazard and risk assessment documents such as SERA, 1997a, 1997b; Bakke, 2003.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.
19	To minimize or eliminate direct or indirect negative effects to non-target plants, terrestrial animals, water quality and aquatic biota (including amphibians) from the application of herbicide, use site-specific soil characteristics, proximity to surface water and local water table depth to determine herbicide formulation, size of buffers needed, if any, and application method and timing. Consider herbicides registered for aquatic use where herbicide is likely to be delivered to surface waters.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.

Standard #	Text of Standard	Implementation Schedule
20	Design invasive plant treatments to minimize or eliminate adverse effects to species and critical habitats proposed and/or listed under the Endangered Species Act. This may involve surveying for listed or proposed plants prior to implementing actions within unsurveyed habitat if the action has a reasonable potential to adversely affect the plant species. Use site-specific project design (e.g. application rate and method, timing, wind speed and direction, nozzle type and size, buffers, etc.) to mitigate the potential for adverse disturbance and/or contaminant exposure.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.
21	Provide a minimum buffer of 300 feet for aerial application of herbicides near developed campgrounds, recreation residences and private land (unless otherwise authorized by adjacent private landowners).	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.
22	Prohibit aerial application of herbicides within legally designated municipal watersheds.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.
23	Prior to implementation of herbicide treatment projects, National Forest system staff will ensure timely public notification. Treatment areas will be posted to inform the public and forest workers of herbicide application dates and herbicides used. If requested, individuals may be notified in advance of spray dates.	This standard will apply to invasive plant treatment projects with NEPA decisions signed after March 1, 2006.

1. ATSDR, 2004. Guidance Manual for the Assessment of Joint Toxic Action of Chemical Mixtures. U.S. Department Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry.

**DESCHUTES, OCHOCO, CRNG  
INTEGRATED INVASIVE PLANT PREVENTION PRACTICES**

**These invasive plant prevention practices are supplemental to the previously listed Regional Prevention Standards, which are now Forest Plan Standards.**

**Education**

**Management Objectives:**

1. Ensure public and employee knowledge of invasive plants to help reduce both the spread rate of existing invasive plants and the risk of infestation by new invasive plants.
2. Increase education and awareness to aid in the early detection of new invasive plant sites.

#	Invasive Plant Prevention Practices	LRMP Objective
1.1	Educate employees on the Forests regarding the problems associated with and the identification of invasive plants. Add invasive plant awareness to Employee Orientation, Fire Effects and other training. Report infestation to the appropriate District Invasive plant Coordinator.	1.2
1.2	Work to increase public (including contractors and permittees) awareness of invasive plants and their potential negative impact on the environment. Use education programs to increase invasive plant awareness and prevent invasive plant spread	1.2
1.3	Increase the level of educational material regarding invasive plants displayed at trailheads and District offices. Use education programs to increase invasive plant awareness and prevent invasive plant spread by recreationists and other Forest users. Post prevention practices at NFS trailheads, roads, boat launches, and other forest recreation facilities.	1.2
1.4	Continue work with State, local and interested partners to develop additional educational materials that improve the understanding and identification of invasive plants in Central Oregon.	1.2; 5.3
1.5	Discuss invasive plant prevention practices at annual grazing permittee meetings and contractor pre-work sessions.	1.2
1.6	Coordinate invasive plant prevention efforts with other agencies.	1.2, 5.3
1.7	Project level personnel will be trained to recognize invasive plants occurring on or adjacent to their Districts and should be able to recognize potential invaders.	1.2

## Project Need

### Management Objectives:

1. Weigh the need of the proposed project against the risk of invasive plant infestation.
2. Address invasive plant prevention needs when planning soil disturbance activities.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard Addressed
2.1	In the earliest stages of project consideration, look at the risks of invasive plant infestation and the long-term consequences of dealing with invasive plants. Determine which prevention practice / mitigation measure would apply and be effective to reduce the risk of invasive plant introduction or spread.	2.4, Standard #1
2.2	Evaluate the need for any ground disturbing activity and ways to minimize the possible effects of implementation, e.g. winter logging, minimizing openings.	2.1, 2.2
2.3	Be realistic during project size-up. Consider the cost and the chance of success of the invasive plant prevention practices.	
2.4	Invasive plant risk assessment and management will be considered in all NEPA planning activities where soil disturbance or invasive plant introduction or spread could result from that activity. Prevention will be emphasized as the preferred strategy for invasive plant management.	1.1, 1.2, 2.3, 2.4, 2.5 FSM 2080.03
2.5	NEPA analysis will consider the costs associated with preventing the occurrence or spread of invasive plants.	

## Prevention – Minimize Transportation of Invasive Plant Seed

**Management Objective:** Reduce the spread of existing invasive plants across the Forests and Grassland and the risk of introducing new invasive species to project sites and other areas of the Forests/Grassland.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard addressed
3.1	When possible, keep active road construction sites closed to vehicles not involved with construction.	2.1
3.2	Treat invasive plants at all Forest Service administrative sites including Ranger Stations, compounds, staging areas, trailheads, boat launches, campgrounds, parking lots, airstrips, interpretive and historic sites, and roads leading to trailheads.	1.4, 1.5
3.3	Encourage motorized trail users to inspect and clean their vehicles prior to using NFS lands. Post message at trailheads and get information to Motorized Clubs.	2.5
3.4	Require all Forest Service employees to inspect, remove, and properly dispose of invasive plant seed and plant parts found on their clothing and personal equipment prior to leaving a project site.	1.1, 1.2,
3.5	Consider using transitional pastures when moving livestock from invasive plant infested areas onto NFS lands, where livestock have been identified as a vector in transport of invasive plant seeds. (Transitional pastures are designated fenced areas that can be logistically and economically maintained in an invasive plant-free condition).	R-6 Standard #6
3.6	Consider the exclusion of livestock, wildlife, and vehicles from high priority invasive plant sites where animals or vehicles are likely to cause a spread of the invasive plant off site.	1.1, 2.4, 2.5
3.7	The use of invasive plant-infested areas for fire camps, fire camp equipment, and crew bases should be avoided. Whenever possible, establish fire camps, vehicle and crew staging areas, helibases, helispots, and airstrips in areas inspected and verified as invasive plant-free. Where unavoidable, measures should be taken to prevent invasive plant spread. .	2.3, R-6 Standard #1
3.8	Work with other jurisdictions to identify and limit boat trailer introduction of aquatic invasive plant species to small lakes within the forest boundaries.	2.4

## Project Planning, Design, and Special Use Permit Administration

### Management Objectives:

1. Integrate invasive plant management practices into all resource programs and project planning.
2. Ensure that the risks of invasive plant introduction and/or spread, and the mitigation required to minimize that risk are properly considered before ground disturbing activities begin.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard addressed
4.1	Invasive plant risk assessments will be completed, and invasive plant management will be considered in <b>all</b> NEPA planning activities where land disturbance or invasive plant introduction or spread could result from that activity.	1.1, FSM 2080.03
4.2	When conducting NEPA analysis, consider the costs associated with preventing the introduction or spread of invasive plants.	
4.3	For projects with the potential to introduce and spread invasive plants, involve the District invasive plant coordinator in the planning and implementation process.	1.1, 2.1, 2.4,
4.4	Project level personnel should be trained to recognize invasive plant species occurring on or adjacent to their Districts.	1.2
4.5	Project or contract maps should show known invasive plant infestations as a means to aiding avoidance or monitoring.	1.1, 1.2, 1.3, R6 Standard #1, 8
4.6	Consider Logging systems design that would provide for minimal land disturbance and avoid understory reductions in or adjacent to invasive plant infestations.	2.1, 2.2
4.7	Where inventories indicate an infestation, the project should be designed, in coordination with the District invasive plant specialist, to plan for the long-term management of the infestation and to prevent the spread of the infestation off the site.	1.1, 1.4,
4.8	Project should be designed to consider all resource values and tradeoffs, including the opportunity to restrict operators from working near high risk invasive plant sites during the time when invasive plants are capable of being spread by the operation, unless proper mitigation measures are used.	R6 Standard #8

#	Invasive Plant Prevention Practices	LRMP Objective or Standard addressed
4.9	Incorporate timber sale provisions C(T)6.6# (weed free seed) and B(T)6.35 (Equipment Cleaning) in all timber sale contracts. C(T)5.12# (Use of Roads by Purchaser), B(T)5.3 (Road Maintenance) and C(T)6.315# (Sale Operation Schedule) will be used as necessary to keep contract vehicles out of high-risk infestations during peak invasive plant seed dispersal periods. These types of requirements will also be incorporated in Federal Acquisition Regulation (FAR) contracts in Section H – Special Contract Requirements as deemed necessary (see page 22).	1.1, 1.2, 2.3
4.10	Revegetate disturbed land as soon as practical following ground-disturbing activities. Consider regeneration and other resource objective needs in planning for species to be seeded, timing, rates, etc.	1.1, 2.1
4.11	Favor the use of native species in preference to introduced species for re-vegetation seeding when the native species can accomplish the site objectives within a reasonable time frame, costs are not excessive, and seed is available.	1.1, 1.4
4.12	All seed purchased or otherwise designated or accepted for use on Forest System Lands will require testing for “All-States Noxious Weeds” according to AOSA (Association of Official Seed Analysts) standards and will be certified in writing by a Registered Seed Technologist or Seed Analyst as meeting the requirements of the Federal Seed Act and State Seed Law regarding the testing, labeling, sale and transport of prohibited and restricted noxious weeds. Only seed that has passed the testing for “All-States Noxious Weeds,” will be accepted and used on NFS lands. This measure will be incorporated into all new contracts, purchases, or agreements, as appropriate, prior to awarding or issuing such documents. It will also be incorporated by modification into all existing contracts or agreements where seed purchase or use is required and has not yet been completed.	1.1, 2.3
4.13	Consider the exclusion of livestock, wildlife, and vehicles (on and off-road) and other human activities from high priority invasive plant sites where such are likely to spread the infestation. Revegetate such sites as needed.	1.1, 1.5, 2.4, 2.5,

#	Invasive Plant Prevention Practices	LRMP Objective or Standard addressed
4.14	Where off-road vehicle (ORV) use is restricted to a specific area, that area will be closely monitored for invasive plants. Planning for the ORV area will consider prevention as a high priority.	2.4, 2.5
4.15	Road management objectives will consider allowing or encouraging desirable herbaceous vegetative growth on shoulders, cuts, and fills.	2.2, 2.4
4.16	Road maintenance planning will address practices to prevent the introduction and spread of invasive plants.	1.1, 2.4
4.17	Road closures will be coordinated with the District invasive plant specialist to ensure that invasive plant prevention is considered. If closed roads are to be seeded, certified weed free seed would be used.	2.4
4.18	Develop invasive plant management plans with grazing permittees for each allotment, include: location of and ground disturbance associated with salt licks, watering sites, yarding/loafing areas, corrals and other heavy use areas. Monitor these sites for invasive plants and treat them as needed. Consider invasive plant seed transportation, maintaining healthy vegetation to compete with invasive plant species, invasive plant control methods, revegetation, reporting and education.	1.1, 1.2, 5.1, 5.3, R6 Standard #6
4.19	Annual operating plans (AOPs) should provide information to grazing permittees concerning invasive plant locations and management activities.	1.1, 1.2, 5.1, 5.3, Standard #6
4.20	In Allotment Management Plans (AMPs) and AOPs, to the extent possible, consider the use of livestock as a tool in preventing palatable invasive plants from setting seed.	Standard 6
4.21	To reduce the risk of invasive plant introduction and spread following implementation of prescribed burning, pastures should be evaluated to determine if rest, deferment or other adjustments to livestock grazing use should be used.	1.1, 5.1, 5.3, Standard #6
4.22	Review mineral operating plans to ensure measures are implemented to prevent the introduction and spread of invasive plants. Use material only from invasive plant-free sources. Ensure that disturbed sites are re-vegetated as soon after disturbance as possible.	1.1, 1.2 R-6 Standards #1, 7
4.23	Consider invasive plant risk and spread factors in travel plan (road closure) decisions.	2.4 R-6 Standard # 1

#	Invasive Plant Prevention Practices	LRMP Objective or Standard addressed
4.24	Consider road closures in areas that are invasive plant free and/or at unusually high risk to invasive plant invasion.	1.3, 2.4
4.25	Incorporate invasive plant prevention considerations into road layout and design. Minimize the removal of trees and other roadside vegetation during road construction, reconstruction, and maintenance, particularly on southerly aspects. Design roads that are self-maintaining, e.g. outslope roads, rolling dips, take advantage of natural features. Design roads for revegetation success by saving and applying topsoil, laying back slopes, etc.	2.1, 2.4
4.26	During trail planning and alternative development, evaluate invasive plant risk factors (presence of invasive plants, habitat type, aspect, shading, etc.) when determining trail location and design.	2.4
4.27	Include invasive plant prevention and control measures in all special use permits that involve ground disturbance.	1.1, 1.5 R-6 Standard #2
4.28	When administering Forest Roads and Trails Act and private road easements, require appropriate invasive plant prevention measures.	2.4
4.29	Plan for collection of KV or other funds to revegetate soil disturbance or treat invasive plants as needed after timber harvest and regeneration activities.	1.1, 1.4, 1.5, 2.1
4.30	Plan and apply for flood and/or fire rehabilitation funding to treat invasive plant infestations not treated effectively the first growing season after the disturbance event.	1.5
4.31	When possible, coordinate the timing of road maintenance activities and invasive plant control activities. Delay blading roads within two weeks of herbicide application. Delay spraying after blading until vegetative regrowth has occurred.	1.1, 1.2, 1.5 R-6 Standard # 8

## Pre-Project Activity, Inventory, and Analysis

**Management Objective:** Minimize the spread of existing invasive plants into new project areas.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard Addressed
5.1	Pre-project inventories should be completed and used during the project planning process. Develop site-specific plans for treatment of existing invasive plant populations. Maintain an invasive plant inventory and monitoring system.	1.3, 2.4, Standard 1, R6 Monitoring Framework
5.1a	Establish Invasive Plant Prevention Areas (high value, invasive plant-free areas that are a priority to keep clean). Prioritize Invasive Plant Prevention Areas for Early-Detection/Rapid Response strategy.	
5.2	Whenever budgets allow, Botanical surveys, range analyses, and other resource inventories should be expanded to note all invasive plant infestations by species, size of infestation, and location.	1.3
5.3	Before construction equipment moves into a project area, treat seed-bearing invasive plants along existing Forest Service access roads leading to the project area. Pretreat existing weed infestations prior to creating new seed beds.	Goal 2
5.4	Treat invasive plants in road obliteration, closure, and reclamation projects before roads are made un-drivable. Monitor and retreat as necessary.	Goal 2
5.5	Treat pre-existing and proposed landings, skid trails and helibases that are invasive plant infested before logging.	Goal 2, Objective 2.3
5.6	Where practical, treat high risk areas for invasive plant infestations (e.g. roads, disturbed ground) before burning. Monitor and retreat after burning if necessary.	Goal 2

**Project Implementation**

**Management Objectives:**

1. Minimize ground disturbance and the exposure of mineral soil during project activities, thereby reducing the potential for invasive plants to become established on new sites and the need to conduct revegetation activities.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard Addressed
6.1	Minimize soil disturbance and conserve existing topsoil (A and B soil horizons) for replacement whenever possible in situations where ground disturbing activities are unavoidable.	2.1
6.2	Reduce disturbance when doing road maintenance. Limit the amount of ditch pulling only to the amount necessary to assure proper drainage. Limit blading to running surfaces and the minimum necessary on road shoulders.	2.1
6.3	Maintain desirable roadside vegetation. If desirable vegetation is removed during blading or other ground disturbing activities revegetate the area.	2.2
6.4	Consider rock armor in areas that are constantly disturbed (e.g. cattle watering sites, pump chances) at road/stream crossings.	Goal 2
6.5	In the overall context of meeting multiple resource objectives for a treatment area, Consider developing prescriptions and selecting logging and burning methods that minimize soil disturbance and that minimize weed establishment or spread.	1.1, 2.1
6.6	Minimize skid trails and the number and size of landings.	2.1
6.7	Minimize fire line and associated soil disturbance during prescribed burning. Utilize natural barriers and existing roads and skid trails for control lines where possible.	2.1
6.8	Where shoulders or drainage ditches are covered by desirable herbaceous cover, consider leaving it in place rather than blading it off if such a practice can be done without causing excessive damage to the road surface or significant public safety hazards.	2.2

## Revegetation/Site Rehabilitation

**Management Objective:** Re-establish desirable vegetation on exposed mineral soil due to project activity and unplanned events such as fire, flood, or other disturbances to minimize the introduction and/or spread of invasive plants.

#	Invasive Plant Prevention Practices	LRMP Objective or Standard Addressed
7.1	Revegetate disturbed land as soon as possible following disturbance. Consider revegetation (reseeding) unless it can be documented that natural regeneration can accomplish within a reasonable time frame the same prevention objectives as seeding.	Goal 2
7.2	Favor the use of native species in preference to introduced species when the native species can accomplish the site objectives in a reasonable time-frame, costs are not excessive, and seed is available.	R-6 Standard #13
7.3	All seed purchased or otherwise designated or accepted for use on Forest System lands will be required to be tested for invasive plants according to the Association of Official Seed Analysts standards and will be certified in writing by a Registered Seed Technologist or Seed Analyst as meeting the requirements of the Federal Seed Act and the State Seed law regarding the testing, labeling, sale and transport of prohibited and restricted invasive plants.	Goals 1 & 2
7.4	Measure 7.3 will be incorporated into all new contracts, purchases, and agreements as appropriate, prior to awarding or issuing such documents.	1.1
7.5	Decommissioned roads should be seeded with certified weed-free seed to minimize potential invasion by invasive plants.	R-6 Standard #13
7.6	Where shoulders or ditches are covered by desirable vegetation, consider leaving it in place rather than blading it off if such a practice can be done without causing excessive damage to the road surface or public safety hazards.	2.2
7.7	If fertilizer is determined to be beneficial, based on soil analysis and cost effectiveness, apply fertilizer one year after germination and establishment of grass has occurred. All contracts must include specific language for revegetation prescriptions, including the timing of application of fertilizer, if applied.	R-6 Standard #12
7.8	Minimize and/or exclude grazing on restoration areas if not compatible with achieving revegetation efforts.	1.1, Standard #6

## Monitoring

**Management Objective:** Conduct project follow-up and review to determine success of invasive plant treatments and revegetation efforts and detect new invasive plant sites requiring treatment and make corrections as necessary. Monitoring is a part of every project and as such, needs to be covered in NEPA discussions, and planned for as part of implementation. Conduct implementation compliance monitoring consistent with the 2005 ROD requirements – Appendix M of the FEIS.

#	Invasive Plant Prevention Practices R6 FEIS Standard	LRMP Objective or Standard Addressed
8.1	Determine if standards for use of herbicides are being adhered to, including mitigation measures, reducing reliance on herbicide, and record keeping.	3.1, 4.1, 4.2, 4.3
8.2	Determine if designated sites are being treated as proposed.	Goal 2
8.3	Determine whether prescribed health and safety measures are being followed, and if chemical labels are being followed.	3.1
8.4	Determine whether the trend of invasive plant infestations are increasing or decreasing. Accomplish this by revisiting treated sites annually for five years, or until project objectives are met, conducting a comparison of yearly records, and establishing photo monitoring stations at selected sites.	3.2, 5.1
8.5	Determine whether the prescribed treatments are having the desired effect and whether site objectives or treatment methods need to be changed. Accomplish this by determining if specific site objectives are still valid, deciding whether prescribed treatments are achieving site objectives, and whether prescribed mitigation measures and safety measures are working.	5.1
8.6	Conduct post-project monitoring for invasive plants for all activities that have the potential to introduce or spread invasive plants on Forest Service Lands, including but not limited to: prescribed burning, timber harvest, road maintenance, and stream restoration projects.	1.3, 5.1
8.7	Conduct monitoring after a wildfire event to determine whether the fire caused existing infestation to spread, whether the fire established favorable sites for new infestations, and if suppression activities caused new invasive plant introduction.	1.3, 2.3, 5.1
8.8	Monitor areas of concentrated livestock use for invasive plant establishment. Treat new infestations.	1.3, 1.4
8.9	Monitor rock pits and quarries to ensure no new invasive plant seeds are transported to the use site.	1.3 R-6 Standard #7

#	Invasive Plant Prevention Practices R6 FEIS Standard	LRMP Objective or Standard Addressed
8.10	Retain performance bonds from mining operations until revegetation objectives are achieved.	Goal 2

## CONTRACT AND PERMIT CLAUSES -- EXAMPLES

### Mining Claims

**CLEANING OF EQUIPMENT:** Unless otherwise agreed, to prevent the introduction of seeds and noxious weeds onto National Forest System lands, the Claimant shall ensure all equipment moved onto National Forest System land is free of soil, seeds, vegetative matter, or other debris that could contain, or hold, seeds. The Claimant shall employ whatever cleaning methods necessary to ensure compliance with the terms of this provision. The Claimant shall notify the responsible Forest Service Officer prior to moving each piece of equipment onto National Forest System land, unless otherwise agreed in writing. Notification shall include identification of the location of the equipments most recent operation. Upon request by the Forest Service, arrangements shall be made for Forest Service inspection of each piece of equipment prior to entry upon National Forest System lands.

The Claimant shall certify compliance with the terms of this provision, in writing, prior to each entry of equipment onto National Forest System lands. For the purpose of this provision, “equipment” includes all construction and/or maintenance machinery, excluding pickup trucks, cars, and other passenger vehicles, used in the daily transport of personnel.

### Special Uses

#### Non-Native, Invasive Plant Prevention and Control

*(Use this clause in all authorizations involving ground disturbance, which could result in the introduction or spread of non-native, invasive plants. This clause may also be used where cooperative agreements for non-native, invasive plant control are in place with state and local governments).*

The holder/grantee shall be responsible for the prevention and control of non-native, invasive plants of concern on the area covered by this authorization and shall provide prevention and control measures as directed by the Forest Service. Non-native, invasive plants of concern are defined as those species recognized, as such, by Forest Service and/or State authorities in the area, where the authorized use is located.

The holder/grantee shall also be responsible for prevention and control of non-native, invasive plant infestations, which are determined by the Forest Service to have originated from the authorized area, including on National Forest System lands, which are not within the authorized area.

When determined to be necessary by the authorized officer, the holder/grantee shall develop a site-specific plan for non-native, invasive plant prevention and control. Such plan shall be subject to Forest Service approval. Upon Forest Service approval, the non-native, invasive plant, prevention and control plan shall become a part of this authorization, and its provisions shall be enforceable under the terms of this authorization.

### **Equipment Cleaning to Prevent the Spread of Non-native, Invasive Plants**

*(Use this clause in authorizations involving ground disturbance where equipment cleaning is essential to prevent the spread of non-native, invasive species).*

To prevent the introduction of seeds and non-native, invasive plants onto National Forest System lands, the holder/grantee shall ensure all equipment moved onto National Forest System land is free of soil, seeds, vegetative matter, or other debris that could contain, or hold, seeds. The holder/grantee shall employ whatever cleaning methods are necessary to ensure compliance with the terms of this provision. The holder/grantee shall notify the responsible Forest Service Officer prior to moving each piece of equipment onto National Forest System land, unless otherwise agreed in writing. Notification shall include identification of the location of the equipment's most recent operation. Upon request by the Forest Service, arrangements shall be made for Forest Service inspection of each piece of equipment prior to entry upon National Forest System lands.

The holder/grantee shall certify compliance with the terms of this provision, in writing, prior to each entry of equipment onto National Forest System lands. For the purpose of this provision, "equipment" includes all construction and/or maintenance machinery, excluding pickup trucks, cars, and other passenger vehicles, used in the daily transport of personnel.

## **Public Works Contracts**

### **H.7 NOXIOUS WEED CONTROL**

- (a) In order to prevent the potential spread of noxious weeds into the Ochoco or Deschutes National Forest, the Contractor shall be required to furnish the Forest Service with proof of weed-free equipment.
- (b) Noxious weeds are defined as any exotic plant species established or that may be introduced in the State, which may render the land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses and which is designated by the Oregon Department of Agriculture or the Deschutes County Weed Board or by other appropriate agencies having jurisdiction.
- (c) All equipment and vehicles to be used at the job site shall be cleaned and certified free of noxious weeds and their seeds prior to entrance onto the National Forest. The restriction shall include equipment and vehicles intended for off-road use as well as on

road use, whether they are owned, leased, or borrowed by the contractor or subcontractor.

- (d) Cleaning shall consist of the removal of all dirt, grease, debris, and materials that may harbor noxious weeds and their seeds. This may require the use of a pressure hose. Cleaning shall occur off Federal lands.
- (e) Equipment, materials and vehicles shall be visually inspected by a designated Forest Service Officer, and certified in writing to be reasonably clean and weed free. Inspections will take place at a location designated by the Forest Officer in advance of equipment and material arrival. Equipment and vehicles are expected to proceed directly to the job site following the inspection. Materials to be used on the project will be delivered to the job site following the inspection and approval.
- (f) Certification shall remain valid for each identified piece of equipment or vehicle only for the duration of the specified project and only as long as the vehicle or equipment remains at the job site. Equipment and vehicles (excepting passenger vehicles - this includes pickups and vans) that leave the job site will need to be re-certified as weed free before they are allowed to return to the job site or re-enter the National Forest.

B-4.2 Native Vegetation

**Appendix B-4.2.1. Acres and percent of Plant Association Groups (PAGs) open to motorized travel off of designated routes under Alternative 1 (existing condition), Alternative 2 (Proposed Action), and Alternative 3 on the Deschutes National Forest.**

Notes in Result column are for the Proposed Action.

<b>PAG</b>	<b>Alt. 1 Closed</b>	<b>Alt. 1 Open</b>	<b>Alt. 1 % Closed</b>	<b>Alt. 1 % Open</b>	<b>Alt. 2 &amp; 3 Closed</b>	<b>Alt. 2 &amp; 3 Open</b>	<b>Alt. 2 &amp; 3 % Closed</b>	<b>Alt. 2 &amp; 3 % Open</b>	<b>Result</b>
Alpine Dry	485	21	96	4	506	0	100	0	Increased protection; 100% closed
Alpine Meadow	3,703	29	99	1	3,732	0	100	0	Increased protection; 100% closed
Alpine shrub	184	0	100	0	184	0	100	0	Increased protection; 100% closed
Cinder	6,431	450	93	7	6,852	29	99.6	0.4	Increased protection.
Glacier	937	0	100	0	937	0	100	0	Increased protection; 100% closed
Hardwood	475	8	98	2	483	0	100	0	Increased protection; 100% closed
Juniper Woodlands	780	1,291	38	62	2,070	0	100	0	Increased protection; 100% closed
Lava	22,865	3,688	86	14	26,553	0	100	0	Increased protection; 100% closed
Lodgepole Pine Dry	177,214	178,526	50	50	355,425	281	99.9	0.08	Increased protection
Lodgepole Pine Wet	34,706	32,602	52	48	67,307	0	100	0	Increased protection; 100% closed
Meadow	4,070	455	90	10	4,524	0	100	0	Increased protection; 100% closed
Mesic Shrub	5,284	896	86	14	6,180	0	100	0	Increased protection; 100% closed
Mixed Conifer Dry	162,674	111,715	59	41	274,369	0	100	0	Increased protection; 100% closed
Mixed Conifer Wet	49,792	40,770	55	45	90,554	0	100	0	Increased protection; 100% closed
Mountain Hemlock Dry	184,930	6,535	97	3	191,465	0	100	0	Increased protection; 100% closed
Ponderosa Pine Dry	236,124	218,415	52	48	453,944	531	99.9	0.1	Increased protection
Ponderosa Pine Wet	24,915	23,625	51	49	48,537	0	100	0	Increased protection; 100% closed
Riparian	3,156	41	99	1	3,198	0	100	0	Increased protection; 100% closed
Rock	12,317	290	98	2	12,588	19	99.9	0.1	Increased protection; 100% closed
Water									N/A
White Bark Pine Dry	145	0	100	0	145	0	100	0	Increased protection; 100% closed
Xeric Shrublands	23,097	4,405	84	16	27,383	54	99.8	0.2	Increased protection
<b>Total</b>	<b>987,559</b>	<b>625,459</b>	<b>61</b>	<b>39</b>	<b>1,611,912</b>	<b>915</b>	<b>99.9</b>	<b>0.01</b>	<b>Overall increased protection to native plant habitats</b>

**Appendix B-4.2.2. Acres and percent of Plant Association Groups (PAGs) open to motorized access for dispersed camping (MADC) on the Deschutes National Forest under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action) and Alternative 3 (similar to Alternative 2 except upland MADC areas have special provisions under Alt. 3).**

PAG	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
Alpine Dry	473	33	93	7	493	12	0	0	98	2	0	0
Alpine Meadow	2,941	791	79	21	3,540	21	96	75	95	1	3	2
Alpine shrub	39	145	21	79	171	6	0	6	93	3	0	3
Cinder	5,847	1,034	85	15	6,241	620	13	7	91	9	0.2	0.1
Glacier	937	0	100	0	937	0	0	0	100	0	0	0
Hardwood	231	253	48	52	325	63	0	96	67	13	0	20
Juniper Woodlands	382	1,689	18	82	1,967	97	0	6	95	5	0	0.3
Lava	11,191	15,362	42	58	15,142	11,366	43	1	57	43	0.2	0.01
Lodgepole Pine Dry	36,556	319,184	10	90	253,282	85,103	13,212	4,109	71	24	4	1
Lodgepole Pine Wet	15,526	51,782	23	77	55,420	10,139	273	1,476	82	15	0.4	2
Meadow	793	3,732	18	82	4,115	260	0	149	91	6	0	3
Mesic Shrub	3,107	3,073	50	50	4,824	574	0	782	78	9	0	13
Mixed Conifer Dry	89,710	184,680	33	67	202,409	65,424	2,420	4,117	74	24	1	2
Mixed Conifer Wet	28,245	62,318	31	69	60,987	24,363	733	4,471	67	27	1	5

PAG	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
Mountain Hemlock Dry	117,042	74,423	61	39	186,464	3,928	610	463	97	2	0.3	0.2
Ponderosa Pine Dry	75,765	378,774	17	83	296,051	145,105	10,416	2,903	65	32	2	1
Ponderosa Pine Wet	11,007	37,533	23	77	32,545	14,135	820	1,037	67	29	2	2
Riparian	2,967	231	93	7	3,160	20	0	18	99	1	0	0.1
Rock	10,435	2,172	83	17	12,416	179	3	9	98	1	0.02	0.07
Water												
White Bark Pine Dry	145	0	100	0	145	0	0	0	100	0	0	0
Xeric Shrublands	16,777	10,725	61	39	21,275	3,614	2,546	2	78	13	9	0.01
<b>Total</b>	<b>446,881</b>	<b>1,166,137</b>	<b>28</b>	<b>72</b>	<b>1,196,287</b>	<b>365,494</b>	<b>31,243</b>	<b>19,795</b>	<b>74</b>	<b>23</b>	<b>2</b>	<b>1</b>

**Appendix B-4.2.3. Acres and percent of Plant Association Groups (PAGs) open to motorized travel off of designated routes under Alternative 1 (existing condition) and Alternatives 2 (Proposed Action) and Alternative 3 on the Ochoco National Forest and Crooked River National Grassland.**

PAG	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open
Douglas Fir	24,525	70,819	33	67	95,341	0	100	0
Dry Grand Fir	64,628	129,237	26	74	193,864	0	100	0

Dry Ponderosa Pine	10,500	33,823	24	76	44,317	0	100	0
Juniper Steppe	9,133	21,065	30	70	30,192	0	100	0
Juniper Woodland	103,765	21,476	83	17	125,155	20	99.9	0.1
Mesic Ponderosa Pine	14,882	52,543	22	78	67,420	0	100	0
Moist Grand Fir	26,242	37,206	41	59	63,446	0	100	0
Nonforest	34,717	62,941	36	64	97,651	0	100	0
Subalpine Fir	3,196	663	83	17	3,860	0	100	0
<b>Total</b>	<b>291,589</b>	<b>429,773</b>	<b>40</b>	<b>60</b>	<b>721,266</b>	<b>20</b>	<b>100</b>	<b>0.003</b>

**Appendix B-4.2.4. Acres and percent of Plant Association Groups (PAGs) open to motorized access for dispersed camping (MADC) on the Ochoco National Forest and Crooked River National Grassland under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action) and Alternative 3 (similar to Alternative 2 except upland MADC areas have special provisions under Alt. 3).**

PAG	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 Open & Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
Douglas Fir	14,470	80,874	15	85	79,021	10,055	361	5,903	83	11	0.4	6
Dry Grand Fir	47,009	146,857	24	76	160,088	20,885	1,501	11,389	83	11	1	6
Dry Ponderosa Pine	3,844	40,479	9	91	35,318	6,278	547	2,174	80	14	1	5
Juniper Steppe	8,391	21,807	28	72	26,829	1,484	1,400	479	89	5	4	2
Juniper Woodland	101,008	24,233	81	19	100,400	10,398	8,750	5,627	80	8	7	4
Mesic Ponderosa Pine	3,377	64,049	5	95	53,231	8,253	929	5,006	79	12	1.4	7
Moist Grand Fir	22,376	41,072	35	65	55,301	4,196	566	3,383	87	7	1	5
Nonforest	18,162	79,496	19	81	83,290	8,123	1,120	5,119	85	8	1	5
Subalpine Fir	2,886	974	75	25	3,597	28	111	123	93	1	3	3
<b>Total</b>	<b>221,522</b>	<b>499,840</b>	<b>31</b>	<b>69</b>	<b>597,076</b>	<b>69,700</b>	<b>15,286</b>	<b>39,203</b>	<b>83</b>	<b>10</b>	<b>2</b>	<b>5</b>

**Appendix B-4.2.5. Acres and percent of Special Habitat types on the Deschutes National Forest in areas open or closed to motorized travel off of designated routes under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action), and Alternative 3.**

Special Habitat Type	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open
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Hardwood	476	8	98	2	484	0	100	0
Meadow	7,770	484	94	6	8,254	0	100	0
Riparian	19,932	4,651	81	19	24,580	0	100	0
Rock	12,314	290	98	2	12,585	0	100	0
Scabland	23,007	4,404	84	16	27,291	0	100	0
<b>Total Acres</b>	<b>63,499</b>	<b>9,837</b>	<b>87</b>	<b>13</b>	<b>73,193</b>	<b>0</b>	<b>100</b>	<b>0</b>

**Appendix B-4.2.6. Acres of Special Habitat types that occur on the Deschutes National Forest open to motorized access for dispersed camping under the three alternatives.**

Special Habitat Type	Alt. 1 Acres Closed	Alt. 1 Acres Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Acres Closed	Alt. 2 & 3 Acres Open	Alt. 2 Open and Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Alt. 2 % open and Alt. 3 % open Special provisions non-riparian	Alt. 2 & 3 % open Special provisions -riparian
Hardwood	231	253	48	52	325	63	0	96	67	13	0	20
Meadow	3,732	4,523	45	55	7,653	281	96	225	93	3	1	3
Riparian	8,980	15,603	37	63	21,645	885	16	2,035	88	4	0.1	8
Rock	10,432	2,172	83	17	12,414	178	3	9	98	1	0.02	0.1
Scabland	16,728	10,683	61	39	21,185	3,613	2,545	2	77	13	9	0.01
<b>Total Acres</b>	<b>40,103</b>	<b>33,234</b>	<b>55</b>	<b>45</b>	<b>63,222</b>	<b>5,020</b>	<b>2,659</b>	<b>2,366</b>	<b>86</b>	<b>7</b>	<b>4</b>	<b>3</b>

**Appendix B-4.2.7. Acres of Special Habitat Types that occur on the Ochoco National Forest and Crooked River National Grassland open or closed to motorized travel off of designated routes currently.**

Special Habitat Type	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open
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Hardwood	493	858	37	63	1,353	0	100	0
Meadow	3,765	5,580	40	60	9,343	0	100	0
Riparian	2,358	1,619	59	41	3,977	0	100	0
Rock	769	332	70	30	1,102	0	100	0
Scabland	18,240	61,568	23	77	79,804	0	100	0
<b>Total Acres</b>	<b>25,625</b>	<b>69,957</b>	<b>27</b>	<b>73</b>	<b>95,579</b>	<b>0</b>	<b>100</b>	<b>0</b>

**Appendix B-4.2.8. Acres of Special Habitat Types that occur on the Ochoco national Forest and Crooked River National Grassland open to motorized access for dispersed camping under the three alternatives.**

Special Habitat Type	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 Open and Alt. 3 Open Special provisions non-riparian	Alt. 2 & 3 Open Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Alt. 2 % open and Alt. 3 % open Special provisions non-riparian	Alt. 2 & 3 % open Special provisions -riparian
Hardwood	292	1,060	22	78	827	0	3	522	61	0.03	0.2	39
Meadow	1,368	7,976	15	85	6,620	452	99	2,172	71	5	1	23
Riparian	1,853	2,124	47	53	3,168	0	3	806	80	0	0.1	20
Rock	484	618	44	56	1,045	25	14	19	95	2	1	2
Scabland	5,849	73,959	7	93	69,832	6,898	1,300	1,775	88	9	2	2
<b>Total</b>	<b>9,846</b>	<b>85,736</b>	<b>10</b>	<b>90</b>	<b>81,492</b>	<b>7,376</b>	<b>1,419</b>	<b>5,294</b>	<b>85</b>	<b>8</b>	<b>1</b>	<b>6</b>

**Appendix B-4.2.9. Acres of Sensitive plant populations that occur on the Deschutes and Ochoco National Forests and Crooked River National Grassland open or closed to motorized travel off of designated routes currently.**

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Achnatherum hendersonii</i> (Henderson's needlegrass)	Ochoco	110	96	53	47	205.9	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Achnatherum wallowaensis</i> (Wallowa needlegrass)	Ochoco	0	14	0	100	14	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Agoseris elata</i> (tall agoseris)	Deschutes	985	0	100	0	985	0	100	0	No change – all sites closed and protected
<i>Arnica viscosa</i> (Mt. Shasta arnica)	Deschutes	1	0	100	0	1	0	100	0	No change – all sites closed and protected
<i>Astragalus peckii</i> (Peck's milkvetch)	Deschutes	0	36	0	100	36	0	100	0	Increased protection – all sites protected from off road motorized travel
<i>Astragalus tegetarioides</i> (bastard milkvetch)	Ochoco	4	7	35	65	11	0	100	0	Increased protection – all sites protected from off road motorized travel
<i>Botrychium ascendens</i> (trianglelobe moonwort)	Ochoco	0	0.5	0	100	0.5	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Botrychium crenulatum</i> (scalloped moonwort)	Ochoco	0	28	0	100	28	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Botrychium minganense</i> (Mingan moonwort)	Ochoco	3	6	34	66	9	0	100	0	Increased protection – all sites protected from off-road motorized travel

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Botrychium montanum</i> (mountain moonwort)	Ochoco	1	3	30	70	4	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Botrychium paradoxum</i> (peculiar moonwort)	Ochoco	0.2	0	100	0	0.2	0	100	0	No change – all sites closed and protected
<i>Botrychium pumicola</i> (pumice grape-fern)	Deschutes	2,177	853	72	28	3,008	1.5	99.9	0.5	Increased protection. Majority of sites closed.
<i>Calochortus longebarbatus</i> var. <i>peckii</i> (Peck's mariposa lily)	Ochoco	744	2,045	27	73	2,790	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Carex capitata</i> (capitate sedge)	Deschutes	0.2	0	100	0	0.2	0	100	0	No change – all sites closed and protected
<i>Carex lasiocarpa</i> var. <i>americana</i> (slender sedge)	Deschutes	0.3	0	100	0	0.3	0	100	0	No change – all sites closed and protected
<i>Castilleja chlorotica</i> (green-tinged paintbrush)	Deschutes	937	177	84	16	1,088	2	99.9	0.1	Increased protection. Majority of sites closed.
<i>Cyperus acuminatus</i> (short-pointed cyperus)	Deschutes	1	0	100	0	1	0	100	0	No change – all sites closed and protected

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Gentiana newberryi</i> var. <i>newberryi</i> (Newberry's gentian)	Deschutes	168	4	98	2	168	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Lobelia dortmanna</i> (Dortmann's cardinalflower)	Deschutes	2	0	100	0	2	0	100	0	No change – all sites closed and protected
<i>Lomatium ochocense</i> (Ochoco lomatium)	Ochoco	0.6	0	100	0	0.6	0	100	0	No change – all sites closed and protected
<i>Lycopodiella inundata</i> (inundated clubmoss)	Deschutes	7	0	100	0	5	0	100	0	No change – all sites closed and protected
<i>Penstemon peckii</i> (Peck's penstemon)	Deschutes; CRNG	4,657 6.8	185 0	96 100	4 0	4,839 6.8	0 0	100 100	0 0	Increased protection on Deschutes; no change for CRNG – all sites within closed areas.
<i>Rorippa columbiae</i> (Columbia yellowcress)	Deschutes	0	0.1	0	100	0	0	100	0	One known site is along steep road shoulder and not conducive to motorized travel.
<i>Scheuchzeria palustris</i> ssp. <i>americana</i> (rannoch rush)	Deschutes	15	0	100	0	15	0	100	0	No change – all sites closed and protected
<i>Schoenoplectus subterminalis</i> (swaying bulrush)	Deschutes	15.2	0	100	0	15.2	0	100	0	No Change – all sites closed and protected

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Utricularia minor</i> (lesser bladderwort)	Deschutes	0.3	0.1	77	23	0.1	0	100	0	Increased protection – all sites protected from off-road motorized travel
<b>Bryophytes</b>										
<i>Helodium blandowii</i> (moss)	Deschutes; Ochoco	0.1 0.2	0 0	100 100	0 0	0.1	0	100 100	0 0	
<i>Rhizomnium nudum</i> (rhizomnium moss)	Deschutes	0.1	0.1	67	33	0.02	0	100	0	Increased protection – all sites protected from off-road motorized travel
<i>Schistostega pennata</i> (luminous moss)	Deschutes	19	0	100	0	19	0	100	0	No change – all sites closed and protected
<i>Tomentypnum nitens</i> (moss)	Deschutes	12.1	1.7	88	12	13	0	100	0	Increased protection.
<i>Tritomaria exsectiformis</i> (liverwort)	Deschutes	0.6	0.1	82	18	0.03	0	100	0	
<b>Lichens</b>										
<i>Dermatocarpon. Luridum</i> (silverskin lichen)	Deschutes; Ochoco	0.2 0.1	0 2.6	100 4	0 96	0.1 2.7	0 0	100 100	0 0	This species grows in the water. On Deschutes NF, no change – all sites within closed areas and protected. On Ochoco NF, increased protection – all sites protected from off-road motorized travel

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Texosporium sancti-jacobi</i> (lichen)	CRNG			50	50			100	0	Two sites were discovered but are not yet mapped in GIS. These sites will be revisited pending funding in 2010. One site occurs in a protected RNA; one site occurs in a canyon that is used by ATVs (Lesko 2009).
<b>Fungi</b>										
<i>Alpova alexsmithi</i> (fungus)i	Deschutes	0.1	0	100	0	0.1	0	0	0	
<i>Helvella crassitunicata</i> (fungus)	Deschutes	0.1	0	100	0	0.1	0	0	0	
<i>Hygrophorus caeruleus</i> (fungus)	Deschutes	0.1	0.1	67	33	0.1	0	100	0	
<i>Ramaria amyloidea</i> (fungus)	Deschutes	0.1	0	100	0	.02	0	100	0	
<b>Total DES</b>				<b>88</b>	<b>12</b>			<b>100</b>	<b>0</b>	
<b>Total OCH</b>				<b>29</b>	<b>71</b>			<b>100</b>	<b>0</b>	

**Appendix B-4.2.10. Acres of Sensitive plant populations that occur on the Deschutes and Ochoco National Forests and Crooked River National Grassland that occur within 300 feet of a travel route that is open for Motorized Access for Dispersed Camping under the three alternatives.**

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<i>Achnatherum hendersonii</i> (Henderson's needlegrass)	OCH	7	200	3	97	189	17	0	0.6	92	8	0	0.3
<i>Achnatherum wallowaensis</i> (Wallowa needlegrass)	OCH	0	14	0	100	14	0	0	0	100	0	0	0
<i>Agoseris elata</i> (tall agoseris)	DES	941	44	96	4	677	215	0	92	69	22	0	9
<i>Arnica viscosa</i> (Mt. Shasta arnica)	DES	0.7	0	100	0	0.7	0	0	0	100	0	0	0
<i>Astragalus peckii</i> (Peck's milkvetch)	DES	0	36	0	100	36	0	0	0	100	0	0	0
<i>Astragalus tegetarioides</i> (bastard milkvetch)	OCH	0	11	0	100	4	7	0	0	35	65	0	0
<i>Botrychium ascendens</i> (trianglelobe moonwort)	OCH	0	0.5	0	100	0.5	0	0	0	100	0	0	0
<i>Botrychium crenulatum</i> (scalloped moonwort)	OCH	0	28	0	100	21	0.3	0	7	74	1	0	25

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<i>Botrychium minganense</i> (Mingan moonwort)	OCH	3	6	34	66	6	0.1	0	3	68	2	0	30
<i>Botrychium montanum</i> (mountain moonwort)	OCH	1	3	27	73	3	0	0	1	73	0	0	27
<i>Botrychium paradoxum</i> (peculiar moonwort)	OCH	0	0.2	0	100	0.2	0	0	0	100	0	0	0
<i>Botrychium pumicola</i> (pumice grape-fern)	DES	1,944	1,035	66	34	2,157	26	433	0	72	1	14	0
<i>Calochortus longebarbatus</i> var. <i>peckii</i> (Peck's mariposa lily)	OCH	118	2,671	4	96	1,940	163	17	670	70	5	1	24
<i>Carex capitata</i> (capitate sedge)	DES	0	0.2	0	100	0.1	0	0	0	100	0	0	0
<i>Carex lasiocarpa</i> var. <i>americana</i> (slender sedge)	DES	0	0.3	0	100	0	0.2	0	0	100	0	0	0

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<i>Castilleja chlorotica</i> (green-tinged paintbrush)	DES	894	220	80	20	948	121	54	2	87	11	5	0
<i>Cyperus acuminatus</i> (short-pointed cyperus)	DES	0.9	0.1	92	8	0.5	0	0	0	100	0	0	0
<i>Gentiana newberryi</i> var. <i>newberryi</i> (Newberry's gentian)	DES	172	23	19	81	161	3	0	1	95	3	0	2
<i>Lobelia dortmanna</i> (Dortmann's cardinalflower)	DES	2	0	100	0	1.1	0.9	0	0	56	4	0	0
<i>Lomatium ochocense</i> (Ochoco lomatium)	OCH	0	0.6	0	100	0.6	0	0	0	100	0	0	0
<i>Lycopodiella inundata</i> (inundated clubmoss)	DES	0	7	0	100	5.2	0	0	0	96	0	0	4
<i>Penstemon peckii</i> (Peck's penstemon)	DES; CRNG	3,130 7	1,712 0	65 100	35 0	3,083 6	1,224 0	0 0	0 1	64 89	25 0	0 0	0 11

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<i>Rorippa columbiae</i> (Columbia yellowcress)	DES	0	0.1	0	100	0.1	0	0	0	100	0	0	0
<i>Scheuchzeria palustris ssp. americana</i> (rannoch rush)	DES	15	0	100	0	15	0	0	0	100	0	0	0
<i>Schoenoplectus subterminalis</i> (swaying bulrush)	DES	0	0	100	0	0	0	0	0	100	0	0	0
<i>Utricularia minor</i> (lesser bladderwort)	DES	0	0.3	0	100	0.3	0	0	0	100	0	0	0
<b>Bryophytes</b>													
<i>Helodium blandowii</i> (moss)	DES	0	0.1	0	100	0	0	0	0.1	0	0	0	100
	OCH	0	0.1	11	89	0.02	0	0	0.1	11	0	0	89
<i>Rhizomnium nudum</i> (rhizomnium moss)	DES	0.1	0.1	67	33	0	0	0	0	100	0	0	0
<i>Schistostega pennata</i> (luminous moss)	DES	0	19	0	100	19	0	0	0	100	0	0	0

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<i>Tomentypnum nitens</i> (moss)	DES OCH	0.2 6	14 4.4	2 57	98 43	11 7	0 0	0 0	2 3	86 72	0 0	0 0	14 28
<i>Tritomaria exsectiformis</i> (liverwort)	DES	0.3	0.4	45	55	0	0	0	0	100	0	0	0
<b>Lichens</b>													
<i>Dermatocarpon. Luridum</i> (silverskin lichen)	DES OCH	0.2 0.1	0.1 2.6	4	96	0.1 0.2	0 0	0 0	0 2.6	100 6	0 0	0 0	0 94
<i>Texosporium sancti-jacobi</i> (lichen)	CRNG	0.1	0	100	0	0.1	0	0	0	100	0	0	0
<b>Fungi</b>													
<i>Alpova alexsmithi</i> (fungus)i	DES	0.1	0	100	0	0.1	0	0	0	100	0	0	0
<i>Helvella crassitunicata</i> (fungus)	DES	0	0.1	0	100	0.1	0	0	0	100	0	0	0
<i>Hygrophorus caeruleus</i> (fungus)	DES	0.1	0.1	67	33	0	0	0	0	72	0	0	28
<i>Ramaria amyloidea</i> (fungus)	DES	0.1	0	100	0	0	0	0	0	100	0	0	0

Scientific Name	Unit	Alt 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt 2 & 3 Closed	Alt 2 Open & Alt. 3 Open Special provisions non-riparian	Alt 2 & 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Alt. 2 & 3 % Closed	Alt. 2 % Open & Alt. 3 Open Special provisions non-riparian	Alt. 3 % Open Special provisions non-riparian	Alt. 2 & 3 % Open Special provisions -riparian
<b>Total DES</b>				68	32					70	16	5	6
<b>Total OCH</b>				5	95					71	6	1	22

**Appendix B-4.2.11. Acres of other Rare or Uncommon plant populations that occur on the Deschutes National Forest in areas open or closed to motorized travel off of designated routes currently.**

Scientific Name	Common Name	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Chaenotheca subroscida</i>	Lichen	0.1	0			0.1	0			Not change
<i>Choiromyces alveolatus</i>	Fungus	0.1	0			0.04	0			No change – known areas closed to motorized travel
<i>Clavariadelphus truncates</i>	Fungus	0.1	0			0.1	0			No change – known areas closed to motorized travel
<i>Cypripedium montanum</i>	Vascular Plant	1.2	0.1			1	0			Increased protection
<i>Elaphomyces anthracinus</i>	Fungus	0.1	0			0.1	0			No change
<i>Elaphomyces subviscidus</i>	Fungus	0.1	0			0.1	0			No change
<i>Gastroboletus ruber</i>	Fungus	0.2	0			0.02	0			No change
<i>Gautieria magnicellaris</i>	Fungus	0.1	0			0.1				No change
<i>Gymnomyces abietis</i>	Fungus	0.1	0			0.1	0			No change

Scientific Name	Common Name	Alt. 1 Closed	Alt. 1 Open	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 & 3 % Closed	Alt. 2 & 3 % Open	Result
<i>Hydnotrya inordinata</i>	Fungus	0.1	0			0.1	0			No change
<i>Leptogium teretiusculum</i>	Lichen	0.1	0			0.1	0			No change
<i>Polyozellus multiplex</i>	Fungus	0.1	0			0.1	0			No change
<i>Ramaria coulterae</i>	Fungus	0	0.1			0.1	0			Increased protection
<i>Ramaria rubripermanens</i>	Fungus	0.2	0			0.02	0			No change
<i>Rhizopogon atroviolaceus</i>	Fungus	0.1	0			0.1	0			No change
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>	Fungus	0.1	0			0.1	0			No change
<b>Total</b>		<b>2.8</b>	<b>0.1</b>	<b>96</b>	<b>4</b>	<b>2.9</b>	<b>0</b>	<b>100</b>	<b>0</b>	

**Appendix B-4.2.12. Acres of other Rare or Uncommon plant populations that occur on the Deschutes National Forest in areas open or closed for motorized access for dispersed camping.**

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 Open and Alt 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Result
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Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 Open and Alt 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Result
<i>Chaenotheca subroscida</i>	Lichen	0	0.1	0.1	0	0	0	Increased protection
<i>Choiromyces alveolatus</i>	Fungus	0.1	0	0	0		0.4	Open but with riparian special provisions
<i>Clavariadelphus truncates</i>	Fungus	0	0.1	0.02	0		0	Increased protection – 100% of known acres closed to MADC
<i>Cyripedium montanum</i>	Vascular Plant	1.1	0.1	0.1	0		0.04	Open but with riparian special provisions
<i>Elaphomyces anthracinus</i>	Fungus	0	0.1	0	0.02		0	No change – within areas open to MADC. However, known sites are on roadside edge and not likely to be impacted by a dispersed campsite.
<i>Elaphomyces subviscidus</i>	Fungus	0.1	0	0.02	0		0	Increased protection
<i>Gastroboletus ruber</i>	Fungus	0.2	0	0.02	0		0	Increased protection
<i>Gautieria magnicellaris</i>	Fungus	0	0.1	0.1	0	0	0	Increased protection
<i>Gymnomyces abietis</i>	Fungus	0.1	0	0.1	0	0	0	Increased protection
<i>Hydnotrya inordinata</i>	Fungus	0	0.1	0.02	0	0	0	Increased protection
<i>Leptogium teretiussculum</i>	Lichen	0.1	0	0	0.1		0	Less protection in Alt. 2
<i>Polyozellus multiplex</i>	Fungus	0	0.1	0.1	0		0	Increased protection
<i>Ramaria coulterae</i>	Fungus	0	0.1	0.1	0	0	0	Increased protection

Scientific Name	Common Name	Alt 1 Closed	Alt. 1 Open	Alt. 2 & 3 Closed	Alt. 2 & 3 Open	Alt. 2 Open and Alt 3 Open with Special provisions non-riparian	Alt 2 & 3 Open with Special provisions -riparian	Result
<i>Ramaria rubripermanens</i>	Fungus	0.2	0	0.2	0	0	0	Increased protection
<i>Rhizopogon atroviolaceus</i>	Fungus	0	0.1	0.1	0	0	0	Increased protection
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>	Fungus	0.1	0	0.1	0	0	0	Increased protection
<b>Total</b>								

### **B-4.2.13. Biological Evaluation for TES plants.**

**Botany Biological Evaluation'  
For Proposed Threatened, Endangered, and Sensitive Plant Species  
Travel Management  
Katie Grenier, April, 2009**

#### **INTRODUCTION**

The Biological Evaluation report discusses the existing condition and effects of the proposed action and alternatives on Threatened, Endangered, and Sensitive (TES) plants within the Travel Management project area, which covers the Deschutes and Ochoco National Forests and Crooked River National Grassland. It is prepared in compliance with Forest Service Manual direction (2672.4).

The effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List dated January 2008.

#### **SUMMARY OF FINDINGS**

**There are no federally listed or Proposed Threatened or Endangered plant species documented or suspected to occur on the Forests and Grassland.** Therefore, only effects to Sensitive plants are analyzed.

**Alternative 1 (Existing Condition)** – May Impact Individuals and Habitat. There are potential direct and indirect impacts to Sensitive plants if current motorized use continues.

**Alternative 2 (Proposed Action)** – Has a Beneficial Impact on sensitive plants by prohibiting motorized travel off of designated routes and limiting areas open for motorized access for dispersed camping over current conditions.

**Alternative 3** – Has a beneficial impact on sensitive plants by prohibiting motorized travel off of designated routes. Alternative 3 provides greater protection than Alternative 2 in upland areas open for motorized access for dispersed camping because of special provisions (i.e., camping can only occur in designated, defined, or existing sites).

#### **PROJECT DESCRIPTION**

Under Alternative 2 (the Proposed Action) , the Deschutes and Ochoco National Forests and the Crooked River National Grassland propose to prohibit motorized travel outside of those existing designated routes (roads and trails) and areas – where it is not already restricted or prohibited by law, regulation, policy, order, Forest Plan direction, or site-specific decision. Alternative 2 allows motorized access for the purpose of ingress and egress to dispersed campsites within 300 feet of the centerline of designated routes. Motorized vehicles would not be permitted to cross streams except on designated routes in order to access sites. Motorized access to existing (not designated or defined) sites would be prohibited within 30 feet of the edge of a water body, wetland or stream.

Alternative 1, the No Action Alternative, would not prohibit motorized travel where it is not already restricted or prohibited by law, regulation, policy, order, Forest Plan direction, site-

specific decision or agreement. Motorized access on designated roads would continue as currently authorized. Alternative 1 would continue to allow, unless specifically determined otherwise by a separate decision, motorized access off of designated routes for a variety of types of vehicles on approximately 625,430 acres either year-round or seasonally on the Deschutes National Forest; and on about 431, 784 acres on the Ochoco National Forest. Motorized access for dispersed camping would continue to be allowed.

Alternative 3 is more restrictive than Alternative 2. The primary difference is motorized access for dispersed camping (for the purpose of ingress and egress) is allowed only in designated, defined, or existing dispersed campsites. The riparian special provision that prohibits camping within 30 ft. of a water body is the same for both alternatives.

## **PREFIELD REVIEW**

**There are no federally listed or Proposed Threatened or Endangered plant species documented or suspected to occur on the Forests and Grassland.** The Forests and Grassland have no habitat recognized as essential for listed or proposed plant species recovery under the Endangered Species Act. Therefore, the Forests and Grassland species are Sensitive. A review of available information was completed in order to identify Sensitive plant species that occur. Being as the project area encompasses the entire two Forests and Grassland, it is assumed that potential habitat occurs for all of the vascular plants, bryophytes, lichens and fungi that are on the Deschutes and Ochoco National Forests Sensitive Plant List.

The following sources were consulted for the pre-field review:

- Regional Forester's Sensitive Species List (January 2008).
- Oregon Natural Heritage Information Center's (formerly the Oregon Natural Heritage Program) Rare, Threatened and Endangered Species List (Oregon Natural Heritage Information Center 2008).
- U.S. Forest Service NRIS TESP-Invasives Database (National database).
- U.S. Forest Service personnel (District Botanists and Ecologists) and District botanical records.
- Literature (see References).

The Deschutes National Forest Sensitive Plant List includes 36 vascular plants (16 are documented to occur), 16 bryophytes (6 are documented), and 5 fungi (4 are documented) (Table 1). The Ochoco National Forest and Crooked River National Grassland's Sensitive Plant List includes 34 vascular plants (12 are documented), 5 bryophytes (3 are documented), and no fungi (**Table 1**). Detailed information about the species is described in Appendix A.

**Table 1. Sensitive plant species documented (D) or suspected (S) to occur on the Deschutes and Ochoco National Forests and Crooked River National Grassland.** For documented species, the total number of mapped sites and approximate acres are provided.

Scientific Name and Code	Common Name	DES	OCH & CRNG
Vascular Plants			
<i>Achnatherum hendersonii</i>	Henderson's needlegrass		D (33 sites/217 ac.)
<i>Achnatherum wallowaensis</i>	Wallowa needlegrass		D (5 sites/14 ac.)
<i>Agoseris elata</i>	tall agoseris	D (42 sites/985 ac.)	
<i>Arabis suffrutescens</i> var. <i>horizontalis</i>	horizontal woody rockcress	S	
<i>Arnica viscosa</i>	Mt. Shasta arnica	D (1 site/0.7 ac.)	
<i>Astragalus diaphanus</i> var. <i>diurnus</i>	transparent milkvetch		S
<i>Astragalus peckii</i>	Peck's mil-vetch	D (5 sites/50 ac.)	S
<i>Astragalus tegetarioides</i>	Deschutes milkvetch		D (1 site/11 ac.)
<i>Botrychium ascendens</i>	trianglelobe moonwort		D (3 sites/0.5 ac.)
<i>Botrychium crenulatum</i>	scalloped moonwort		D (22 sites/29 ac.)
<i>Botrychium minganense</i>	Mingan moonwort		D (10 sites/8.8 ac.)
<i>Botrychium montanum</i>	mountain moonwort		D (12 sites/3.8 ac.)
<i>Botrychium paradoxum</i>	peculiar moonwort		D (1 site/0.2 ac.)
<i>Botrychium pumicola</i>	pumice grape-fern	D (320 sites/3,325 ac.)	
<i>Calamagrostis breweri</i>	Brewer's reedgrass	S	
<i>Calochortus longebarbatus</i> var. <i>peckii</i>	Peck's mariposa lily		D (166 sites/2,963 ac.)
<i>Camissonia pygmaea</i>	dwarf suncap		S
<i>Carex abrupta</i>	abrupt-beaked sedge	S	S
<i>Carex capitata</i>	capitate sedge	D (1 site/0.1 ac.)	
<i>Carex diandra</i>	lesser paniced sedge	S	S

Scientific Name and Code	Common Name	DES	OCH & CRNG
<i>Carex lasiocarpa</i> var. <i>americana</i>	slender sedge	D 1 site/0.3 ac.)	S
<i>Carex livida</i>	livid sedge	S	
<i>Carex retrorsa</i>	retrorse sedge	S	S
<i>Carex vernacula</i>	native sedge	S	
<i>Castilleja chlorotica</i>	green-tinged paintbrush	D (152 sites/1,124 ac.)	
<i>Cheilanthes feei</i>	Fee's lip-fern	S	S
<i>Collomia mazama</i>	Mt. Mazama collomia	S	
<i>Cyperus acuminatus</i>	short-pointed cyperus	D (2 sites/1 ac.)	
<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	A cyperus	S	S
<i>Elatine brachysperma</i>	short-seeded waterwort	S	S
<i>Eleocharis bolanderi</i>	Bolander's spikerush		S
<i>Eriogonum cusickii</i>	Cusick's buckwheat		S
<i>Eucephalus gormanii</i> (formerly <i>Aster gormanii</i> )	Gorman's aster	S	
<i>Gentiana newberryi</i> var. <i>newberryi</i>	alpine gentian	D (13 sites/51 ac.)	
<i>Heliotropium curassavicum</i>	salt heliotrope	S	S
<i>Lipocarpha aristulata</i>	aristulate lipocarpha	S	S
<i>Lobelia dortmanna</i>	Dortmann's cardinalflower	D (1 site/2 ac.)	
<i>Lomatium ochocense</i>	Ochoco lomatium		D (1 site/0.6 ac.)
<i>Lycopodiella inundata</i>	inundated clubmoss	D (4 sites/7 ac.)	
<i>Lycopodium complanatum</i>	ground cedar	S	
<i>Mimulus evanescens</i>	disappearing monkeyflower		S
<i>Muhlenbergia minutissima</i>	annual dropseed	S	S
<i>Ophioglossum pusillum</i>	northern adderstongue	S	
<i>Penstemon peckii</i>	Peck's penstemon	D (87 sites/4,903 ac.)	D (3 sites/13 ac.)
<i>Pilularia americana</i>	American pillwort	S	
<i>Potamogeton diversifolius</i>	Rafinesque's pondweed	S	S
<i>Rorippa columbiae</i>	Columbia yellowcress	D (1 site/0.1 ac.)	S
<i>Rotala ramosior</i>	lowland toothcup	S	S
<i>Salix wolfii</i>	wolf's willow		S

Scientific Name and Code	Common Name	DES	OCH & CRNG
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>	rannoch-rush	D (1 site/ 15 ac.)	
<i>Schoenoplectus subterminalis</i> (formerly <i>Scirpus subterminalis</i> )	swaying bulrush	D (1 site/ 0.1 ac.)	
<i>Talinum spinescens</i>	spinescent fameflower		S
<i>Thelypodium eucosmum</i>	world thelypody		S
<i>Utricularia minor</i>	lesser bladderwort	D (6 sites/0.4 ac.)	S
<b>Bryophytes</b>			
<i>Barbilophozia lycopodioides</i>	liverwort	S	
<i>Brachydontium olympicum</i>	moss	S	
<i>Chiloscyphus gemmiparus</i>	liverwort	S	
<i>Conostomum tetragonum</i>	moss	S	
<i>Helodium blandowii</i>	moss	D (2 sites/0.1 ac.)	D (1 site/0.2 ac.)
<i>Polytrichum sphaerothecium</i>	moss	S	
<i>Pseudocalliergon trifarium</i>	moss	S	
<i>Rhizomnium nudum</i>	rhizomnium moss	D (3 sites/ 0.2 ac.)	
<i>Schistostega pennata</i>	luminous moss	D (3 sites/20 ac.)	
<i>Scouleria marginata</i>	marginate splashzone moss	S	S
<i>Splachnum ampullaceum</i>	moss	S	
<i>Tomentypnum nitens</i>	moss	D (18 sites/14 ac.)	
<i>Tortula mucronifolia</i>	moss		S
<i>Trematodon boasii</i>	moss	S	
<i>Tritomaria exsectiformis</i>	liverwort	D (11 sites/0.7 ac.)	
<b>Lichens</b>			
<i>Dermatocarpon. luridum</i>	silverskin lichen	D (3 sites/0.2 ac.)	D (7 sites/3 ac.)
<i>Leptogium cyanescens</i>	skin lichen	S	
<i>Texosporium sancti-jacobi</i>	lichen	S	D (2 sites/0.2 ac.)
<b>Fungi</b>			
<i>Alpova alexsmithii</i>	fungus	D (2 sites/ 0.1 ac.)	
<i>Gastroboletus vividus</i>	fungus	S	
<i>Helvella crassitunicata</i>	fungus	D (1 site/ 0.1 ac.)	
<i>Hygrophorus caeruleus</i>	fungus	D (3 sites/ 0.2 ac.)	

Scientific Name and Code	Common Name	DES	OCH & CRNG
<i>Ramaria amyloidea</i>	fungus	D (1 site/ 0.1 ac.)	

## FIELD SURVEYS

Numerous surveys for sensitive plants have been conducted for a variety of projects on both Forests and Grassland. Surveys are done using Limited Focus, Intuitive Control and Complete survey methods. This project covers the entire two Forests and Grassland and surveys are not done on all acres.

## DETERMINATION OF EFFECTS

Sensitive plants receive management emphasis to ensure viability and to preclude trends toward endangerment that would result in the need for federal listing (Forest Service Manual 2672.1). The desired future condition for sensitive species analyzed in this report is to ultimately remove them from the U.S. Fish and Wildlife Service’s Species of Concern list, and from the Regional Forester’s Sensitive Species list. Ensuring that habitat is well distributed with viable, increasing populations within the Forests and Grassland can contribute to this effort.

## ENVIRONMENTAL EFFECTS

This part of the report displays the direct, indirect and cumulative effects of the activities proposed for each alternative. Each TES plant species is analyzed to determine if the project has an effect on that species. A Biological Evaluation determines if there is:

- NI = No impact from the proposed project
- MIIH = May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species
- WIFV = Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species. This determination is a trigger for a “Significant Actin” as defined in NEPA.
- BI = Beneficial impact
- N/A = No habitat or species spresent

To compare the alternatives for effects on Sensitive plants under the different alternatives, this analysis compares acres occupied by Sensitive plants that are closed or open in the two major categories: 1) motorized travel off of designated routes (OffDR); and 2) motorized access for dispersed camping (MADC) (*see Appendices M and N, Botany Report for this project*). All information related to this analysis is explained in the Botany Report for this Travel Management Project: the measures used to compare the alternatives, the methodology used for the analysis, and assumptions about the analysis.

Table 1 uses data from Appendices M and N in the Botany Report to make a determination for each of the categories in each alternative. Table 4 summarizes the effects for each Sensitive plant species under each alternative.

## ASSUMPTIONS FOR THIS ANALYSIS

- Even though it will take awhile for vegetation to recover, for TES plants within the 30 ft. no-motorized access to riparian areas, the assumption is that the habitat will slowly start to recover and that the restrictions to motorized use is benefit their populations and habitat; therefore, for the assumption for **MADC with riparian provisions** (in both Alternatives 2 and 3) is that the proposed change will not impact individuals or habitat (NI).
- This analysis assumes that Alternative 3 provides greater protection to native plants and native plant habitat within **upland** MADC areas because motorized access for dispersed camping is confined to defined, designated, and existing areas. Alternative 2 does not require that dispersed camping be limited to defined, designated, and existing areas, and therefore, it is reasonable to assume that there may be greater impacts to native plants and native plant habitat.
- If any acres of occupied habitat are within **upland MADC** areas in Alternative 2 (even if the percent acres is a reduction from Alt. 1), the assumption is that motorized access for dispersed camping can impact individuals and habitat due to the fact that, in Alternative 2, MADC is not confined to existing, designated, or defined sites.
- If all occupied acres of TES plant habitat are **closed to MADC**, this is a beneficial impact (= BI)
- If there is no change between Alternatives, then the biological evaluation determines there is No Impact.
- Our primary assumption with this analysis related to cumulative effects is that the reduction of motorized access off designated routes and modification of motorized access for dispersed camping has a beneficial effect.
- It is important to note that – for Alternatives 2 and 3 – sensitive areas are already identified and, within these areas, MADC would be confined to existing, designated, and defined sites.

**Table 2. Effects determination for Sensitive plant species that occur on the Deschutes and Ochoco National Forests and Crooked River National Grassland for the Travel Management project.**

Data comes from Appendices M and N in the Botany Report for this Travel Management Project.

**Codes:**

**NI** – No Impact

**MIIH** = May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal Listing or cause a loss of viability to the population or species;

**MIFV** = Will Impact Individuals or Habitat With A Consequence That The Action May Contribute To A Trend Towards Federal Listing Or Cause A Loss Of Viability To The Population or Species

**BI** = Beneficial Impact.

Species	Alt. 1 OffDR	Alt. 1 MADC	Alt. 2 & 3 OffDR	Alt. 2 MADC & Alt. 3 Open MADC with Special provisions non-riparian	Alt. 2 & 3 MADC with Special provisions non-riparian	Alt 2 & Alt. 3 MADC with Special provisions -riparian	Discussion
<b>Vascular Plants</b>							
<i>Achnatherum hendersonii</i>	MIIH – 47% of acres open OffDR	MIIH – 97% acres open MADC	BI – 100% of acres closed for OffDR	Alt. 2 – BI – 92% acres closed; MIIH for 8% acres open Alt. 3 – NI due to provisions	NI	NI	In Proposed Action, majority (92%) of occupied acres closed to MADC. Increased protection.
<i>Achnatherum wallowaensis</i>	MIIH – 100% acres open OffDR	MIIH – 100% acres open MADC	BI - 100% of acres closed for OffDR	BI – 100% acres closed MADC	NI	NI	In Proposed Action, 100% of occupied acres closed to OffDR and MADC.
<i>Agoseris elata</i>	NI – 100% acres closed OffDR	MIIH – 4% acres open MADC	NI - 100% of acres closed for OffDR	Alt. 2 = MIIH; Alt. 3 = NI - 22% acres open MADC	NI – though 22% open for MADC, upland provisions should protect	NI - 9% acres open with riparian provisions	This species occurs along edges of horse trails and roads. Assume special provisions will ensure MADC occurs in already-existing campsites (Alt. 3) and riparian habitat will be better protected (Alt. 2 and 3).

<b>Species</b>	<b>Alt. 1 OffDR</b>	<b>Alt. 1 MADC</b>	<b>Alt. 2 &amp; 3 OffDR</b>	<b>Alt. 2 MADC &amp; Alt. 3 Open MADC with Special provisions non-riparian</b>	<b>Alt. 2 &amp; 3 MADC with Special provisions non-riparian</b>	<b>Alt 2 &amp; Alt. 3 MADC with Special provisions -riparian</b>	<b>Discussion</b>
<i>Arnica viscosa</i>	NI – 100% acres closed OffDR	NI – 100% acres closed MADC	NI - 100% of acres closed for OffDR	NI – No acres open MADC	NI – No acres open MADC	NI – No acres open MADC	No change – 100% of occupied acres closed.
<i>Astragalus peckii</i>	MIIH – 100% acres open OffDR	MIIH – 100% acres open MADC	BI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI	BI	Alt. 2 & 3 increase protection over Alt. 1
<i>Astragalus tegetarioides</i>	MIIH – 65% acres open OffDR	MIIH – 100% acres open MADC	BI – 100% of acres closed for OffDR	Alt. 2 - MIIH – 65% acres open MADC Alt. 3 - NI	NI	NI	In Proposed Action, protected from OffDR, but not from MADC.
<i>Botrychium ascendens</i>	MIIH - 100% acres open OffDR	MIIH – 100% acres open MADC	BI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	NI	NI	Increased protection under Alt. 2 & 3 over Alt. 1.
<i>Botrychium crenulatum</i>	MIIH - 100% acres open OffDR	MIIH – 100% acres open MADC	BI – 100% of acres closed for OffDR	MIIH – but only 1% acres open MADC	NI	NI – 25% acres open MADC but riparian provisions	In Proposed Action, the majority (74%) of occupied acres are closed to MADC. Increased protection over Alt. 1
<i>Botrychium minganense</i>	MIIH – 66% acres open OffDR	MIIH – 66% acres open MADC	BI – 100% of acres closed for OffDR	MIIH but only 2% acres open MADC	NI	NI – 30% acres open MADC but riparian provisions	In the Proposed Action, the majority (68%) of occupied acres are closed to MADC. Increased protection over Alt. 1
<i>Botrychium montanum</i>	MIIH – 70% acres open OffDR	MIIH – 73% acres open MADC	BI – 100% of acres closed for OffDR	BI – No acres open MADC	NI – No acres open MADC	NI – 27% acres open MADC but riparian provisions	In the Proposed Action, the majority (73%) of occupied acres are closed to MADC. Increased protection over Alt. 1.

<b>Species</b>	<b>Alt. 1 OffDR</b>	<b>Alt. 1 MADC</b>	<b>Alt. 2 &amp; 3 OffDR</b>	<b>Alt. 2 MADC &amp; Alt. 3 Open MADC with Special provisions non-riparian</b>	<b>Alt. 2 &amp; 3 MADC with Special provisions non-riparian</b>	<b>Alt 2 &amp; Alt. 3 MADC with Special provisions -riparian</b>	<b>Discussion</b>
<i>Botrychium paradoxum</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	Proposed Action increases protection over Alt. 1. 100% acres closed to OffDR and MADC
<i>Botrychium pumicola</i>	MIIH – 28% acres open OffDR	MIIH – 34% acres open MADC	BI – only 0.05% open OffDR	Alt. 2 – BI – only 1% ac. Open; Alt. 3 - NI	NI – 14% ac open but provisions would protect	NI – No ac in this category	Alt. 2 & 3 increase protection over Alt. 1
<i>Calochortus longebarbatus</i> var. <i>peckii</i>	MIIH – 73% acres open OffDR	MIIH – 96% acres open MADC	BI – 100% of acres closed for OffDR	MIIH - 6% acres open MADC	NI – 1 acre open MADC but provisions	NI – 24% acres open MADC but riparian provisions	In the Proposed Action, the majority (70%) of occupied acres are closed to offDR and MADC.
<i>Carex capitata</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	BI – 100% acres closed to MADC	NI	NI	Alt. 2 & 3 increase protection over Alt. 1
<i>Carex lasiocarpa</i> var. <i>americana</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed to MADC	NI	NI	Alt. 2 & 3 increase protection over Alt. 1
<i>Castilleja chlorotica</i>	MIIH – 16% acres open OffDR	MIIH – 20% acres open MADC	MIIH – but only 0.1% open OffDR	Alt. 2 – MIIH – 11% acres open MADC; Alt. 3 – NI due to provisions	NI – 5% ac open MADC but provisions	NI – no ac. Open in this category	Alt. 2 & 3 increase protection over Alt. 1 – 99.9% of occupied acres would be closed to OffDR. 11% occur with open MADC in Alt. 2
<i>Cyperus acuminatus</i>	NI – 100% acres closed OffDR	MIIH – 8% acres open MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed to MADC	NI – 100% acres closed to MADC	NI – 100% acres closed to MADC	Alt. 2 & 3 increase protection over Alt. 1

Species	Alt. 1 OffDR	Alt. 1 MADC	Alt. 2 & 3 OffDR	Alt. 2 MADC & Alt. 3 Open MADC with Special provisions non-riparian	Alt. 2 & 3 MADC with Special provisions non-riparian	Alt 2 & Alt. 3 MADC with Special provisions -riparian	Discussion
<i>Gentiana newberryi</i> var. <i>newberryi</i>	MIIH – 2% acres open OffDR	MIIH – 81% acres open MADC	BI – 100% acres closed OffDR	Alt. 2 – MIIH 3% open MADC; Alt. 3 – NI due to provisions	NI	NI – 3% acres open but provisions	In Proposed Action, majority of acres closed to MADC (97%) and 100% closed to motorized travel off designated routes.
<i>Lobelia dortmanna</i>	NI – 100% acres closed OffDR	NI – 100% acres closed MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	Aquatic species that would not be impacted by motorized travel off designated routes or MADC.
<i>Lomatium ochocense</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed to MADC	NI – 100% acres closed to MADC	NI – 100% acres closed to MADC	Alt. 2 & 3 increase protection over Alt. 1
<i>Lycopodiella inundata</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	NI – 96% acres closed MADC	NI – 100% acres closed MADC	NI – 4% acres open MADC, but provisions	Alt. 2 & 3 increase protection over Alt. 1
<i>Penstemon peckii</i>	<b>DES = MIIH</b> – 4% acres open OffDR; <b>OCH = NI</b> – 100% acres closed OffDR	<b>DES = MIIH</b> – 35% acres open MADC; <b>OCH = NI</b> – 100% acres closed MADC	<b>DES = BI</b> – 100% acres closed OffDR; <b>OCH = NI</b> – 100% acres closed OffDR	<b>DES = Alt. 2</b> – MIIH with 25% open MADC; Alt. 3 – NI due to provisions; <b>OCH = Alt. 2</b> – NI – No acres open MADC	<b>DES = NI</b> – 100% ac closed to MADC; <b>OCH = NI</b> – No acres open MADC	<b>DES = NI</b> – 10% acres open MADC but provisions; <b>OCH = NI</b> – 11% acres open MADC but riparian provisions	Alt. 2 & 3 increase protection over Alt. 1. Alt. 3 provides more protection in MADC upland areas due to special provisions.

Species	Alt. 1 OffDR	Alt. 1 MADC	Alt. 2 & 3 OffDR	Alt. 2 MADC & Alt. 3 Open MADC with Special provisions non-riparian	Alt. 2 & 3 MADC with Special provisions non-riparian	Alt 2 & Alt. 3 MADC with Special provisions -riparian	Discussion
<i>Rorippa columbiae</i>	NI – known site not where OffDR would occur	NI – known site not where OffDR would occur	NI – known site not where OffDR would occur	NI – known site not where MADC would occur	NI – known site not where MADC would occur	NI – known site not where MADC would occur	No change – known site not impacted by any alternative.
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>	NI – 100% acres closed OffDR	NI – 100% acres closed MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	No change – 100% acres closed
<i>Schoenoplectus subterminalis</i> (formerly <i>Scirpus subterminalis</i> )	NI – 100% acres closed OffDR	NI – 100% acres closed OffDR	NI – 100% of acres closed for OffDR	NI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	No change – 100% acres closed
<i>Utricularia minor</i>	MIIH – 23% acres open OffDR	NI – 100% acres closed MADC	BI – 100% of acres closed for OffDR	BI – in both Alts no acres open MADC in this category	BI – No acres open MADC	BI – 81% open MADC but riparian provisions	This species occurs in a wetland that is not accessible to motorized travel off of designated routes. However, proposed action provides additional protection.
<b>Bryophytes</b>							
<i>Helodium blandowii</i>	NI – 100% acres closed OffDR	DES = MIIH – 100% acres open MADC; OCH = MIIH – 89% acres open MADC	NI – 100% of acres closed for OffDR	DES = NI – 100% acres open MADC but in riparian OCH = Alt. 2 – MIIH – 11% open MADC	NI – 100% acres closed MADC	DES = NI – 100% OCH – NI – 89% open MADC but riparian provisions	Because this species occurs in fens, it is unlikely habitat for dispersed camping, which would occur along drier edges of wetlands and fens.

<b>Species</b>	<b>Alt. 1 OffDR</b>	<b>Alt. 1 MADC</b>	<b>Alt. 2 &amp; 3 OffDR</b>	<b>Alt. 2 MADC &amp; Alt. 3 Open MADC with Special provisions non-riparian</b>	<b>Alt. 2 &amp; 3 MADC with Special provisions non-riparian</b>	<b>Alt 2 &amp; Alt. 3 MADC with Special provisions -riparian</b>	<b>Discussion</b>
<i>Rhizomnium nudum</i>	MIIH – 33% acres open OffDR	MIIH – 33% acres open MADC	BI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI – 100% acres closed MADC	BI – 100% acres closed MADC	Alt. 2 & 3 increase protection over Alt. 1
<i>Schistostega pennata</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI – 100% acres closed MADC	BI – 100% acres closed MADC	Alt. 2 & 3 increase protection over Alt. 1
<i>Tomentypnum nitens</i>	MIIH – 12% acres open OffDR	MIIH – 98% acres open MADC	BI – 100% of acres closed for OffDR	BI – 72% closed MADC, rest in riparian provisions	BI – No acres open MADC	NI – 28% open MADC but riparian provisions	Alt. 2 & 3 increase protection over Alt. 1
<i>Tritomaria exsectiformis</i>	MIIH – 18% acres open OffDR	MIIH – 55% acres open MADC	BI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI – 100% acres closed MADC	BI – 100% acres closed MADC	Alt. 2 & 3 increase protection over Alt. 1
<b>Lichens</b>							
<i>Dermatocarpon luridum</i>	DES = NI; OCH = MIIH – 96% acres open OffDR	DES - MIIH – 33% acres open MADC; OCH – MIIH – 96% open MADC	DES - NI OCH = BI 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI – 100% acres closed MADC	BI – 100% acres closed MADC	This is an aquatic species that could be damaged by driving across streams. Alt. 2 & 3 increase protection over Alt. 1

Species	Alt. 1 OffDR	Alt. 1 MADC	Alt. 2 & 3 OffDR	Alt. 2 MADC & Alt. 3 Open MADC with Special provisions non-riparian	Alt. 2 & 3 MADC with Special provisions non-riparian	Alt 2 & Alt. 3 MADC with Special provisions -riparian	Discussion
<i>Texosporium sancti-jacobi</i>	MIIH	MIIH	BI	BI	BI	BI	Two sites were discovered but are not yet mapped in GIS. These sites will be revisited pending funding in 2010. One site occurs in a protected RNA; one site occurs in a canyon that is used by ATVs (Lesko 2009).
<b>Fungi</b>							
<i>Alpova alexsmithii</i>	NI – 100% acres closed OffDR	NI – 100% acres closed MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	No change – 100% acres closed
<i>Helvella crassitunicata</i>	NI – 100% acres closed OffDR	MIIH – 100% acres open MADC	NI – 100% of acres closed for OffDR	BI – 100% acres closed MADC	BI – 100% acres closed MADC	BI – 100% acres closed MADC	Alt. 2 & 3 increase protection over Alt. 1
<i>Hygrophorus caeruleus</i>	MIIH – 33% acres open OffDR	MIIH – 33% acres open MADC	NI – 100% of acres closed for OffDR	BI – 72% ac closed MADC; rest protected by riparian provisions	BI – No acres in this category	BI – 28% acre open MADC but riparian provisions	Alt. 2 & 3 increase protection over Alt. 1
<i>Ramaria amyloidea</i>	NI – 100% acres closed OffDR	NI – 100% acres closed MADC	NI – 100% of acres closed for OffDR	NI – 100% acres closed MADC	NI – 100% acres closed MADC	NI – 100% acres closed MADC	No change – 100% acres closed

## EFFECTS – ALTERNATIVE 1 (Existing Condition)

Overall, this alternative would result in a biological evaluation determination of “May impact individuals or habitat but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species” for many of the sensitive species (Tables 2 and 4).

### Motorized Travel Off of Designated Routes (OffDR)

In Alternative 1, 71% of acres occupied by Sensitive plants on the Ochoco NF and Grassland and 12% of acres on the Deschutes NF are open for motorized travel off designated routes (**Table 3**), whereas under Alternative 2 100% of occupied TES plant acres are closed.

Open habitats, such as meadows and drier forests, may be more vulnerable to off-road travel due to the fact that more open habitats are more easily accessed by motor vehicles compared to areas with denser vegetation. Species that occur in these habitats include Henderson’s and Wallowa needlegrasses (found in open scablands), Peck’s penstemon (found in moist swales and intermittent streams in ponderosa pine forests), Peck’s milk-vetch (mostly found in non-forested, open areas), and *Botrychium* species and Peck’s mariposa lily (found in meadows).

At this time, there are no known Sensitive plants on the Forests and Grassland that are impacted by current levels of motorized travel off of designated routes to the point at which the species is declining to the point that it may need to be federally listed in order to be protected. Therefore, the effects determination for those species that occur in areas open for motorized travel off of designated routes is MIIH instead of WIFV (*see definitions in Table 4*).

**Table 3. Percent of acres occupied by TES plants closed and open for motorized travel off designated routes under Alternative 1 (Existing Condition), Alternative 2 (Proposed Action), and Alternative 3 for the Forests and Grassland.**

See Appendix B-4.2.9 of the EIS for more information.

Unit	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 % Close	Alt. 2 & 3 % Open
Deschutes NF	88	12	100	0
Ochoco NF and CRNG	29	71	100	0
<b>Summary Conclusion</b>	<b>Alternative 1 provides less protection to TES plants</b>		<b>Alternative 2 provides the most protection to TES plants</b>	

### Motorized Access for Dispersed Camping

Under Alternative 1, 95% of acres occupied by TES plants on the Ochoco NF and Grassland and 32% on the Deschutes NF are within areas open for motorized access for dispersed camping (Table 4). Alternative 1 provides less protection to TES plants compared to Alternative 2, which closes 70% of occupied TES plant acres on the Deschutes NF and 71% on the Ochoco NF/Grassland to MADC.

As displayed in Table 4 and as discussed above under OffDR, the effects determination for those species that occur in areas open for motorized access for dispersed camping is MIIH. Alternative 1 potentially impacts more TES plants than in Alternative 2.

**Table 4 Percent of acres occupied by TES plants closed and open for motorized access for dispersed camping (MADC) under the different alternatives.**

See Appendix B-4.2.10 of the Botany Report for more information.

Unit	Alt. 1 % Closed	Alt. 1 % Open	Alt. 2 & 3 % Close	Alt. 2 % Open & Alt. 3 Open Special provisions non- riparian	Alt. 2 & 3 % Open Special provisions non- riparian	Alt. 2 & 3 % Open Special provisions -riparian
Deschutes NF	68	32	70	16	5	6
Ochoco NF and CRNG	5	95	71	6	1	22
<b>Summary Conclusions</b>	<b>Alternative 1 provides less protection to TES plants.</b>		<b>Alternative 2 provides a higher level of protection to TES plants than Alternative 1. Alternative 3 provides the most protection.</b>			

**DIRECT AND INDIRECT EFFECTS – ALTERNATIVE 2**

**Motorized Travel Off of Designated Routes (OffDR)**

For motorized travel off of designated routes, this alternative would result in a biological evaluation determination of “Beneficial Impact”. All acres occupied by TES plants (100% would be closed to motorized travel off of designated routes (Table 3).

**Motorized Access for Dispersed Camping**

The majority (70% on Deschutes NF; 71% on Ochoco NF/Grassland) of areas occupied by TES plants would be closed to motorized access for dispersed camping (Table 3). There are 16% of acres occupied by TES plants that occur in upland MADC areas where dispersed camping is not confined to existing, defined, or designated sites (i.e., special provisions) (Appendix N of the Botany Report for this project).

For a few species, Alternative 2 increases the number of acres that are open for MADC compared to Alternative 1. For example, 22 acres of tall agoseris would be open for MADC in Alternative 2, whereas only 4 acres are currently open and would be open in Alternative 1. But, for most species, Alternative 2 increases the protection because acres open for MADC are reduced compared to the existing condition.

One sensitive species, Deschutes milkvetch (*Astragalus tegetarioides*), would have 65% of occupied acres open for MADC. This regional endemic species occurs in open stands of low and big sagebrush, and in openings, swales and canyon bottoms in ponderosa pine forests. These habitats would be easily accessible and used for MADC. However, under the Proposed Action (Alternative 2), MADC is limited to no more than 300 ft. from the centerline of a road, which is a greater limitation than under the current conditions (Alternative 1). Under Alternative 3, MADC is confined to existing, designated, and defined sites – providing potentially more protection to rare plants that occur within MADC areas.

### DIRECT AND INDIRECT EFFECTS – ALTERNATIVE 3

Alternative 3 provides the most protection to sensitive plants because it includes special provisions for all upland habitats. Alternatives 2 and 3 are the same regarding riparian special provisions.

### SUMMARY

Table 5 of this Biological Evaluation summarizes the effects determination for each Alternative. In summary:

- **Alternative 1 (Existing Condition)** – May Impact Individuals and Habitat. There are potential direct and indirect impacts to Sensitive plants if current motorized use continues
- **Alternative 2 (Proposed Action)** – Has a Beneficial Impact on sensitive plants by prohibiting motorized travel off of designated routes and limiting areas open for MADC over current conditions.
- **Alternative 3** – As with Alternative 2, Alt. 3 has a Beneficial Impact on sensitive plants and provides more protection to sensitive plants in upland MADC areas compares to Alt. 2

### DETERMINATION OF CONCLUSIONS

**Table 5.** Alternative Effects Summary to Sensitive Plant Populations and Habitat for the Travel Management Project area.

Codes:

NI – No Impact

MIIH = May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal Listing or cause a loss of viability to the population or species;

MIFV = Will Impact Individuals or Habitat With A Consequence That The Action May Contribute To A Trend Towards Federal Listing Or Cause A Loss Of Viability To The Population or Species

BI = Beneficial Impact.

Species	Motorized Travel Off of Designated Routes		Motorized Access for Dispersed Camping		
	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 3
<b>Vascular Plants</b>					
<i>Achnatherum hendersonii</i> Henderson's needlegrass	MIIH	BI	MIIH	MIIH	NI
<i>Achnatherum wallowaensis</i> Wallowa needlegrass	MIIH	BI	MIIH	NI	NI
<i>Agoseris elata</i> tall agoseris	NI	NI	MIIH	MIIH	NI
<i>Arnica viscosa</i> Mt. Shasta arnica	NI	NI	NI	NI	NI
<i>Astragalus peck</i> Peck's milkvetch	MIIH	BI	MIIH	BI	BI
<i>Astragalus tegetarioides</i> Deschutes milkvetch	MIIH	BI	MIIH	MIIH	NI

Species	Motorized Travel Off of Designated Routes		Motorized Access for Dispersed Camping		
	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 3
<i>Botrychium ascenden</i> trianglelobe moonwort	MIIH	BI	MIIH	BI	BI
<i>Botrychium crenulatum</i> scalloped moonwort	MIIH	BI	MIIH	MIIH	NI
<i>Botrychium minganense</i> Mingan moonwort	MIIH	BI	MIIH	MIIH	NI
<i>Botrychium montanum</i> mountain moonwort	MIIH	BI	MIIH	BI	NI
<i>Botrychium paradoxum</i> Peculiar moonwort	NI	BI	MIIH	BI	BI
<i>Botrychium pumicola</i> pumice grape-fern	MIIH	BI	MIIH	MIIH	NI
<i>Calochortus longebarbatus</i> var. <i>peckii</i> Peck's mariposa lily	MIIH	BI	MIIH	MIIH	NI
<i>Carex capitata</i> capitate sedge	NI	NI	MIIH	BI	BI
<i>Carex lasiocarpa</i> var. <i>americana</i> slender sedge	NI	NI	MIIH	BI	BI
<i>Castilleja chlorotica</i> green-tinged paintbrush	BI	BI	MIIH	NI – OffDR MIIH – MADC	NI
<i>Cyperus acuminatus</i> short-pointed cyperus	NI	NI	MIIH	BI	NI
<i>Gentiana newberryi</i> var. <i>newberryi</i> alpine gentian	MIIH	BI	MIIH	MIIH	NI
<i>Lobelia dortmanna</i> Dortmann's cardinalflower	NI	NI	NI	NI	NI
<i>Lomatium ochocense</i> Ochoco lomatium	NI	NI	MIIH	BI	BI
<i>Lycopodiella inundata</i> inundated clubmoss	NI	NI	MIIH	BI	BI

Species	Motorized Travel Off of Designated Routes		Motorized Access for Dispersed Camping		
	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 3
<i>Penstemon peckii</i> Peck's penstemon	DES = MIIH OCH = NI	DES = BI OCH = BI	DES = MIIH OCH = NI	DES = MIIH OCH = NI	DES = NI; OCH = NI
<i>Rorippa columbiae</i> Columbia yellowcress	NI	NI	NI	NI	NI
<i>Scheuchzeria palustris</i> ssp. <i>americana</i> rannoch-rush	NI	NI	NI	NI	NI
<i>Schoenoplectus subterminalis</i> (formerly <i>Scirpus subterminalis</i> ) swaying bulrush	NI	NI	NI	NI	NI
<i>Utricularia minor</i> lesser bladderwort	MIIH	BI	MIIH	BI	BI
<b>Bryophytes</b>					
<i>Helodium blandowii</i> moss	DES = NI OCH = NI	DES = NI OCH = NI	DES = MIIH OCH = MIIH	DES = NI OCH = NI	DES = NI OCH = NI
<i>Rhizomnium nudum</i> rhizomnium moss	MIIH	BI	MIIH	BI	BI
<i>Schistostega pennata</i> luminous moss	NI	NI	MIIH	BI	BI
<i>Tomentypnum nitens</i> moss	MIIH	BI	MIIH	BI	BI
<i>Tritomaria exsectiformis</i> liverwort	BI	BI	MIIH	BI	BI
<b>Lichens</b>					
<i>Dermatocarpon luridum</i> Silverskin lichen	DES = NI OCH = MIIH	DES = NI OCH = BI	DES = MIIH OCH = MIIH	DES = BI OCH = BI	DES = BI OCH = BI
<i>Texosporium sancti-jacobi</i> lichen	MIIH	BI	MIIH	BI	BI
<b>Fungi</b>					
<i>Alpova alexsmithii</i> fungus	NI	NI	NI	NI	NI
<i>Helvella crassitunicata</i> fungus	NI	NI	MIIH	BI	BI

Species	Motorized Travel Off of Designated Routes		Motorized Access for Dispersed Camping		
	Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 3
<i>Hygrophorus caeruleus</i> fungus	MIIH	BI	MIIH	BI	BI
<i>Ramaria amyloidea</i> fungus	NI	NI	NI	NI	NI

## Appendix A. Deschutes and Ochoco National Forest Sensitive Plant Habitat Descriptions.

### Vascular Plants

*Achnatherum hendersonii* and *Achnatherum wallowaensis* – Henderson and Wallowa needlegrasses were recently split out from one former species, *Oryzopsis hendersonii*. Both species are regional endemics, found at 3,400 to 5,400 feet in elevation, and occupy the same type of habitat, which is comprised of dry, shallow, stony lithosols or welded tuffs subject to frost action in the winter. The major associated species include *Artemisia rigida*, *Poa sandbergii* and *Danthonia unispicata*. Very little is known about the species population biology and dispersal mechanisms. No populations were found during surveys of the project area.

*Agoseris elata* – Tall agoseris occurs in nonforest areas and openings in ponderosa pine forest between 3000 and 4800 feet elevation. Habitat includes dry edges of moist ecotones adjacent to moist meadows, lakes, stream courses, and riverbanks. The closest known sighting is on the Sisters Ranger District.

*Arabis suffrutescens* var. *horizontalis* – Crater Lake rockcress is found in meadows, woods, summits, ridges, and steep, exposed rock outcrops between 5500-8900'. Oregon Natural Heritage records (as recent as 1993) are only from Crater Lake National Park, Lake of the Woods, and Mt. McLoughlin, all in south-central and southern Oregon.

*Arnica viscosa* – Shasta arnica is found on the Bend/Ft. Rock Ranger District. Typical habitat is rock, scree, talus, and lava flows, between 6500-9200'. May be w/in moraine lake basins or crater lake basins at or above subalpine mixed conifer in western white pine and mountain hemlock, sparsely vegetated openings.

*Astragalus diaphanus* var. *diurnus* – **Transparent milkvetch is found in Western juniper woodlands along John Day River on thin, gravelly, well-drained soils in woodland openings.**

*Astragalus peckii* – Peck's milk-vetch is a perennial legume found in non-forested areas, forest openings, and open forest. It is most commonly found in shrub-steppe plant associations, but has also been reported from common juniper woodlands, ponderosa pine forest edge and lodgepole pine forest openings. It grows in loose, deep pumice, loamy sand, or sandy soils with flat to gentle slopes. It has often been found in or along dry watercourses, old lakebeds (basins), pumice flats and other natural openings. It has been found in previously-disturbed areas on the Crescent Ranger District, namely in a powerline corridor and between berms in a lodgepole pine plantation.

*Astragalus tegetarioides* – Deschutes milkvetch is a regional endemic that occurs on volcanic soils in open stands of low and big sagebrush, and in openings, swales and canyon bottoms in ponderosa pine forests. The most common associated plants include *Artemisia arbuscula*, *Poa sandbergii*, *Festuca occidentalis* and *Phlox hoodii*. Most populations are in Harney County on the Emigrant Ranger District, Malheur National Forest. The ecological requirements for this species are not well known. Other members of the genus are considered early successional, somewhat fire tolerant species.

***Botrychium ascendens***

***Botrychium crenulatum***

***Botrychium minganense***  
***Botrychium montanum***  
***Botrychium paradoxum***

These *Botrychium* species have a similar habitat: Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows in Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine. Since the habitat requirements, with several species often occurring together in genus clusters, they will be considered as one group for this analysis.

Moonworts are found in a wide variety of sites from marsh to xeric open meadows, seeps and springs, to lightly-shaded forested riparian areas. Research suggests that moonworts are early successional species that may require natural disturbance to stay ahead of successional changes (Zika, et al. 1995). They reproduce by spores, similar to ferns, and are known to be mycorrhizal. Host plants and growth requirements are still unknown. Moonworts are particularly difficult to locate due to their diminutive stature, and the fact that they can spend several years in the gametophyte stage, without aboveground expression; apparently drawing reserves from host plants from which they have mycorrhizal connection.

*Botrychium*, moonworts, are considered rare species that have wide, scattered distributions, but occur in small isolated populations (Zika, et al. 1995). They are scattered throughout the western United States and into Canada. Four of the above six species are on the U.S. Fish and Wildlife Service Notice of Review (1997) as Species of Concern nationwide, may be imperiled, and need more research before becoming listed as threatened. In addition, Oregon Natural Heritage Program (ONHP) lists *B. paradoxum* as S1, meaning they are critically imperiled in Oregon because of extreme rarity, and are vulnerable to extirpation.

***Botrychium pumicola*** – Pumice grape-fern is an inconspicuous perennial which may regrow from a bud located 1-3 inches below the ground surface. It reproduces through spore dispersal, and, vegetatively, through the formation of tiny underground buds called gemmae. This species is endemic to Central Oregon open-canopy pumice soils at high elevations in the Oregon Cascades and Newberry Crater, and at lower elevations within a lodgepole pine matrix. Within the lodgepole pine matrix, it prefers relatively flat, open basins where frost heaving tends to prevent the establishment of tree seedlings and most other vegetation as well.

***Calamagrostis breweri*** – Brewer's reedgrass is a perennial tufted grass found in moist to dry alpine and subalpine meadows, open slopes, streambanks, and lake margins.

***Calochortus longebarbatus*** -- Peck's mariposa lily is a restricted local endemic. Populations occur in Crook, Wheeler and Harney Counties. It is a sterile triploid, which reproduces exclusively through asexual reproduction by the production of bulblets that form in leaf axils at or below ground level (Fredricks 1989). The primary habitat of the plant occurs within open meadows and partially shaded to open riparian edges along seasonal and perennial streams. Significant variation of expression in belowground populations makes inventory and monitoring of the species difficult (Croft, et al. 1997); species that reproduce vegetatively do not flower every year. No Peck's mariposa lily populations were found during surveys of the project area.

***Camissonia pygmaea*** – Dwarf suncap occurs in sagebrush habitats.

***Carex abrupta***. Abrupt-beaked sedge occurs in ponderosa pine forests, alpine fell fields, meadows, roadsides, and open slopes, usually in dry soil, from 1,400m to high elevations.

***Carex capitata*** – Capitata sedge is usually found in open, wet places, but sometimes in drier sites at high elevations. This species is known from five sites on the Sisters, Bend, and Crescent districts of the Deschutes National Forest.

*Carex diandra* – Lesser panicled sedge occurs in swamps, sphagnum bogs, lake margins, and wet, often calcareous meadows at moderate elevations.

*Carex lasiocarpa* var. *americana* – Slender sedge is found in swamps and wet meadows at mid elevations. Found on the Deschutes National Forest along the Deschutes River, south of Bend.

*Carex livida* – Pale sedge is found within all forest types in peatlands including fens and bogs, as well as wet meadows with still or channeled water.

*Carex retrorsa* – Retorse sedge occurs in wet meadows, bogs, swamps, and edges of streams, lakes, and rivers. It is found in foothills and lowlands ranging from 10' – 3,000 ft. elevation.

*Carex vernacular* – Native sedge occurs in moist or wet places at high elevations, especially at the edges of melting snowfields and in meltwater streams. It is known to occur from 7,760 – 9,110 ft. in elevation.

*Castilleja chlorotica* – Green-tinged paintbrush is a perennial eastern Oregon endemic, known only from Deschutes, Lake, and Klamath Counties. It has been found at 4,300' to 8,200 ft. elevation in open and forested ponderosa, lodgepole, and mixed conifer. It has also been found in non-forested sagebrush-bitterbrush habitat types. Soils are often very poor and rocky.

An important life history factor to note about the *Castilleja* genus is that it is hemiparasitic, which means it contains chlorophyll and may or may not be able to complete its life cycle without a host species; hemiparasites primarily draw water and minerals from the host. It is not known which species is the host for green-tinged paintbrush, although it is suspected to be a shrub (Dr. Richard Everett, pers. comm.). On the Fremont National Forest, upon which the majority of the known population exists, the host is suspected to be sagebrush; on the Deschutes National Forest sites, it may be bitterbrush. Successful reestablishment after a fire or other disturbance may depend upon the reestablishment of its host.

*Cheilanthes feei* – Fee's lip-fern is located in crevices on cliffs, generally those with calcareous content. Known from NE Oregon. It has not been found on the Deschutes National Forest.

*Collomia mazama* – Mt. Mazama collomia occurs in meadows (dry to wet, level to sloping); stream banks and bars; lakeshores and vernal pool margins; forest edges and openings; alpine slopes. There are numerous recent sites within Klamath, Jackson, and Douglas Counties.

*Cyperus acuminatus* – Short-pointed cyperus is a tufted annual. On the Deschutes NF, it is located on damp mineral soil of a broad, low-gradient shore of reservoir, in a community just below the *Spiraea* community. Sites occur on Crane Prairie Reservoir and Davis Lake.

*Cyperus lupulinus* ssp. *lupulinus* – This cyperus species is found on upper shorelines. It is known from NE Oregon.

*Elatine brachysperma* – Short-seeded waterwort is a tiny, prostrate herb, rooting at the nodes, submerged to terrestrial, on mudflats or the edges of ponds. In California, it has been found between 164 – 1,640 ft. in elevation. Known sites occur in Harney, Grant, Lake, Malheur, Union, Wallowa Counties. At one location it is reported to occur where there is heavy horse and cattle use.

*Eleocharis bolanderi* – Bolander's spikerush occurs in alkaline soils. It is known from Harney, Malheur, Union, Baker, and Lake Counties.

***Eriogonum cusickii*** – Cusick’s buckwheat occurs in dry open areas from 4,000 – 5,300 ft. elevation in Lake and Harney Cos. Not in Central OR (Halvorson 2008).

***Eucephalus* (formerly *Aster*) *gormannii***. A perennial member of the sunflower family that is found on dry cliffs, open rocky ridges, steep rocky washes, or fine gravelly andesitic scree in subalpine and alpine areas at elevations of 5000 to 6100 feet. Dry SW, S, ESE, E exposures are most common. The closest documentation of this species is in the Mt. Jefferson Wilderness on the Willamette National Forest.

***Gentiana newberryi* var. *newberryi*** – Newberry’s gentian is a perennial species occurring between 4,700 and 8,700 feet in subalpine and alpine meadows in moist to moderately dry sandy loam, on level to moderate slopes. It is also found in mesic to moderately well-drained meadows or mesic grassy borders and flats adjacent to lakes and streams.

***Heliotropium curassavicum*** – Salt heliotrope occurs in alkaline w/ greasewood in Harney, Malheur, Union, Baker, and Lake Counties.

***Lipocarpha aristulata*** – Aristulate lipocarpha is a delicate, tufted annual. This sedge-like plant is found in low elevation streamsides and gravel bars. It is documented in Washington with *Rorippa columbiae* and *Rotala ramosior*. In Oregon, it occurs in Wallowa and Malheur Counties.

***Lobelia dortmanna*** – Water lobelia is a fibrous rooted aquatic perennial species, found in water of lake, pond, slow river or stream, or wet meadow. Sisters Ranger District site is the only known Oregon locality.

***Lomatium ochocense*** – Ochoco lomatium is a local endemic discovered in 1994. It occurs on basaltic scablands on shallow basalt lithosoic soils. It is restricted to terrain where there is exposed, fractured bedrock. It is known from 5 sites on the south flank of the Ochoco Mountains in Crook County. All but 1 documented site is on BLM.

***Lycopodiella inundata*** – Inundated clubmoss occurs in dune deflation areas in coastal back-dunes, as well as edges of higher elevation lakes and montane bogs, including sphagnum bogs; less often, wet meadows. It is known on Deschutes National Forest from the Crescent Ranger District.

***Lycopodium complanatum*** – Ground cedar occurs along edges of wet meadows, and dry, forested mid-slope with 25% canopy cover. It is associated with Englemann spruce and Douglas-fir on the Wallowa-Whitman National Forest.

***Mimulus evanescens*** – Disappearing monkeyflower is associated with “drawdown” environments along lakes, reservoir shores, and bank terraces of larger rivers. There is a historic site on Grizzly Mountain in Crook County, but no known extant sites in central Oregon.

***Muhlenbergia minutissima*** – Annual dropseed is found in weathered lava soils in riparian. Currently, it is known only from Malheur Co.

***Ophioglossum pusillum*** – Northern adder’s tongue is a fernlike plant associated with dune deflation plains, marsh edges, vernal ponds, and stream terraces in moist meadows. In Oregon, it is only known from Lane County; chiefly on the Siuslaw and Willamette National Forests.

***Penstemon peckii*** – Peck’s penstemon occurs in ponderosa pine openings, open ponderosa pine forests, pine/mixed conifer openings, recovering fluvial surfaces (streambanks, overflow channels, inactive floodplains), seeps, rills, springs, vernal pools; draws, ditches, skid roads; dry or intermittent stream channels, and in moist-wet meadows. It is endemic to central Oregon with the vast majority of populations on Sisters District and a few on Crooked River National Grassland.

***Pilularia americana*** – American pillwort is a small grasslike plant that is found in alkali and other shallow vernal pools, not-recently-used stock ponds and along reservoir shores. In Oregon, recent collections have been made in Deschutes, Klamath, and Jackson Counties. There is an historical site from about 100 years ago from the extreme eastern edge of the Bend/Ft. Rock Ranger District, but targeted surveys in recent years has not re-discovered it.

***Potamogeton diversifolius*** – Rafinesque’s pondweed occurs along lakes and ponds, including human-created habitat. It is known from Klamath, Harney and Lake Counties.

***Rorippa columbiae*** – Columbia yellowcress is a perennial from the mustard family occurs in wet to vernal moist sites, meadows, fields, playas, lakeshores, intermittent stream beds, banks of perennial streams, along irrigation ditches, river bars and deltas. In Oregon, this species is found in Klamath, Lake, and Harney Counties. It has been found on the Crescent district of the Deschutes National Forest.

***Rotala ramosior*** – Lowland toothcup occurs in Oregon at low elevation (<2,300 ft) below high water, including created habitat in wet, swampy places, lakes and pond margins, and free-flowing river reaches. It is known from Benton, Columbia, Marion, Hood River., Harney, Multnomah and Linn Counties. It has not been found on the Deschutes National Forest.

***Salix wolfii*** – Wolf’s willow occurs in riparian and wet meadows. It is documented on the Deschutes National Forest and in northeastern Oregon.

***Scheuchzeria palustris ssp. americana*** – Rannoch-rush occurs in open-canopied bogs, fens, and other wetlands where often in shallow water, in Pacific silver fir and Douglas-fir forests (in west Cascades). It is found on the Bend district of the Deschutes National Forest.

***Schoenoplectus (formerly Scirpus) subterminalis*** – Swaying bulrush is generally submerged to emergent in quiet water 2-8 decimeters deep, in peatlands, sedge fens, creeks, ditches, ponds and lakes. It is found on the Crescent district of the Deschutes National Forest.

***Talinum spinescens*** – Spinescent fameflower occurs in scablands in Jefferson and Wasco Counties. Potential habitat occurs on the Crooked River National Grassland.

***Thelypodium eucosmum*** – World thelypody is a regional endemic species found in Baker, Grant, and Wheeler Counties. It occurs in moist, seepy areas on ashy-clay soils. It is documented in Grant and Wheeler Counties. Sites include steep drainages along the John Day River.

World thelypody is a restricted regional endemic species found in Baker, Grant, and Wheeler Counties, Oregon. It inhabits dry slopes with vernal moisture, shaded by western juniper or ponderosa pine. Plants will grow in partial shade or full sun. It is typically found in the juniper/sagebrush plant associations at elevations of 1800 to 5000 feet. Associated species can include weedy plants like cheatgrass. No populations were found during surveys of the project area.

***Utricularia minor*** – Lesser bladderwort occurs underwater in lowland and montane fens, sedge meadows, low-nutrient lakes and peatbog pools. It is known from Deschutes, Clackamas, Lane, Klamath, Jackson, Coos, Douglas, Harney, Marion and Linn Counties. There are documented populations on the Bend and Sisters districts of the Deschutes National Forest.

## **Bryophytes**

***Barbilophozia lycopodioides*** – This liverwort forms mats on peaty soil on damp ledges of rock outcrops and cliffs at higher elevations. Sites receive abundant snowfall. Elevations of known sites in Oregon and Washington range from 3400 to 7500 feet. Forest types include *Abies amabilis*, *Abies lasiocarpa*, *Abies procera*, *Abies lasiocarpa*, *Picea engelmannii*, *Pinus contorta* ssp. *latifolia*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

***Brachydontium olympicum*** – This moss forms loose mats on exposed acidic boulders or soil in rock crevices. In boulder fields, moraines, and ledges of cliffs, often in areas of late snowmelt. Subalpine to alpine elevations between 5,000 and 6,000 feet. On Oregon's Mt. Hood *Brachydontium* occurs above timberline at about 6,000 ft where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Brachydontium* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

***Chiloscyphus gemmiparus*** – This liverwort forms small turfs or clumps on rocks in beds of cold montane streams, submerged or emergent in the splash zone, full shade to partial sun. Some streams drain lakes with motorized boating access. Elevations in Oregon range from 5000-7000 feet. Known sites in the Pacific Northwest include *Abies amabilis*, *Abies lasiocarpa*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

***Conostomum tetragonum*** – This moss occurs as small sods or inconspicuous individual shoots intermixed with other bryophytes, on soil in rock crevices in boulder fields, moraines, and ledges of cliffs at subalpine to alpine elevations, often in areas of late snowmelt. On Oregon's Mt. Hood, *Conostomum* occurs above timberline at about 6,500 ft, where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Conostomum* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

***Helodium blandowii*** – This moss forms mats and small hummocks in medium to rich montane fens with calcareous groundwater. It sometimes under sedges and shrubs around the edges of fens or along streamlets in fens. Elevations range from 5,000-6,000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. Accompanying vascular species include *Betula glandulosa*, *Salix geyeriana*, *Carex limosa*, *Eleocharis quinqueflora* and *Scheuchzeria palustris*. Associated mosses include *Aulacomnium palustre*, *Calliergon stramineum*, *Hamatocaulis vernicosus*, *Meesia triquetra*, and *Tomenthypnum nitens*. Found on the Bend district of the Deschutes National Forest.

***Polytrichum sphaerothecium*** – This moss forms green to brown sods on igneous rocks in exposed or sheltered sites, and subalpine parkland to alpine krummholz. On Oregon's Mt. Hood, *Polytrichastrum sexangulare* var. *vulcanicum* occurs at or above timberline at about 6,500 ft elevation, where the plant association is probably *Phyllodoce empetriformis* or *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest it probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and possibly *Abies amabilis* associations. Associated bryophytes may include *Conostomum tetragonum* and *Gymnomitrium*. It has not been found on the Deschutes National Forest.

***Pseudocalliergon trifarium*** – This moss forms lawns or inconspicuously intermixed with other bryophytes in medium to rich montane fens where it grows submerged to emergent in pools or on saturated ground, usually in full sunlight. Fen pools may dry up in late summer. Elevations range from 5000-6000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. *Calliergon trifarium* is one of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Scheuchzeria palustris*, and *Triglochin*

*maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Tomentypnum nitens*, *Meesia triquetra* and *Helodium blandowii*. It has not been found on the Deschutes National Forest.

***Rhizomnium nudum*** – Rhizomnium moss occurs on humus or mineral soil in seepages, vernal wet depressions, or intermittently wet, low gradient channels. Exposure varies from full sun to full shade. Coniferous forests, that include silver fir, western hemlock, mountain hemlock, western red cedar and Engelmann spruce, and on Deschutes NF include lodgepole pine, Engelmann spruce, mountain hemlock and western white pine.

***Schistostega pennata*** – Luminous moss is usually on mineral soil in crevices on lower and more sheltered parts of root wads of fallen trees. There is a rare occurrence in a natural cave in upper bank of perennial creek. Often near streams or other wet areas. Canopy often full but as low as 20% at humid sites near water. Most commonly found within silver fir plant series but also common in western hemlock and mountain hemlock series. Also occurs in lodgepole pine stands near water. Stands are typically late seral or old growth.

***Splachnum ampullaceum*** – This moss forms green sods on old dung of herbivores, or on soil enriched by dung, in peatlands or other wetlands. The sodden, decomposed dung will scarcely be visible, or may be completely humified. The two known sites for *Splachnum ampullaceum* in Oregon are at 5000 feet elevation, but Hutten et al. (2005) reported it from as low as 500 feet in Olympic National Park. Plants in Oregon occurred in fens dominated by *Eleocharis quinquefolia*, *Hamatocaulis vernicosus*, and *Pinus contorta* var. *latifolia*. *Splachnum ampullaceum* tends to outcompete *Tetraplodon mnioides* in wet habitats, indicating that wetlands are optimal habitat for this species (Studlar and Byers 2007). It has not been found on the Deschutes National Forest.

***Tomentypnum nitens*** – Tomentypnum moss forms loose or dense sods intermixed with other bryophytes in medium to rich montane fens where it favors slightly elevated sites such as logs, stumps, or hummocks formed by *Vaccinium uliginosum* and *Betula glandulosa*. Elevations range from 5,000 to 6,000 feet. Fens occur in openings in forest types that include *Abies amabilis*, *Abies concolor*, *Abies lasiocarpa*, and *Pinus contorta* ssp. *latifolia* associations. *Tomentypnum nitens* is one of the more conspicuous of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Carex aquatilis* ssp. *dives*, *Scheuchzeria palustris*, and *Triglochin maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Pseudocalliergon trifarium*, *Meesia triquetra* and *Helodium blandowii*. Sites occur on all three districts of the Deschutes National Forest.

***Tortula mucronifolia*** – This moss occurs in riparian habitats and is associated with *Populus* spp. (aspen and cottonwoods) and montane fir (*Abies* spp.), at higher elevations (5,000 – 7,000 ft.).

***Trematodon boasii*** – This moss forms loose mats on moist bare soil along the edges of trails, streams and ponds in the subalpine zone. Soils usually have some organic content and are irrigated by meltwater from late-season snowbeds. Little is known about associated species. Habitats probably include *Phyllodoce empetrififormis* and *Cassiope mertensiana* heath and *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* forest associations. It has not been found on the Deschutes National Forest.

***Tritomaria exsectiformis*** – This liverwort occurs within the Pacific Northwest from mid-elevational (3,200-5,200 feet) riparian zones. Typically, its habitat is open to shaded coniferous forest in association with low volume, perennial water flow at or near springs and seeps, along very gentle topographic gradients. Lodgepole pine (*Pinus contorta*) is present at nearly all sites of *T. exsectiformis* within the Oregon and Washington Cascades. Other tree species occurring at these sites include white fir, ponderosa pine, Engelmann spruce (*Picea engelmannii*), Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), mountain hemlock (*Tsuga mertensiana*), and subalpine fir (*Abies lasiocarpa*). Currently, all but one of the *T. exsectiformis* sites in the Oregon and Washington Cascades occur within spring-fed hydrologic systems.

## Lichens

*Dermatocarpon luridum* – Silverskin lichen has been found on sunny or partly sunny bedrock or on larger, relatively immobile rocks within channels of perennial or nearly perennial streams. It is often found above waterline and dry in summer months. It is found on both the Deschutes and Ochoco National Forests.

*Leptogium cyanescens* – Skin lichen occurs on mossy trees and rocks in humid forests. It is generally riparian, but recently documented in upland settings on vine maple, big leaf maple, and in moss on white oak. It is associated with Western Hemlock and Pacific Silver Fir Zones in mixed conifer stands, mature big leaf maple and Douglas-fir stands, maple and willow thickets.

*Texosporium sancti-jacobi* – This lichen is documented on The Island and near Canadian Bench, Crooked River National Grassland. This whitish soil crust lichen is often found on old root clumps of *Poa secunda* or on scat. It is most likely to occur in Central Oregon in Crooked River National Grassland habitats. It has not been found on the Deschutes National Forest.

## Fungi

*Alpova alexsmithii* – This fungus occurs principally on soil in Pacific Silver Fir (44%) and Mountain Hemlock (44%) series at elevations of 2742-5764 feet. It is a mycorrhizal associate of *Tsuga*. Associated species include Pacific silver fir, lodgepole pine, Engelmann spruce and mountain hemlock. Other woody associates include *Vaccinium membranaceum* and *Vaccinium scoparium*. It fruits August-December. It is documented from the Mt. Jefferson Wilderness on the Deschutes National Forest.

*Gastroboletus vividus* – This fungus is found in association with the roots of *Abies magnifica* and *Tsuga mertensiana* above 5,000 ft. elevation. It fruits July-September. There is a known site at Crater Lake National Park. No known sites on the Deschutes National Forest.

*Helvella crassitunicata* – This fungus occurs in montane forests containing *Abies* spp., from old growth and younger age groups, from low to high elevation in the fall and winter, occasionally on trails, or other moderately disturbed areas. Documented on the Sisters district of the Deschutes National Forest.

*Hygrophorus caeruleus* – This fungus is associated with roots of Pinaceae and may be restricted to *Abies* species. It typically fruits in mid-elevation to montane conifer forests in the spring near melting snowbanks (May-July). It is documented on the Deschutes National Forest.

*Ramaria amyloidea* – This fall-fruiting coral-like fungus occurs on moist humus or wood, or under duff. It is associated with *Abies* spp., *Pseudotsuga menziesii* and *Tsuga heterophylla*.

## **Appendix B-4.2.14. Plant Association Group descriptions, Deschutes and Ochoco National Forests and Crooked River National Grassland.**

### **Deschutes National Forest**

**Alpine Dry PAG** – Only comprising 0.03% of the mapped PAGS, this type is characterized by high elevation lodgepole pine and whitebark pine.

**Alpine Meadow PAG** – Plant associations dominated by sedges and occurring at higher elevations within the Cascade Mountains (USDA Forest Service 1988). Soils are imperfectly –drained early in the growing season, often remaining moist well into summer.

**Alpine Shrub PAG** – These are plant associations occurring at high elevations in the Cascade Mountains (USDA Forest Service 1988). Soils are either imperfectly-drained early in growing season or well-drained. Pink mountain heath (*Phyllodoce empetrifomis*) is a representative species.

**Hardwood PAG** – This type includes quaking aspen (*Populus tremuloides*) stands and cottonwood (*Populus trichocarpa*) bottomlands. Associated species may include Engelmann spruce (*Picea engelmannii*), mountain alder (*Alnus incana*), and red osier dogwood (*Cornus sericeus*), common snowberry (*Symphoricarpos albus*).

**Juniper Woodlands PAG** – Western juniper (*Juniperus occidentalis*) PAGs occur at low elevations in the warmest and driest part of the Forest/Grassland (Simpson et al. 1994). Antelope bitterbrush (*Purshia tridentata*), Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) are typical understory species. On the Deschutes National Forest, the Juniper Woodland PAG is only 0.1% of the total mapped PAG acres (**Table 5**).

**Lodgepole Pine PAGES** – In central Oregon, distribution of the Lodgepole Pine Series is tied directly to ash/pumice deposits, mostly from Mt. Mazama (Simpson 2007). Lodgepole pine has the widest ecologic amplitude of all the conifers that occur in central Oregon. It dominates sites that are either too wet or dry for its competitors (ponderosa pine, white fir-grand fir, Shasta red fir, or mountain hemlock). Plant associations are grouped to reflect temperature-precipitation zones, and species diversity and productivity decline as the PAGs change from wet to dry and warm to cold. For this analysis, the Forest GIS layer included the following two PAGES:

**Lodgepole Pine Dry PAG** – Typical understory species include pinemat manzanita (*Arctostaphylos nevadensis*), long-stolon sedge (*Carex inops*), Idaho fescue (*Festuca idahoensis*), and western needlegrass (*Stipa occidentalis*).

**Lodgepole Pine Wet PAG** – Typical species include western bog blueberry (*Vaccinium occidentale*), Douglas' spirea (*Spiraea douglasii*), widefruit sedge (*Carex eurycarpa*).

**Meadow PAG** – Meadows are dominated by grasses, sedges, rushes, or forbs (USDA Forest Service 1988). Soils are either imperfectly-drained or saturated through most of the growing season. They are often a component of riparian areas.

**Mesic Shrub PAG** – Dominated by moisture-loving plants, willows (*Salix* spp.), mountain alder (*Alnus incana*), western bog blueberry (*Vaccinium occidentale*), Douglas spirea (*Douglasia spiraea*) are typical shrubs. Aquatic sedge (*Carex aquatilis*), sitka sedge (*Carex sitchensis*), beaked sedge (*Carex rostrata*), and tufted hairgrass (*Deschampsia caespitosa*) typically occur.

**Mixed conifer PAGES** are composed of a mix of species that includes white fir, Douglas fir, mountain hemlock and lodgepole pine. Occasionally, western white pine and, to a much lesser degree, western larch trees, either individually or in patches, are found in this zone. Ponderosa pine is found throughout the mixed conifer zone. At the lowest elevations, which are typically on slightly drier sites, it often is the dominant species with lesser amounts of white fir, sugar pine, and lodgepole pine.

**Mixed Conifer Dry PAG** – These PAGs have moderate to high productivity and a mean annual precipitation of 20 to 35 inches. Tree species are consists of firs, ponderosa pine, Douglas-fir, larch, incense cedar, and lodgepole pine.

**Mixed Conifer Wet PAG** – Plant associations in this PAG have a higher productivity than the Mixed Conifer Dry PAG and a mean annual precipitation of 35 to 75 inches.

**Mt. Hemlock Dry PAG** – This type, which occurs between 6000-7500' elevation is characterized by dense stands with closed canopies of pure mountain hemlock to stands with mixes of tree species where mountain hemlock will still be the dominant or co-dominant tree. The latter stands also have dense canopies. Understory species include woodrush (*Luzula* spp.), grouse huckleberry (*Vaccinium scoparium*), big huckleberry (*Vaccinium membranaceum*), and beargrass (*Xerophyllum tenax*). Lodgepole pine is common after disturbance.

**Ponderosa pine forests** are widely distributed on the east slope of the Oregon Cascades (Simpson 2007). Since ponderosa pine occupies drier sites than any other forest type except western juniper or occasionally lodgepole pine, its distribution is tied closely to available soil moisture.

**Ponderosa Pine Dry PAG** – Typical species include bitterbrush (*Purshia tridentata*), Idaho fescue (*Festuca idahoensis*), western needlegrass (*Stipa occidentalis*), green leaf manzanita (*Arctostaphylos patula*), and snowbrush (*Ceanothus velutinous*). This PAG occurs in zones that typically receive less than 20 inches of precipitation.

**Ponderosa Pine Wet PAG** – Four percent of the PAGS on the Deschutes National Forest are mapped as this type (compared to 29% for ponderosa pine dry PAG). The majority of this type that is currently mapped using the old plant association guide (Volland 1985) is ponderosa pine/bitterbrush-snowbrush/needlegrass.

**Riparian PAG** – Riparian zones occur along the interface between aquatic and terrestrial ecosystems (Kovalichik 1987). Typical species include willows (*Salix* spp.), mountain alder (*Alnus incana*), bog blueberry (*Vaccinium occidentale*), Douglas spirea (*Spiraea douglasii*).

**Whitebark Pine PAG** – Whitebark pine grows at the highest elevations of any western tree species. Found on exposed ridges, temperatures are cool and the growing season is short. Winters are long, snowy and frequently involve severe windstorms.

**Xeric Shrublands PAG** – These plant associations are dominated by sagebrush (*Artemisia tridentata*) and bitterbrush (*Purshia tridentata*). Soils are well-drained throughout the growing season (USDA Forest Service 1988). Other typical species include Idaho fescue and squirreltail (*Elymus elymoides*).

### **Ochoco National Forest**

**Douglas-Fir PAG** – The Douglas-Fir PAG generally occurs at an average of 4,800 ft. elevation and aspect is generally south. It includes warm, dry Douglas-fir habitats types where ponderosa pine occurs as a major seral or climax associate. Many stands have a shrub-dominated undergrowth that includes common snowberry (*Symphoricarpos albus*), chokecherry (*Prunus virginiana*), antelope bitterbrush (*Purshia tridentata*), Oregon grape (*Berberis repens*), serviceberry (*Amelanchier alnifolia*), willow (*Salix* spp.), and mountain snowberry (*Symphoricarpos oreophilus*). Elk sedge (*Carex geyeri*) and pinegrass (*Calamagrostis rubescens*) dominate in some stands.

**Dry Grand Fir PAG** – The Dry Grand Fir PAG includes the most extensive plant associations on the Ochoco National Forest. Two plant associations make up this group: grand fir/pinegrass (*Abies grandis/Calamagrostis rubescens*) and grand fir/elk sedge (*Abies grandis/Carex geyeri*). These typically occur on south facing slopes between 4,000-6,500 ft. elevations.

**Dry Ponderosa Pine PAG** – As moisture and temperature increase, Dry Ponderosa Pine PAG occurs on shallow soils adjacent to sagebrush and western juniper zones, comprising 10% of the PAGs in the Forest and Grassland. Typical understory species are bluebunch wheatgrass, Idaho fescue, big sagebrush (*Artemisia tridentata*), antelope bitterbrush, curlleaf mountain mahogany (*Cercocarpus ledifolius*), western needlegrass, and arrowleaf balsamroot (*Balsamorhiza sagittata*).

**Juniper Steppe and Juniper Woodland** – Western juniper (*Juniperus occidentalis*) PAGs occur at low elevations in the warmest and driest part of the Forest/Grassland (Simpson et al. 1994). Antelope bitterbrush (*Purshia tridentata*), Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) are typical understory species. Together, Juniper Steppe PAG and Juniper Woodland PAG comprise 28% of the Ochoco National Forest and Crooked River National Grassland (4% and 24% respectively) (**Table 6**). This PAG is most extensive on Crooked River National Grassland.

**Mesic Ponderosa Pine** – Three main plant associations occur in this PAG: 1) ponderosa pine/pinegrass (*Pinus ponderosa/Calamagrostis rubescens*); 2) ponderosa pine/elk sedge (*Pinus ponderosa/Carex geyeri*); and 3) ponderosa pine/snowberry (*Pinus ponderosa/Symphoricarpos albus*). The Mesic Ponderosa Pine PAG is more productive and has a different fire regime than the Dry Ponderosa PAG (Simpson 2009, *personal communication*).

**Moist Grand Fir PAG** – In Moist Grand Fir PAG, typical understory species are Queen’s cup bead lily (*Clintonia uniflora*), twinflower (*Linnaea borealis*), huckleberries (*Vaccinium scoparium* and *V. membranaceum*) and Columbia brome (*Bromus vulgaris*). The Moist Grand Fir PAG includes the most productive sites on the Ochoco National Forest.

**Subalpine Fir PAG** – This PAG is only a small percentage (0.4%) of the total PAGs on the Ochoco NF and Grassland. It occurs only at the upper elevations with the coldest temperatures and most moisture. Species found in the understory are elk sedge and currents (*Ribes* spp.).

**Non Forest PAG** – Fourteen percent of the Ochoco NF and Grassland are non-forested. These areas are scablands or xeric shrub plant associations that are dominated by sagebrush with bunchgrasses and forbs present.

## B-4.3 Vegetation Management Activities and Wildfires

B.4.3.1 Definitions of vegetation management treatments that may result in forest conditions that are more conducive to access by motorized vehicles.

### **Release Treatment:**

#### **Weeding:**

A release treatment in stands not past the sapling stage that eliminates or suppresses undesirable vegetation regardless of crown position (Helms 1998).

#### **Slashing:**

Cutting back the less tough, competing vegetation with a light cutting tool or machine (Helms 1998).

### **Fuel Treatment:**

#### **Prescribed Fire:**

Deliberately burning wildland fuels in either their natural or their modified state and under specified environmental conditions, which allows the fire to be confined to a predetermined area (Helms 1998). Specific types of prescribed fire include (terms are subjective and often used interchangeably):

#### **Broadcast Burning:**

A prescribed fire allowed to burn over a designated area within well-defined boundaries to achieve some land management objective (Helms 1998)

#### **Underburning:**

A prescribed fire that consumes surface fuels but not trees and shrubs (Helms 1998)

#### **Jackpot burning:**

Burning scattered concentrations of materials within a unit (IWEB 2008)

#### **Pile burning:**

Burning of piled slash including hand and machine piles and decks (IWEB 2008)

#### **Wildland fire use:**

The management of naturally ignited wildland fires to accomplish specific, pre-stated resource management objectives in predefined geographic areas outlined in Fire Management Plans (Helms 1998)

#### **Chipping of Fuels:**

Breaking down/or slicing of trees, changing the size or shape into smaller pieces. Includes leaving on site or removing (IWEB 2008)

#### **Compacting/Crushing of Fuels:**

Any crushing, mowing, mulching or other treatment that grinds or shreds fuels, leaving resulting material on the forest floor (IWEB 2008)

Piling of Fuels, Hand or Machine:

Piling slash resulting from logging or fuels management activities (IWEB 2008)

Rearrangement of Fuels:

Any rearranging of fuels such as limbs, tops, or brush to reduce fuel bed depth or speed up decomposition (IWEB 2008)

Thinning for Hazardous Fuels Reduction:

See definition under *Intermediate Treatment*

Yarding:

Any activity that removes fuel from the site by carrying or dragging (IWEB 2008)

**B.4.3.2. Project or planning area names and acres of treated ground along with the NEPA documents under which most vegetation management projects were completed that may result in forest conditions more conducive to motorized access on the Deschutes and Ochoco National Forest from 2004 – 2008.**

Project or planning area names and acres of treated ground on the Deschutes NF from 2004 – 2008.

PROJECT	ACRES
18 FIRE SALVAGE REOFFER	1879
4 CORNERS FIRE SALV	12
45 T S	59
ABE T S	46
AIR	508
ANNS BUTTE PIT	3
ASH FIRE SALVAGE	794
ASPEN N F	1867
ATE RS FIRE SALVAGE	69
BACON	22
BAJA EAST FIBER	113
BAJA PINE	17
BAJA WEST	348
BATTERY	105
BB 89 CT SALV	518
BB 90 CT SALV	164
BBQ FIRE SALVAGE	822
BBR NFR	897
BEACH CAMPGROUND	1
BEAR GARDEN	611
BEASEL T S	993
BEAVERSLIDE	56
BIG BEAR	38
BIG GAME FUELS CE	41
BIG MARSH LP	20
BIG MILITARY LP	5

PROJECT	ACRES
BIRD	370
BITTERBRUSH STUDY PLOTS	360
BLACK CRATER REHAB	14
BLACK CRATER SALVAGE	21
BLOWOUT LP SALVAGE	255
BON	1005
BOOT TIMBER SALE	30
BOOTH FIRE SALVAGE	679
BRIDGE FIBER	40
BROKEN RIM	83
BROWNS MEADOW	7
BUGGER LP SALVAGE	98
BUICK	2621
BUNNY FIBER	354
BUNNY PINE	49
BUTTE FIRE SALVAGE	1423
C & R	172
CAB T S	152
CAN SPRINGS	28
CANAL NFR	612
CAST 1	68
CE WITHOUT DM	114
CENTRAL	1053
CHAR FIRE SALVAGE	692
CHARLIE BROWN	1353
CHINA HAT GS	3
CHINA HAT HELISPOT	4

PROJECT	ACRES
CHINKA	394
CHOP POST & POLE	20
CLUNKER T S	1964
COIL FIBER T S	316
COLLINS	26
COMPRESSOR STATION	42
CONE	245
COUNTY	26
COW PATTY LP SALVAGE	89
COWGIRL	103
CRANE PRAIRE CG	21
CRANE PRAIRE DAM DEBRIS	5
CRESCENT LAKE WUI FUELS REDUCTION	136
CRITTER	1356
CROSS SBA	345
CROSSINGS	453
CUB T S	351
CULTUS LAKE CG	48
DAVIS PINE 81	82
DEER RUN SEED ORCH	32
DEMO BUTTE	22
DESCHUTES BRIDGE CG	10
DESCHUTES BRIDGE PIT	12
DEVILS LAKE TRAILHEAD	2
DILMAN	1541
DOG T S	241
DUTCHMAN CINDER PIT	6
EAGLE ROCK	186
EAST BUTTE L O	2
EAST TUMBULL	530
EATON WRIGHT	13
EB	357
ELECTRA	212
ELK LAKE CABIN GS	1
ELMER FIBER/FIREWOOD	67
EMERALD T S	278
EMIGRANT LP	73
ET BIOMASS DEMO	26
EYERLY FIRE SALVAGE	1632
FALL	1797
FALL RIVER ESTATES	10
FALL RIVER FISH HATCHERY	2
FALL RIVER GS	2
FIVE MILE POST	12
FLATTOP HAZARDOUS FUELS REDUCTION PROJECT	1567
FLY FIRE SALVAGE	720

PROJECT	ACRES
FLYMON	223
FOREST LANE	70
FT & D FIBER	28
FUZZY EA	3925
FUZZY REOFFER	402
GEM T S	224
GENERAL PATCH FIRE FUELS MITIGATION PROJECT	21
GOLF	192
GOOSE	52
GREEN LAKES TRLHEAD	6
GREENTHIN STEWARDSHIP	957
GROW	237
GULL PT CMPGRD	33
GUTSHOT	426
HAMMY	308
HAMROY FSW BO	49
HAVEN FIBER	135
HAWK	87
HAZY REOFFER	1963
HEMLOCK BUTTE LP	309
HIGHWAY 20	3021
HIKER LP SALVAGE	37
HOLE IN THE GROUND	1814
HOMESTEAD LP	80
HOP	320
HOWL	149
HWY 46 BUG LP	13
HWY 58 AND 61 JCT	31
HWY WEST 15	19
HWY WEST 7	21
INA SALV	1135
JACK BU	151
JELLY	38
JIG	22
KAPKA T S	1490
KATALO	4447
KELSEY BUTTE SEED ORCHARD	24
KIT	1667
KIWI PINE CT	84
KLAK	2481
KO T S	16
KUMQUAT 82	451
LAMBCHOP 83	200
LANDING PAD 61	64
LAVA	67
LAVA CAST	149

PROJECT	ACRES
LAVA LAKE COMPACTOR	1
LAVA LAND DEBRIS PILE	0
LAVA LAKES CG	13
LAVA RIVER CAVE N F	2
LEDO	121
LEFTOVER AGAIN? SBA	285
LIFT FIRE SALVAGE	1434
LITTLE FAWN	9
LITTLE FIRE SALVAGE	766
LITTLE LADY LP	21
LITTLE WALKER	19
LO T S	1416
LOBAS SALV	751
LOOKOUT	84
LOPE	380
LOPPED	116
LOWER	286
LOWER JACK REOFFER	205
LSR DEMO	111
LUCKY DOILY SALV	59
MALLARD MARSH CG	15
MARSH BUNNY LP	178
MARTEN	19
MATRIX FIRE SALVAGE	720
MCCACHE	1050
MEADOW CAMP DAY USE	7
METOLIUS BASIN	1943
METOLIUS GREEN THIN	306
METOLIUS HERITAGE DEMO	9
METOLIUS RNA	21
MICRO	7
MILE CAMP DAY USE	2
MILITARY	45
MIST	4286
MJB BUG SALVAGE	29
MOORE ROCK	207
MUTT & JEFF	21
MYST FUEL HAZARD REDUCTION PROJECT	50
N PAUNINA	230
N. BOUNDARY LP	22
NET	284
NORDEEN SNOW SHELTER	1
NORTH DAVIS CREEK	85
NORTH TWIN CG	3
NUT TIMBER SALE	622
ODELL DAVIS LP	24
ODELL LAVAS	30

PROJECT	ACRES
OVERPASS	103
PAUL FIBER SALV RE	503
PAUNINA POLE	81
PAWN LP SALVAGE	243
PICKLE T S	2084
PILE FIREWOOD	20
PINE 90 CT SALVAGE	218
PINE BUTTE	36
PINE FLAT	39
PIT	1002
PITS	158
POINT CG	2
PRAIRIE T S	226
PRINGLE FALLS AD N F	26
QUINN MEADOW CG	9
RABBIT FIR	42
RAILROAD RIMROSE	819
RAINBOW	31
RED CRATER PIT 1	1
RED ELK	69
RED PLAGUE T S	112
RED RIVER LP FIBER	146
REGAL SBA	1421
RICKETY RAIL LP	83
RIDER	81
RIM	35
RINGO #2	93
RINGO DIKE	58
ROAD 2222	21
RODNEY	82
ROUND ABOUT LP	102
ROYAL	673
RUDDY	161
S & N PAUNINA	162
S. PAUNINA BUG LP	280
SCENIC 61	190
SCENIC 61 CG	24
SEVEN BUTTES NATURAL FUELS PROJECT	209
SIX MILE T S	225
SLT	182
SNOOP TIMBER SALE	1483
SNOW CREEK GS 1	2
SNOW CREEK PIT 1	0
SODA CREEK CG	5
SOUTH BOUNDARY N F 7	677
SOUTH HOSMER DAY USE	5
SOUTH LP SALVAGE	224

<b>PROJECT</b>	<b>ACRES</b>
SOUTH PAUNINA LP	109
SOUTH WALKER LP	57
SOUTHBOUND 82	218
SPARKS LAKE CG	3
SPRING BUTTE LO	3
SPRING RIVER BUTTE CE	4
SRST	74
STORMY LP SALVAGE	28
STRIP	62
SUA CT RESALE	89
SUB FIREWOOD	62
SUNNY	64
SUNSET BEACH CG	3
SUNSET VIEW CG	1
SWAMP CREEK	245
T & B 97	67
TAIL	838
TEE	953
THE LLOYD 1	81
THIN LP SALVAGE 3	18
TINY FIREWOOD 1	39
TITAN T S	391
TITANIC	315
TODD LAKE HORSE CAMP 1	2
TOE SBA	2397
TOON	626
TOT	326

<b>PROJECT</b>	<b>ACRES</b>
TUN T S	357
U.P.	418
UMLI	213
UNCLAIMED LP SALVAGE	755
UNDERLINE	547
VARMIT	91
VERNAL POOL ALLINGHAM CUTOFF 1	10
W BLACK BU METOLIUS BAS WBB 9	47
W. MARSH SITE PREP	64
WALKER	61
WALKER FIRE SALVAGE	64
WALNUT	85
WAMPUS BUTTE COMMO CE	4
WANOGA SNOW PARK	8
WAPITI CREST LP SALV	74
WATER WONDERLAND 1	34
WEST BLACK BUTTE	53
WEST HAMNER NO. 2	44
WEST HIGHWAY	37
WEST LAVA	10
WEST SLOPE 82	19
WOOF LP FIBER SALV	63
YARD	369

**Project or planning area names and acres of treated ground on the Ochoco National Forest from 2004 – 2008.**

<b>Project Name</b>	<b>Acres</b>
Antelope CG	80
Aqua	48
Badger	60
Bandit	2015
Barn	599
Beetle	338
Benefield	162
Biscuit root	393
Black Bear	4008
Bug Creek	103
Bullpine	40
Cartpot	249
Catfish	238
Clearwater	391
Colby	339
Cows	178
Cram	75
Creis	609
Crock	44
Crossout	354
Cyrus	378
Cyrus Hills	240
Deep	6552
Dippy Beaver	16
Dry	581
Dutchman	172
East Willow	1176
Fastbuck	22
Fishsticks	317
Flat Bucket	489
Foley	1454
Fox Canyon	751
Fry	96
Fryton	950
Gap	800
Halfway	630
Hardcorner	1721
Harner	771
Harvey	39
Indian trail	703
Jungle	736
Lowdutch	139

<b>Project Name</b>	<b>Acres</b>
Lower CR	2252
Mahogany	233
Marks	76
Mid Maury	1057
Mid Maury II	1496
Mill	271
Mud Springs Salvage	65
Mule	178
Northside	15
OVF	111
Ochillee	781
Ochoco Divide CG	20
Ochoco Valley	823
Potlid	37
Powel Creek	1700
Rager WUI	2886
Ringmeyer	98
Ro-A	30
Rocky	1581
Rocky II	474
Rooster	12
Rough	822
Round Butte	2152
Runway	60
Rye	49
Saddle	126
Sherwood	1274
Shotgun	120
Snowshoe	31
Spears	400
Stogie	78
Suffering	133
Sugar Creek	30
Summit	308
Sunflower	4488
Sunny	30
TNT	291
Top Cat	157
Tower	496
Trout	1427
Westside Wildlife	18
Watson	58
West Maury	3838

Project Name	Acres
Whiskey	22
Windmill	146
Windy John	364
Yobear	894

Project Name	Acres
Zane	823

**NEPA documents under which most vegetation management projects were completed that may result in forest conditions more conducive to motorized access on the Deschutes National Forest from 2004 – 2008.**

NEPA Document	Signed Date	District
18 FIRE ROADSIDE SALVAGE CE	10-Oct-03	Bend Fort Rock
18 FIRE SALVAGE RECOVERY PROJECT	10-Oct-03	Bend Fort Rock
ASPEN EA	18-Mar-05	Bend Fort Rock
BEASEL EA	20-Nov-97	Bend Fort Rock
BEAVERSLIDE EA	20-Jul-88	Bend Fort Rock
BOUNDARY SPRINGS WILDLAND INTERFACE FUELS REDUCTION	1-Apr-06	Bend Fort Rock
BUICK EA	3-Jul-01	Bend Fort Rock
CASCADE LAKES SCENIC BYWAY NORTH AND SOUTH PORTALS PROJECT	1-Nov-05	Bend Fort Rock
CENTRAL EA	12-Feb-99	Bend Fort Rock
CHARLIE BROWN	7-Jan-02	Bend Fort Rock
CHINA HAT HELISPOT CE	28-June-05	Bend Fort Rock
CROSSING CE	26-Jul-06	Bend Fort Rock
CROSSINGS FUELS REDUCTION PROJECT	27-Jul-06	Bend Fort Rock
DILMAN EA	26-Dec-01	Bend Fort Rock
EAST TUMBULL HAZARDOUS FUELS REDUCTION PROJECT EA	17-Jul-06	Bend Fort Rock
ELK LAKE GUARD STATION ENHANCEMENT PROJECT	8-Dec-05	Bend Fort Rock
EMERALD EA	15-Apr-96	Bend Fort Rock
FALL EA	18-May-04	Bend Fort Rock
FALL RIVER FISH STATE FISH HATCHERY ADMIN SUTE CE	23-Jan-03	Bend Fort Rock
FLATTOP HAZARDOUS FUELS REDUCTION PROJECT	2-Mar-06	Bend Fort Rock
FORT ROCK 4	25-Jan-00	Bend Fort Rock
FOUR CORNERS EA	24-May-95	Bend Fort Rock
FUZZY EA	13-Jul-00	Bend Fort Rock
GENERAL PATCH FIRE FUELS MITIGATION PROJECT	1-Jun-05	Bend Fort Rock
HOLE IN THE GROUND	25-Sep-01	Bend Fort Rock
JACK CANYON VEG MANAGEMENT DN	28-Jun-96	Bend Fort Rock
KATALO EA	18-Apr-97	Bend Fort Rock
KATALO WEST EA	27-Jul-98	Bend Fort Rock
KELSEY VEGETATION MANAGEMENT EA	28-Sep-04	Bend Fort Rock
KLAK EA	25-Jul-01	Bend Fort Rock
LANDING RED PLAGUE EA	10-Oct-03	Bend Fort Rock
LAVA CAST FUELS REDUCTION CE	8-Mar-05	Bend Fort Rock
LAVA CAST PROJECT	31-Jan-07	Bend Fort Rock
LAVA CAST TIMBER STAND IMPROVEMENT CE	17-Jun-05	Bend Fort Rock
LOBAS SALVAGE PROJECT	31-Oct-96	Bend Fort Rock
LONG PRAIRIE MISTLETOE REDUCTION EA	9-Sep-05	Bend Fort Rock
LONG PRAIRIE MISTLETOE REDUCTION EA	9-Sep-05	Bend Fort Rock

<b>NEPA Document</b>	<b>Signed Date</b>	<b>District</b>
LUCKY DOILY EA	23-May-90	Bend Fort Rock
MISTLETOE REDUCTION EA	23-Nov-98	Bend Fort Rock
MYST FUEL HAZARD REDUCTION PROJECT	22-Dec-06	Bend Fort Rock
PAULINA FIRE EA	18-Jun-97	Bend Fort Rock
PRAIRIE DOG EA	2-Feb-96	Bend Fort Rock
US CELLULAR WAMPUS BUTTE COMMUNICATIONS SITE INSTALLATION	10-Oct-08	Bend Fort Rock
WOOF EA	22-Dec-94	Bend Fort Rock
FY PRECOMMERCIAL TREE THINNING	annual	Crescent
BAJA 58	30-Sep-98	Crescent
BIG GAME FUELS CE	18-May-99	Crescent
CRESCENT LAKE WILDLAND-URBAN INTERFACE FUELS REDUCTION PLAN	14-Jul-04	Crescent
CRESCENT LAKE WILDLAND-URBAN INTERFACE PROJECT	14-Sep-04	Crescent
DAVIS FIRE RECOVERY PROJECT	14-Sep-04	Crescent
MAINTENANCE BURN FUELS REDUCTION PROJECT	17-Jun-05	Crescent
PAWN EA	2-May-96	Crescent
ROSEDELL CE	19-Apr-05	Crescent
SEVEN BUTTES	5-Dec-96	Crescent
SEVEN BUTTES NATURAL FUELS PROJECT	30-Sep-98	Crescent
SEVEN BUTTES RETURN	23-Jul-01	Crescent
B & B FIRE RECOVERY PROJECT	24-Jun-05	Sisters
BIG BEAR VEG MGMT DN	1-Jun-95	Sisters
BLACK BUTTE RANCH FUELS REDUCTION CE	25-Jul-96	Sisters
BLACK CRATER FIRE TIMBER SALVAGE PROJECT	8-Feb-07	Sisters
BROKEN RIM VEGETATION MANAGEMENT PROJECT DN	23-Dec-93	Sisters
CANAL 16 PRESCRIBED BURN DECISION MEMO	22-Dec-94	Sisters
COIL FIBER TIMBER SALE CONTRACT MODIFICATION CE	20-Aug-04	Sisters
EYERLY FIRE SALVAGE PROJECT	1-Oct-04	Sisters
FLYMON STEWARDSHIP DEMONSTRATION PROJECT	10-Sep-07	Sisters
FOREST HEALTH DEMONSTRATION PROJECT	1-Jun-95	Sisters
HIGHWAY 20 INTEGRATED VEGETATION MANAGEMENT	21-May-98	Sisters
MCCACHE VEG MANAGEMENT DN	18-Oct-01	Sisters
METOLIUS BASIN FOREST MANAGMENT ROD	2-Jul-03	Sisters
METOLIUS RESEARCH NATURAL AREA FIRE MANAGEMENT PLAN	13-Dec-07	Sisters
SANTIAM LSR RESTORATION PROJECT DN	22-Apr-98	Sisters
UNDERLINE VEGETATION MANAGEMENT	18-Jun-93	Sisters



**NEPA documents under which most vegetation management projects were completed that may result in forest conditions more conducive to motorized access on the Ochoco National Forest from 2004 – 2008.**

<b>NEPA Document Name</b>	<b>Date</b>
ACE, BADGER, BUG CREEK, CRAM, FELIX, NORTHSIDE, AND SNOWSHOE PRECOMMERCIAL	15-Feb-05
BANDIT II	04-Mar-03
BEETLE TIMBER SALE	01-Apr-02
BISCUITROOT	03-Sep-96
BLACKBEAR PLANNING AREA	30-Jul-99
CRNG VEG MGT/GRAZING	24-Sep-04
CROOKED RIVER RANCH MOWING	01-Apr-04
DEEP VEGETATION MANAGEMENT PROJECT	16-Jan-04
DIPPY BEAVER ENVIRONMENTAL ASSESSMENT	11-Feb-96
EAST DISTRICT PRECOMMERCIAL THINNING 2002	16-Apr-02
EAST LOOKOUT PLANTATION THINNING	15-Feb-05
FRYTON PLANNING AREA	15-Jul-98
GAP	19-Apr-95
GRIZZLY LANDSCAPE REHAB PROJECT (04)	14-May-04
LOWER CROOKED FUELS REDUCTION	06-Apr-04
MILL PROJECT TIMBER SALES	14-Sep-99
MUD SPRINGS HAZARD TREE REMOVAL	10-Sep-04
NORTHEND PLANTATION PRECOMMERCIAL THINNING	15-Aug-05
RAGER WUI FUELS PROJECT	06-Sep-07
ROUND BUTTE FUEL BREAK PROJECT	16-Jun-04
SOUTH ASPEN RESTORATION PROJECT	14-Feb-05
SUNNY TIMBER SALE	09-Nov-04
TNT PROJECT PLANNING AREA	18-Aug-95
TROUT TIMBER SALES	23-Sep-96
W.SIDE WILDLIFE HABITAT IMPROVEMENT PROJECT	24-Jul-07
WALTON LAKE LOOP TRAIL IMPROVEMENTS	21-Mar-06
WEST MAURY FUELS AND VEGETATION MANAGEMENT PROJECT	23-Apr-05
WINDY JOHN PLANNING AREA	29-Apr-98
YOBEAR TIMBER SALE ENVIRONMENTAL ASSESSMENT	14-Jul-95
ZANE	04-Nov-99

B.4.3.3. Wildfires and acres treated on the Deschutes and Ochoco National Forest that were considered as contributing to existing condition prior to 2004

**TREATMENTS -DESCHUTES NF  
1998 - 2003**

From 1998 to 2003, **156,324 acres** of ground on the Deschutes NF received some sort of vegetation treatment that may result in forest conditions more conducive to motorized access. During this time period, most acres were treated through the following activities:

- burning of piled material;
- pre-commercial thinning;
- piling of fuels (hand or machine);
- chipping of fuels; and
- commercial thinning.

Additionally, **150,889 acres** of the Deschutes NF was reported as burned by large wildfires during this time period. Large wildfires are defined as those documented in Forest GIS layers, generally greater than 100 acres. These fires are listed in Table 7.

**Large wildfires on the Deschutes NF from 1998 to 2003.**

Fire Name	Day	Month	Year	Acres Reported	District
Link	05	07	2003	3,590	Sisters
Davis	28	06	2003	21,135	Crescent
Bear Butte	04	08	2003	11,035	Sisters
Booth	04	08	2003	79,734	Sisters
18 Road	23	07	2003	3,800	Bend Fort Rock
Eyerly	09	07	2002	23,573	Sisters
Cache Mtn	23	07	2002	4,358	Sisters
Little Deschutes	05	05	2002	108	Crescent
Metolius RNA	10	10	2002	140	Sisters
Crane Complex	12	08	2001	650	Bend Fort Rock
Muttonchop	--	--	2000	71	Crescent
Newberry 2	--	--	2000	548	Bend Fort Rock
Cache	--	--	1999	382	Sisters
Spring River Butte	--	--	1999	112	Bend Fort Rock
Dugout	--	--	1999	17	Sisters
Black Bark	--	--	1999	79	Bend Fort Rock
Elk	--	--	1998	251	Bend Fort Rock
McKay	--	--	1998	1,150	Bend Fort Rock
Square Lake	--	--	1998	113	Sisters
Pringle 2	--	--	1998	43	Bend Fort Rock

**TREATMENTS - DESCHUTES NF  
Pre 1998**

Prior to 1998, **499,770 acres** of ground on the Deschutes NF received some sort of vegetation treatment that may result in forest conditions more conducive to motorized access. During this time period, most acres were treated through the following activities:

- burning of piled material;
- pre-commercial thinning;
- yarding;
- stand clearcutting; and
- shelterwood cutting.

Additionally, **236,230 acres** of the Deschutes NF was reported as burned by large wildfires prior to 1998 (1908 – 2007). Approximately **73%** of this reported burned acreage was on the Bend Fort Rock Ranger District; **20%** on the Sisters Ranger District; and **6%** on the Crescent Ranger District. Additionally, approximately **28%** of the reported acreage burned occurred between 1980 and 1997. Large wildfires are defined as those documented in Forest GIS layers, generally greater than 100 acres. These fires are listed in Table 9.

**Large wildfires on the Deschutes NF prior to 1998.**

Fire Name	Year	Acres Reported	District
Snow	1997	37	Bend Fort Rock
Pole Creek	1997	16	Sisters
Black Crater	1997	18	Sisters
Skeleton	1996	17789	Bend Fort Rock
Roman Nose	1996	7	Bend Fort Rock
Park Meadow	1996	598	Sisters
Jefferson	1996	3689	Sisters
Horse Ridge	1996	700	Bend Fort Rock
Evans West	1996	4230	Bend Fort Rock
Cultus Corral	1996	47	Bend Fort Rock
Bessie Butte	1996	257	Bend Fort Rock
Wind	1995	212	Bend Fort Rock
Sugar	1995	33	Bend Fort Rock
Pringle	1995	868	Bend Fort Rock
Newberry	1995	150	Bend Fort Rock
Labor	1995	131	Bend Fort Rock
Green Mountain	1995	223	Bend Fort Rock
Sundance	1994	28	Bend Fort Rock
Ogden	1994	13	Bend Fort Rock
Horse Butte 2	1994	69	Bend Fort Rock
Four Corners	1994	1523	Bend Fort Rock
Surveyors Lava	1993	705	Bend Fort Rock
Sagebrush	1993	359	Bend Fort Rock
Two Creeks	1992	116	Sisters

Fire Name	Year	Acres Reported	District
Talapus Butte	1992	42	Bend Fort Rock
Sage Flat ODF	1992	1105	Sisters
Red Butte	1992	140	Bend Fort Rock
Moffit	1992	43	Bend Fort Rock
Lookout	1992	429	Sisters
Horse Butte	1992	1629	Bend Fort Rock
Hole In The Ground	1992	521	Bend Fort Rock
Haner Butte WPRA	1992	345	Bend Fort Rock
Green Ridge Complex	1992	62	Sisters
Stevens Canyon	1991	1079	Sisters
Pine Butte	1991	60	Crescent
George Lake	1991	161	Sisters
Cow Camp	1991	278	Sisters
Cabin Butte	1991	57	Bend Fort Rock
Wake Butte	1990	356	Bend Fort Rock
Topso Butte	1990	549	Bend Fort Rock
Spring Butte	1990	882	Bend Fort Rock
Finley Butte	1990	1319	Bend Fort Rock
Delicious	1990	2041	Sisters
Crane Prairie	1990	41	Bend Fort Rock
Awbrey Hall	1990	3032	Bend Fort Rock
Canyon Creek	1989	133	Sisters
Tetherow Bridge	1988	57	Bend Fort Rock

Fire Name	Year	Acres Reported	District
Paulina	1988	12592	Bend Fort Rock
Jack In The Box	1988	535	Bend Fort Rock
Inn Of The Seventh Mtn	1988	75	Bend Fort Rock
Hole In The Ground	1987	725	Bend Fort Rock
Cabot Lake	1987	3030	Sisters
Brush Creek	1987	422	Sisters
Pot Holes 2A	1986	29	Bend Fort Rock
Pot Holes 2	1986	185	Bend Fort Rock
Swampwells	1985	177	Bend Fort Rock
Lookout Mtn	1985	533	Bend Fort Rock
Hole In The Ground	1985	192	Bend Fort Rock
Wampus Butte	1984	217	Bend Fort Rock
Skyliner	1984	114	Bend Fort Rock
Kelsey Butte	1984	415	Bend Fort Rock
Fly Creek	1984	528	Sisters
Pringle Falls	1983	121	Bend Fort Rock
Pot Holes 1	1983	240	Bend Fort Rock
Black Butte	1981	235	Sisters
Beales Butte Slash	1980	6	Crescent
Walker Mtn (US-97)	1979	80	Crescent
Unknown	1979	50	Sisters
Tollgate	1979	339	Sisters
Middle	1979	63	Sisters
Bridge Creek	1979	3364	Bend Fort Rock
Pine Mtn	1977	772	Bend Fort Rock
Johns	1977	8	Bend Fort Rock
Green Butte	1977	1751	Bend Fort Rock
Dead Wilma	1977	1938	Bend Fort Rock
Camp 2	1977	266	Bend Fort Rock
Sugarpine Ridge	1975	74	Sisters
Pine Mtn South	1974	13	Bend Fort Rock
Wier Grade	1969	586	Sisters
Weigh Station	1968	120	Bend Fort Rock
Squaw Back	1968	5731	Sisters
Pine Mtn	1968	351	Bend Fort Rock
Coyote	1968	1005	Bend Fort Rock
River Bend	1962	190	Bend Fort Rock
Fly Creek Ranch	1961	1301	Sisters
Round Lake	1960	83	Sisters
Indian Ford	1960	70	Sisters
Squaw Creek	1959	609	Sisters
Horseshoe Butte	1959	87	Bend Fort Rock
Bates Butte	1959	291	Bend Fort Rock

Fire Name	Year	Acres Reported	District
Aspen Flat	1959	15577	Bend Fort Rock
Sugarpine Butte	1958	25	Bend Fort Rock
BS Tanks D-3	1955	196	Bend Fort Rock
Big Marsh	1955	21	Crescent
Ko Butte	1952	646	Bend Fort Rock
Hinkle Butte	1952	223	Sisters
Melvin Butte	1947	689	Sisters
Big Marsh	1947	28	Crescent
Minto Pass	1945	4921	Sisters
Metolius	1945	638	Sisters
Peterson Mill	1941	580	Sisters
Lower Metolius	1941	5415	Sisters
Fremont Siding	1940	1946	Crescent
Maklaks Mtn	1930	62	Crescent
Dugout Lake	1930	636	Sisters
Blue Lake	1928	73	Sisters
Sugarpine Butte	1927	138	Bend Fort Rock
Metolius	1926	3003	Sisters
Cultus Mtn	1926	448	Bend Fort Rock
Wasco Lake	1924	2480	Sisters
Arnold Ice Cave	1924	4156	Bend Fort Rock
White	1922	1411	Bend Fort Rock
Ned England	1922	639	Bend Fort Rock
Unknown	1920	35	Bend Fort Rock
Shepherd	1920	145	Bend Fort Rock
Lookout Mtn Road	1920	59	Bend Fort Rock
Fox Butte	1920	2277	Bend Fort Rock
Pringle Butte	1919	493	Bend Fort Rock
Hinkle Town	1919	2040	Crescent
Finley Butte	1919	16	Bend Fort Rock
County Line	1919	702	Bend Fort Rock
Cold Springs 2	1919	193	Sisters
Cold Springs 1	1919	226	Sisters
Arnold Ice Cave	1919	1442	Bend Fort Rock
Warner	1918	232	Bend Fort Rock
Sutilet	1918	2406	--
Spencer	1918	48	Bend Fort Rock
Shoestring	1918	296	Bend Fort Rock
Rim Rock Butte	1918	3797	Bend Fort Rock
Quartz Butte	1918	1630	Bend Fort Rock
Paulina Prairie	1918	2827	Bend Fort Rock
Paulina Creek	1918	169	Bend Fort Rock
Lost Man	1918	8960	Bend Fort Rock
Island	1918	328	Bend Fort Rock

Fire Name	Year	Acres Reported	District
Dutchman Creek	1918	247	Bend Fort Rock
Unknown	1916	80	Crescent
Ryan Cabin	1916	74	Bend Fort Rock
Dorrance Meadow	1916	147	Bend Fort Rock
Wigtop Butte	1915	184	Bend Fort Rock
Wickiup RS	1915	77	Bend Fort Rock
Watkins Flat	1915	288	Bend Fort Rock
Watkins Butte 2	1915	76	Bend Fort Rock
Watkins Butte 1	1915	222	Bend Fort Rock
Unknown	1915	28	Crescent
Unknown	1915	45	Bend Fort Rock
South Ice Cave	1915	11910	Bend Fort Rock
Pyramid	1915	335	Bend Fort Rock
Mortimer Well	1915	844	Bend Fort Rock
Mahogany Butte	1915	31	Bend Fort Rock
Long Butte	1915	3010	Bend Fort Rock
Buck Butte	1915	115	Bend Fort Rock
Boundry Road	1915	705	Bend Fort Rock
Unknown	1914	49	Crescent
Unknown	1914	120	Crescent
Unknown	1914	116	Bend Fort Rock
Triangle Butte	1914	71	Bend Fort Rock
Three Trappers	1914	971	Bend Fort Rock
The Twins	1914	446	Bend Fort Rock
Swampy Lake	1914	200	Bend Fort Rock
Sugarpine Ridge	1914	1152	Sisters
Stage Station	1914	5543	Bend Fort Rock
Spring Butte	1914	150	Bend Fort Rock
Pine Mtn Radcliff	1914	3943	Bend Fort Rock
Pine Mtn	1914	8022	Bend Fort Rock
Pine Lake	1914	145	Bend Fort Rock
Lookout Mtn Eastside	1914	321	Bend Fort Rock
Katati Butte	1914	225	Bend Fort Rock
Ipsoot Butte	1914	180	Bend Fort Rock
Dry Lake	1914	364	Bend Fort Rock
Camp 2	1914	592	Bend Fort Rock
Wake Butte	1913	378	Bend Fort Rock
Unknown	1913	116	Bend Fort Rock

Fire Name	Year	Acres Reported	District
Trout Creek	1913	48	Sisters
Quartz Mtn	1913	138	Bend Fort Rock
Pine Mtn Northeast	1913	324	Bend Fort Rock
Moore Creek	1913	255	Crescent
Hole In The Ground	1913	284	Bend Fort Rock
Unknown	1912	30	Bend Fort Rock
Steigleder Well	1912	72	Bend Fort Rock
Hole In The Ground	1912	400	Bend Fort Rock
Unknown	1911	98	Crescent
Sugarpine Butte	1911	700	Bend Fort Rock
Pot Holes	1911	561	Bend Fort Rock
North Odell Lake	1911	61	Crescent
Lake Creek D-5	1911	1945	Sisters
Groundhog Butte	1911	179	Bend Fort Rock
Camp 2	1911	232	Bend Fort Rock
Camp 2	1911	232	Bend Fort Rock
Boyd Cave	1911	69	Bend Fort Rock
Boyd Cave	1911	69	Bend Fort Rock
Antelope Spring	1911	669	Bend Fort Rock
South Davis Lake	1910	738	Crescent
Snow Creek	1910	192	Bend Fort Rock
Ringo Butte	1910	65	Crescent
Odell Spring	1910	1448	Crescent
North Davis Lake	1910	1157	Crescent
Metolius-Jefferson Creek	1910	2426	Sisters
Gebhard Well	1910	581	Bend Fort Rock
Edison Ice Cave 2	1910	7326	Bend Fort Rock
Wickiup Butte	1909	296	Bend Fort Rock
Northwest Davis Mtn	1909	337	Crescent
Metolius	1909	210	Sisters
Round Swamp	1908	4774	Crescent
Edison Ice Cave 1	1908	2653	Bend Fort Rock
China Hat East Butte	1908	8175	Bend Fort Rock

**TREATMENTS - OCHOCO NF  
1998 - 2003**

From 1998 to 2003, **44,119** acres of ground on the Ochoco NF was harvested, pre-commercially thinned, or received a fuels reduction treatment. During this time period, most acres were treated through the following activities (as documented in tabular FACTS-not from spatial data):

- pre-commercial thinning;
- improvement cutting;
- commercial thinning;
- single tree selection cutting; and
- selection cutting.

Additionally, **38,133 acres** of the Ochoco NF was reported as burned by large wildfires during this time period. Large wildfires are defined as those documented in Forest GIS layers, generally greater than 100 acres. These fires are listed in Table 15.

**Large wildfires on the Ochoco NF from 1998 to 2003.**

Fire Name	Day	Month	Year	Acres Reported	District
Buck Butte	11	05	2002	105	Crooked River NG
747	13	07	2002	16948	Paulina
Murray	23	07	2002	321	Paulina
Geneva 2	13	07	2002	1130	Crooked River NG
Hash Rock	21	08	2000	18276	Lookout Mountain
761	05	08	1999	101	Crooked River NG
766	05	08	1999	81	Crooked River NG
Elk Drive	19	09	1999	538	Crooked River NG
Belmont	02	08	1998	633	Crooked River NG

**TREATMENTS - OCHOCO NF  
Pre 1998**

Prior to 1998, **160,316 acres** of ground on the Ochoco NF was harvested, pre-commercially thinned, or received a fuels reduction treatment. During this time period, most acres were treated through the following activities (as documented in tabular FACTS-not from spatial data):

- over-story removal;
- pre-commercial thinning;
- stand clearcutting;
- improvement cutting; and
- shelterwood cutting.

Additionally, **10,731 acres** of the Deschutes NF was reported as burned by large wildfires prior to 1998 (1961 – 2007). Note that only one fire (Squaw Back- 1968) was reported prior to 1994. Large wildfires are defined as those documented in Forest GIS layers, generally greater than 100 acres. These fires are listed in Table 17.

**Large wildfires on the Ochoco NF prior to 1998**

Fire Name	Day	Month	Year	Acres Reported	District
Box Canyon	04	08	1996	411	Crooked River NG

3 Rivers	14	07	1996	662	Crooked River NG
Coyle Butte	10	08	1996	188	Lookout Mountain
Little Cabin	30	07	1996	2,438	Crooked River NG
Green Mountain	15	08	1996	106	Lookout Mountain
Sheep Rock	09	07	1994	101	Lookout Mountain
Bridge Creek	03	08	1994	307	Lookout Mountain
Grandview	24	07	1994	787	Crooked River NG
Squaw Back	--	--	1968	5,731	Crooked River NG

## *B-5 Fire Risk*

### **Fire Cause**

The National Interagency Fire Management Integrated Database (NIFMID) maintains information from Forest Service fire reports from 1970 to present. Fire reports are created by field-going personnel and contain much information about each statistical fire<sup>1</sup> on the unit, including (but not limited to) legal location, cause (statistical, general, and specific), aspect, slope, costs, and resources used (FSH 5109.14.20). NIFMID is updated as fire reports are entered into the system after the fire is declared out by local Forest Service units (USDA 1998).

The Statistical cause<sup>2</sup> is the primary cause code carried forward from NIFMID into Forest-level maintained fire history records. The General and Specific cause codes are used to further refine the Statistical cause determination. The categories within each cause group are listed below.

*Statistical Causes* include the following:

- Lightning
- Equipment Use
- Smoking
- Campfire
- Debris Burning
- Railroad
- Arson
- Children
- Miscellaneous

Note that lightning is the only non-human statistical cause. Unknown human-related statistical causes are documented as “miscellaneous”.

*General Causes* include the following:

- **Timber harvest** - Fires resulting from the cutting and removal of timber products, including fires related to timber access road construction, and logging slash disposal. Fires started during preliminary work, such as cutting area layout and marking or road location, are coded as "Forest and Range Management".
- **Harvesting other** - Fires associated with the utilization and removal of non-timber Forest and range products for commercial purposes. Where personal pleasure or use is involved, fires are coded as "Other Recreation"
- **Forest and range management** - Fires associated with forest, range, or watershed land management projects except those listed under other general causes. These include escaped fires from cultural prescribed burning, thinning and pruning slash disposal, and range improvement.

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<sup>1</sup> Statistical fires are those that burn on National Forest System lands or other lands for which the Forest Service has protection responsibility or threaten to spread to lands under Forest Service protection and are suppressed wholly or in part by Forest Service employees (FSH 5109.14.10).

<sup>2</sup> In the Wildfire Origin and Cause Determination Handbook (NWCG 2005) “statistical causes” are termed “general causes”.

- **Highway** - Fires resulting from construction, maintenance, and use of paved and gravel surface roads, except those which can be attributed to "Timber Harvest".
- **Power and reclamation** - Fires resulting from all activities associated with the construction and operation of power generation and transmission line clearing and maintenance.
- **Hunting** - Fires associated with hunting activities. These include den trees fires set for smoking out game.
- **Fishing** – Fire associated with fishing activities
- **Other recreation** – Fires associated with recreational pursuits other than hunting and fishing
- **Resident** – Fires resulting from or associated with residential occupancy
- **Other; lightning, railroad, or children** - Fires with these statistical causes. Fires which properly cannot be associated with any of the other listed generally activity causes. If known, the exact activity that resulted in the fire is documented.

Note that the “other” general category includes lightning, railroad, and children as these categories do not require further refinement. Unknown or causes that do not fit in any of the other categories are also documented with “other”. Three of the *known* General cause categories could be associated with recreational motorized access; hunting, fishing, and other recreation. The “other” and “resident” categories may also contain starts associated with motorized access.

Specific Causes include the following:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▪ Lightning</li> <li>▪ Aircraft</li> <li>▪ Burning Vehicle</li> <li>▪ Exhaust - Powersaw</li> <li>▪ Exhaust - Other</li> <li>▪ Logging line</li> <li>▪ Brake shoe</li> <li>▪ Cooking fire</li> <li>▪ Warming fire</li> <li>▪ Smoking</li> <li>▪ Trash burning</li> <li>▪ Burning dump</li> <li>▪ Field burning</li> <li>▪ Land clearing burning</li> <li>▪ Slash burning</li> </ul> | <ul style="list-style-type: none"> <li>▪ R/W Burning</li> <li>▪ Resource management burning</li> <li>▪ Grudge fire</li> <li>▪ Pyromania</li> <li>▪ Smoking out bees or game</li> <li>▪ Insect or snake control</li> <li>▪ Job fire</li> <li>▪ Blasting</li> <li>▪ Burning building</li> <li>▪ Power line</li> <li>▪ Fireworks</li> <li>▪ Playing with matches</li> <li>▪ Repel predatory animals</li> <li>▪ House or stove flue sparks</li> <li>▪ Other/Misc.</li> </ul> |
|--|--|

Note that “other/misc” is used for fires with an unknown specific cause. Three of the Specific cause codes reference vehicle-related ignition sources; burning vehicle, exhaust-other, brake shoe, although most of the other cause codes could be associated with motorized access.

The Statistical cause code was used in this analysis for several reasons. The statistical cause is the only cause code carried forward into Forest-level records and the cause category used by official fire investigators (NWGC 2005). Additionally, while the General and Specific cause codes document useful metrics, there is potential uncertainty with each further refinement in the cause determination. It is not possible to quantify this uncertainty, as historically, official fire investigators were not available to analyze every ignition, fire investigation protocols were not as organized as they are today, and cause is not always apparent (Curtiss 2009). For example, from 1986 – 2007 on the Deschutes and Ochoco

National Forests, nearly 500 (or approximately 20%) of the human-caused starts were documented with an “other” General cause<sup>3</sup>. Additionally, during this same timeframe only 25 recreation-related (General cause), human-caused starts on the Deschutes and Ochoco National Forests were documented as vehicle-related (Specific cause), while 106 were documented with unknown as a specific cause. Whether or not these statistics reflect actual conditions is unknown. Furthermore, although the Specific cause documents starts potentially “caused” by motorized vehicles, it does not capture starts potentially “associated” with motorized access. This piece of information would be the most crucial statistic to capture for this analysis, but it is not available. The most certain piece of information that can be derived from these statistics is whether or not starts are human or lightning, and this is captured with the Statistical cause.

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<sup>3</sup> Excluding railroad and children. See definition of “Other” general cause.

## B-6 Wildlife

### B-6.1 Wildlife Species and Scientific Names.

Threatened, Endangered, and Sensitive Species	Scientific Name
Northern Spotted Owl	<i>Strix occidentalis caurina</i>
American Peregrine Falcon	<i>Falco peregrinus anatum</i>
Northern Bald Eagle	<i>Haliaeetus leucocephalus</i>
Bufflehead	<i>Bucephala albeola</i>
Harlequin Duck	<i>Histrionicus histrionicus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Horned Grebe	<i>Podiceps auritus</i>
Tri-colored Blackbird	<i>Agelaius tricolor</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>
Western Sage Grouse	<i>Centrocercus urophasianus phaeios</i>
Lewis' Woodpecker	<i>Melanerpes lewis</i>
White-headed Woodpecker	<i>Picoides albolavartus</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
California Wolverine	<i>Gulo gulo luteus</i>
Pacific Fisher	<i>Martes pennanti</i>
Pygmy Rabbit	<i>Brachylagus idahoensis</i>
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>
Oregon Spotted Frog	<i>Rana pretiosa</i>
Columbia Spotted Frog	<i>Rana luteiventris</i>
Crater Lake Tightcoil	<i>Pristiloma arcticum crateris</i>
Silver-bordered Fritillary	<i>Boloria selene atrocotalis</i>
Johnson's Hairstreak	<i>Mitoura johnsoni</i>
Management Indicator Species	Scientific Name
Northern Goshawk	<i>Accipiter gentiles</i>
Coopers Hawk	<i>Accipiter cooperii</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Great Gray Owl	<i>Strix nebulosa</i>
Great Blue Heron	<i>Ardea herodias</i>
Red-tail Hawk	<i>Buteo jamaicensis</i>
Osprey	<i>Pandion haliaetus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Northern Flicker	<i>Colaptes auratus</i>
Elk	<i>Cervus elephas</i>
Mule Deer	<i>Odocoileus hemionus</i>
American Marten	<i>Martes Americana</i>
Cavity Excavators	
Black-backed Woodpecker	<i>Picoides arcticus</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Williamson's Sapsucker	<i>Sphyrapicus thryroideus</i>
Three-toed Woodpecker	<i>Picoides tridactylus</i>

<b>Threatened, Endangered, and Sensitive Species</b>	<b>Scientific Name</b>
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>
<b>Waterfowl</b>	
Canada Goose	<i>Branta Canadensis</i>
Wood Duck	<i>Aix sponsa</i>
Mallard	<i>Anas platyrhynchos</i>
Northern Pintail	<i>Anas acuta</i>
Blue-winged Teal	<i>Anas discors</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Northern Shoveler	<i>Anas clypeata</i>
American Wigeon	<i>Anas Americana</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya Americana</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Green-winged Teal	<i>Anas carolinensis</i>
Ring-necked Duck	<i>Aythya collaris</i>
Barrow's Goldeneye	<i>Bucephala islandica</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Loon	<i>Gavia immer</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Red-necked Grebe	<i>Podiceps gisegena</i>
<b>Bats</b>	
California Myotis	<i>Myotis californicus</i>
Western Small-footed Bat	<i>Myotis cilioabrum</i>
Yuma Myotis	<i>Myotis yumanensis</i>
Little Brown Bat	<i>Myotis lucifugus</i>
Long-legged Bat	<i>Myotis volans</i>
Long-eared Bat	<i>Myotis evotis</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Pallid Bat	<i>Antrozous pallidus</i>
Western Parastrelle	<i>Pipistrellus hesperus</i>
Fringed Myotis	<i>Myotis thysanodes</i>
Spotted Bat	<i>Euderma maculatum</i>
<b>Landbirds</b>	
Pygmy Nuthatch	<i>Sitta pygmaea</i>
Flammulated Owl	<i>Otus flammeolus</i>
Chipping Sparrow	<i>Spizella passerine</i>
Brown Creeper	<i>Certhia Americana</i>
Hermit Thrush	<i>Catharus guttatus</i>
Varied Thrush	<i>Ixoreus naevius</i>
Olive-sided Flycatcher	<i>Contopus borealis</i>
Sandhill Crane	<i>Grus Canadensis</i>
Blue Grouse	<i>Dendragapus obscurus</i>
Clarks Nutcracker	<i>Nucifraga columbiana</i>
Western Bluebird	<i>Sialia mexicana</i>
Brewer's Sparrow	<i>Spizella breweri</i>

<b>Threatened, Endangered, and Sensitive Species</b>	<b>Scientific Name</b>
Sage Sparrow	<i>Amphispiza belli</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
Townsend's Warbler	<i>Dendroica townsendi</i>
Vaux's Swift	<i>Chaetura vauxi</i>
Cassin's Finch	<i>Carpodacus cassinii</i>
Calliope Hummingbird	<i>Stellula calliope</i>
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Long-billed Curlew	<i>Numenius americanus</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Burrowing Owl	<i>Athene cunicularia</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Green-tailed Towhee	<i>Pipilo erythrophthalmus</i>
Veery	<i>Catharus fuscescens</i>
Yellow-breasted Chat	<i>Icteria virens</i>
MacGillivray's Warbler	<i>Oporornis tolmiei</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Yellow Warbler	<i>Dendroica petechia</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Lazuli Bunting	<i>Passerina amonena</i>
Willow Flycatcher	<i>Empidonax trailii</i>
Prairie Falcon	<i>Falco mexicanus</i>
Eared Grebe	<i>Podiceps nigricollis</i>

B-6.2 Terrestrial Wildlife Biological Evaluation

**BIOLOGICAL EVALUATION  
OF  
THREATENED, ENDANGERED, AND SENSITIVE  
WILDLIFE**

Travel Management Rule

**Prepared by:**

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**Date:**     7/22/09    

**Travel Management Rule**

**July 22, 2009**

## EXECUTIVE SUMMARY

A biological evaluation (BE) was completed describing the effects to threatened, endangered and sensitive (TES) fauna species associated with the Travel Management Rule Project Area on the Deschutes and Ochoco National Forests.

A Joint Aquatic and Terrestrial Biological Assessment for Federal Lands within the Deschutes and John Day River Basin's Administered by the Deschutes and Ochoco National Forests was completed for 2006-2009 projects. The BA established project design criteria to simplify and reduce consultation with U.S. Fish and Wildlife Service (USFWS) for 2006 and future projects. The goal for the forests is to fully implement the criteria to achieve conservation and recovery objectives of federally listed, proposed, and candidate species. Project design criteria are to be used as sideboards and a filter for our planning process. Criteria focus on habitat alteration and disturbance effects. Applicable criteria are documented in the biological evaluation process used for individual project alternative analysis and effects determinations on threatened, endangered, proposed, and candidate species.

One threatened species, designated critical habitat, and 21 sensitive species, and/or their habitats are known or suspected to occur within the project area. The following is a summary of the findings of this biological assessment/evaluation on the effects of the proposed alternatives.

1. The No Action Alternative is not expected to have any effects on spotted owls and their associated habitats.
2. The Action Alternatives “**May Effect, and are likely to have a Beneficial Effect**” on the northern spotted owl and its habitat. Consultation is required as this project type is not covered under the Project Design Criteria outlined in the FY2006-2009 Programmatic Biological Assessment.
3. The Action Alternatives “**May Effect, and are likely to have a Beneficial Effect**” on designated critical habitat (for both the 1992 and 2008 designations) for the northern spotted owl. Consultation is required as this project type is not covered under the Project Design Criteria outlined in the FY2006-2009 Programmatic Biological Assessment.
4. The No Action Alternative is not expected to have any impacts on sensitive species and their habitats.
5. Implementation of Alternatives 2 & 3 will have a “**Beneficial Impact**” to the bald eagle, horned grebe, bufflehead, harlequin duck, American peregrine falcon, greater sage grouse, yellow rail, tri-colored blackbird, northern waterthrush, California wolverine, Pacific fisher, pygmy rabbit, Oregon spotted frog, Crater Lake tightcoil, silver-bordered fritillary, and Johnson's hairstreak and their habitats for the Deschutes National Forest.
6. Implementation of Alternatives 2 and 3 will have “**No Impact**” to the Lewis' woodpecker, white-headed woodpecker, and Townsend's big-eared bat and their habitats for the Deschutes National Forest.
7. Implementation of Alternatives 2 and 3 will have a “**Beneficial Impact**” to the bald eagle, peregrine falcon, Townsend's big-eared bat, and Johnson's hairstreak and their habitats for the Ochoco National Forest.
8. Implementation of Alternatives 2 and 3 will have “**No Impact**” to the bufflehead, western sage grouse, tri-colored blackbird, Lewis' woodpecker, white-headed woodpecker, upland sandpiper, California wolverine, pygmy rabbit, Columbia spotted frog, and silver-bordered fritillary and their habitats for the Ochoco National Forest.
9. Implementation of the Travel Management Rule is consistent with the Deschutes, Ochoco, and Crooked River National Grassland Land and Resource Management Plans for all sensitive species.

## METHODS/ASSUMPTIONS

### Scientific Literature Review

Relevant, recent literature was reviewed on the general effects of both motorized and non-motorized use of roads on wildlife. However, literature is not available for all species or types of conditions found on the forests. Much of the information used came from Forman et al. (2003), Gaines et al. (2003), AMEC (2005), Montana TWS (1999), and Ouren et al. (2007). The Forman et al. (2003) publication dealt primarily with highly traveled, paved roads. Most forest roads are not paved nor utilized to the extent that paved roads are. Speeds are also much slower on forest roads than paved roads and use varies widely across the Forest with some roads rarely utilized. It will be noted where effects may be overstated due to the difference in circumstances.

Ouren et al. (2007), Gaines et al. (2003), and Montana TWS (1999) are all literature reviews or bibliographies conducted on the effects of recreation and off-highway vehicle or linear route impacts on wildlife species and habitat. The AMEC (2005) publication provided information on the effects of noise on wildlife. From the review of literature, it was determined that disturbance from roads has the greatest effect on wildlife species and habitat as it relates to the implementation of the Travel Management Rule. Therefore, effects will be analyzed and measured by acres of disturbed and undisturbed habitat.

### Road Data

Roads information for both forests was gathered from the forest engineering department and information housed in the Geographic Information System (GIS) for each forest. This information was used to determine direct habitat lost, likelihood of direct mortality, and was used to provide context to the indirect effect of habitat lost (habitat quality). Direct habitat lost was calculated by multiplying the average width of forest roads by the total miles. This calculation was completed on all roads occurring on the Forests and includes closed roads, as well as, roads currently open. Single lane roads average approximately 14 feet wide while double lane roads average 24 feet in width, which includes the shoulder area.

### Road Assumptions

To simplify the analysis, but still adequately capture the impacts, the following assumptions were made relative to the average traffic speed and volume (cars/day) use occurring on forest roads on the Deschutes and Ochoco National Forests.

Table 1. Average traffic speed and daily volume rates for Deschutes NF roads.\*

Surface	Lanes	Average Speed	Volume Rate (Cars/Day)
PAVED	1 – Single Lane	25	50
	2 – Double Lane	50	100
GRAVEL	1 – Single Lane	35	20
	2 – Double Lane	40	25
IMPROVED	1 – Single Lane	30	5
	2 – Double Lane	35	10
NATIVE	1 – Single Lane	20	1
	2 – Double Lane	25	5

\*Calculations were completed on Forest Service roads only. Therefore, State highways and county owned roads were not included.

**Table 2. Average traffic speed and daily volume rates for Ochoco NF roads (includes CRNG)\*.**

Surface	Lanes	Average Speed	Volume Rate (Cars/Day)
PAVED	1 – Single Lane	45	40
	2 – Double Lane	50	50
GRAVEL	1 – Single Lane	35	20
	2 – Double Lane	40	25
IMPROVED	1 – Single Lane	25	2
NATIVE	1 – Single Lane	20	1

\*Calculations were completed on Forest Service roads only. Therefore, State highways and county owned roads were not included.

In addition, five state highways run through the forests (Highways 20, 26, 58, 97, and 126). Noise due to traffic volumes is higher along these roadways. The Cascades Lakes Highway (Road 46), the Metolius Basin, the East Fort Rock OHV area, McKay Creek, Walton Lake, Big Summit Prairie, and Henderson Flat area also receive greater use and effects are likely higher surrounding these roads as well.

### **Road Effect Distance (200 meter buffer)**

Literature was reviewed to determine at what distance from roads impacts are seen relative to disturbance and edge effects. Forman (2000) described a “road effect distance” of 200 meters for secondary roads to calculate the indirect loss of habitat and the displacement of many species. Forman also mentions the road effect zone is highly variable and is dependent on the species affected, adjacent habitat, road type, and traffic volume. Noss and Cooperrider (1994) report edge effects are not linear and the zone varies in width depending on what is being measured. They report edge effects seen as far as 240 meters. Therefore, the 200 meter road effect distance will be used to assess edge effects as well. This distance may over-estimate effects for some species and will under-estimate effects for others. However, this distance captures known effects for many species and provides a relevant measure of change between the existing condition and the alternatives. The 200 meter road effect distance will also include those effects for motorized access for dispersed camping. Vehicles accessing dispersed campsites are usually traveling at a very low rate of speed for short distance (no more than 300 feet). Engines are only on for short periods of time and therefore, effects realized for the 200 meter road effect zone will include those for motorized access for dispersed camping as well. This 200 meter road effect distance will be referred to as disturbed habitat in the analysis.

### **Closed, Open and High Impact Areas**

There are currently few restrictions to cross country travel across the forests except in designated areas (e.g. wilderness, research natural areas, fire areas, green dot areas). These designated areas have closure orders that prohibit cross country travel and are classified as closed on the maps and in the analysis. In closed areas, just those acres associated with roads and the road effect distance (200 meter buffer either side of open roads) was considered disturbed and/or of decreased habitat quality.

The remaining forest was categorized as open. Since, at any time, there may be off-road use regardless if there is an established trail, user created or not, roads and trails were not buffered. Analyzing the area as a whole will account for the indirect effects of potential disturbance and decreased habitat quality due to disturbance rather than buffering just open system roads.

Because the alternatives close the forests to cross country travel except on designated routes or in designated areas, both forests will be classified as closed with acres of disturbance and/or decreased habitat quality associated with only open roads and their buffers.

### **Habitat Analysis, Viable Ecosystems Model, Geographic Information System**

Habitat for the various species was determined by the Viable Ecosystems Model (Viable). The Geographic Information System (GIS) program ArcMap was used to overlay this habitat with the road effect distance to determine and illustrate the amount of habitat that is likely to be disturbed and of decreased habitat quality for most species. Undisturbed habitat will therefore, occur more than 200 meters from open roads and outside identified buffers.

Viable was not able to map habitat for riparian, special habitat, or niche species. Riparian species select for riparian vegetation or other characteristics found adjacent to streams and water bodies. This information was not available in a GIS map. Riparian buffers were used as a surrogate for riparian habitat. Riparian habitat may be over-estimated as riparian habitat characteristics are not likely to occur within the entire buffer distance and not every water body may contain suitable habitat for each species. For the road effect distance analysis, the wetland buffer and lake buffer were not identified separately but included in the total acreage given for wetlands and lakes. This will over-estimate habitat because the entire water body is included. However, the buffers were used as a means for comparison between the alternatives. In addition, the analysis does not differentiate between areas identified as motorized access for dispersed camping and areas identified as off designated routes. The analysis combined these areas.

**Table 3. Riparian Habitat and Associated Buffers used in Analysis.**

<b>Riparian Habitat</b>	<b>Buffer Distance</b>	<b>Comments</b>
Class 1 Stream	300 feet	Fish-bearing
Class 2 Stream	300 feet	Fish-bearing
Class 3 Stream	150 feet	Perennially non-fish bearing
Class 4 Stream	100 feet	Intermittent
Lakes	300 feet	
Wetland	150 feet	
Wetland Buffer	150 feet	

Mapped special habitats on the Deschutes National Forest include hardwoods, alpine meadows, meadow, alpine shrubs, mesic shrubs, rock, xeric shrublands (scablands), and caves. Mapped special habitats on the Ochoco National Forest include alder/willow, aspen, cottonwood, grassland, mtn. mahogany, meadow, rock and sage/scab. Special habitat information is available as separate layers in GIS for each forest. The analysis does not differentiate between areas identified as motorized access for dispersed camping and areas identified as off designated routes. The analysis combined these areas. As with the riparian habitat, habitat may be over-estimated as each area mapped may not contain suitable habitat for each species within the entire mapped area. However, acres of special habitats were used as a means of comparison between the alternatives.

### **Viable Ecosystems Model**

The Ochoco and Deschutes Viable Ecosystems Management Guide (VEMG) was developed to classify vegetation on a landscape basis. “The Viable Ecosystem model provides a process to apply ecosystem management concepts to project level planning. This system compares existing vegetation with site potential. The model focuses on relationships between combinations of vegetation structure and species composition, and habitat requirements for animals, insects and plants. Viable Ecosystems is a useful tool for cumulative effects analysis of broad scale changes in vegetation at a subwatershed to Forest-wide scale and subsequent changes in animal, insect or plant communities.”

Viable stratifies the environment along a gradient of size, structure, species composition, and relative tree density. The various classifications are then linked to wildlife habitat requirements. For example, a classification with a value of 56152 is white fir (56), early seral (1), medium/large structure (5), and **low**

**density (2)** and would typically have a single story (low density) dominated by ponderosa pine (early seral in white fir) 21” dbh or greater (medium/large structure). This provides nesting habitat for white-headed woodpeckers. A value of 56351 would equate to white fir (56), late seral (3), medium/large structure (5), and **high density (1)** and would be a multi-storied stand dominated by white fir 21” dbh or greater and provide habitat for pileated woodpeckers. All values that provide habitat for species were used. In addition to the mixed conifer value of 56152 using the white-headed woodpecker example, any seral stage dominated by ponderosa pine, medium/large structure, and low density would provide similar open ponderosa pine habitat and was used in determining amounts of white-headed woodpecker habitat across the Deschutes and Ochoco National Forests and Crooked River Grassland.

The 2004 satellite imagery layer was used to develop the Viable map. Data is mapped on a 25 meter pixel grid, meaning the map is divided up on a 25 meter grid and that every 25 meter square (pixel) is assigned a value (i.e. 56351) that relates to a stratum of size, structure, tree species composition, and relative tree density. Criteria used (vegetation, seral state, structure, and density) to determine habitat for each species is described in existing condition of each species.

### **GIS Analysis and ArcMap**

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. The information can be related to visual data (maps), tabular data (tables, spreadsheets, or data bases) and used to run models (create new data set from existing data based on criteria or specific conditions). ArcMap is a component of the ArcGIS program. The client software developed by Economic and Social Research Institute (ESRI) was used for the processing and presentation of GIS data.

### **Northern Spotted Owl**

The analysis conducted for the northern spotted owl includes a forest-wide analysis of all nesting, roosting, and foraging (NRF) habitat, Critical Habitat Units, known home ranges, and late-successional reserves. NRF acres used are derived from the March 2008 update to the 2006-2009 Deschutes and Ochoco Programmatic Biological Assessment and reflect the most current situation. There are two different versions of Critical Habitat. Where CHU is used refers to the area reflected in the 2008 update to the Critical Habitat Rule. Historic CHU refers to the area identified in the 1992 Critical Habitat Rule. Both versions are being analyzed due to a potential remand of the 2008 Rule. An analysis of each home range has also been conducted. A 1.2 mile radius circle is used as a home range distance in the Cascade Range. This equates to approximately 2,882 acres. The analysis will show some home ranges total less than 2,882 acres. Those home ranges that total less than 2,882 acres include private land, water, or other state/federal lands not under our jurisdiction.

### **Species Analysis**

Sensitive species were only analyzed for the forest they are identified for in the R6 Regional Forester’s Sensitive Species list. Management Indicator Species (MIS) were only analyzed for the forest they are identified for in each forest’s respective Land and Resource Management Plan. Surveys have not been conducted for each species. In some cases, no surveys have occurred and in others, surveys may not have been conducted on a consistent basis. Incidental observations may also contribute to known sitings.

### **Other Assumptions**

#### **No New Roads or Trails**

The proposed action and alternatives do not propose to develop new roads or trails or actively rehabilitate roads and trails. As such, it is assumed no additional wildlife habitat (no habitat lost) will be impacted as a result of implementation of the travel management rule.

### **Change in Noise and Disturbance**

Noise disturbance from vehicle use on roads and the associated fragmentation (edge effect) are primary effects to wildlife species and habitat. These effects affect the quality of habitat and species use adjacent to roads. Effects to a variety of species have been documented in the literature, many of which do not occur on the Deschutes or Ochoco National Forests. Data is not available for all species or conditions found on our forests. Therefore, we assume that species in the same family would experience similar effects.

Disturbance will continue within the road effect zone (200 meters each side of roads) with the implementation of the Travel Management Rule. Decreased habitat quality, reduced reproductive potential, and avoidance of the road effect zone are a result of habitat alteration physically or due to disturbance.

Disturbance will decrease beyond the road effect zone with the implementation of the travel management rule and as a result, habitat quality will increase.

### **Mortality**

Mortality rates will be similar as the existing condition on open system roads because traffic volumes or the level of the roads won't change with the implementation of this action. Mortality rates will decrease in areas closed due to the implementation of the travel management rule.

### **Motorized Access for Dispersed Camping/Alternatives 2 and 3**

Alternatives 2 and 3 are analyzed together as they have the same general effects to wildlife species and habitats. Differences between the alternatives relative to this analysis are minor and not measurable. The major difference between Alternatives 2 and 3 is where motorized access for dispersed camping is allowed. In Alternative 2, there are both areas open to motorized access for dispersed camping (within 300' of a designated route) and special provision areas where access is limited to existing, designated, and defined camp sites (see list of special provision areas in Chapter 2). Alternative 3 only allows access to existing, designated, of defined sites. There are no open areas in Alternative 3.

Approximately 353,686 acres are open to motorized access for dispersed camping yearlong or seasonally on the Deschutes NF and 69,733 acres on the Ochoco NF. In addition, 51,044 acres occur in special provision areas for the Deschutes NF and 54,594 acres for the Ochoco NF. Implementation of Alternative 3 would limit motorized access for dispersed camping to existing, designated, and defined sites only. Therefore, Alternative 3 will result in an estimated 57,116 acres on the Deschutes NF and 33,289 acres on the Ochoco NF would be available for motorized access for dispersed camping. The assumption made is Alternative 3 would result in less disturbance overall, therefore increasing habitat quality for many species.

Other assumptions made relative to motorized access for dispersed camping include:

- Motorized access for dispersed camping usually occurs near local attractions (e.g. water, scenery, and recreational activities)
- No new sites will be developed under Alternative 3 as access is limited to existing, designated, and defined sites
- Use (number of days occupied) of dispersed campsites may increase with Alternative 3
- There may be more demand for motorized access for dispersed camping in the long term due to the increase in population growth of the local area
- Recreation use will increase with population growth rates
- The basic dispersed site vehicular impact area is approximately 0.17 acres (100 feet by 75 feet)

## Riparian

See riparian assumptions under the fisheries section as these apply here relative to the size and location of water bodies and analysis assumptions.

## Evaluation Criteria and Comparison Measures

Evaluation criteria are developed to illustrate the effects to wildlife and how those effects differ by alternative. In this analysis, disturbance is a major effect of roads on habitat quality, quantity, and species life needs. Using the same units of measure allows the major impacts to be easily understood and compared, providing the Decision Maker the necessary data to make an informed decision.

## Units of Measure

Suitable habitat for each wildlife species analyzed in this document has been impacted across the project area primarily by noise disturbance and fragmentation of habitat. The following measure will be used to evaluate the impacts and associated effects of the planned activities:

1. The acres of potential suitable habitat as calculated by Viable located outside the disturbed road effect zone (200 meters either side of the road), otherwise known as undisturbed habitat.

## Analysis

An analysis was conducted for each species to calculate the acres of undisturbed and disturbed habitat by alternative. The following will outline the steps taken to calculate the acres of undisturbed habitat as well as explain the rationale used.

Potentially suitable habitat was overlaid with areas open, closed, and seasonally closed to travel off designated routes to determine the number of acres occurring in each category by alternative. Habitat was also overlaid with areas closed, open, or open seasonally to travel off designated routes for the purpose of motorized access for dispersed camping by alternative to determine the number of acres in each dispersed camping access category. The analysis populated the following table.

Existing Designated Routes			Existing Dispersed Camping			Total Acres of Habitat
Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	

The acres reflected in the table refer to the area adjacent to roads and not to the roads themselves. For example, for “Acres Closed”, the area adjacent to the roads is closed to travel off designated routes. However, open roads are still traveling through this habitat resulting in disturbance within the road effect distance (200 meters each side of open roads). For “Acres Open”, the area is open adjacent to roads to travel off designated routes and disturbance could occur anywhere. Therefore, disturbance is not confined to the road effect distance but to the open area as a whole. For “Acres Open Seasonally”, the adjacent area is open to travel off designated routes during the appropriate season of use. “Total Acres of Habitat” refers to the total number of potentially suitable habitat acres by forest for the identified species as generated by Viable or the special habitat or riparian analysis.

Motorized Access for Dispersed Camping – The analysis was conducted the same way as above for designated routes except the acres refer to the areas identified as those closed, open, or open seasonally to motorized access for dispersed camping along an area 300’ adjacent to open roads or within special provision areas.

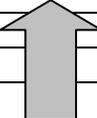
The information from these tables was used to determine the amount of undisturbed and disturbed habitat by alternative. The following will describe how the information from the tables above was used.

**Disturbed and Undisturbed Habitat Tables**

An analysis was conducted to determine the amount of habitat disturbed and undisturbed for each species by forest and alternative. A 200 meter buffer was applied to either side of open system roads to determine the number of habitat acres within the road effect distance. This will help to determine the amount of disturbed habitat even in areas classified as closed to travel off designated routes. Acres within the road effect distance are considered disturbed habitat. The following will describe how the disturbed and undisturbed habitat acres were calculated.

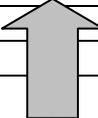
**Step 1.** The total acres of habitat by forest by species are transferred from the first table to this table. These acres refer to the current habitat acres calculated by Viable for each species or allocation by forest.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat



**Step 2.** Acres of Habitat within the Road Effect Zone were calculated by GIS and refer to those habitat or allocation acres occurring within the 200 meter buffer either side of open roads for the identified species or allocation. These acres appear in the second column.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat

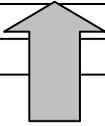


**Step 3.** Acres of disturbed and undisturbed habitat are generated. Undisturbed habitat – The Road Effect Distance acres are subtracted from the Acres Closed column (from the first table) to determine the total acres of undisturbed habitat. This results in those acres outside the 200 meter road effect zone.

**Step 4.** Disturbed Habitat – The undisturbed habitat acres are subtracted from the total acres of habitat column to generate the disturbed habitat acres.

If the acres in the Acres Closed column are less than those for the road effect distance, the road effect distance acres are transferred to the Disturbed Habitat column. This occurs when there are more acres of habitat within the road effect distance than occur in the area closed to travel off designated routes. The Disturbed Habitat acres are then subtracted from the Total Acres of Habitat to generate the Undisturbed Habitat Acres.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat



**Threatened and Endangered Species**

A Biological Evaluation has been prepared in compliance with the requirements of Forest Service Manual (FSM) 2630.3., FSM 2670-2671, FSM W.O. Amendments 2600-95-7, and the Endangered Species Act (ESA) of 1973. A Biological Assessment (BA) will be prepared in compliance with the requirements of Forest Service Manual (FSM) 2630.3, FSM 2672.4 and the Endangered Species Act of 1973 (Subpart B: 402.12, Section 7 Consultation, as amended) on actions and programs authorized, funded, or carried out by the Forest Service to assess their potential for effect on threatened and endangered species and species proposed for federal listing (FSM 2670.1).

Those species thought to occur presently or historically on the Deschutes and Ochoco National Forests and Crooked River National Grassland and analyzed in this document include the northern spotted owl (*Strix occidentalis*) and northern spotted owl critical habitat.

**Table 4. Threatened and Endangered Species Summary**

Species	Status	Habitat	Presence
Northern Spotted Owl	Federal Threatened, MIS	Old Growth Mixed Conifer Forests	Yes
Northern Spotted Owl Critical Habitat - 2008			Yes
Northern Spotted Owl Critical Habitat – Historic*			Yes

**Table 5. Summary of Conclusion of Effects, Threatened and Endangered Species.**

<b>Species/Habitat</b>	<b>Alternative 1</b>	<b>Action Alternatives</b>
Northern Spotted Owl	“No Effect”	“May Effect, Likely Beneficial Affect”
Northern Spotted Owl Critical Habitat - 2008	“No Effect”	“May Effect, Likely Beneficial Affect”
Northern Spotted Owl Critical Habitat – Historic*	“No Effect”	“May Effect, Likely Beneficial Affect”

\*refers to Critical Habitat designated in 1992

**Summary of Conclusions for T&E Species**

1. The No Action Alternative is not expected to have any effects on spotted owls and their associated habitats.
2. The Action Alternatives “**May Effect, and are likely to have a Beneficial Effect**” on the northern spotted owl and its habitat. Consultation is required as this project type is not covered under the Project Design Criteria outlined in the FY2006-2009 Programmatic Biological Assessment.
3. The Action Alternatives “**May Effect, and are likely to have a Beneficial Effect**” on designated critical habitat (for both the 1992 and 2008 designations) for the northern spotted owl. Consultation is required as this project type is not covered under the Project Design Criteria outlined in the FY2006-2009 Programmatic Biological Assessment.

**Northern Spotted Owl, Federal Threatened, MIS**

***Existing Condition***

In June 1990 the northern spotted owl was listed as threatened throughout its range. The FWS completed a five year review of the status of the owl. They concluded a change in the classification of the northern spotted owl was not warranted (USDI 2004). A report by Sustainable Ecosystems Institute (SEI) was prepared for the U.S. Fish and Wildlife Service to evaluate the scientific materials currently available on the northern spotted owl (Courtney et al. 2004). This report compared risks faced by the northern spotted owl in 2004 with those at the time of listing in 1990 under the Endangered Species Act. The SEI report incorporated the “Status and Trends in Demography of Northern Spotted Owls” (Anthony et al. 2004) report on northern spotted owl populations within the range of the Northwest Forest Plan. Some key results of the SEI report are:

- The report confirms and supports findings on habitat associations as known at the time of listing (1990): that spotted owls typically need some late-successional habitat and that other habitat components are also important in some parts of their range.
- The conservation needs of the northern spotted owl – late-successional forests and connectivity between them – have not substantially changed.
- The risks currently faced by the northern spotted owl are significant, comparable in magnitude to those faced by the species in 1990, and have the potential to increase.
- The best available data, although limited, suggest that timber harvest has decreased greatly since the time of listing and that a major cause of habitat loss on federal lands is fire.
- Major threats to northern spotted owls at this time include effects of past and current harvest, loss of habitat to fire, West Nile virus, and barred owls.

Findings from the 2004 effort and a subsequent panel of experts assembled in 2006 to identify the most current threats to the owl and provided information for the completion of the spotted owl recovery plan by USFWS on May 13, 2008 (USFWS 2008b). This document is not a regulatory document but provides guidance to reach recovery for the species. Three main threats were identified in the recovery plan:

- Competition with barred owls
- Loss of suitable habitat as a result of timber harvest and fire
- Loss of amount and distribution of suitable habitat as result of past activities and disturbances

The Recovery Plan recognized different management scenarios were needed for dry forest landscapes and the need to manage entire landscapes in these areas to meet spotted owl objectives. In particular, active management is needed to create more fire resilient and fire resistant forests and treatments to reduce risk should be done in the larger context of restoring broader ecological functions and processes. For dry forest landscapes, an integrated landscape strategy is being developed to address Recovery Actions 6, 7, and 9.

In addition, USFWS published a new Critical Habitat Rule on August 13, 2008 (Fed Reg 2008). Critical Habitat designation follows the final 2008 Recovery Plan MOCA boundaries for the west-side and MOCAs identified under Option 1 of the 2007 draft Recovery Plan for east-side forests (USFWS 2007a). Fire-prone dry forest provinces require different management considerations and a different management context under the new Rule. Reducing the risk of large scale habitat loss and restoring ecosystem processes and functions are primary goals for drier forest landscapes.

### **Habitat**

Spotted owls are primarily inhabitants of old growth and mature forests. Suitable spotted owl habitat contains adequate quantities of dead and down woody material, decadent trees, a medium to high crown closure, multiple layers in the overstory, and trees at least 200 years old or greater than 32 inches dbh (USDA 1990b). Nesting, roosting, and foraging (NRF) habitat for the northern spotted owl on the Deschutes National Forest includes stands of mixed conifer, ponderosa pine with white fir understories, and mountain hemlock with subalpine fir. Suitable nest sites are generally in cavities in the boles of either dead or live trees. Platform nests may also be used (but more rarely), which include abandoned raptor nests, broken treetops, mistletoe brooms, and squirrel nests. Relatively heavy canopy habitat with a semi-open understory is essential for effective hunting and movement (USDA 2003a).

Edge effects from large forest openings may adversely impact the microhabitat conditions necessary for suitable owl habitat as well as contribute to increasing the risk to spotted owls imposed by predators or to competition from the barred owl (*Strix varia*). Spotted owls will use younger, managed forests provided that key habitat components are available. These younger forests provide dispersal habitat for owls and foraging habitat if near nesting or roosting areas.

### **Prey**

Habitat conditions that support good populations of northern flying squirrels (*Glaucomys sabrinus*), western red-backed voles (*Clethrionomys californicus*), and other nocturnal or crepuscular small mammals, birds, and insects are essential to supporting spotted owls. An analysis of local spotted owl pellets showed the primary prey species is the northern flying squirrel with red-backed vole, bushy-tailed woodrat (*Neotoma cinerea*), western pocket gopher (*Thomomys mazama*), Douglas squirrel (*Tamiasciurus hudsonicus*), snowshoe hare (*Lepus americanus*), voles (*Microtus* spp.), mice (*Peromyscus* spp.), and insects as secondary prey items.

The northern flying squirrel was found to be the most important prey species for the spotted owl in 16 of 17 studies analyzed for the SEI Report (Courtney et al. 2004). It was once thought to be old growth dependent but several studies have shown that densities were similar in both young and old forests, especially if old forest legacies (e.g. large decaying logs) and well-developed understories were present (Rosenberg and Anthony 1992, Carey 1995, Waters and Zabel 1995, Carey et al. 1997, Carey 2000, Carey et al. 2002, and Ransome and Sullivan 2003). Den sites have been documented in cavities in live and dead old growth trees, stick nests, moss nests, cavities in branches of fallen trees, decayed stumps, and suppressed young trees (Carey et al. 1997). Mycorrhizal and epigeous fungi, in particular truffles, are an important food source for flying squirrels (Maser et al. 1985, Waters and Zabel 1995, Waters et al. 2000, Carey et al. 2002, Lehmkuhl et al. 2004, and Lehmkuhl et al. in draft, 2004) but where winter snow levels are deeper, as seen in eastside habitats more often, other foods become important like lichens (Thysell et al. 1997, Rosentreter et al. 1997, and Lehmkuhl et al. in draft, 2004).

While few studies exist for the southern red-backed vole (*C. gapperi*), a species found on the east slope of the Cascades, information does exist for the California or western red-backed vole (*C. californicus*). Patterns of abundance associated with stand age have been inconsistent. Some studies indicate voles are more highly associated with old growth or mature stands (Rosenberg et al. 1994) while others have found no difference of vole abundance between young and older forests, but stands selected were mostly naturally regenerated from wildfire (Aubry et al. 1991). The presence of down woody material seems to be important in some aspects. Tallmon and Mills (1994) found that 98% of recorded observations coincided with down logs even though only 7% of the area was covered with logs. In addition, this study reported that more decayed logs were selected for. This may have to do with increased moisture levels and the increased presence of mycorrhizal fungi, a major food source. However, the presence of down woody material is not always an indicator of use. Mills (1995) found that even though down wood was present in adequate amounts, it did not predict the distribution of voles but the presence of hypogeous sporocarps, did predict distribution. Rosenberg et al. (1994) also found this species highly associated with deep organic soils, another predictor of fungi occurrence.

Bushy-tailed woodrats are also an important prey species but these species may have a patchy distribution due to specific habitat requirements. They typically inhabit boulder outcrops or talus slopes (Smith 1997). The number of suitable den sites may limit population density and appear to be climate dependent (Carey et al. 1999). Densities increase in stream-side areas associated with boulders and consistently occupy old, natural stands but are absent from young managed (35-80 years) stands (Carey et al. 1999).

### **Road Effects**

Little research has been conducted to determine the effects of motorized use on spotted owls. Some studies have looked at spotted owl responsiveness to noise disturbance relating the results to nesting success and productivity while others have measured physiological responses.

In a study conducted by Delaney and Grubb (2001 and 2002), they found spotted owls did not flush from nest sites when motorcycles were >70m and noise levels were <76dB. Owls were observed to flush only during the post-fledgling phase suggesting reluctance to flush during the nest incubation phase when presented with the same stimuli. Other findings of the studies showed that noise levels were louder at nest cavities than levels measured at ground level and even louder yet within cavities compared to outside cavities.

In another study, fecal steroid levels were measured to determine at what distance do spotted owls see increased stress levels due to disturbance. Findings showed male northern spotted owls occurring close to roads (<0.41 km) experienced higher levels of stress induced hormones than owls occurring farther from roads or in areas without roads (Wasser et al. 1997).

Roads also result in the fragmentation of habitat. Spotted owls are interior forest species and roads result in smaller patch sizes with a disproportionate amount of edge (Forman et al. 2003:66). Roads and the subsequent decrease in patch size and increase edge may result in additional habitat loss (Forman et. al 2003:752, 760).

### **Nesting, Roosting, and Foraging Habitat (NRF)**

The Deschutes National Forest is located on the east slope of the Cascade Mountains in Central Oregon. This region is dominated by mixed conifer and ponderosa pine (*Pinus ponderosa*) forests at mid to lower elevations and by true fir forests at higher elevations. Forests in this region are highly fragmented due to logging and wildfires and a variety of natural factors (poor soils, lava flows, high fire frequencies, high elevations) (USDA 1993). Wildfires played a major role in shaping the forests of this region before large scale fire suppression. Fire suppression efforts in the last several decades have resulted in shifts in tree species composition and accumulations of fuel. These changes may have made forests more susceptible to uncharacteristic fires and large scale insect and disease outbreaks. Protection of late-successional forests in this area must consider risk reduction in order to sustain forest conditions (USDA 1993).

Fire exclusion has altered the species composition and structure of many Mixed Conifer Dry (MCD) stands, consequently spotted owl nesting, roosting, and foraging (NRF) habitat may exist today in sites that did not historically provide habitat. Conversely, many of the stands that historically were NRF habitat have been harvested and no longer provide habitat. Many of the forest sites that contain MCD do not have the vegetative site potential to sustain NRF habitat characteristics over the long-term (100+ years). Generally Mixed Conifer Wet (MCW) and MCD (on north aspects) plant associations have the site potentials and environmental conditions that are expected to sustain NRF habitat. Over the past 5 to 20 years, many of the overstocked “out of balance” MCD stands experienced heavy mortality from the spruce budworm epidemic. Loss of canopy layer and live tree canopy closure reduced the quality of habitat for spotted owls in these stands. Subsequently, large uncharacteristic stand replacement wildfires occurred in the high mortality areas from the insect outbreak. This loss from wildfire, in combination with habitat loss from management activities, has resulted in few acres of suitable habitat, unevenly distributed across the landscape.

**Table 6. Existing Designated Route and Dispersed Camping Conditions within Northern Spotted Owl Habitat (Nesting, Roosting, and Foraging {NRF} habitat) within Critical Habitat, Late-Successional Reserves, and Spotted Owl Home Ranges on the Deschutes National Forest.**

Allocation	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>NRF</b>	35,167 (42%)	48,418 (58%)	160 (0%)	35,539 (42%)	45,661 (55%)	2,545 (3%)	83,745
<b>NRF-CHU</b>	11,851 (70%)	5,159 (30%)	0	3,502 (21%)	13,084 (77%)	424 (2%)	17,010
<b>NRF – Historic CHU</b>	10,363 (69%)	4,737 (31%)	0	2,719 (18%)	12,068 (80%)	315 (2%)	15,101
<b>NRF – LSR</b>	23,286 (73%)	8,652 (27%)	0	9,783 (30%)	20,472 (64%)	1,806 (6%)	32,061
<b>NRF – Home Ranges</b>	12,830 (74%)	4,575 (26%)	0	5,443 (31%)	11,518 (66%)	445 (3%)	17,406

NRF acres reflected from March 2008 Programmatic BA update. CHU – reflects the 2008 Rule. CHU Historic – reflects the 1992 Rule.

The majority of suitable NRF habitat in the various allocations occurs within the road effect distance resulting in potential disturbance (Table 7). Approximately 95% of the total NRF habitat across the forest occurs within the road effect distance. In addition, 80% of the NRF habitat within the 2008 CHU and 54% of the historic CHU occur within the road effect distance. The difference in percentages between these two allocations is due to the 2008 CHU covering a larger area. Approximately 55% of the NRF habitat in LSRs and 45% of the suitable habitat in the home ranges also occurs within the road effect distance. This disturbance potential, along with reduced habitat quality in some areas, may result in decreased productivity of the known pairs across the forest.

**Table 7. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Nesting, Roosting, and Foraging (NRF) Habitat on the Deschutes National Forest for Existing Designated Routes.**

<b>NRF Habitat</b>	<b>Total Acres of NRF Habitat</b>	<b>Acres of NRF Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of NRF Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of NRF Habitat Undisturbed/Percent of Total Habitat</b>
<b>NRF</b>	83,745	30,701 (37%)	79,279 (95%)	4,466 (5%)
<b>NRF-CHU</b>	17,010	8,522 (50%)	13,681 (80%)	3,329 (20%)
<b>NRF – Historic CHU</b>	15,101	7,509 (50%)	8,091 (54%)	7,000 (46%)
<b>NRF – LSR</b>	32,061	15,445 (48%)	17,562 (55%)	14,498 (45%)
<b>NRF – Home Ranges</b>	17,406	7,427 (43%)	7,771 (45%)	9,634 (55%)

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **Late Successional Reserves**

The Habitat Conservation Area (HCA) network strategy was identified by the ISC (USDA 1990b), then adopted and refined by the Draft Final Recovery Plan (USDI 1992a) as Designated Conservation Areas (DCAs). The network strategy was refined in the Forest Ecosystem Management Team Report (FEMAT) (USDA 1993) as LSRs prior to the Record of Decision (ROD) for the NWFP. The strategy and its standards and guidelines for managing late-successional forests were intended to be the basis for the long-term conservation of northern spotted owls and other species associated with old-growth coniferous forests. This reserve network was designed to protect late-successional forest species where habitat conditions are relatively intact and provide for the recovery of late-successional forest habitat where habitat is extremely limited.

The intent of LSRs is to protect and enhance the condition of late-successional/old-growth forest ecosystems, which serve as habitat for dependent or old-growth associated species including the northern spotted owl. The LSR network in the Pacific Northwest covers three major mountain ranges: the Cascades, the Klamath, and the Coast Ranges including the Olympic Peninsula. Together they roughly form an “H” configuration. The east leg joins the Sierra Nevada in California to the Siskiyou, and north to the Cascades. The west leg joins the California and Oregon coastal mountains, Olympic Mountains, and the Siskiyou. The Cascade crest, except for the Klamath and Columbia River gorges, forms a continuous north-south “backbone,” and the Siskiyou form the “cross-bar.”

Eleven LSRs are designated on the Deschutes National Forest (Cultus, Sheridan, Brown’s Mtn., Round Mtn., Davis, Crescent, Lower Big Marsh, Upper Big Marsh, Metolius, Cache/Trout, and Three Creeks). The NWFP requires that each LSR or logical groups of them be assessed to determine their present conditions, capabilities, and restoration needs.

Many of the LSRs occurring on the Deschutes NF may not be providing habitat conditions as originally intended. Three of the 11 LSRs (Lower Big Marsh, Crescent, and Three Creeks) are managed for species other than the spotted owl due to existing plant associations. In addition, three other LSRs (Metolius, Cache/Trout, and Davis) have been severely impacted by wildfire and these areas may not be functional for approximately 200-300 years, while two other LSRs (Cultus and Three Creeks) have experienced high levels of insect and disease mortality. The following trends have been recognized:

- 1) Greatly increased stand densities are putting all sizes of trees at risk.
- 2) Mortality of larger trees, insect and disease damage, and catastrophic fire are all increasing.
- 3) Species composition has been shifting from early to late seral species.
- 4) Stand structure has been shifting from larger tree sizes to smaller trees sizes, and from single or two canopy layers to multi-canopy layers.

Table 8 displays the total acres of LSR and suitable NRF acres that occur within areas closed, open, or open seasonally to travel off designated routes currently. Most of the LSRs are closed to travel off designated routes except for the purposes of motorized access for dispersed camping.

**Table 8. Existing Designated Route and Dispersed Camping Conditions within Late-Successional Reserves on the Deschutes National Forest.**

LSR	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>LSR – Forest Total</b>	161,657 (73%)	58,523 (27%)	0	161,658 (73%)	58,522 (27%)	0	220,181
<b>Cultus LSR</b>	19,539 (100%)	0	0	19,539 (100%)	0	0	19,539
<b>Sheridan LSR</b>	5,813 (19%)	25,203 (81%)	0	5,813 (19%)	25,203 (81%)	0	31,016
<b>Brown’s Mtn. LSR</b>	2,980 (41%)	4,347 (59%)	0	2,980 (41%)	4,347 (59%)	0	7,327
<b>Round Mtn. LSR</b>	0	238 (100%)	0	0	238 (100%)	0	238
<b>Davis LSR</b>	26,851 (55%)	22,304 (45%)	0	26,851 (55%)	22,304 (45%)	0	49,155
<b>Crescent LSR</b>	683 (100%)	0	0	683 (100%)	0	0	683
<b>Upper Big Marsh LSR</b>	3,278 (100%)	0	0	3,278 (100%)	0	0	3,278
<b>Lower Big Marsh LSR</b>	9 (1%)	1,195 (99%)	0	9 (1%)	1,195 (99%)	0	1,204
<b>Metolius LSR</b>	72,014 (95%)	3,865 (5%)	0	72,014 (95%)	3,865 (5%)	0	75,879
<b>Cache-Trout LSR</b>	28,783 (100%)	0	0	28,783 (100%)	0	0	28,783
<b>Three Creeks LSR</b>	1,708 (55%)	1,370 (45%)	0	1,708 (55%)	1,370 (45%)	0	3,078
<b>NRF within LSR</b>							
<b>Cultus LSR NRF</b>	3,287 (100%)	0	0	82 (2%)	2,801 (85%)	404 (12%)	3,287

LSR	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Sheridan LSR NRF</b>	449 (24%)	1,459 (76%)	0	0	1,908 (100%)	0	1,908
<b>Brown's Mtn LSR NRF</b>	529 (38%)	864 (62%)	0	0	930 (67%)	463 (33%)	1,392
<b>Round Mtn LSR NRF</b>	0	59 (100%)	0	0	59 (100%)	0	59
<b>Davis LSR NRF</b>	3,299 (40%)	5,016 (60%)	0	1,996 (24%)	5,508 (66%)	812 (10%)	8,316
<b>Crescent LSR NRF</b>	368 (100%)	0	0	0	251 (68%)	116 (32%)	368
<b>Upper Big Marsh LSR NRF</b>	725 (100%)	0	0	0	725 (100%)	0	725
<b>Lower Big Marsh LSR NRF</b>	0	0	0	0	0	0	0
<b>Metolius LSR NRF</b>	9,988 (89%)	1,254 (11%)	0	7,283 (65%)	3,949 (35%)	11 (0%)	11,242
<b>Cache-Trout LSR NRF</b>	4,641 (100%)	0	0	422 (9%)	4,220 (91%)	0	4,642
<b>Three Creeks LSR NRF</b>	0	121 (100%)	0	0	121 (100%)	0	121
<b>Total NRF in LSRs</b>	<b>23,286</b>	<b>8,652</b>	<b>0</b>	<b>9,783</b>	<b>20,472</b>	<b>1,806</b>	<b>32,061</b>

NRF acres reflected from March 2008 Programmatic BA update.

Table 8 shows approximately 161,657 acres of LSR occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 109,840 acres of LSR occur inside the road effect distance within those areas identified as closed (161,657 acres) resulting in the potential disturbance of 64% of the LSR on the Deschutes NF.

Table 8 shows approximately 23,286 acres of suitable NRF habitat within LSRs occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 15,445 acres of suitable NRF habitat within LSRs occur inside the road effect distance within those areas identified as closed (23,286 acres) resulting in the potential disturbance of 64% of the suitable NRF habitat within LSRs on the Deschutes NF.

**Table 9. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for LSRs on the Deschutes National Forest for Existing Designated Routes.**

<b>Late-Successional Reserve</b>	<b>Total Acres of Late-Successional Reserve</b>	<b>Acres of Late-Successional Reserve within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Late-Successional Reserve Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Late-Successional Reserve Undisturbed/Percent of Total Habitat</b>
<b>Cultus LSR</b>	19,539	8,225 (42%)	8,225 (42%)	11,314 (58%)
<b>Sheridan LSR</b>	31,016	17,915 (58%)	17,915 (58%)	13,101 (42%)
<b>Brown's Mtn. LSR</b>	7,327	2,822 (39%)	7,169 (98%)	158 (2%)
<b>Round Mtn. LSR</b>	238	31 (13%)	31 (13%)	207 (87%)
<b>Davis LSR</b>	49,155	20,534 (42%)	42,838 (87%)	6,317 (13%)
<b>Crescent LSR</b>	683	458 (67%)	458 (67%)	225 (33%)
<b>Upper Big Marsh LSR</b>	3,278	106 (3%)	106 (3%)	3,172 (97%)
<b>Lower Big Marsh LSR</b>	1,204	178 (15%)	178 (15%)	1,026 (85%)
<b>Metolius LSR</b>	75,879	40,986 (54%)	44,851 (59%)	31,028 (41%)
<b>Cache-Trout LSR</b>	28,783	17,908 (62%)	17,908 (62%)	10,875 (38%)
<b>Three Creeks LSR</b>	3,078	677 (22%)	2,047 (67%)	1,031 (33%)
<b>Total LSR Acres</b>	<b>220,180</b>	<b>109,840 (50%)</b>	<b>141,726 (64%)</b>	<b>78,454 (36%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

**Table 10. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed NRF Habitat for LSRs on the Deschutes National Forest for Existing Designated Routes.**

<b>NRF in Late-Successional Reserve</b>	<b>Total Acres of NRF in LSR</b>	<b>Acres of NRF in LSR within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of NRF in LSR Disturbed/Percent of Total Habitat</b>	<b>Total Acres of NRF in LSR Undisturbed/Percent of Total Habitat</b>
<b>Cultus LSR</b>	3,287	1,718 (52%)	1,718 (52%)	1,569 (48%)
<b>Sheridan LSR</b>	1,908	824 (43%)	824 (43%)	1,084 (57%)
<b>Brown's Mtn. LSR</b>	1,392	398 (29%)	1,261 (91%)	131 (9%)
<b>Round Mtn. LSR</b>	59	5 (8%)	5 (8%)	54 (92%)
<b>Davis LSR</b>	8,316	4,141 (50%)	4,141 (50%)	4,175 (50%)
<b>Crescent LSR</b>	368	286 (78%)	286 (78%)	82 (22%)
<b>Upper Big Marsh LSR</b>	725	22 (3%)	22 (3%)	703 (97%)
<b>Lower Big Marsh LSR</b>	0	0	0	0
<b>Metolius LSR</b>	11,242	5,584 (50%)	6,838 (61%)	4,404 (39%)
<b>Cache-Trout LSR</b>	4,642	2,466 (53%)	2,466 (53%)	2,176 (47%)
<b>Three Creeks LSR</b>	121	1 (1%)	1 (1%)	120 (99%)
<b>Total LSR Acres</b>	<b>32,061</b>	<b>15,445 (48%)</b>	<b>17,562 (55%)</b>	<b>14,498 (45%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **Critical Habitat Units**

Critical habitat is defined as:

1. The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical and biological features
  - a. Essential to the conservation of the species and
  - b. That may require special management considerations or protection; and
2. Specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Critical habitat receives protection under Section 7 of ESA through prohibition against federal agencies for carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. Critical habitat is based on primary constituent elements of habitat (PCEs) (Fed Reg 2008b).

### **1992 (Historic) CHUs**

Critical Habitat Units (CHU) were established by the U. S. Fish and Wildlife Service in 1992 because 1) spotted owl habitat is continually decreasing and becoming more fragmented, 2) the resultant increased threat of isolation of spotted owl populations, and 3) the exacerbation of poor habitat conditions for dispersing spotted owls.

The objectives for CHUs, developed by USFWS (1992b), were as follows:

1. Increase the amount of suitable habitat within home ranges of known spotted owls in the Southern Deschutes Area of Concern.
2. Maintain and improve dispersal habitat throughout the province, particularly across lower elevation passes along the crest of the Cascades.
3. Maintain all existing and future resident spotted owls within the southern Deschutes area until populations recover sufficiently to provide stable breeding units.

### **2008 CHUs**

In 2008, USFWS revised critical habitat for the spotted owl to address the network of habitat blocks identified in the 2008 Final Recovery Plan. The landscape management approach for eastside provinces identified in the final recovery plan as the most effective approach for managing spotted owl habitat in dry forests was not incorporated into the Final CHU Rule because it could not be translated into critical habitat at this time until the new approach is further defined. For eastside provinces, areas designated for critical habitat are based on Option 1 MOCAs (Managed Owl Conservation Areas) in the 2007 draft recovery plan (USFWS 2007a) and are those areas finalized in the final rule. These MOCAs were delineated to meet the physical and biological features essential to conservation of the spotted owl.

The Deschutes National Forest incorporates Unit 11 – Eastern Oregon Cascades. The Eastern Oregon Cascades Unit is comprised of approximately 106,600 acres in Jefferson, Deschutes, and Klamath counties, and is comprised of lands managed by the Deschutes National Forest. This unit includes seven distinct areas across the forest; five occurring on the Sisters Ranger District and one each occurring on the Bend Fort Rock and Crescent Ranger Districts. These seven areas occur in similar areas as the 1992 historic critical habitat units with some changes.

The Deschutes NF has 5 identified historic Critical Habitat Units of which the seven new 2008 areas overlap. Four of the five areas have had some portion of them burned by wildfire in the past 6 years. In addition, high levels of mortality are present in portions of some CHUs from insects and disease and many of the CHUs are dominated by plant associations not capable of producing or sustaining suitable habitat conditions (mixed conifer dry or ponderosa pine).

CHU	Geographic Location	Estimated % of CHU burned by wildfire in past 6 years	General Comments
OR-3	Metolius	85%	Burned in B&B and Eyerly fires.
OR-4	First Creek/Cache	90%	Burned in Cache Mtn, Link, B&B, GW, and Lake George fires. Dominated by ponderosa pine/mixed conifer dry in south. High mortality due to spruce budworm.
OR-5	Trout	30%	Burned in Black Crater fire. Dominated by mixed conifer dry.
OR-6	Cultus	1%	Very high mortality from insects and disease. Estimated to be greater than 60%.
OR-7	Davis	35%	Davis fire (2003). Mix of plant associations.

Recent impacts to habitat, along with potential disturbance from motorized travel may result in the decreased use of the Critical Habitat Units as well as reduced reproductive potential.

**Table 11. Existing Designated Route and Dispersed Camping Conditions within Critical Habitat for the Northern Spotted Owl on the Deschutes National Forest.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>2008 CHU</b>	85,353	21,319	0	47,170	56,629	2,872	106,671
<b>Historic CHU</b>							
<b>OR-3</b>	19,566	2,005	0	12,248	9,323	0	21,570
<b>OR-4</b>	17,268	28	0	16,159	1,138	0	17,297
<b>OR-5</b>	8,735	14	0	2,674	6,074	0	8,748
<b>OR-6</b>	15,094	0	0	700	12,941	1,454	15,095
<b>OR-7</b>	14,368	17,861	0	11,198	20,935	98	32,231
<b>Total OR Acres</b>	<b>75,031</b>	<b>19,908</b>	<b>0</b>	<b>42,979</b>	<b>50,411</b>	<b>1,552</b>	<b>94,942</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

Table 11 shows approximately 85,353 acres of 2008 CHU occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 55,180 acres of the 2008 CHU area occurs inside the road effect distance within those areas identified as closed (85,353 acres) resulting in the potential disturbance of 48% of the 2008 CHU on the Deschutes NF.

Table 11 shows approximately 75,031 acres of historic CHU occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 46,959 acres of the

historic CHU area occurs inside the road effect distance within those areas identified as closed (75,031 acres) resulting in the potential disturbance of 49% of the historic CHU on the Deschutes NF.

**Table 12. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Critical Habitat on the Deschutes National Forest for Existing Designated Routes.**

Critical Habitat	Total Acres of Critical Habitat	Acres of Critical Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Critical Habitat Disturbed/Percent of Total Habitat	Total Acres of Critical Habitat Undisturbed/Percent of Total Habitat
<b>2008 CHU</b>	106,671	55,180 (52%)	55,180 (52%)	51,491 (48%)
<b>Historic CHU</b>				
<b>OR-3</b>	21,570	11,013 (51%)	13,017 (60%)	8,553 (40%)
<b>OR-4</b>	17,297	9,531 (55%)	9,560 (55%)	7,737 (45%)
<b>OR-5</b>	8,748	4,738 (54%)	4,751 (54%)	3,997 (46%)
<b>OR-6</b>	15,095	6,942 (46%)	6,509 (43%)	8,152 (54%)
<b>OR-7</b>	32,231	14,745 (46%)	14,745 (45%)	17,576 (55%)
<b>Total OR Acres</b>	<b>94,941</b>	<b>46,969 (49%)</b>	<b>48,582 (51%)</b>	<b>46,015 (49%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

#### **NRF in CHU**

Suitable habitat has been declining within critical habitat for the past 2-3 decades from insect and disease mortality and more recently, from large uncharacteristic wildfires. Most of the Critical Habitat Units are closed to travel off designated routes currently except for the purposes of motorized access for dispersed camping.

**Table 13. Accounting of total acres and current NRF acres in Critical Habitat Units within the Deschutes National Forest.**

CHU Unit	Total Acres	Total NRF Acres
Eastern Oregon Cascades – 11*	106,685	17,010
OR-3	21,571	3,402
OR-4	17,297	327
OR-5	8,748	2,637
OR-6	15,095	2,984
OR-7	32,231	5,751

- - denotes acres within the Deschutes National Forest; NRF acres from 2008 Programmatic BA update.

**Table 14. Existing Designated Route and Dispersed Camping Conditions within Nesting, Roosting, and Foraging (NRF) Habitat within Critical Habitat for the Northern Spotted Owl on the Deschutes National Forest.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>2008 CHU NRF</b>	11,851 (70%)	5,159 (30%)	0	3,502 (21%)	13,084 (77%)	424 (2%)	17,010
<b>Historic CHU</b>							
<b>OR-3 - NRF</b>	2,820 (83%)	582 (17%)	0	801 (24%)	2,602 (76%)	0	3,402
<b>OR-4 - NRF</b>	327 (100%)	0	0	327 (100%)	1 (0%)	0	327
<b>OR-5 - NRF</b>	2,637 (100%)	0	0	70 (3%)	2,567 (97%)	0	2,637
<b>OR-6 - NRF</b>	2,984 (100%)	0	0	64 (2%)	2,610 (87%)	309 (10%)	2,984
<b>OR-7 - NRF</b>	1,597 (28%)	4,155 (72%)	0	1,458 (25%)	4,288 (75%)	6 (0%)	5,751
<b>Total OR NRF Acres</b>	<b>10,365 (69%)</b>	<b>4,737 (31%)</b>	<b>0</b>	<b>2,719 (18%)</b>	<b>12,068 (80%)</b>	<b>315 (2%)</b>	<b>15,101</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

Table 14 shows approximately 11,851 acres of NRF within the 2008 CHU occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 8,522 acres of NRF within the 2008 CHU occur inside the road effect distance within those areas identified as closed (11,851 acres) resulting in the potential disturbance of 80% of the 2 NRF within the 2008 CHU on the Deschutes NF.

Table 14 shows approximately 10,365 acres of NRF within the historic CHU occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 7,509 acres of NRF within the historic CHU occur inside the road effect distance within those areas identified as closed (10,365 acres) resulting in the potential disturbance of 54% of the NRF within the historic CHU on the Deschutes NF.

**Table 15. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat Nesting, Roosting, and Foraging (NRF) Habitat for Critical Habitat on the Deschutes National Forest for Existing Designated Routes.**

Critical Habitat	Total Acres of NRF in Critical Habitat	Acres of NRF in Critical Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of NRF in Critical Habitat Disturbed/Percent of Total Habitat	Total Acres of NRF in Critical Habitat Undisturbed/Percent of Total Habitat
<b>2008 CHU NRF</b>	17,010	8,522 (50%)	13,681 (80%)	3,329 (20%)
<b>Historic CHU</b>				
<b>OR-3 - NRF</b>	3,402	1,602 (47%)	2,184 (64%)	1,218 (36%)
<b>OR-4 - NRF</b>	327	178 (54%)	178 (54%)	149 (46%)
<b>OR-5 - NRF</b>	2,637	1,217 (46%)	1,217 (46%)	1,420 (54%)
<b>OR-6 - NRF</b>	2,984	1,587 (53%)	1,587 (53%)	1,387 (46%)
<b>OR-7 - NRF</b>	5,751	2,925 (51%)	2,925 (51%)	2,826 (49%)
<b>Total OR NRF Acres</b>	<b>15,101</b>	<b>7,509 (50%)</b>	<b>8,091 (54%)</b>	<b>7,000 (46%)</b>

**Dispersal Habitat**

Dispersal habitat was defined by the Interagency Scientific Committee (USDA 1990b) as stands with an average dbh of 11 inches and a 40% canopy cover. Those conditions are not biologically possible in all eastside plant association groups. The Deschutes National Forest conveyed a Science Team of experts on local conditions to determine plausible definitions of dispersal habitat. The team developed a process by which local biological knowledge of sites would be used to describe dispersal habitat (USDA 1996b). The following criteria have been used to define dispersal habitat on the Deschutes National Forest for various projects:

**Table 16. Dispersal Habitat Definitions.**

Plant Association Group	Stand Criteria Average dbh, Percent Canopy Cover
Mixed Conifer Wet	11" dbh, 40% CC
Mixed Conifer Dry	11" dbh, 30% CC
Ponderosa Pine	11" dbh, 30% CC
Lodgepole Pine	7" dbh, 30% CC
Mountain Hemlock	7" dbh, 30% CC

Dispersal habitat provides avenues for juvenile and non-territorial spotted owls to move across the landscape. This habitat does not provide all the habitat components necessary for occupation and is used for short durations of time. Disturbance from motorized travel off designated routes or for the purposes

of motorized access for dispersed camping would be minimal and difficult to assess. Therefore, effects to dispersal habitat will not be analyzed.

## **Home Ranges**

USFWS requirements regarding a “take” situation exists where there is less than 40% (1,158 acres) NRF habitat within a 1.2 mile home range, or 50% (493 acres) NRF habitat within a 0.7 mile radius because of the tenuous nature of an owl’s existence at those habitat levels. Currently, 2 of 44 home ranges have sufficient NRF habitat within the 1.2 mile home range while 3 of 44 home ranges have sufficient NRF habitat within the 0.7 mile radius on the Deschutes National Forest.

Recent post-fire and insect assessments have shown some spotted owl home ranges are no longer capable of providing adequate suitable habitat for occupancy. Currently, 31 home ranges are considered to be capable of providing habitat for owls (i.e. viable). Seventeen home ranges were heavily impacted by fires occurring in 2002 through 2008 and habitat was lost. These sites are no longer considered viable.

Viability of existing home ranges is based on the occupancy history, habitat quality and the amount and arrangement of suitable habitat remaining within each home range after disturbance events.

Prior to the fires starting in 2002, occupancy had not been documented for many home ranges several years prior to these disturbance events. Habitat quality had diminished greatly within many of these home ranges due to mortality from over-stocked stands resulting from fire suppression. These types of conditions led to wide-scale mortality from insect and disease outbreaks in the late 1980s and early 1990s, especially on the Sisters Ranger District. The fires of 2002 through 2008 further fragmented poor habitat conditions. Many home ranges impacted by the fires have very little habitat remaining. The spatial arrangement of the remaining habitat was assessed to determine patch size, distance to other forested areas (connectivity), as well as the amount of stand replacement fire within each home range.

Owls on the Deschutes National Forest have routinely nested and reproduced in home ranges where suitable habitat within the home range is less than the identified threshold for “take” (i.e. 1,158 acres within 1.2 miles and/or 493 acres within 0.7 miles). Estimated suitable habitat within home ranges can be misleading due to the delineation of home ranges as circles. In reality, owls are likely to use habitat outside the delineated radius depending on topography, fragmentation, and availability of suitable habitat.

In order for home ranges to be considered viable, there needs to be:

- Inclusions of nesting habitat with proximity to the historic activity center to account for site fidelity,
- Connectivity between patches of suitable habitat.

Exact acreages may vary between home ranges due to the habitat quality, site occupancy history and the location of the activity center in relation to other suitable habitat.

An analysis was conducted for all home ranges located on the Deschutes National Forest. The following table identifies those home ranges considered potentially viable and the amount of suitable habitat within both the home range (1.2 mile radius circle) and within the core (0.7 mile radius circle). Those home range no longer considered viable are included in Appendix 1 along with the reproductive history of the known pairs. A conservative approach was taken to account for any possibility of a home range being occupied until otherwise proven different.

**Table 17. Suitable habitat acres for viable spotted owl pairs on the Deschutes National Forest.**

Forest Owl Pair Number	Forest Site Name (Home Range)	Current NRF w/in 1.2 mi.	Current NRF w/in 0.7 mi.	Year Last Active*
1001	Cultus Mountain	1,041	628	2007
1002	Applejack	398	157	2002
1003	Benchmark	624	217	2008
1004	Deer Lake	550	348	1995
1005	Sheridan Mountain	156	104	2006
1006	Lucky Lake	68	0	1995
1007	Three Trappers Butte	525	250	2008
2001	McCool Butte	639	221	2004^
2002	Hamner Butte	1,558	603	2008
2003	Ringo Butte	906	350	2008
2004	Maklaks Mountain	643	269	2008
2005	Moore Creek	755	439	2003
2007	Crescent Lake	352	115	2003
2008	Saddle Butte	272	157	1998
2009	Big Marsh	642	229	2008
2010	Royce Mountain	805	281	2003
2011	Moore Creek Trail	740	280	2006
2012	Cappy Mountain	530	341	2004
2013	Willamette Pass	739	299	2003
2014	Trapper Creek	392	214	2006
5001	Castle Rocks	582	280	1990
5002	Candle Creek	179	37	1991
5005	Jefferson Lakes	185	57	1997
5011	Trout Creek	1,363	561	1993
5012	Davis Creek	332	171	1993
5015	Bluegrass Butte	324	137	2005
5018	Suttle	20	6	2004
5019	Suttle 96	67	16	2004
5020	Suttle South	64	33	2000
5022	Obsidian	1,045	488	2005
5023	Black Crater	946	449	2007

\* - Sites are not surveyed each year.

^ - Barred Owl detected

Home ranges were overlaid with areas closed, open, and open seasonally to travel off designated routes and closed, open, and open seasonally to motorized access for dispersed camping. The majority of home ranges are closed to travel off designated routes except for the purposes of motorized access for dispersed camping.

**Table 18. Existing Designated Route and Dispersed Camping Conditions within Spotted Owl Home Ranges on the Deschutes National Forest.**

Home Range	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Cultus Mountain	2,881	0	0	0	2,629	252	2,882
Applejack	2,881	0	0	1,215	1,585	81	2,881
Benchmark	2,881	0	0	218	2,284	380	2,881
Deer Lake	2,882	0	0	320	2,029	533	2,882
Sheridan Mountain	0	2,881	0	0	2,881	0	2,881
Lucky Lake	2,882	0	0	1,552	1,330	0	2,882
Three Trappers Butte	104	2,791	0	0	2,895	0	2,895
McCool Butte	584	2,298	0	584	2,298	0	2,882
Hamner Butte	2,878	3	0	2,878	3	0	2,881
Ringo Butte	123	2,686	0	123	2,686	0	2,809
Maklaks Mountain	327	2,554	0	149	2,732	0	2,881
Moore Creek	11	2,871	0	0	2,881	0	2,882
Crescent Lake	2,882	0	0	2,265	616	1	2,882
Saddle Butte	2,801	81	0	2,801	81	0	2,882
Big Marsh	2,722	0	0	0	2,722	0	2,722
Royce Mountain	121	2,760	0	121	2,760	0	2,881
Moore Creek Trail	1,662	1,219	0	0	2,882	0	2,881
Cappy Mountain	2,143	0	0	89	2,054	0	2,143
Willamette Pass	1,800	0	0	119	1,401	279	1,800
Trapper Creek	2,016	0	0	1,753	251	7	2,016
Castle Rocks	2,112	250	0	233	2,129	0	2,362
Candle Creek	2,804	0	0	2,804	0	0	2,804
Jefferson Lakes	2,632	0	0	2,632	0	0	2,632
Trout Creek	2,882	0	0	186	2,696	0	2,882
Davis Creek	2,146	0	0	2,146	0	0	2,146
Bluegrass Butte	2,600	0	0	8	2,592	0	2,600
Suttle	2,261	0	0	2,089	172	0	2,261
Suttle 96	2,269	0	0	1,856	413	0	2,269
Suttle South	2,097	0	0	1,838	259	0	2,097
Obsidian	2,818	0	0	2,787	31	0	2,818
Black Crater	2,424	0	0	1,260	1,165	0	2,424
<b>Total Home Range Acres</b>	<b>61,627</b>	<b>20,394</b>	<b>0</b>	<b>32,026</b>	<b>48,457</b>	<b>1,533</b>	<b>82,021</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

Table 18 shows approximately 61,627 acres of the total home range acres occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 32,800 acres of the home range acres occur inside the road effect distance within those areas identified as closed (61,627 acres) resulting in the potential disturbance of 42% of the home range acres on the Deschutes NF.

**Table 19. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Spotted Owl Home Ranges on the Deschutes National Forest for Existing Designated Routes.**

<b>Home Ranges</b>	<b>Total Acres of Home Ranges</b>	<b>Acres of Home Ranges within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Undisturbed/Percent of Total Habitat</b>
Cultus Mountain	2,882	809 (28%)	809 (28%)	2,073 (72%)
Applejack	2,881	820 (28%)	820 (28%)	2,061 (72%)
Benchmark	2,881	2,521 (88%)	2,521 (88%)	360 (12%)
Deer Lake	2,882	721 (25%)	721 (25%)	2,161 (75%)
Sheridan Mountain	2,881	1,254 (44%)	1,254 (44%)	1,627 (56%)
Lucky Lake	2,882	401 (14%)	401 (14%)	2,481 (86%)
Three Trappers Butte	2,895	2,417 (83%)	2,417 (83%)	478 (17%)
McCool Butte	2,882	1,301 (45%)	1,301 (45%)	1,581 (55%)
Hamner Butte	2,881	1,700 (59%)	1,703 (59%)	1,178 (41%)
Ringo Butte	2,809	1,273 (45%)	1,273 (45%)	1,536 (55%)
Maklaks Mountain	2,881	1,206 (42%)	1,206 (42%)	1,675 (58%)
Moore Creek	2,882	1,209 (42%)	1,209 (42%)	1,673 (58%)
Crescent Lake	2,882	286 (10%)	286 (10%)	2,596 (90%)
Saddle Butte	2,882	1,878 (65%)	1,959 (68%)	923 (32%)
Big Marsh	2,722	196 (7%)	196 (7%)	2,526 (93%)
Royce Mountain	2,881	1,059 (37%)	1,059 (37%)	1,822 (63%)
Moore Creek Trail	2,881	622 (22%)	1,841 (64%)	1,040 (36%)
Cappy Mountain	2,143	39 (2%)	39 (2%)	2,104 (98%)

<b>Home Ranges</b>	<b>Total Acres of Home Ranges</b>	<b>Acres of Home Ranges within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Undisturbed/Percent of Total Habitat</b>
Willamette Pass	1,800	604 (34%)	604 (34%)	1,196 (66%)
Trapper Creek	2,016	213 (11%)	213 (11%)	1,803 (89%)
Castle Rocks	2,362	521 (22%)	771 (33%)	1,591 (67%)
Candle Creek	2,804	0	0	2,804 (100%)
Jefferson Lakes	2,632	120 (5%)	120 (5%)	2,512 (95%)
Trout Creek	2,882	1,710 (59%)	1,710 (59%)	1,172 (41%)
Davis Creek	2,146	1,108 (52%)	1,108 (52%)	1,038 (48%)
Bluegrass Butte	2,600	1,908 (73%)	1,908 (73%)	692 (27%)
Suttle	2,261	1,703 (75%)	1,703 (75%)	558 (25%)
Suttle 96	2,269	1,453 (64%)	1,453 (64%)	816 (36%)
Suttle South	2,097	1,621 (77%)	1,621 (77%)	476 (23%)
Obsidian	2,818	1,478 (52%)	1,478 (52%)	1,340 (48%)
Black Crater	2,424	649 (27%)	649 (27%)	1,775 (73%)
<b>Total Home Range Acres</b>	<b>82,021</b>	<b>32,800 (40%)</b>	<b>34,353 (42%)</b>	<b>47,668 (58%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **NRF within Home Ranges**

Suitable habitat has been declining within critical habitat for the past 2-3 decades from insect and disease mortality and more recently, from large uncharacteristic wildfires. Suitable habitat within home ranges was overlaid with areas closed, open, and open seasonally to travel off designated routes and closed, open, and open seasonally to motorized access for dispersed camping. The majority of the suitable habitat within home ranges is closed to travel off designated routes except for the purposes of motorized access for dispersed camping.

**Table 20. Existing Designated Route and Dispersed Camping Conditions within NRF Habitat in Spotted Owl Home Ranges on the Deschutes National Forest.**

Home Range	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Cultus Mountain	1,041	0	0	0	978	63	1,041
Applejack	399	0	0	249	123	27	399
Benchmark	624	0	0	79	408	137	624
Deer Lake	550	0	0	15	535	0	550
Sheridan Mountain	0	156	0	0	156	0	156
Lucky Lake	68	0	0	68	0	0	68
Three Trappers Butte	18	506	0	0	525	0	524
McCool Butte	178	460	0	178	460	0	638
Hamner Butte	1,555	3	0	1,555	3	0	1,558
Ringo Butte	0	906	0	0	906	0	906
Maklaks Mountain	0	643	0	0	643	0	643
Moore Creek	0	755	0	0	755	0	755
Crescent Lake	352	0	0	328	24	0	352
Saddle Butte	272	0	0	272	0	0	272
Big Marsh	642	0	0	0	642	0	642
Royce Mountain	0	805	0	0	805	0	805
Moore Creek Trail	423	317	0	0	740	0	740
Cappy Mountain	530	0	0	0	530	0	530
Willamette Pass	740	0	0	55	474	211	740
Trapper Creek	392	0	0	256	129	7	392
Castle Rocks	558	24	0	34	548	0	582
Candle Creek	179	0	0	179	0	0	179
Jefferson Lakes	158	0	0	158	0	0	158
Trout Creek	1,363	0	0	0	1,363	0	1,363
Davis Creek	332	0	0	332	0	0	332
Bluegrass Butte	314	0	0	8	306	0	314
Suttle	20	0	0	20	0	0	20
Suttle 96	67	0	0	67	0	0	67
Suttle South	64	0	0	53	11	0	64
Obsidian	1,045	0	0	1,045	0	0	1,045
Black Crater	946	0	0	492	454	0	946
<b>Total Home Range Acres</b>	<b>12,830</b>	<b>4,575</b>	<b>0</b>	<b>5,443</b>	<b>11,518</b>	<b>445</b>	<b>17,405</b>

NRF acres reflected from March 2008 Programmatic BA update.

Table 20 shows approximately 12,830 acres of NRF within home ranges occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 7,427 acres of NRF within home ranges occur inside the road effect distance within those areas identified as closed (12,830 acres) resulting in the potential disturbance of 45% of the NRF within home ranges on the Deschutes NF.

**Table 21. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed NRF Habitat for Spotted Owl Home Ranges on the Deschutes National Forest for Existing Designated Routes.**

Home Ranges	Total NRF Acres in Home Ranges	Acres of NRF in Home Ranges within the Road Effect Distance/Percent of Total Habitat	Total NRF Acres in Home Ranges Disturbed/Percent of Total Habitat	Total NRF Acres in Home Ranges Undisturbed/Percent of Total Habitat
Cultus Mountain	1,041	234 (22%)	234 (22%)	807 (78%)
Applejack	399	89 (22%)	89 (22%)	310 (78%)
Benchmark	624	480 (77%)	480 (77%)	144 (23%)
Deer Lake	550	296 (54%)	296 (54%)	254 (46%)
Sheridan Mountain	156	33 (21%)	33 (21%)	123 (79%)
Lucky Lake	68	0	0	68 (100%)
Three Trappers Butte	524	381 (73%)	381 (73%)	143 (27%)
McCool Butte	638	338 (53%)	338 (53%)	300 (47%)
Hamner Butte	1,558	943 (61%)	946 (61%)	612 (39%)
Ringo Butte	906	441 (49%)	441 (49%)	465 (51%)
Maklaks Mountain	643	366 (57%)	366 (57%)	277 (43%)
Moore Creek	755	379 (50%)	379 (50%)	376 (50%)
Crescent Lake	352	0	0	352 (100%)
Saddle Butte	272	193 (71%)	193 (71%)	79 (29%)
Big Marsh	642	141 (22%)	141 (22%)	501 (78%)
Royce Mountain	805	284 (35%)	284 (35%)	521 (65%)
Moore Creek	740	146	463	277

<b>Home Ranges</b>	<b>Total NRF Acres in Home Ranges</b>	<b>Acres of NRF in Home Ranges within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total NRF Acres in Home Ranges Disturbed/Percent of Total Habitat</b>	<b>Total NRF Acres in Home Ranges Undisturbed/Percent of Total Habitat</b>
Trail		(20%)	(63%)	(37%)
Cappy Mountain	530	14 (3%)	14 (3%)	516 (97%)
Willamette Pass	740	390 (53%)	390 (53%)	350 (47%)
Trapper Creek	392	141 (36%)	141 (36%)	251 (64%)
Castle Rocks	582	166 (29%)	190 (33%)	392 (67%)
Candle Creek	179	0	0	179 (100%)
Jefferson Lakes	158	42 (27%)	42 (27%)	116 (73%)
Trout Creek	1,363	778 (57%)	778 (57%)	585 (43%)
Davis Creek	332	102 (31%)	102 (31%)	230 (69%)
Bluegrass Butte	314	197 (63%)	197 (63%)	117 (37%)
Suttle	20	13 (65%)	13 (65%)	7 (35%)
Suttle 96	67	47 (70%)	47 (70%)	20 (30%)
Suttle South	64	63 (98%)	63 (98%)	1 (2%)
Obsidian	1,045	593 (57%)	593 (57%)	452 (43%)
Black Crater	946	137 (14%)	137 (14%)	809 (86%)
<b>Total NRF Home Range Acres</b>	<b>17,405</b>	<b>7,427 (43%)</b>	<b>7,771 (45%)</b>	<b>9,634 (55%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Effects

#### NRF Habitat

Direct effects will include the continued disturbance within ¼ mile of nest sites within the road effect distance during the nesting period (March 1 through September 30).

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 37% of the total NRF habitat for the Deschutes National Forest remains in areas where disturbance is occurring. In addition, all allocations with suitable NRF habitat will see a decrease in potential disturbance potential and an increase in areas that are undisturbed. See Table 23 for more information.

**Table 22. Designated Route and Dispersed Camping Conditions within Northern Spotted Owl Habitat (Nesting, Roosting, and Foraging {NRF} habitat) within Critical Habitat, Late-Successional Reserves, and Spotted Owl Home Ranges on the Deschutes National Forest for the Action Alternatives.**

Allocation	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>NRF</b>	83,741	0	0	70,302	13,031	408	83,741
<b>NRF-CHU</b>	17,009	0	0	13,477	3,337	194	17,010
<b>NRF – Historic CHU</b>	15,010	0	0	8,690	6,248	165	15,010
<b>NRF – LSR</b>	32,055	0	0	25,143	6,599	313	32,055
<b>NRF – Home Ranges</b>	17,414	0	0	14,772	2,558	84	17,414

NRF acres reflected from March 2008 Programmatic BA update. CHU – reflects the 2008 Rule. CHU Historic – reflects the 1992 Rule.

**Table 23. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Nesting, Roosting, and Foraging (NRF) Habitat on the Deschutes National Forest for Action Alternatives.**

<b>NRF Habitat</b>	<b>Total Acres of NRF Habitat</b>	<b>Acres of NRF Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of NRF Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of NRF Habitat Undisturbed/Percent of Total Habitat</b>
<b>NRF</b>	83,741	30,700 (37%)	30,700 (37%)	53,041 (63%)
<b>NRF-CHU</b>	17,010	8,521 (50%)	8,521 (50%)	8,488 (50%)
<b>NRF – Historic CHU</b>	15,101	7,509 (50%)	7,509 (50%)	7,592 (50%)
<b>NRF – LSR</b>	32,061	15,442 (48%)	15,442 (48%)	16,618 (52%)
<b>NRF – Home Ranges</b>	17,409	7,308 (42%)	7,308 (42%)	10,101 (58%)

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **Late-Successional Reserves**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 50% of the total LSR acres for the Deschutes National Forest remain in areas where disturbance is occurring. See Table 25 for more information.

**Table 24. Designated Route and Dispersed Camping Conditions within Late-Successional Reserves on the Deschutes National Forest for the Action Alternatives.**

LSR	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>LSR – Forest Total</b>	220,161	0	0	163,615	55,328	1,221	220,164
<b>Cultus LSR</b>	19,537	0	0	15,374	3,605	557	19,536
<b>Sheridan LSR</b>	31,016	0	0	20,222	10,795	0	31,017
<b>Brown’s Mtn. LSR</b>	7,326	0	0	6,302	581	445	7,328
<b>Round Mtn. LSR</b>	237	0	0	231	6	0	237
<b>Davis LSR</b>	49,152	0	0	43,671	5,316	165	49,152
<b>Crescent LSR</b>	683	0	0	552	132	0	684
<b>Upper Big Marsh LSR</b>	3,278	0	0	3,232	46	0	3,278
<b>Lower Big Marsh LSR</b>	1,203	0	0	1,123	81	0	1,204
<b>Metolius LSR</b>	75,874	0	0	51,495	24,324	54	75,873
<b>Cache-Trout LSR</b>	28,776	0	0	18,486	10,290	0	28,776
<b>Three Creeks LSR</b>	3,079	0	0	2,927	152	0	3,079
<b>NRF within LSR</b>							
<b>Cultus LSR NRF</b>	3,288	0	0	2,419	682	186	3,287
<b>Sheridan LSR NRF</b>	1,908	0	0	1,461	447	0	1,908
<b>Brown’s Mtn LSR NRF</b>	1,392	0	0	1,251	38	104	1,393
<b>Round Mtn LSR NRF</b>	57	0	0	58	0	0	58
<b>Davis LSR NRF</b>	8,314	0	0	7,016	1,278	21	8,315
<b>Crescent LSR NRF</b>	368	0	0	312	56	0	368
<b>Upper Big Marsh LSR NRF</b>	725	0	0	721	4	0	725
<b>Lower Big Marsh LSR NRF</b>	0	0	0	0	0	0	0
<b>Metolius LSR NRF</b>	11,242	0	0	8,381	2,857	2	11,240
<b>Cache-Trout</b>	4,640	0	0	3,404	1,236	0	4,640

LSR	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>LSR NRF</b>							
<b>Three Creeks LSR NRF</b>	121	0	0	120	1	0	121
<b>Total NRF in LSRs</b>	<b>32,055</b>	<b>0</b>	<b>0</b>	<b>25,143</b>	<b>6,599</b>	<b>313</b>	<b>32,055</b>

NRF acres reflected from March 2008 Programmatic BA update.

**Table 25. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for LSRs on the Deschutes National Forest for Action Alternatives.**

Late-Successional Reserve	Total Acres of Late-Successional Reserve	Acres of Late-Successional Reserve within the Road Effect Distance/Percent of Total Habitat	Total Acres of Late-Successional Reserve Disturbed/Percent of Total Habitat	Total Acres of Late-Successional Reserve Undisturbed/Percent of Total Habitat
<b>Cultus LSR</b>	19,536	8,224 (42%)	8,224 (42%)	11,312 (58%)
<b>Sheridan LSR</b>	31,017	17,916 (58%)	17,916 (58%)	13,101 (42%)
<b>Brown's Mtn. LSR</b>	7,328	2,822 (39%)	2,822 (39%)	4,506 (61%)
<b>Round Mtn. LSR</b>	237	31 (13%)	31 (13%)	206 (87%)
<b>Davis LSR</b>	49,152	20,531 (42%)	20,531 (42%)	28,621 (58%)
<b>Crescent LSR</b>	684	459 (67%)	459 (67%)	225 (33%)
<b>Upper Big Marsh LSR</b>	3,278	106 (3%)	106 (3%)	3,172 (97%)
<b>Lower Big Marsh LSR</b>	1,204	178 (15%)	178 (15%)	1,026 (85%)
<b>Metolius LSR</b>	75,873	40,981 (54%)	40,981 (54%)	34,892 (46%)
<b>Cache-Trout LSR</b>	28,776	17,904 (62%)	17,904 (62%)	10,872 (38%)
<b>Three Creeks LSR</b>	3,079	677 (22%)	677 (22%)	2,402 (78%)
<b>Total LSR Acres</b>	<b>220,164</b>	<b>109,829 (50%)</b>	<b>109,829 (50%)</b>	<b>110,335 (50%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 48% of the NRF habitat within LSRs for the Deschutes National Forest remains in areas where disturbance is occurring. See Table 26 for more information.

**Table 26. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed NRF Habitat for LSRs on the Deschutes National Forest for Action Alternatives.**

<b>NRF in Late-Successional Reserve</b>	<b>Total Acres of NRF in LSR</b>	<b>Acres of NRF in LSR within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of NRF in LSR Disturbed/Percent of Total Habitat</b>	<b>Total Acres of NRF in LSR Undisturbed/Percent of Total Habitat</b>
<b>Cultus LSR</b>	3,287	1,718 (52%)	1,718 (52%)	1,569 (48%)
<b>Sheridan LSR</b>	1,908	824 (43%)	824 (43%)	1,084 (57%)
<b>Brown's Mtn. LSR</b>	1,392	398 (29%)	398 (29%)	994 (71%)
<b>Round Mtn. LSR</b>	59	5 (8%)	5 (8%)	54 (92%)
<b>Davis LSR</b>	8,316	4,139 (50%)	4,139 (50%)	4,177 (50%)
<b>Crescent LSR</b>	368	286 (78%)	286 (78%)	82 (22%)
<b>Upper Big Marsh LSR</b>	725	22 (3%)	22 (3%)	703 (97%)
<b>Lower Big Marsh LSR</b>	0	0	0	0
<b>Metolius LSR</b>	11,242	5,584 (50%)	5,584 (50%)	5,658 (50%)
<b>Cache-Trout LSR</b>	4,642	2,465 (53%)	2,465 (53%)	2,177 (47%)
<b>Three Creeks LSR</b>	121	1 (1%)	1 (1%)	120 (99%)
<b>Total LSR Acres</b>	<b>32,061</b>	<b>15,442 (48%)</b>	<b>15,442 (48%)</b>	<b>16,618 (52%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

## Critical Habitat Units

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 52% of the total 2008 CHU acres and 49% of the historic CHU acres for the Deschutes National Forest remain in areas where disturbance is occurring. See Table 28 for more information.

**Table 27. Designated Route and Dispersed Camping Conditions within Critical Habitat for the Northern Spotted Owl on the Deschutes National Forest for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>2008 CHU</b>	106,668	0	0	81,255	24,693	721	106,669
<b>Historic CHU</b>							
<b>OR-3</b>	21,570	0	0	15,718	5,853	0	21,570
<b>OR-4</b>	17,296	0	0	12,044	5,253	0	17,297
<b>OR-5</b>	8,748	0	0	6,203	2,545	0	8,748
<b>OR-6</b>	15,095	0	0	11,354	3,732	9	15,095
<b>OR-7</b>	32,231	0	0	28,317	3,899	15	32,231
<b>Total OR Acres</b>	<b>94,941</b>	<b>0</b>	<b>0</b>	<b>73,636</b>	<b>21,282</b>	<b>24</b>	<b>94,942</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

**Table 28. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Critical Habitat on the Deschutes National Forest for Action Alternatives.**

<b>Critical Habitat</b>	<b>Total Acres of Critical Habitat</b>	<b>Acres of Critical Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Critical Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Critical Habitat Undisturbed/Percent of Total Habitat</b>
<b>2008 CHU</b>	<b>106,669</b>	<b>55,176 (52%)</b>	<b>55,176 (52%)</b>	<b>51,493 (48%)</b>
<b>Historic CHU</b>				
<b>OR-3</b>	21,570	11,013 (51%)	11,013 (51%)	10,557 (49%)
<b>OR-4</b>	17,297	9,531 (55%)	9,531 (55%)	7,766 (45%)
<b>OR-5</b>	8,748	4,738 (54%)	4,738 (54%)	4,010 (46%)
<b>OR-6</b>	15,095	6,942 (46%)	6,942 (46%)	8,153 (54%)
<b>OR-7</b>	32,231	14,475 (45%)	14,475 (45%)	17,756 (55%)
<b>Total OR Acres</b>	<b>94,942</b>	<b>46,699 (49%)</b>	<b>46,699 (49%)</b>	<b>48,242 (51%)</b>

**NRF in CHU**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 50% of the NRF acres within the 2008 CHU acres and 50% of the NRF acres within the historic CHU area for the Deschutes National Forest remain in areas where disturbance is occurring. See Table 30 for more information.

**Table 29. Designated Route and Dispersed Camping Conditions within Nesting, Roosting, and Foraging (NRF) Habitat within Critical Habitat for the Northern Spotted Owl on the Deschutes National Forest for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>2008 CHU NRF</b>	17,009	0	0	13,477	3,337	194	17,010
<b>OR-3 - NRF</b>	3,402	0	0	2,777	625	0	3,402
<b>OR-4 - NRF</b>	327	0	0	235	93	0	327
<b>OR-5 - NRF</b>	2,637	0	0	2,063	574	0	2,637
<b>OR-6 - NRF</b>	2,984	0	0	2,157	662	165	2,984
<b>OR-7 - NRF</b>	5,751	0	0	1,458	4,294	0	5,751
<b>Total OR NRF Acres</b>	<b>15,101</b>	<b>0</b>	<b>0</b>	<b>8,690</b>	<b>6,248</b>	<b>165</b>	<b>15,101</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

**Table 30. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat Nesting, Roosting, and Foraging (NRF) Habitat for Critical Habitat on the Deschutes National Forest for Action Alternatives.**

<b>Critical Habitat</b>	<b>Total Acres of NRF in Critical Habitat</b>	<b>Acres of NRF in Critical Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of NRF in Critical Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of NRF in Critical Habitat Undisturbed/Percent of Total Habitat</b>
<b>2008 CHU NRF</b>	<b>17,009</b>	<b>8,521 (50%)</b>	<b>8,521 (50%)</b>	<b>8,488 (50%)</b>
<b>Historic CHU</b>				
<b>OR-3 - NRF</b>	3,402	1,602 (47%)	1,602 (47%)	1,800 (53%)
<b>OR-4 - NRF</b>	327	178 (54%)	178 (54%)	149 (46%)
<b>OR-5 - NRF</b>	2,637	1,217 (46%)	1,217 (46%)	1,420 (54%)
<b>OR-6 - NRF</b>	2,984	1,587 (53%)	1,587 (53%)	1,397 (47%)
<b>OR-7 - NRF</b>	5,751	2,925 (51%)	2,925 (51%)	2,826 (49%)
<b>Total OR NRF Acres</b>	<b>15,101</b>	<b>7,509 (50%)</b>	<b>7,509 (50%)</b>	<b>7,592 (50%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **Home Ranges**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 40% of the home range acres for the Deschutes National Forest remain in areas where disturbance is occurring. See Table 32 for more information.

**Table 31. Designated Route and Dispersed Camping Conditions within Spotted Owl Home Ranges on the Deschutes National Forest for the Action Alternatives.**

Home Range	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Cultus Mountain	2,882	0	0	2,657	225	0	2,882
Applejack	2,881	0	0	2,358	476	47	2,881
Benchmark	2,881	0	0	1,339	1,320	222	2,881
Deer Lake	2,881	0	0	2,470	409	2	2,881
Sheridan Mountain	2,881	0	0	735	2,146	0	2,881
Lucky Lake	2,881	0	0	2,664	217	0	2,881
Three Trappers Butte	2,896	0	0	1,452	1,444	0	2,896
McCool Butte	2,882	0	0	2,321	561	0	2,882
Hamner Butte	2,881	0	0	2,881	0	0	2,881
Ringo Butte	2,809	0	0	2,195	614	0	2,809
Maklaks Mountain	2,881	0	0	2,289	592	0	2,881
Moore Creek	2,882	0	0	2,255	627	0	2,882
Crescent Lake	2,882	0	0	2,750	132	0	2,882
Saddle Butte	2,882	0	0	2,852	30	0	2,882
Big Marsh	2,722	0	0	2,627	95	0	2,722
Royce Mountain	2,882	0	0	2,481	401	0	2,882
Moore Creek Trail	2,881	0	0	2,540	341	0	2,881
Cappy Mountain	2,143	0	0	2,127	16	0	2,143
Willamette Pass	1,799	0	0	1,780	19	0	1,799
Trapper Creek	2,010	0	0	2,006	4	0	2,010
Castle Rocks	2,362	0	0	2,239	123	0	2,362
Candle Creek	2,804	0	0	2,804	0	0	2,804
Jefferson Lakes	2,632	0	0	2,569	63	0	2,632
Trout Creek	2,882	0	0	2,042	840	0	2,882
Davis Creek	2,146	0	0	1,575	571	0	2,146
Bluegrass Butte	2,598	0	0	1,458	1,140	0	2,598
Suttle	2,261	0	0	1,270	971	20	2,261
Suttle 96	2,268	0	0	1,605	644	19	2,268
Suttle South	2,097	0	0	1,062	1,018	17	2,097
Obsidian	2,818	0	0	2,024	794	0	2,818
Black Crater	2,423	0	0	2,063	360	0	2,423
<b>Total Home Range Acres</b>	<b>82,010</b>	<b>0</b>	<b>0</b>	<b>65,490</b>	<b>16,193</b>	<b>327</b>	<b>82,010</b>

NRF acres reflected from March 2008 Programmatic BA update.

**Table 32. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Spotted Owl Home Ranges on the Deschutes National Forest for Action Alternatives.**

<b>Home Ranges</b>	<b>Total Acres of Home Ranges</b>	<b>Acres of Home Ranges within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Home Ranges Undisturbed/Percent of Total Habitat</b>
Cultus Mountain	2,882	809 (28%)	809 (28%)	2,073 (72%)
Applejack	2,881	820 (28%)	820 (28%)	2,061 (72%)
Benchmark	2,881	2,521 (88%)	2,521 (88%)	360 (12%)
Deer Lake	2,881	721 (25%)	721 (25%)	2,160 (75%)
Sheridan Mountain	2,881	1,254 (44%)	1,254 (44%)	1,627 (56%)
Lucky Lake	2,881	400 (14%)	400 (14%)	2,481 (86%)
Three Trappers Butte	2,896	2,418 (83%)	2,418 (83%)	478 (17%)
McCool Butte	2,882	1,302 (45%)	1,302 (45%)	1,580 (55%)
Hamner Butte	2,881	1,700 (59%)	1,700 (59%)	1,181 (41%)
Ringo Butte	2,809	1,273 (45%)	1,273 (45%)	1,536 (55%)
Maklaks Mountain	2,881	1,206 (42%)	1,206 (42%)	1,675 (58%)
Moore Creek	2,882	1,210 (42%)	1,210 (42%)	1,672 (58%)
Crescent Lake	2,882	286 (10%)	286 (10%)	2,596 (90%)
Saddle Butte	2,882	1,878 (65%)	1,878 (65%)	1,004 (35%)
Big Marsh	2,722	196 (7%)	196 (7%)	2,526 (93%)
Royce Mountain	2,882	1,060 (37%)	1,060 (37%)	1,822 (63%)
Moore Creek Trail	2,881	622 (22%)	622 (22%)	2,259 (78%)
Cappy Mountain	2,143	40 (2%)	40 (2%)	2,103 (98%)
Willamette Pass	1,799	605 (34%)	605 (34%)	1,194 (66%)
Trapper Creek	2,010	213 (11%)	213 (11%)	1,797 (89%)
Castle Rocks	2,362	520 (22%)	520 (22%)	1,842 (78%)

Home Ranges	Total Acres of Home Ranges	Acres of Home Ranges within the Road Effect Distance/Percent of Total Habitat	Total Acres of Home Ranges Disturbed/Percent of Total Habitat	Total Acres of Home Ranges Undisturbed/Percent of Total Habitat
Candle Creek	2,804	0	0	2,804 (100%)
Jefferson Lakes	2,632	120 (5%)	120 (5%)	2,512 (95%)
Trout Creek	2,882	1,710 (59%)	1,710 (59%)	1,172 (41%)
Davis Creek	2,146	1,108 (52%)	1,108 (52%)	1,038 (48%)
Bluegrass Butte	2,598	1,907 (73%)	1,907 (73%)	691 (27%)
Suttle	2,261	1,702 (75%)	1,702 (75%)	559 (25%)
Suttle 96	2,268	1,454 (64%)	1,454 (64%)	814 (36%)
Suttle South	2,097	1,620 (77%)	1,620 (77%)	477 (23%)
Obsidian	2,818	1,478 (52%)	1,478 (52%)	1,340 (48%)
Black Crater	2,423	647 (27%)	647 (27%)	1,776 (73%)
<b>Total Home Range Acres</b>	<b>82,010</b>	<b>32,800 (40%)</b>	<b>32,800 (40%)</b>	<b>49,210 (60%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### **NRF in Home Ranges**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 42% of the NRF habitat within known home ranges for the Deschutes National Forest remains in areas where disturbance is occurring. See Table 34 for more information.

**Table 33. Designated Route and Dispersed Camping Conditions within NRF Habitat in Spotted Owl Home Ranges on the Deschutes National Forest for the Action Alternatives.**

Home Range	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Cultus Mountain	1,040	0	0	981	59	0	1,040
Applejack	400	0	0	371	29	0	400
Benchmark	625	0	0	363	180	82	625
Deer Lake	550	0	0	379	171	0	550
Sheridan Mountain	155	0	0	140	15	0	155
Lucky Lake	68	0	0	68	0	0	68
Three Trappers Butte	525	0	0	341	184	0	525
McCool Butte	640	0	0	521	119	0	640
Hamner Butte	1,558	0	0	1,558	0	0	1,558
Ringo Butte	906	0	0	680	226	0	906
Maklaks Mountain	643	0	0	453	190	0	643
Moore Creek	755	0	0	576	179	0	755
Crescent Lake	352	0	0	352	0	0	352
Saddle Butte	272	0	0	272	0	0	272
Big Marsh	642	0	0	638	4	0	642
Royce Mountain	805	0	0	682	123	0	805
Moore Creek Trail	740	0	0	660	80	0	740
Cappy Mountain	530	0	0	526	4	0	530
Willamette Pass	740	0	0	722	18	0	740
Trapper Creek	391	0	0	387	4	0	391
Castle Rocks	582	0	0	574	8	0	582
Candle Creek	179	0	0	179	0	0	179
Jefferson Lakes	157	0	0	140	17	0	157
Trout Creek	1,363	0	0	1,003	360	0	1,363
Davis Creek	332	0	0	309	23	0	332
Bluegrass Butte	314	0	0	229	85	0	314
Suttle	21	0	0	11	10	0	21
Suttle 96	67	0	0	44	23	0	67
Suttle South	64	0	0	23	39	2	64
Obsidian	1,046	0	0	709	337	0	1,046
Black Crater	947	0	0	881	66	0	947
<b>Total Home Range Acres</b>	<b>17,409</b>	<b>0</b>	<b>0</b>	<b>14,772</b>	<b>2,553</b>	<b>84</b>	<b>17,409</b>

NRF acres reflected from March 2008 Programmatic BA update.

**Table 34. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed NRF Habitat for Spotted Owl Home Ranges on the Deschutes National Forest for Action Alternatives.**

<b>Home Ranges</b>	<b>Total NRF Acres in Home Ranges</b>	<b>Acres of NRF in Home Ranges within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total NRF Acres in Home Ranges Disturbed/Percent of Total Habitat</b>	<b>Total NRF Acres in Home Ranges Undisturbed/Percent of Total Habitat</b>
Cultus Mountain	1,040	234 (23%)	234 (23%)	806 (77%)
Applejack	400	89 (22%)	89 (22%)	311 (78%)
Benchmark	625	480 (77%)	480 (77%)	145 (23%)
Deer Lake	550	296 (54%)	296 (54%)	254 (46%)
Sheridan Mountain	155	33 (21%)	33 (21%)	122 (79%)
Lucky Lake	68	0	0	68 (100%)
Three Trappers Butte	525	381 (73%)	381 (73%)	144 (27%)
McCool Butte	640	338 (53%)	338 (53%)	302 (47%)
Hamner Butte	1,558	943 (61%)	943 (61%)	615 (39%)
Ringo Butte	906	441 (49%)	441 (49%)	465 (51%)
Maklaks Mountain	643	366 (57%)	366 (57%)	277 (43%)
Moore Creek	755	379 (50%)	379 (50%)	376 (50%)
Crescent Lake	352	0	0	352 (100%)
Saddle Butte	272	193 (71%)	193 (71%)	79 (29%)
Big Marsh	642	22 (3%)	22 (3%)	620 (97%)
Royce Mountain	805	284 (35%)	284 (35%)	521 (65%)
Moore Creek Trail	740	146 (20%)	146 (20%)	594 (80%)
Cappy Mountain	530	14 (3%)	14 (3%)	516 (97%)
Willamette Pass	740	390 (53%)	390 (53%)	350 (47%)
Trapper Creek	391	141 (36%)	141 (36%)	250 (64%)
Castle Rocks	582	166	166	416

Home Ranges	Total NRF Acres in Home Ranges	Acres of NRF in Home Ranges within the Road Effect Distance/Percent of Total Habitat	Total NRF Acres in Home Ranges Disturbed/Percent of Total Habitat	Total NRF Acres in Home Ranges Undisturbed/Percent of Total Habitat
		(29%)	(29%)	(71%)
Candle Creek	179	0	0	179 (100%)
Jefferson Lakes	157	42 (27%)	42 (27%)	115 (73%)
Trout Creek	1,363	778 (57%)	778 (57%)	585 (43%)
Davis Creek	332	102 (31%)	102 (31%)	230 (69%)
Bluegrass Butte	314	197 (63%)	197 (63%)	117 (37%)
Suttle	21	13 (62%)	13 (62%)	8 (38%)
Suttle 96	67	47 (70%)	47 (70%)	20 (30%)
Suttle South	64	63 (98%)	63 (98%)	1 (2%)
Obsidian	1,046	593 (57%)	593 (57%)	453 (43%)
Black Crater	947	137 (14%)	137 (14%)	810 (86%)
<b>Total NRF Home Range Acres</b>	<b>17,409</b>	<b>7,308 (42%)</b>	<b>7,308 (42%)</b>	<b>10,101 (58%)</b>

Percentages show percentage of total suitable habitat for each unit. Small differences in numbers are due to rounding.

### Comparison of Alternatives

#### Nesting, Roosting, and Foraging Habitat (NRF)

Implementation of the Action Alternatives will greatly reduce disturbance to nesting, roosting, and foraging (NRF) habitat overall for the spotted owl. As you can see from Table 35, there is a 58% increase in undisturbed NRF habitat across the forest. In addition, there is a 30% increase in undisturbed NRF habitat in the 2008 Critical Habitat Units and a 4% increase in the historic (1992) Critical Habitat Units. NRF habitat within LSR's shows a 7% increase in undisturbed habitat while home ranges show a 3% increase. Overall, there is a beneficial effect to suitable NRF habitat across the forest.

**Table 35. NRF habitat comparison for the Travel Management Rule (Deschutes NF).**

<b>NRF Habitat</b>	<b>Alt. 1 – No Action Undisturbed NRF Acres</b>	<b>Alts. 2 &amp; 3 – Action Alternatives Undisturbed NRF Acres</b>
<b>NRF</b>	5%	63%
<b>NRF – CHU</b>	20%	50%
<b>NRF – Historic CHU</b>	46%	50%
<b>NRF – LSR</b>	45%	52%
<b>NRF-Home Ranges</b>	55%	58%

**Late-Successional Reserves**

Implementation of the Action Alternatives will greatly reduce disturbance within Late-Successional Reserves. As you can see from Table 36, there is a 14% decrease in disturbance within LSRs across the forest. In addition, implementation of the action alternatives resulted in 4 LSRs with decreased disturbance to habitat overall (Brown’s Mountain, Davis, Metolius, and Three Creeks) (Table 36). Implementation of the action alternatives resulted in two LSR’s with decreased disturbance to NRF habitat (Brown’s Mountain and Metolius) while the remaining LSRs remained constant as many of the LSR’s were already closed to travel off designated routes.

**Table 36. LSR and NRF habitat within LSRs comparison for the Travel Management Rule (Deschutes NF).**

<b>Late-Successional Reserve</b>	<b>Alt. 1 – No Action Undisturbed LSR Acres</b>	<b>Alts. 2 &amp; 3 – Action Alternatives Undisturbed LSR Acres</b>	<b>Alt. 1 – No Action Undisturbed NRF Acres</b>	<b>Alts. 2 &amp; 3 – Action Alternatives Undisturbed NRF Acres</b>
Cultus	58%	58%	48%	48%
Sheridan	42%	42%	57%	57%
Brown’s Mtn.	2%	61%	9%	71%
Round Mtn	87%	87%	92%	92%
Davis	13%	58%	50%	50%
Crescent	33%	33%	22%	22%
Upper Big Marsh	97%	97%	97%	97%
Lower Big Marsh	85%	85%	0	0
Metolius	41%	46%	39%	50%
Cache-Trout	38%	38%	47%	47%
Three Creeks	33%	78%	99%	99%
<b>Total LSR</b>	<b>36%</b>	<b>50%</b>	<b>45%</b>	<b>52%</b>

**Critical Habitat Units**

Implementation of the Action Alternatives will result in an overall increase in undisturbed habitat in both the historic and 2008 Critical Habitat Units. There is a 2% increase in undisturbed habitat in the historic Critical Habitat Units. Specifically, only one historic CHU (OR-3) resulted in decreased disturbance to habitat while the remaining historic CHU’s and 2008 CHU remained constant. Disturbance decreased in NRF habitat within the 2008 CHU and two historic CHUs while the remaining historic CHU’s remained constant.

**Table 37. Historic and 2008 Critical Habitat Unit and NRF habitat in CHUs comparison for the Travel Management Rule (Deschutes NF).**

Critical Habitat Unit	Alt. 1 – No Action Undisturbed CHU Acres	Alts. 2 & 3 – Action Alternatives Undisturbed CHU Acres	Alt. 1 – No Action Undisturbed NRF Acres	Alts. 2 & 3 – Action Alternatives Undisturbed NRF Acres
2008 CHU	48%	48%	20%	50%
OR-3	40%	49%	36%	53%
OR-4	45%	45%	46%	46%
OR-5	46%	46%	54%	54%
OR-6	54%	54%	46%	47%
OR-7	55%	55%	49%	49%
<b>Total Historic CHU</b>	<b>49%</b>	<b>51%</b>	<b>46%</b>	<b>50%</b>

**Home Ranges**

Implementation of the Action Alternatives will result in a decrease in disturbance to habitat overall. There is a 2% decrease in disturbance to habitat in spotted owl home ranges as a whole. Disturbance was decreased in three home ranges (Saddle Butte, Moore Creek Trail, and Castle Rocks) while disturbance was decreased to NRF habitat in three home ranges (Big Marsh, Moore Creek Trail, and Suttle).

**Table 38. Home range and NRF habitat within home ranges comparison for the Travel Management Rule (Deschutes NF).**

Home Range	Alt. 1 – No Action Undisturbed Home Range Acres	Alts. 2 & 3 – Action Alternatives Undisturbed Home Range Acres	Alt. 1 – No Action Undisturbed NRF Acres	Alts. 2 & 3 – Action Alternatives Undisturbed NRF Acres
Cultus Mountain	72%	72%	78%	78%
Applejack	72%	72%	78%	78%
Benchmark	12%	12%	23%	23%
Deer Lake	75%	75%	46%	46%
Sheridan Mountain	56%	56%	79%	79%
Lucky Lake	86%	86%	100%	100%
Three Trappers Butte	17%	17%	27%	27%
McCool Butte	55%	55%	47%	47%
Hamner Butte	41%	41%	39%	39%
Ringo Butte	55%	55%	51%	51%
Maklaks Mountain	58%	58%	43%	43%
Moore Creek	58%	58%	50%	50%
Crescent Lake	90%	90%	100%	100%
Saddle Butte	32%	35%	29%	29%
Big Marsh	93%	93%	78%	97%
Royce Mountain	63%	63%	65%	65%
Moore Creek Trail	36%	78%	37%	43%

Home Range	Alt. 1 – No Action Undisturbed Home Range Acres	Alts. 2 & 3 – Action Alternatives Undisturbed Home Range Acres	Alt. 1 – No Action Undisturbed NRF Acres	Alts. 2 & 3 – Action Alternatives Undisturbed NRF Acres
Cappy Mountain	98%	98%	97%	97%
Willamette Pass	66%	66%	47%	47%
Trapper Creek	89%	89%	64%	64%
Castle Rocks	67%	78%	67%	67%
Candle Creek	100%	100%	100%	100%
Jefferson Lakes	95%	95%	73%	73%
Trout Creek	41%	41%	43%	43%
Davis Creek	48%	48%	69%	69%
Bluegrass Butte	27%	27%	37%	37%
Suttle	25%	25%	35%	38%
Suttle 96	36%	36%	30%	30%
Suttle South	23%	23%	2%	2%
Obsidian	48%	48%	43%	43%
Black Crater	73%	73%	86%	86%
<b>Total Home Range</b>	<b>58%</b>	<b>60%</b>	<b>55%</b>	<b>58%</b>

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the spotted owl and its habitat.

### Determination

Proposed actions in the Action Alternatives reduce disturbance to NRF habitat overall, as well as, to NRF habitat within LSRs and home ranges. In addition, disturbance will be reduced within LSRs and home ranges outside NRF habitat. Implementation of Alternatives 2 and 3 will have a **“May Effect, and likely a Beneficial Affect”** to spotted owls and their habitat.

### Critical Habitat Units

Proposed actions in the Action Alternatives reduce disturbance to NRF habitat within Critical Habitat Units overall, both in the 2008 Critical Habitat Units and in the 1992 Critical Habitat Units. In addition, disturbance will be reduced within CHUs outside NRF habitat. Implementation of Alternatives 2 and 3 will have a **“May Effect, and likely a Beneficial Affect”** to the 2008 and 1992 Critical Habitat Units.

### Communication with U.S. Fish and Wildlife Service

This project is not covered under the current FY2006-2009 Programmatic Biological Assessment. Further communication with U.S. Fish and Wildlife Service is recommended and a Biological Assessment will be submitted.

### Mitigation Measures

None

## Consistency

Implementation of the Travel Management Rule is consistent with the Deschutes Land and Resource Management Plan, the Deschutes National Forest Late-Successional Reserve Assessments, and both the 1992 and 2008 Critical Habitat Rules. It is also consistent with recovery actions listed in the Final Recovery Plan for the spotted owl.

## Regional Forester's Sensitive Species

Species classified as sensitive by the Forest Service are to be considered by conducting biological evaluations (BE) to determine potential effects of all programs and activities on these species (FSM 2670.32). The BE is a documented review of Forest Service activities in sufficient detail to determine how a proposed action may impact sensitive wildlife species, and to comply with the requirements of the Endangered Species Act.

The Forest Service Region 6 Sensitive Species List (USDA 2008c) was reviewed for species that may be present on the Deschutes and Ochoco National Forests and Crooked River National Grassland. After a review of records, habitat requirements, and existing habitat components, it was determined the following sensitive animal species have habitat or are known to occur in the project area and will be included in this analysis:

**Table 39. Sensitive Species Summary for the Deschutes and Ochoco National Forests and Crooked River National Grassland.**

Species	Status	Habitat	Presence
Northern Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Regional Forester Sensitive, MIS	Lakeside with Large Trees	Yes
Bufflehead ( <i>Bucephala albeola</i> )	Regional Forester Sensitive	Lakes, Snags	Yes
Harlequin Duck ( <i>Histrionicus histrionicus</i> )	Regional Forester Sensitive	Rapid Streams, Large Trees	Unknown
Horned Grebe ( <i>Podiceps auritus</i> )	Regional Forester Sensitive	Lake	Unknown
Tricolored Blackbird ( <i>Agelaius tricolor</i> )	Regional Forester Sensitive	Lakeside, Bullrush	Yes
Yellow Rail ( <i>Coturnicops noveboracensis</i> )	Regional Forester Sensitive	Marsh	Yes
Western Sage Grouse ( <i>Centrocercus urophasianus phaeios</i> )	Regional Forester Sensitive	Sagebrush Flats	Yes
American Peregrine Falcon ( <i>Falco peregrinus anatum</i> )	Regional Forester Sensitive, MIS	Riparian, Cliffs	Yes
Lewis' Woodpecker ( <i>Melanerpes lewis</i> )	Regional Forester Sensitive, MIS	Large, open ponderosa pine and burned forests	Yes
White-headed	Regional Forester	Large, open ponderosa	

Species	Status	Habitat	Presence
Woodpecker ( <i>Picoides albolarvatus</i> )	Sensitive, MIS	pine	Yes
Northern Waterthrush ( <i>Seiurus noveboracensis</i> )	Regional Forester Sensitive	Riparian vegetation including willows and alder	Yes
Upland Sandpiper ( <i>Bartramia longicauda</i> )	Regional Forester Sensitive	Upland fields	Yes
Pacific Fisher ( <i>Martes pennanti</i> )	Federal Candidate, Regional Forester Sensitive	Mixed, Complex	Unknown
Pygmy Rabbit ( <i>Brachylagus idahoensis</i> )	Regional Forester Sensitive	Sagebrush Flats	Unknown
California Wolverine ( <i>Gulo gulo</i> )	Regional Forester Sensitive, MIS	Mix, High Elevation	Yes
Townsend's Big-eared Bat ( <i>Corynorhinus townsendii</i> )	Regional Forester Sensitive, MIS	Caves	Yes
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	Federal Candidate, Regional Forester Sensitive	Stream, Marsh	Yes
Columbia Spotted Frog ( <i>Rana luteiventris</i> )	Federal Candidate, Regional Forester Sensitive	Stream, Marsh	Yes
Crater Lake Tightcoil ( <i>Pristiloma arcticum crateris</i> )	Regional Forester Sensitive	Riparian, Perennially Wet	Yes
Silver-bordered Fritillary ( <i>Boloria selene atrocotalis</i> )	Regional Forester Sensitive	Open riparian bogs and marshes	Yes
Johnson's Hairstreak ( <i>Mitoura johnsonii</i> ) ( <i>Callophrys johnsonii</i> )	Regional Forester Sensitive	Coniferous forests with mistletoe	Unknown

### Summary of Conclusions for Sensitive Species

1. The No Action Alternative serves as a baseline for all sensitive species.
2. Implementation of Alternatives 2 & 3 will have a **“Beneficial Impact”** to the bald eagle, horned grebe, bufflehead, harlequin duck, American peregrine falcon, greater sage grouse, yellow rail, tri-colored blackbird, northern waterthrush, California wolverine, Pacific fisher, pygmy rabbit, Oregon spotted frog, Crater Lake tightcoil, silver-bordered fritillary, and Johnson's hairstreak and their habitats for the Deschutes National Forest.
3. Implementation of Alternatives 2 and 3 will have **“No Impact”** to the Lewis' woodpecker, white-headed woodpecker, and Townsend's big-eared bat and their habitats for the Deschutes National Forest.

4. Implementation of Alternatives 2 and 3 will have a **“Beneficial Impact”** to the bald eagle, peregrine falcon, Townsend’s big-eared bat, and Johnson’s hairstreak and their habitats for the Ochoco National Forest.
5. Implementation of Alternatives 2 and 3 will have **“No Impact”** to the bufflehead, western sage grouse, tri-colored blackbird, Lewis’ woodpecker, white-headed woodpecker, upland sandpiper, California wolverine, pygmy rabbit, Columbia spotted frog, and silver-bordered fritillary and their habitats for the Ochoco National Forest.
6. Implementation of the Travel Management Rule is consistent with the Deschutes, Ochoco, and Crooked River National Grassland Land and Resource Management Plans for all sensitive species.

**Table 40. Summary of Conclusion of Impacts, Region 6 Sensitive Species, Travel Management Rule for the Deschutes and Ochoco National Forests and Crooked River National Grassland.**

Species	Alternative 1 – No Action		Alternatives 2 & 3	
	Deschutes NF	Ochoco NF	Deschutes NF	Ochoco NF
Northern Bald Eagle	NI	NI	BI	BI
Horned Grebe	NI	-	BI	-
Bufflehead	NI	NI	BI	NI
Harlequin Duck	NI	-	BI	-
American Peregrine Falcon	NI	NI	BI	BI
Western Sage Grouse	NI	NI	BI	NI
Yellow Rail	NI	-	BI	-
Tri-colored Blackbird	NI	NI	BI	NI
Lewis’ Woodpecker	NI	NI	NI	NI
White-headed Woodpecker	NI	NI	NI	NI
Northern Waterthrush	NI	-	BI	-
Upland Sandpiper		NI	-	NI
California Wolverine	NI	NI	BI	NI
Pacific Fisher	NI	-	BI	-
Pygmy Rabbit	NI	NI	BI	NI
Townsend’s Big-eared Bat	NI	NI	NI	BI
Oregon Spotted Frog	NI	-	BI	-
Columbia Spotted Frog	-	NI	-	NI
Crater Lake Tightcoil	NI	NI	BI	NI
Silver-bordered Fritillary	NI	NI	BI	NI
Johnson’s Hairstreak	NI	NI	BI	BI

NI = No Impact

MIIH = May impact individuals or habitat, but will not likely contribute a trend toward federal listing or loss of viability to the population or species

BI = Beneficial Impact

**Table 41. Comparison of Alternatives for Sensitive Species**

<b>Species</b>	<b>Alternative 1 – No Action Undisturbed Habitat Deschutes</b>	<b>Alternatives 2 and 3 – Action Alternatives Undisturbed Habitat Deschutes</b>	<b>Alternative 1 – No Action Undisturbed Habitat Ochoco</b>	<b>Alternatives 2 and 3 – Action Alternatives Undisturbed Habitat Ochoco</b>
Northern Bald Eagle	6,749 (26%)	13,796 (53%)	1,992 (38%)	4,312 (82%)
Bufflehead	11,367 (26%)	28,615 (65%)	28,032 (55%)	28,032 (55%)
Harlequin Duck	955 (4%)	11,556 (44%)	NA	NA
Horned Grebe	11,895 (14%)	50,813 (59%)	NA	NA
Tricolored Blackbird	6,731 (14%)	29,297 (61%)	9,980 (54%)	9,980 (54%)
Yellow Rail	3,967 (9%)	25,638 (61%)	NA	NA
Western Sage Grouse	5,889 (58%)	6,560 (65%)	44,434 (71%)	44,432 (71%)
American Peregrine Falcon	11,743 (93%)	12,022 (95%)	1,110 (74%)	1,595 (80%)
Lewis’ Woodpecker	2,716 (38%)	2,716 (38%)	2,826 (63%)	2,826 (63%)
White-headed Woodpecker	12,773 (35%)	12,773 (35%)	5,541 (67%)	5,541 (67%)
Northern Waterthrush	6,408 (13%)	21,746 (45%)	NA	NA
Upland Sandpiper	NA	NA	5,888 (53%)	5,888 (53%)
Pacific Fisher	3,038 (73%)	3,481 (83%)	NA	NA
Pygmy Rabbit	5,889 (58%)	6,560 (65%)	44,434 (71%)	44,432 (71%)
California Wolverine	86,473 (93%)	89,763 (97%)	0	0
Townsend’s Big-eared Bat	13,145 (45%)	13,145 (45%)	1,110 (56%)	1,594 (80%)
Oregon Spotted Frog	15,414 (17%)	43,898 (49%)	NA	NA
Columbia Spotted Frog	NA	NA	32,626 (54%)	32,626 (54%)
Crater Lake Tightcoil	12,570 (17%)	39,510 (54%)	44,652 (58%)	44,652 (58%)
Silver-bordered Fritillary	4,147 (10%)	25,818 (61%)	9,414 (56%)	9,414 (56%)
Johnson’s Hairstreak	7,632 (4%)	87,330 (44%)	15,190 (21%)	56,324 (76%)

## **Bald Eagle, Federal Threatened, MIS**

### ***Existing Condition***

The bald eagle, formerly a threatened species in the lower 48 states under the Endangered Species Act, has been delisted (August 8, 2007) because it has recovered from being at risk of extinction (Fed Reg 2007). It will continue to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is now designated a Regional Forester Sensitive Species. The FWS has issued National Bald Eagle Management Guidelines (USFWS 2007b) intended to minimize activities that could interfere with the eagle's ability to forage, nest, roost, breed, or raise young. Such impacts to bald eagles, where they may constitute "disturbance", are prohibited by the Eagle Act. Guidelines for off-road vehicle use near nests during the breeding season are included. In addition, the guidelines identify management practices that can be used for added benefit to bald eagles.

On the Deschutes and Ochoco National Forests, ponderosa pine and Douglas-fir trees averaging 32 inch+ dbh with live large, open limb structure are preferred for nesting. Nests consist of bulky stick platforms built in the super-canopy of such trees, or less frequently on cliffs. They are typically constructed within one mile of appropriate foraging habitat, which includes rivers and large lakes and reservoirs. Bald eagles are sit-and-wait predators, which predominantly capture prey from perches over water; ideal perches are large trees and snags within 330 ft. (100 m) of water (Anthony et al. 1995). Prey items include fish, waterfowl and other birds, small mammals, and carrion (Stalmaster 1987).

There are 49 known bald eagle territories on the Deschutes National Forest and 7 known territories on the Ochoco National Forest primarily associated with large water bodies, rivers, and streams. Annual surveys are conducted but not for all sites. A list of the known bald eagle territories and their yearly status is included in Appendix 2.

Bald Eagle Management Areas (BEMAs) (MA-3) are designated in the Deschutes National Forest Plan (USDA 1990a) to manage habitat to enhance the carrying capacity of bald eagles. Generally within MA-3, nesting and foraging areas are protected and enhanced, emphasizing old growth stands with large trees. In addition, human disturbance is to be minimized during the nesting season. Therefore, seasonal restrictions may be warranted between January 1 through August 31 to protect nest sites and key feeding and roost sites. Currently, approximately 22,245 acres on the Deschutes NF and 2,673 acres on the Ochoco NF occur within BEMAs.

### **Road Impacts/Disturbance**

Bald eagles have shown varied responses to human disturbances. Stalmaster and Newman (1978) reported a lower number of eagles in areas of high activity compared to areas of moderate activity. Moderate activity seemed to be tolerated though this resulted in a shift in distribution to marginal habitat and confined the population to a smaller area. They also reported that human disturbance was tolerated more often when the disturbance was partially obscured by vegetation. Grubb and King (1991) noted pedestrian disturbance was the most impactful to breeding eagles followed by vehicle disturbance. Recommended buffer distances to reduce disturbance during the nesting season for bald eagles has ranged from 300-800 meters (Anthony and Isaacs 1989, Fraser et al. 1985, McGarigal 1988, and Stalmaster 1987). Grubb and King (1991) recommended a 450 meter buffer for vehicles relative to bald eagle disturbance.

Habitat for the bald eagle occurs sparingly throughout the Deschutes and Ochoco National Forests in most plant associations except juniper where average tree size is 20" dbh or greater. Approximately 25,965 acres of habitat currently exist across the Deschutes National Forest and approximately 5,245 acres of habitat occurs on the Ochoco National Forest for a total of 31,210 acres.

**Table 42. Existing Designated Route and Dispersed Camping Conditions within Northern Bald Eagle Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	18,913 (73%)	6,128 (24%)	924 (3%)	9,505 (37%)	12,535 (48%)	3,926 (15%)	25,965
<b>Ochoco</b>	2,925 (56%)	1,386 (26%)	934 (18%)	2,675 (51%)	1,654 (32%)	916 (17%)	5,245
<b>Total</b>	<b>21,838 (70%)</b>	<b>7,514 (24%)</b>	<b>1,858 (6%)</b>	<b>12,180 (39%)</b>	<b>14,189 (45%)</b>	<b>4,842 (16%)</b>	<b>31,210</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 42 shows approximately 18,913 acres of bald eagle habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 19,216 acres of habitat occur inside the road effect distance within those areas identified as closed (18,913 acres) resulting in the potential disturbance of 74% of the bald eagle habitat on the Deschutes NF.

Table 42 shows approximately 2,925 acres of bald eagle habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,253 acres of habitat occur inside the road effect distance within those areas identified as closed (2,925 acres) resulting in the potential disturbance of 62% of the bald eagle habitat on the Ochoco NF.

**Table 43. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Bald Eagle on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Bald Eagle Habitat	Acres of Bald Eagle Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Bald Eagle Habitat Disturbed/Percent of Total Habitat	Total Acres of Bald Eagle Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	25,965	12,164 (47%)	19,216 (74%)	6,749 (26%)
<b>Ochoco</b>	5,245	933 (18%)	3,253 (62%)	1,992 (38%)
<b>Total</b>	<b>31,210</b>	<b>13,097 (42%)</b>	<b>22,469 (72%)</b>	<b>8,741 (28%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**BEMAs**

**Table 44. Existing Designated Route and Dispersed Camping Conditions within Bald Eagle Management Areas on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	21,232	12	0	6,867	200	14,178	<b>21,244</b>
<b>Ochoco</b>	888	760	1,024	387	1,261	1,024	<b>2,673</b>
<b>Total</b>	<b>22,120</b>	<b>772</b>	<b>1,024</b>	<b>7,254</b>	<b>1,461</b>	<b>15,202</b>	<b>23,917</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 44 shows approximately 21,232 acres of BEMA occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 10,853 acres of habitat occur inside the road effect distance within those areas identified as closed (21,232 acres) resulting in the potential disturbance of 51% of the BEMAs on the Deschutes NF.

Table 44 shows approximately 888 acres of BEMA occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through this allocation, resulting in potential disturbance. Approximately 1,163 acres of habitat occur inside the road effect distance within those areas identified as closed (888 acres) resulting in the potential disturbance of 44% of the BEMAs on the Ochoco NF.

**Table 45. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Bald Eagle Management Areas on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of BEMA	Acres of BEMA within the Road Effect Distance/Percent of Total Habitat	Total Acres of BEMA Disturbed/Percent of Total Habitat	Total Acres of BEMA Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	21,244	10,853 (51%)	10,865 (51%)	10,379 (49%)
<b>Ochoco</b>	2,673	1,163 (44%)	1,163 (44%)	1,510 (56%)
<b>Total</b>	<b>23,917</b>	<b>12,016 (50%)</b>	<b>12,028 (50%)</b>	<b>11,889 (50%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Direct effects will include the continued disturbance at nest sites within the road effect distance during the nesting period (January 1 through August 30).

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 47% of the bald eagle habitat for the Deschutes and 18% of the bald eagle habitat for the Ochoco remains in areas where disturbance is occurring. See Table 47 for more information.

**Table 46. Designated Route and Dispersed Camping Conditions within Northern Bald Eagle Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	25,960 (100%)	5 (0%)	0	19,700 (76%)	4,946 (19%)	1,319 (5%)	25,965
<b>Ochoco</b>	5,245 (100%)	0	0	4,922 (94%)	275 (5%)	48 (1%)	5,245
<b>Total</b>	<b>31,205</b> <b>(100%)</b>	<b>5</b> <b>(0%)</b>	<b>0</b>	<b>24,622</b> <b>(79%)</b>	<b>5,221</b> <b>(17%)</b>	<b>1,367</b> <b>(4%)</b>	<b>31,210</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 47. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Bald Eagle on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Bald Eagle Habitat	Acres of Bald Eagle Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Bald Eagle Habitat Disturbed/Percent of Total Habitat	Total Acres of Bald Eagle Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	25,965	12,164 (47%)	12,169 (47%)	13,796 (53%)
<b>Ochoco</b>	5,245	933 (18%)	933 (18%)	4,312 (82%)
<b>Total</b>	<b>31,210</b>	<b>13,097</b> <b>(42%)</b>	<b>13,102</b> <b>(42%)</b>	<b>18,108</b> <b>(58%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**BEMAs**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 49% of the BEMAs for the Deschutes and 56% of the BEMAs for the Ochoco remain in areas where disturbance is occurring. See Table 49 for more information.

**Table 48. Designated Route and Dispersed Camping Conditions within Bald Eagle Management Areas on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	21,242	0	0	18,053	304	2,886	<b>21,242</b>
<b>Ochoco</b>	2,672	0	0	2,055	584	34	<b>2,672</b>
<b>Total</b>	<b>23,914</b>	<b>0</b>	<b>0</b>	<b>20,108</b>	<b>888</b>	<b>2,920</b>	<b>23,914</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 49. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Bald Eagle Management Areas on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of BEMA	Acres of BEMA within the Road Effect Distance/Percent of Total Habitat	Total Acres of BEMA Disturbed/Percent of Total Habitat	Total Acres of BEMA Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	21,242	10,850 (51%)	10,850 (51%)	10,392 (49%)
<b>Ochoco</b>	2,672	1,163 (44%)	1,163 (44%)	1,509 (56%)
<b>Total</b>	<b>23,914</b>	<b>12,013</b>	<b>12,013</b> <b>(50%)</b>	<b>11,901</b> <b>(50%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 50. Undisturbed Habitat Summary for the Bald Eagle**

<b>Species</b>	<b>Alternative 1 – No Action Undisturbed Habitat Deschutes</b>	<b>Alternatives 2 and 3 – Action Alternatives Undisturbed Habitat Deschutes</b>	<b>Alternative 1 – No Action Undisturbed Habitat Ochoco</b>	<b>Alternatives 2 and 3 – Action Alternatives Undisturbed Habitat Ochoco</b>
<b>Northern Bald Eagle</b>	6,749 (26%)	13,796 (53%)	1,992 (38%)	4,312 (82%)
<b>BEMA</b>	10,379 (49%)	10,392 (49%)	1,510 (56%)	1,509 (56%)

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the bald eagle and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable bald eagle habitat on both the Deschutes and Ochoco National Forests. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the bald eagle and its habitat. Implementation of the travel management rule will result in no change in disturbance to BEMAs on both forests. Therefore, Alternatives 2 and 3 will have **“No Impact”** to BEMAs.

**Bufflehead, Region 6 Sensitive**

***Existing Condition***

Buffleheads are the smallest diving ducks in North America. They are local uncommon breeders in the central Cascades. Buffleheads utilize lakes, ponds, rivers, and seacoasts. Known nesting locations include Hosmer Lake, Crane Prairie Reservoir, Twin Lakes, Wickiup Reservoir, Davis Lake and along the Little Deschutes River. (Marshall et al. 2003 p. 124-125).

Buffleheads nest at high elevation forested lakes in the central Cascades using natural cavities (abandoned northern flicker holes) and artificial nest boxes in mixed coniferous-deciduous woodlands near lakes and ponds (Gilligan et al. 1994 in Marshall et al. 2003 p.124-125). Females often nest in the same site in successive years (NatureServe 2004). This duck eats both animal and plant material. However, during the breeding season, aquatic insects and larvae are the most important item in their diet. They also eat seeds of pondweeds and bulrushes (Csuti et al. 1997 p. 100). Buffleheads winter throughout Oregon in open waters (Marshall et al. 2003).

Gabrielson and Jewett (1940 in Marshall et al. 2003) found the bufflehead to be one of the most abundant winter ducks in Oregon but noted decreases in numbers by 1930, primarily due to overshooting. Hunting pressure has decreased in the Pacific Flyway and numbers have increased. However, human disturbance from high recreation use around high elevation Cascades lakes and a shortage of suitable nest cavities may impact populations (Marshall et al. 2003). Bufflehead population numbers are generally low in Oregon and a shortage of natural cavities has brought attention to the breeding segment of the population (Csuti et al. 1997 p. 100). The breeding population is considered sensitive by ODFW.

Habitat for the bufflehead includes Class 1, 2, and 3 streams and lakes. Lakes include the water body and associated buffer. Suitable habitat specific to the bufflehead has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because low elevation lakes, ponds, and streams are also included in this query. In addition, large snag habitat may not be available along all mapped streams and lakes required for nesting by this species.

**Table 51. Existing Designated Route and Dispersed Camping Conditions within Bufflehead Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Class 3 Stream</b>	2,245	730	55	3,030
<b>Lake</b>	10,412	6,703	991	18,106
<b>Total</b>	<b>20,920</b>	<b>21,436</b>	<b>1,945</b>	<b>44,301</b>

**Table 52. Existing Designated Route and Dispersed Camping Conditions within Bufflehead Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	3,659	3,836	2,095	9,590
<b>Class 2 Stream</b>	6,031	11,574	10,567	28,172
<b>Class 3 Stream</b>	2,684	5,498	4,393	12,575
<b>Lake</b>	147	120	179	446
<b>Total</b>	<b>12,521</b>	<b>21,028</b>	<b>17,234</b>	<b>50,781</b>

**Table 53. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Bufflehead on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Bufflehead Habitat</b>	<b>Acres of Bufflehead Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Bufflehead Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Bufflehead Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	44,301	9,553 (22%)	32,934 (74%)	11,367 (26%)
<b>Ochoco</b>	50,781	22,749 (45%)	22,749 (45%)	28,032 (55%)
<b>Total</b>	<b>95,082</b>	<b>32,302 (34%)</b>	<b>55,683 (59%)</b>	<b>39,399 (41%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 51 shows approximately 20,920 acres of bufflehead habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 9,553 acres of habitat

occur inside the road effect distance within those areas identified as closed (20,920 acres) resulting in the potential disturbance of 74% of the bufflehead habitat on the Deschutes NF.

Table 52 shows approximately 12,521 acres of bufflehead habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 22,749 acres of habitat occur inside the road effect distance within those areas identified as closed (12,521 acres) resulting in the potential disturbance of 45% of the bufflehead habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the bufflehead habitat for the Deschutes and 45% of the bufflehead habitat for the Ochoco remains in areas where disturbance is occurring. See Table 56 for more information.

**Table 54. Designated Route and Dispersed Camping Conditions within Bufflehead Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	8,345	3,256	132	11,733
<b>Class 2 Stream</b>	9,994	1,437	8	11,439
<b>Class 3 Stream</b>	2,769	238	23	3,030
<b>Lake</b>	17,059	862	192	18,113
<b>Total</b>	<b>38,167</b>	<b>5,793</b>	<b>355</b>	<b>44,315</b>

**Table 55. Designated Route and Dispersed Camping Conditions within Bufflehead Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	7,135	2,096	364	9,595
<b>Class 2 Stream</b>	20,196	5,846	2,132	28,174
<b>Class 3 Stream</b>	9,502	2,104	974	12,580
<b>Lake</b>	343	64	40	447
<b>Total</b>	<b>37,176</b>	<b>10,110</b>	<b>3,510</b>	<b>50,796</b>

**Table 56. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Bufflehead on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Bufflehead Habitat	Acres of Bufflehead Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Bufflehead Habitat Disturbed/Percent of Total Habitat	Total Acres of Bufflehead Habitat Undisturbed/Percent of Total Habitat
Deschutes	44,315	9,552 (22%)	15,700 (35%)	28,615 (65%)
Ochoco	50,796	22,743 (45%)	22,749 (45%)	28,032 (55%)
<b>Total</b>	<b>95,082</b>	<b>32,295 (34%)</b>	<b>38,449 (40%)</b>	<b>56,647 (60%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 57. Undisturbed Habitat Summary for the Bufflehead.**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Bufflehead</b>	26%	65%	55%	55%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the bufflehead and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the bufflehead and no change on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the bufflehead and its habitat on the Deschutes National Forest and **“No Impact”** to the bufflehead and its habitat on the Ochoco National Forest.

**Harlequin Duck, Region 6 Sensitive**

***Existing Condition***

Harlequin ducks breed primarily west of the Cascades and records from the eastslope of the Cascades are limited. Single birds have been reported on the Metolius River. Breeding pairs have been observed using low to moderate (1-7%) gradient third to fifth order streams in the western hemlock zone typically with simple channels and abundant in-stream rocks which serve as loaf sites. Sandy substrates and constricted or braided channels are rarely used (Bruner 1997 in Marshall et al. 2003). Nests are scooped depressions lined with down. Those located on upslope sites on cliffs and steep slopes were more successful than ground nests in riparian areas (Bruner 1997 in Marshall et al. 2003). Harlequins are diurnal feeders and forage heavily on the limnephelid caddisfly *Dicosmeocus gilvipes*. Some mayflies and stoneflies are also consumed but in lesser quantities. Harlequin ducks winter in rough coastal waters, especially along rocky shores or reefs; summering non-breeders also occur in this habitat.

High breeding site fidelity and dependence on forested montane riparian canyons in the western Cascades makes this species vulnerable to natural and human disturbances. Changes in benthic invertebrate populations and disturbance at breeding sites may impact populations (Marshall et al. 2003).

Studies have shown that harlequin ducks are sensitive to human disturbances during the breeding season (Cassier and Groves 1989 in Gaines et. al 2003, Hamann et al. 1999 in Gaines et. al 2003, and Wallen and Groves 1989). However, little is known about the effects of roads on this species. Cassier and Groves (1989) recommended trails and roads be located at least 50 meters from streams used by harlequin ducks due to the duck’s response to humans fishing near breeding habitat.

Habitat for the harlequin duck includes Class 1, 2, and 3 streams. Suitable habitat specific to the harlequin duck has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because this includes more than low to moderate gradient streams. In addition, streams are included regardless of substrate identified as necessary for caddisfly production.

**Table 58. Designated Route and Dispersed Camping Conditions within Harlequin Duck Habitat on the Deschutes National Forest for the Existing Condition.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Class 3 Stream</b>	2,245	730	55	3,030
<b>Total</b>	<b>10,508</b>	<b>14,733</b>	<b>954</b>	<b>26,195</b>

**Table 59. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Harlequin Duck on the Deschutes National Forest for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Harlequin Duck Habitat</b>	<b>Acres of Harlequin Duck Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Harlequin Duck Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Harlequin Duck Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	26,195	9,553 (36%)	25,240 (96%)	955 (4%)
<b>Total</b>	<b>26,195</b>	<b>9,553 (36%)</b>	<b>25,240 (96%)</b>	<b>955 (4%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 58 shows approximately 10,508 acres of harlequin duck habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 9,553 acres of habitat occur inside the road effect distance within those areas identified as closed (10,508 acres) resulting in the potential disturbance of 96% of the harlequin duck habitat on the Deschutes NF.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 56% of the harlequin duck habitat for the Deschutes remains in areas where disturbance is occurring. See Table 61 for more information.

**Table 60. Designated Route and Dispersed Camping Conditions within Harlequin Duck Habitat on the Deschutes National Forest for the Action Alternatives.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
<b>Class 1 Stream</b>	8,345	3,256	132	11,733
<b>Class 2 Stream</b>	9,994	1,437	8	11,439
<b>Class 3 Stream</b>	2,769	238	23	3,030
<b>Total</b>	<b>21,108</b>	<b>4,931</b>	<b>163</b>	<b>26,202</b>

**Table 61. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Harlequin Duck on the Deschutes National Forest for the Action Alternatives.**

Forest	Total Acres of Harlequin Duck Habitat	Acres of Harlequin Duck Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Harlequin Duck Habitat Disturbed/Percent of Total Habitat	Total Acres of Harlequin Duck Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	26,202	9,552 (36%)	14,646 (56%)	11,556 (44%)
<b>Total</b>	<b>26,202</b>	<b>9,552 (36%)</b>	<b>14,646 (56%)</b>	<b>11,556 (44%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 62. Undisturbed Habitat Comparison for the Harlequin Duck**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Harlequin Duck</b>	4%	44%	NA	NA

### **Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the harlequin duck and its habitat.

### **Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the harlequin duck. Therefore, Alternatives 2 and 3 will have a “**Beneficial Impact**” to the harlequin duck and its habitat on the Deschutes National Forest

### **Horned Grebe, Region 6 Sensitive**

#### ***Existing Condition***

Horned grebes utilize marshes, ponds, lakes, and occasionally occur along sluggish streams for breeding. They nest among tall vegetation in shallow water on small and large lakes and ponds (approximately ¼ acre or larger), in calm waters of marshes, and along rivers and streams. The highest breeding densities occur in pothole marshes of aspen woodlands (NatureServe 2004). The horned grebe is uncommon to common east of the Cascades and is a rare breeder on the eastside with no records for central Oregon (Marshall et al. 2003). Outside the breeding season, horned grebes are found on bays, estuaries and seacoasts, and in migration commonly in inland freshwater habitats, especially lakes and rivers (NatureServe 2004). Declining water levels during the breeding season may strand nests (Marshall et al. 2003).

Habitat for the horned grebe includes Class 1, 2, and 3 streams, lakes, and wetlands. Wetlands and lakes include both the wetland and water body and the associated buffer. Suitable habitat specific to the horned grebe has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every stream, lake, or wetland mapped provides suitable habitat. This query also includes the entire water body, rather than just the calm, backwater areas required for nesting by this species.

**Table 63. Existing Designated Route and Dispersed Camping Conditions within Horned Grebe Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Class 3 Stream</b>	2,245	730	55	3,030
<b>Lake</b>	10,412	6,703	991	18,106
<b>Wetlands</b>	15,418	25,421	1,297	42,135
<b>Total</b>	<b>36,338</b>	<b>46,857</b>	<b>3,242</b>	<b>86,436</b>

**Table 64. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Horned Grebe on the Deschutes National Forest for Existing Designated Routes.**

Forest	Total Acres of Horned Grebe Habitat	Acres of Horned Grebe Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Horned Grebe Habitat Disturbed/Percent of Total Habitat	Total Acres of Horned Grebe Habitat Undisturbed/Percent of Total Habitat
Deschutes	86,436	24,443 (28%)	74,541 (86%)	11,895 (14%)
<b>Total</b>	<b>154,070</b>	<b>24,443 (28%)</b>	<b>74,541 (86%)</b>	<b>11,895 (14%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 63 shows approximately 36,338 acres occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 24,443 acres of habitat occur inside the road effect distance within those areas identified as closed (36,338 acres) resulting in the potential disturbance of 86% of the horned grebe habitat on the Deschutes NF.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 59% of the horned grebe habitat for the Deschutes remains in areas where disturbance is occurring. See Table 66 for more information.

**Table 65. Designated Route and Dispersed Camping Conditions within Horned Grebe Habitat on the Deschutes National Forest for the Action Alternatives.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Class 1 Stream	8,345	3,256	132	11,733
Class 2 Stream	9,994	1,437	8	11,439
Class 3 Stream	2,769	238	23	3,030
Lake	17,059	862	192	18,113
Wetlands	37,089	4,887	157	42,133
<b>Total</b>	<b>75,256</b>	<b>10,680</b>	<b>512</b>	<b>86,448</b>

**Table 66. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Horned Grebe on the Deschutes National Forest for Action Alternatives.**

Forest	Total Acres of Horned Grebe Habitat	Acres of Horned Grebe Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Horned Grebe Habitat Disturbed/Percent of Total Habitat	Total Acres of Horned Grebe Habitat Undisturbed/Percent of Total Habitat
Deschutes	86,448	24,443 (28%)	35,635 (41%)	50,813 (59%)
<b>Total</b>	<b>154,095</b>	<b>24,443 (28%)</b>	<b>35,635 (41%)</b>	<b>50,813 (59%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 67. Undisturbed Habitat Comparison for the Horned Grebe**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Horned Grebe</b>	14%	59%	NA	NA

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the horned grebe and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the horned grebe. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the horned grebe and its habitat on the Deschutes National Forest.

**Tri-colored Blackbird, Region 6 Sensitive**

***Existing Condition***

Tri-colored blackbirds are a colonial nesting species that prefer to nest in emergent vegetation such as cattails or tall sedges or in thickets of willows or other shrubs. Breeding colonies are scattered and intermittent in Oregon. Their breeding distribution in Oregon is unpredictable from year to year, but is often found in mixed flocks along with red-winged blackbirds (Csuti 1997). Small breeding colonies are known from Crook and Deschutes counties (Marshall et al. 2003). They breed and nest in the vegetation of fresh-water marshes or thickets, sometimes nesting on the ground. Hardstem bulrush, cattails, nettles, and willow are used for nesting with cattails being the preferred substrate. This species forages in irrigated pastures, lightly grazed rangelands, and mowed alfalfa fields consuming primarily animal matter. Grasshoppers, beetles and other insects are utilized (Marshall et al. 2003).

The Oregon population, which represents only 1% of the total population of this species, declined during the 1980’s due to elimination of habitat, burning, plowing, loss of food source, pesticides, human disturbance (traffic), small colony size and shifting local populations. Threats to the tri-colored blackbird include human disturbance at nesting colonies which can lead to abandonment or failure, elimination of habitat, and pesticide use (Marshall et al. 2003).

Habitat for the tri-colored blackbird includes wetlands, wetland buffers, and mesic shrub on the Deschutes, and alder/willow on the Ochoco. Suitable habitat specific to the tri-colored blackbird has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every wetland mapped, mesic shrub area, or alder/willow patch provides suitable habitat.

**Table 68. Existing Designated Route and Dispersed Camping Conditions within Tri-colored Blackbird Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetland</b>	9,489	17,981	1,049	28,518
<b>Wetland Buffer</b>	5,929	7,440	248	13,617
<b>Mesic Shrub</b>	5,283	838	58	6,179
<b>Total</b>	<b>20,701</b>	<b>26,259</b>	<b>1,355</b>	<b>48,315</b>

**Table 69. Existing Designated Route and Dispersed Camping Conditions within Tri-colored Blackbird Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetland</b>	2,426	5,282	1,397	9,105
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Alder/Willow</b>	818	132	628	1,579
<b>Total</b>	<b>5,536</b>	<b>9,499</b>	<b>3,393</b>	<b>18,429</b>

**Table 70. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Tri-colored Blackbird on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Tri-colored Blackbird Habitat</b>	<b>Acres of Tri-colored Blackbird Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Tri-colored Blackbird Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Tri-colored Blackbird Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	48,315	13,970 (29%)	41,584 (86%)	6,731 (14%)
<b>Ochoco</b>	18,429	8,449 (46%)	8,449 (46%)	9,980 (54%)
<b>Total</b>	<b>66,744</b>	<b>22,419 (34%)</b>	<b>50,033 (75%)</b>	<b>16,711 (25%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 68 shows approximately 20,701 acres of tri-colored blackbird habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 13,970 acres of habitat occur inside the road effect distance within those areas identified as closed (20,701 acres) resulting in the potential disturbance of 86% of the tri-colored blackbird habitat on the Deschutes NF.

Table 69 shows approximately 5,536 acres of tri-colored blackbird habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 8,449 acres of habitat occur inside the road effect distance within those areas identified as closed (5,536 acres) resulting in the potential disturbance of 46% of the tri-colored blackbird habitat on the Ochoco NF.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the tri-colored blackbird habitat for the Deschutes and 46% of the tri-colored blackbird habitat for the Ochoco remains in areas where disturbance is occurring. See Table 73 for more information.

**Table 71. Designated Route and Dispersed Camping Conditions within Tri-colored Blackbird Habitat on the Deschutes National Forest for the Action Alternatives.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Wetland	25,301	3,109	107	28,517
Wetland Buffer	11,788	1,778	50	13,616
Mesic Shrub	6,178	0	0	6,178
<b>Total</b>	<b>43,267</b>	<b>4,887</b>	<b>157</b>	<b>48,311</b>

**Table 72. Designated Route and Dispersed Camping Conditions within Tri-colored Blackbird Habitat on the Ochoco National Forest for the Action Alternatives.**

Ochoco National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Wetland	6,712	2,238	155	9,105
Wetland Buffer	6,293	1,320	133	7,746
Alder/Willow	1,578	0	0	1,578
<b>Total</b>	<b>14,583</b>	<b>3,558</b>	<b>288</b>	<b>18,429</b>

**Table 73. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Tri-colored Blackbird on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Total Acres of Tri-colored Blackbird Habitat	Acres of Tri-colored Blackbird Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Tri-colored Blackbird Habitat Disturbed/Percent of Total Habitat	Total Acres of Tri-colored Blackbird Habitat Undisturbed/Percent of Total Habitat
Deschutes	48,311	13,970 (29%)	19,014 (39%)	29,297 (61%)
Ochoco	18,429	8,449 (46%)	8,449 (46%)	9,980 (54%)
<b>Total</b>	<b>66,740</b>	<b>22,419 (34%)</b>	<b>27,463 (41%)</b>	<b>39,277 (59%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 74. Undisturbed Habitat Comparison for the Tri-colored Blackbird**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Tri-colored Blackbird	14%	61%	54%	54%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the tri-colored blackbird and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the tri-colored blackbird and no change on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the tri-colored blackbird and its habitat on the Deschutes National Forest and **“No Impact”** to the tri-colored blackbird and its habitat on the Ochoco National Forest.

**Yellow Rail, Region 6 Sensitive**

***Existing Condition***

The yellow rail was thought to be extirpated in Oregon until several were found in the Klamath Marsh area in 1982 where most the Oregon population currently resides. Rails are also irregularly reported from Big Marsh on the Crescent district and one individual was found dead on the road near Prineville in the 1970’s (Marshall et al. 2003). Yellow rail breeding takes place in emergent wetlands, grass or sedge and wet meadows in freshwater situations. Calling males have been found in shallow flooded sedge meadows between 4100-5000 feet in elevation. Water depths average 2.9+1.4 inches (Lundsten and Popper 2002 in Marshall et al. 2003). Nests are usually covered with senescent vegetation and heavy vegetative cover is

found in the surrounding area. Males change territories based on changing water levels to remain in shallow water.

The Oregon population of yellow rails is geographically restricted to a small area of the state and is disjunct from the main population east of the Rocky Mountains. Threats to the population include the loss of wetland habitat due to development of various types (i.e. ditching, draining, and diking of wetlands). Management practices at or near nest sites may also cause impacts. Intensive livestock grazing may remove potential cover for nest sites and flood irrigation practices may inundate active nests during the wrong season (Marshall et al. 2003).

Habitat for the yellow rail includes wetlands. Wetlands include both the wetland and the associated buffer. Suitable habitat specific to the yellow rail has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because all wetlands are mapped and may not contain conditions suitable for nesting, wetland size may be too small, and includes low elevation wetlands.

**Table 75. Existing Designated Route and Dispersed Camping Conditions within Yellow Rail Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetlands</b>	15,418	25,421	1,297	42,135
<b>Total</b>	<b>15,418</b>	<b>25,421</b>	<b>1,297</b>	<b>42,135</b>

**Table 76. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Yellow Rail on the Deschutes National Forest for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Yellow Rail Habitat</b>	<b>Acres of Yellow Rail Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Yellow Rail Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Yellow Rail Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	42,135	11,451 (27%)	38,168 (91%)	3,967 (9%)
<b>Total</b>	<b>42,135</b>	<b>11,451 (27%)</b>	<b>38,168 (91%)</b>	<b>3,967 (9%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 75 shows approximately 15,418 acres of yellow rail habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 11,451 acres of habitat occur inside the road effect distance within those areas identified as closed (15,418 acres) resulting in the potential disturbance of 91% of the yellow rail habitat on the Deschutes NF.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the yellow rail habitat for the Deschutes remains in areas where disturbance is occurring. See Table 78 for more information.

**Table 77. Designated Route and Dispersed Camping Conditions within Yellow Rail Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetlands</b>	37,089	4,887	157	42,133
<b>Total</b>	<b>37,089</b>	<b>4,887</b>	<b>157</b>	<b>42,133</b>

**Table 78. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Yellow Rail on the Deschutes National Forest for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Yellow Rail Habitat</b>	<b>Acres of Yellow Rail Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Yellow Rail Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Yellow Rail Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	42,133	11,451 (27%)	16,495 (39%)	25,638 (61%)
<b>Total</b>	<b>42,133</b>	<b>11,451 (27%)</b>	<b>16,495 (39%)</b>	<b>25,638 (61%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 79. Undisturbed Habitat Comparison for the Yellow Rail**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Yellow Rail</b>	9%	61%	NA	NA

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the yellow rail and its habitat.

## **Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the yellow rail. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the yellow rail and its habitat on the Deschutes National Forest.

## **Greater Sage Grouse, Region 6 Sensitive**

### ***Existing Condition***

This species was formerly widespread in sagebrush dominated areas east of the Cascades. However, by the 1940's, the range had contracted by approximately 50% (Marshall et al. 2003). Greater sage grouse are sagebrush obligates relying on the plant for both food and cover. Lekks are located in openings in the sagebrush. Nests are shallow depressions lined with grasses or sagebrush leaves, usually located under sagebrush. Big sagebrush is used more than low sage for nesting and grasses >7" tall usually surround successful nests (Marshall et al. 2003). Broods use both big and low sage for food and cover but utilize areas with a higher forb content. Sage grouse are limited to soft food due to a non-muscular gizzard. Although sagebrush is the primary food source, forbs and insects are important for successful reproduction. Birds congregate in the winter in mixed sex flocks where sagebrush is available above the snow or they use windswept ridges. Mountain big sage and low sage are used most often near Prineville.

Significant declines have been reported across the range and trends are difficult to obtain since populations usually see marked variation within the span of a decade. Threats to this species include the loss, fragmentation, and degradation of sage steppe habitats. Conversion of sage steppe to agriculture, sagebrush control projects, wildfire, urbanization, livestock grazing, and invasion of cheatgrass have all been found to impact sage grouse populations. Juniper expansion is also a major factor impacting habitat. This leads to a decrease in herbaceous plants and reduced productivity.

A fine scale mapping project was initiated on the Bend-Fort Rock Ranger District, Deschutes National Forest, in 2005 to further refine sage grouse habitat in the Pine Mountain area. Three years of mapping have occurred mapping the majority of potential sage grouse habitat (approximately 13,000 acres). The project is not yet completed with remnant habitat to the south of Pine Mtn. left to map. There has been no similar mapping effort on the Ochoco National Forest.

Three sage grouse habitats were mapped and defined – winter, nesting, and brood rearing and foraging habitat (USFS 2006b). Winter habitat is defined as Mtn. Big Sagebrush – Bitterbrush plant associations with large structure and appreciable shrub heights capable of providing cover above the accumulated snowpack. Nesting habitat is comprised of Mtn. Big Sage – Bitterbrush and Mtn. Big Sage/Idaho Fescue plant associations with appreciable live shrub cover, structural height, and forb diversity. Brood rearing and foraging habitat are defined as Mtn. Big Sage plant associations with lower shrub cover and more grass and forb components. These habitats will be analyzed for the Deschutes NF while sage/scab habitat will be used to simulate sage grouse habitat on the Ochoco. Habitat may be over-estimated on the Ochoco NF as not all sage/scab habitats will provide suitable conditions for sage grouse.

**Table 80. Existing Designated Route and Dispersed Camping Conditions within Sage Grouse Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Sage Grouse Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Brood/Forage</b>	2,150	0	116	2,266
<b>Nesting</b>	3,820	0	62	3,882
<b>Nesting/Brood/Forage</b>	191	0	0	191
<b>Nesting/Winter</b>	42	0	0	42
<b>Winter</b>	2,610	0	501	3,111
<b>Winter/Brood/Forage</b>	612	0	16	628
<b>Total</b>	<b>9,425</b>	<b>0</b>	<b>695</b>	<b>10,120</b>

**Table 81. Existing Designated Route and Dispersed Camping Conditions within Sage Grouse Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage/Scab</b>	16,562	12,831	32,794	62,186
<b>Total</b>	<b>16,562</b>	<b>12,831</b>	<b>32,794</b>	<b>62,186</b>

Table 80 shows approximately 9,425 acres of sage grouse habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,536 acres of habitat occur inside the road effect distance within those areas identified as closed (9,425 acres) resulting in the potential disturbance of 42% of the sage grouse habitat on the Deschutes NF.

Table 81 shows approximately 16,562 acres of sage grouse habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,752 acres of habitat occur inside the road effect distance within those areas identified as closed (16,562 acres) resulting in the potential disturbance of 29% of the sage grouse habitat on the Ochoco NF.

**Table 82. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sage Grouse on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Sage Grouse Habitat	Acres of Sage Grouse Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Sage Grouse Habitat Disturbed/Percent of Total Habitat	Total Acres of Sage Grouse Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	10,120	3,536 (35%)	4,231 (42%)	5,889 (58%)
<b>Ochoco</b>	62,186	17,752 (29%)	17,752 (29%)	44,434 (71%)
<b>Total</b>	<b>72,306</b>	<b>21,288</b> <b>(29%)</b>	<b>21,983</b> <b>(30%)</b>	<b>50,323</b> <b>(70%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the sage grouse habitat for the Deschutes and 29% of the sage grouse habitat for the Ochoco remains in areas where disturbance is occurring. See Table 85 for more information.

**Table 83. Designated Route and Dispersed Camping Conditions within Sage Grouse Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
Sage Grouse Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
<b>Brood/Forage</b>	2,229	0	0	2,229
<b>Nesting</b>	3,861	0	0	3,861
<b>Nesting/Brood/Forage</b>	191	0	0	191
<b>Nesting/Winter</b>	42	0	0	42
<b>Winter</b>	3,109	0	0	3,109
<b>Winter/Brood/Forage</b>	628	0	0	628
<b>Total</b>	<b>10,060</b>	<b>0</b>	<b>0</b>	<b>10,060</b>

**Table 84. Designated Route and Dispersed Camping Conditions within Sage Grouse Habitat on the Ochoco National Forest for the Action Alternatives.**

Ochoco National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage/Scab	62,181	0	0	62,181
<b>Total</b>	<b>62,181</b>	<b>0</b>	<b>0</b>	<b>62,181</b>

**Table 85. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sage Grouse on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Sage Grouse Habitat	Acres of Sage Grouse Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Sage Grouse Habitat Disturbed/Percent of Total Habitat	Total Acres of Sage Grouse Habitat Undisturbed/Percent of Total Habitat
Deschutes	10,060	3,500 (35%)	3,500 (35%)	6,560 (65%)
Ochoco	62,181	17,749 (29%)	17,749 (29%)	44,432 (71%)
<b>Total</b>	<b>72,241</b>	<b>21,288 (29%)</b>	<b>21,288 (29%)</b>	<b>50,992 (71%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 86. Undisturbed Habitat Comparison for the Sage Grouse**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Sage Grouse	58%	65%	71%	71%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the greater sage grouse and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the sage grouse and results in no change in disturbance to suitable habitat on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the sage grouse and its habitat on the Deschutes National Forest and a **“No Impact”** to sage grouse and its habitat on the Ochoco National Forest.

**American Peregrine Falcon, Region 6 Sensitive**

***Existing Condition***

Peregrine falcons utilize rock cliff faces averaging 75’ tall and within 1 mile of water for nesting sites, and forage over a variety of habitats where smaller birds are abundant. They utilize ledges and potholes

as nest sites. Rock doves, starlings, and gulls are major prey items but also take a wide variety of birds and mammals. Major declines in the population were seen between the 1940's and 1970's due to DDT use. After banning DDT, numbers began to increase. They were removed from the endangered species list in 1999 (Marshall et al. 2003).

There is one known eyrie on the Deschutes National Forest and none known for the Ochoco National Forest.

Habitat for the peregrine falcon includes rock. Suitable habitat specific to the peregrine falcon has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because most rock mapped does not equate to cliff habitat suitable for the peregrine falcon to nest on.

**Table 87. Existing Designated Route and Dispersed Camping Conditions within Peregrine Falcon Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	12,326	114	178	12,618
<b>Total</b>	<b>12,326</b>	<b>114</b>	<b>178</b>	<b>12,618</b>

**Table 88. Existing Designated Route and Dispersed Camping Conditions within Peregrine Falcon Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	1,502	378	110	1,990
<b>Total</b>	<b>1,502</b>	<b>378</b>	<b>110</b>	<b>1,990</b>

**Table 89. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Peregrine Falcon on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Peregrine Falcon Habitat</b>	<b>Acres of Peregrine Falcon Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Peregrine Falcon Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Peregrine Falcon Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	12,618	583 (5%)	875 (7%)	11,743 (93%)
<b>Ochoco</b>	1,990	392 (20%)	880 (44%)	1,110 (74%)
<b>Total</b>	<b>14,608</b>	<b>975 (7%)</b>	<b>1,755 (12%)</b>	<b>12,853 (88%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 87 shows approximately 12,326 acres of peregrine falcon habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 583 acres of habitat occur inside the road effect distance within those areas identified as closed (12,326 acres) resulting in the potential disturbance of 7% of the peregrine falcon habitat on the Deschutes NF.

Table 88 shows approximately 1,502 acres of peregrine falcon habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 392 acres of habitat occur inside the road effect distance within those areas identified as closed (1,502 acres) resulting in the potential disturbance of 44% of the peregrine falcon habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 5% of the peregrine falcon habitat for the Deschutes and 20% of the peregrine falcon habitat for the Ochoco remains in areas where disturbance is occurring. See Table 92 for more information.

**Table 90. Designated Route and Dispersed Camping Conditions within Peregrine Falcon Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	12,605	19	0	12,624
<b>Total</b>	<b>12,605</b>	<b>19</b>	<b>0</b>	<b>12,624</b>

**Table 91. Designated Route and Dispersed Camping Conditions within Peregrine Falcon Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	1,987	0	0	1,987
<b>Total</b>	<b>1,987</b>	<b>0</b>	<b>0</b>	<b>1,987</b>

**Table 92. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Peregrine Falcon on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Peregrine Falcon Habitat	Acres of Peregrine Falcon Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Peregrine Falcon Habitat Disturbed/Percent of Total Habitat	Total Acres of Peregrine Falcon Habitat Undisturbed/Percent of Total Habitat
Deschutes	12,624	583 (5%)	602 (5%)	12,022 (95%)
Ochoco	1,987	392 (20%)	392 (20%)	1,595 (80%)
<b>Total</b>	<b>14,611</b>	<b>975 (7%)</b>	<b>994 (7%)</b>	<b>13,617 (93%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 93. Undisturbed Habitat Comparison for the Peregrine Falcon**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Peregrine Falcon	93%	95%	74%	80%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the peregrine falcon and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes and Ochoco National Forests for the peregrine falcon. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the peregrine falcon and its habitat on the Deschutes and Ochoco National Forests.

**Lewis’ Woodpecker, Region 6 Sensitive and MIS**

***Existing Condition***

Formerly widespread, this species is common year-round only in the white oak ponderosa pine belt east of Mt. Hood. Habitat for the Lewis’ woodpecker, a migrant in this part of its range, includes old-forest, single-storied ponderosa pine. Burned ponderosa pine forests created by stand-replacing fires provide highly productive habitats as compared to unburned pine (Wisdom et al. 2000). Lewis’ woodpeckers feed on flying insects and are not strong cavity excavators. They require large snags in an advanced state of decay that are easy to excavate, or they use old cavities created by other woodpeckers. Nest trees generally average 17 to 44 inches (Saab and Dudley 1998, Wisdom et al. 2000). Known breeding has been documented in low numbers along Why-chus Creek (Marshall et al. 2003) and in recent burned areas across the Deschutes.

In evaluating landscape predictor variables for the Lewis’ woodpecker, Saab et al. (2002) found a negative relation to burned ponderosa pine/Douglas-fir stands with high crown closure (>70%) but was positively associated with low snag densities overall. However, although it selects for more open stands, this species selected nest sites with higher densities of large snags ( $\geq 20$ ”dbh) (Saab and Dudley 1998). Lewis’ woodpeckers are different than other woodpeckers. They are aerial insectivores during the breeding season and use lower densities of smaller snags but rely more heavily on large snags (Saab and Dudley 1998). Habitat for Lewis’ woodpecker will increase 5-10 years after in fire areas as smaller snags fall.

The Lewis’ woodpecker is declining throughout its range. Threats to this species include the loss of suitable habitat, competition for nest trees, and effects of pesticides on insects.

Habitat for the Lewis’ woodpecker occurs sparingly throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, and white fir in open stands where average tree size is 15”dbh or greater. Approximately 7,390 acres of habitat currently exist across the Deschutes National Forest and approximately 4,471 acres of habitat occurs on the Ochoco National Forest for a total of 11,861 acres.

**Table 94. Existing Designated Route and Dispersed Camping Conditions within Lewis’ Woodpecker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	3,044 (41%)	4,099 (55%)	247 (3%)	861 (12%)	5,966 (81%)	563 (8%)	7,390
<b>Ochoco</b>	731 (16%)	1,574 (35%)	2,166 (48%)	375 (8%)	1,942 (43%)	2,155 (48%)	4,471
<b>Total</b>	<b>3,775 (32%)</b>	<b>5,673 (48%)</b>	<b>2,413 (20%)</b>	<b>1,236 (10%)</b>	<b>7,908 (67%)</b>	<b>2,718 (23%)</b>	<b>11,861</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 94 shows approximately 3,044 acres of Lewis’ woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 4,674 acres of habitat occur inside the road effect distance within those areas identified as closed (3,044 acres) resulting in the potential disturbance of 63% of the Lewis’ woodpecker habitat on the Deschutes NF.

Table 94 shows approximately 731 acres of Lewis’ woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 1,645 acres of habitat occur inside the road effect distance within those areas identified as closed (731 acres) resulting in the potential disturbance of 37% of the Lewis’ woodpecker habitat on the Ochoco NF.

**Table 95. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Lewis' Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Lewis' Woodpecker Habitat	Acres of Lewis' Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Lewis' Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Lewis' Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	7,390	4,674 (63%)	4,674 (63%)	2,716 (38%)
Ochoco	4,471	1,645 (37%)	1,645 (37%)	2,826 (63%)
<b>Total</b>	<b>11,861</b>	<b>6,319 (53%)</b>	<b>6,319 (53%)</b>	<b>5,542 (47%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 63% of the Lewis' woodpecker habitat for the Deschutes and 37% of the Lewis' woodpecker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 97 for more information.

**Table 96. Designated Route and Dispersed Camping Conditions within Lewis' Woodpecker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	7,390 (100%)	0	0	4,555 (62%)	2,755 (37%)	79 (1%)	7,390
Ochoco	4,471 (100%)	0	0	3,776 (84%)	477 (11%)	218 (5%)	4,471
<b>Total</b>	<b>11,861 (100%)</b>	<b>0</b>	<b>0</b>	<b>8,331 (70%)</b>	<b>3,232 (27%)</b>	<b>297 (3%)</b>	<b>11,861</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 97. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Lewis' Woodpecker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Lewis' Woodpecker Habitat	Acres of Lewis' Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Lewis' Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Lewis' Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	7,390	4,674 (63%)	4,674 (63%)	2,716 (38%)
Ochoco	4,471	1,645 (37%)	1,645 (37%)	2,826 (63%)
<b>Total</b>	<b>11,861</b>	<b>6,319</b> <b>(53%)</b>	<b>6,319</b> <b>(53%)</b>	<b>5,542</b> <b>(47%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 98. Undisturbed Habitat Comparison for the Lewis' Woodpecker**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Lewis' Woodpecker	38%	38%	63%	63%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Lewis' woodpecker and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in no change in disturbance to suitable habitat on the Deschutes and Ochoco National Forests for the Lewis' Woodpecker. Therefore, Alternatives 2 and 3 will have **“No Impact”** to the Lewis' Woodpecker and its habitat on the Deschutes and Ochoco National Forests.

**White-headed Woodpecker, Region 6 Sensitive and MIS**

***Existing Condition***

White-headed woodpeckers are uncommon permanent residents in forests east of the Cascades. They use habitat with large open ponderosa pine, low shrub levels and large snags. Dixon (1995) found white-headed woodpecker densities increased with increasing old-growth ponderosa pine trees and showed a positive association with large ponderosa pine. The white-headed woodpecker is a primary cavity excavator of soft snags. This woodpecker is the only woodpecker species to rely heavily on seeds of ponderosa pine for food (Marshall et al. 2003 p. 364).

A long term study on the white-headed woodpecker occurred on the Deschutes and Winema National Forests from 1997-2004 with several Deschutes study sites occurring in the Metolius Basin area. Frenzel (2000) calculated the mean diameter for white-headed woodpecker nest trees to be 26.2” dbh while Dixon

(1995) found similar results (mean diameter of 25.6”dbh). Frenzel (2003) found nests at sites with a high density of large diameter trees had a higher survival rate than nests in recently harvested sites. Unharvested sites or sites with greater than 12 trees per acre >21”dbh had a success rate of 63.1% while nests at previously harvested sites or lower densities of large trees had a success rate of 39.8%. Therefore, white-headed woodpeckers were positively associated with higher densities of large trees. On the Winema National Forest, white-headed woodpeckers were found to be using small-diameter trees, logs in a slash pile and upturned roots (6-13”dbh) where large snags were uncommon (Frenzel 2002).

Threats to this species include increased stand densities in ponderosa pine due to fire suppression, loss of large, old ponderosa pine trees and snags, wildfire, and increased shrub densities. Increased shrub densities may be factors leading to increased mammalian nest predation and increased risk of avian predation on adults (Frenzel 2000).

Habitat for the white-headed woodpecker occurs sparingly throughout the Deschutes and Ochoco National Forests in the following plant associations –ponderosa pine, Douglas-fir, white fir, and Shasta red fir in open stands where average tree size is 20”dbh or greater. Approximately 36,167 acres of habitat currently exist across the Deschutes National Forest and approximately 8,220 acres of habitat occurs on the Ochoco National Forest for a total of 44,387 acres.

**Table 99. Existing Designated Route and Dispersed Camping Conditions within White-headed Woodpecker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	19,437 (54%)	16,231 (45%)	499 (1%)	8,875 (25%)	25,298 (70%)	1,994 (5%)	36,167
<b>Ochoco</b>	2,033 (25%)	2,676 (32%)	3,511 (43%)	1,398 (17%)	3,414 (42%)	3,408 (41%)	8,220
<b>Total</b>	<b>21,470 (48%)</b>	<b>18,907 (43%)</b>	<b>4,010 (9%)</b>	<b>10,273 (23%)</b>	<b>28,712 (65%)</b>	<b>5,402 (12%)</b>	<b>44,387</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 99 shows approximately 19,437 acres of white-headed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 23,394 acres of habitat occur inside the road effect distance within those areas identified as closed (19,437 acres) resulting in the potential disturbance of 65% of the white-headed woodpecker habitat on the Deschutes NF.

Table 99 shows approximately 2,033 acres of white-headed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,679 acres of habitat occur inside the road effect distance within those areas identified as closed (2,033 acres) resulting in the potential disturbance of 33% of the white-headed woodpecker habitat on the Ochoco NF.

**Table 100. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for White-headed Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of White-headed Woodpecker Habitat	Acres of White-headed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of White-headed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of White-headed Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	36,167	23,394 (65%)	23,394 (65%)	12,773 (35%)
Ochoco	8,220	2,679 (33%)	2,679 (33%)	5,541 (67%)
<b>Total</b>	<b>44,387</b>	<b>26,073 (59%)</b>	<b>26,073 (59%)</b>	<b>18,314 (41%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 65% of the white-headed woodpecker habitat for the Deschutes and 33% of the white-headed woodpecker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 102 for more information.

**Table 101. Designated Route and Dispersed Camping Conditions within White-headed Woodpecker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	36,167 (100%)	0	0	22,664 (63%)	13,107 (36%)	396 (1%)	36,167
Ochoco	8,220 (100%)	0	0	7,091 (86%)	781 (10%)	348 (4%)	8,220
<b>Total</b>	<b>44,384 (100%)</b>	<b>0</b>	<b>0</b>	<b>29,753 (67%)</b>	<b>13,888 (31%)</b>	<b>744 (2%)</b>	<b>44,387</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 102. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for White-headed Woodpecker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of White-headed Woodpecker Habitat	Acres of White-headed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of White-headed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of White-headed Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	36,167	23,394 (65%)	23,394 (65%)	12,773 (35%)
Ochoco	8,220	2,679 (33%)	2,679 (33%)	5,541 (67%)
<b>Total</b>	<b>44,387</b>	<b>26,073 (59%)</b>	<b>26,073 (59%)</b>	<b>18,314 (41%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 103. Undisturbed Habitat Comparison for the White-headed Woodpecker**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
White-headed Woodpecker	35%	35%	67%	67%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the white-headed woodpecker and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in no change in disturbance to suitable habitat on the Deschutes and Ochoco National Forests for the white-headed woodpecker. Therefore, Alternatives 2 and 3 will have a “No Impact” to the white-headed woodpecker and its habitat on the Deschutes and Ochoco National Forests.

**Northern Waterthrush, Region 6 Sensitive Existing Condition**

The northern waterthrush is one of Oregon’s rarest and most local breeders. An isolated population has summered and presumably bred in the south central Cascades since 1977. This population extends from the Little Deschutes River north of Gilchrist south to the vicinity of Highway 58 west along Crescent Creek and to Salt Creek in Lane County (Marshall et al. 2003). In addition, one male was seen at Lost Lake along the crest in the late 1980s. No nest has ever been found. Along Crescent Creek, birds are found in dense willow 5-8’ tall with some alder interspersed, often in standing or slow moving water. Northern waterthrushes have been observed singing from willows, pines, and snags in the vicinity. Their diet is unknown. No population surveys have been done but several pairs have been detected for the past 30 years along Crescent Creek and the Little Deschutes River (Marshall et al. 2003).

Habitat for the northern waterthrush includes hardwoods, mesic shrubs and Class 1-4 riparian areas on the Deschutes NF. Suitable habitat specific to the northern waterthrush has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every special habitat area will be comprised of suitable vegetation needed by this species for nesting or located near standing or slow moving water.

**Table 104. Existing Designated Route and Dispersed Camping Conditions within Northern Waterthrush Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type or Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwood</b>	487	8	0	496
<b>Mesic Shrub</b>	5,283	838	58	6,179
<b>Class 1</b>	4,169	6,986	574	11,729
<b>Class 2</b>	4,094	7,017	325	11,436
<b>Class 3</b>	2,245	730	55	3,030
<b>Class 4</b>	8,211	6,494	561	15,266
<b>Total</b>	<b>24,489</b>	<b>22,073</b>	<b>1,573</b>	<b>48,136</b>

Table 104 shows approximately 24,489 acres of northern waterthrush habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 18,081 acres of habitat occur inside the road effect distance within those areas identified as closed (24,489 acres) resulting in the potential disturbance of 87% of the northern waterthrush habitat on the Deschutes NF.

**Table 105. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Northern Waterthrush on the Deschutes National Forest for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Northern Waterthrush Habitat</b>	<b>Acres of Northern Waterthrush Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Northern Waterthrush Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Northern Waterthrush Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	48,136	18,081 (38%)	41,728 (87%)	6,408 (13%)
<b>Total</b>	<b>48,136</b>	<b>18,081 (38%)</b>	<b>41,728 (87%)</b>	<b>6,408 (13%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated

routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 55% of the northern waterthrush habitat for the Deschutes remains in areas where disturbance is occurring. See Table 107 for more information.

**Table 106. Designated Route and Dispersed Camping Conditions within Northern Waterthrush Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type or Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwood</b>	496	0	0	496
<b>Mesic Shrub</b>	6,178	0	0	6,178
<b>Class 1</b>	8,345	3,256	132	11,733
<b>Class 2</b>	9,994	1,437	8	11,439
<b>Class 3</b>	2,769	238	23	3,030
<b>Class 4</b>	12,045	3,119	103	15,267
<b>Total</b>	<b>39,827</b>	<b>8,050</b>	<b>266</b>	<b>48,143</b>

**Table 107. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Northern Waterthrush on the Deschutes National Forest for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Northern Waterthrush Habitat</b>	<b>Acres of Northern Waterthrush Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Northern Waterthrush Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Northern Waterthrush Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	48,143	18,081 (38%)	26,397 (55%)	21,746 (45%)
<b>Total</b>	<b>48,143</b>	<b>18,081 (38%)</b>	<b>26,397 (55%)</b>	<b>21,746 (45%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 108. Undisturbed Habitat Comparison for the Northern Waterthrush**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Northern Waterthrush</b>	6,408 (13%)	21,746 (45%)	NA	NA

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the northern waterthrush and its habitat.

## Determination

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the northern waterthrush. Therefore, Alternatives 2 and 3 will have a “**Beneficial Impact**” to the northern waterthrush and its habitat on the Deschutes National Forest.

## Upland Sandpiper, Region 6 Sensitive

### *Existing Condition*

There are small populations of upland sandpipers found in Oregon, which are separate from the main populations found east of the Rocky Mountains. The eastern Oregon breeding grounds have been detected in various sized meadows, 3,400-5,060 ft (1036.32-1542.29 m) elevation. The meadows are roughly 1,000-30,000 ac (400-12,000ha) and are comprised of wildflowers, grasses and forbs, surrounded by lodgepole or ponderosa pine forests and near a water source (Marshall et al. 2003, ODFW 2006). Upland sandpipers forage in short vegetation, 2.5 in (10 cm) tall, but nest in taller vegetation, 6-12 in (16-31 cm) tall, which provides protection (USDA 2004d).

Hunting in the late 1800’s and loss of habitat, due to grazing and farming developments, led to historic population declines. Oregon populations of upland sandpipers have declined from approximately 75-79 adult birds in 1984 to about 20 by the early 1990’s (ODFW 2006). Possible reasons for declines might include conifer encroachment into meadows, use of herbicides to control and eliminate forbs in nesting habitat, and overgrazing of some meadows in spring and summer (Marshall et al. 2003, ODFW 2006).

Habitat for the upland sandpiper includes meadows. Suitable habitat specific to the upland sandpiper has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every meadow will be the size needed, occur at the appropriate elevation, are near a water source, or are comprised of suitable vegetation needed by this species for nesting.

**Table 109. Existing Designated Route and Dispersed Camping Conditions within Upland Sandpiper Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Meadow</b>	5,170	3,984	1,990	11,143
<b>Total</b>	<b>5,170</b>	<b>3,984</b>	<b>1,990</b>	<b>11,143</b>

**Table 110. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Upland Sandpiper on the Ochoco National Forest for Existing Designated Routes.**

Forest	Total Acres of Upland Sandpiper Habitat	Acres of Upland Sandpiper Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Upland Sandpiper Habitat Disturbed/Percent of Total Habitat	Total Acres of Upland Sandpiper Habitat Undisturbed/Percent of Total Habitat
Ochoco	11,143	5,255 (47%)	5,255 (47%)	5,888 (53%)
<b>Total</b>	<b>11,143</b>	<b>5,255 (47%)</b>	<b>5,255 (47%)</b>	<b>5,888 (53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 109 shows approximately 5,170 acres of upland sandpiper habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 5,255 acres of habitat occur inside the road effect distance within those areas identified as closed (5,170 acres) resulting in the potential disturbance of 47% of the upland sandpiper habitat on the Ochoco NF.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 47% of the upland sandpiper habitat for the Ochoco remains in areas where disturbance is occurring. See Table 112 for more information.

**Table 111. Designated Route and Dispersed Camping Conditions within Upland Sandpiper Habitat on the Ochoco National Forest for the Action Alternatives.**

Ochoco National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Meadow	11,141	0	0	11,141
<b>Total</b>	<b>11,141</b>	<b>0</b>	<b>0</b>	<b>11,141</b>

**Table 112. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Upland Sandpiper on the Ochoco National Forest for Action Alternatives.**

Forest	Total Acres of Upland Sandpiper Habitat	Acres of Upland Sandpiper Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Upland Sandpiper Habitat Disturbed/Percent of Total Habitat	Total Acres of Upland Sandpiper Habitat Undisturbed/Percent of Total Habitat
Ochoco	11,141	5,254 (47%)	5,254 (47%)	5,888 (53%)
<b>Total</b>	<b>11,141</b>	<b>5,254 (47%)</b>	<b>5,254 (47%)</b>	<b>5,887 (53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 113. Undisturbed Habitat Comparison for the Upland Sandpiper**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Upland Sandpiper	NA	NA	53%	53%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the upland sandpiper and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in no change in disturbance to suitable habitat on the Ochoco National Forest for the upland sandpiper. Therefore, Alternatives 2 and 3 will have a “**No Impact**” to the upland sandpiper and its habitat on the Ochoco National Forest.

**Pacific Fisher, Federal Candidate, Region 6 Sensitive**

***Existing Condition***

Fisher populations are considered to be extremely low in Oregon, Washington, and parts of the Rocky Mountains. They occur in landscapes dominated by late-successional and mature forests. Fishers have been found to use riparian areas disproportionately to what exists. On the Westside of the Cascades, fishers tend to be associated with low to mid-elevational forests dominated by late-successional and old growth Douglas-fir and western hemlock. However, on the eastside of the Cascades, they occur at higher elevations in association with true firs and mixed conifer forests. They tend to prefer areas with high canopy closure and late-successional forests with relatively low snow accumulations. Critical features of fisher habitat include physical structure of the forest and prey associated with forest structure. Structure includes vertical and horizontal complexity created by a diversity of tree sizes and shapes, light gaps, down woody material, and layers of overhead cover. Major prey species include small to medium sized mammals, birds, and carrion. Porcupine are the best known prey species but fisher will also prey on snowshoe hare, squirrels, mice and shrews. (Powell and Zielinski 1994)

Large forest openings, open hardwood forests, and recent clearcuts were found to be infrequently used by fishers in the West (Ruggerio et. al 1994). Fishers have shown an aversion to open areas and this has affected local distributions and can limit population expansion and colonization of unoccupied areas (Coulter 1966, Earle 1978). However, Kelly (1977) found that fishers tended to use recently harvested areas when brush and saplings provided some low overhead cover but these areas were avoided during the winter.

Habitat for the Pacific fisher occurs in very minor amounts on the Deschutes National Forest in the following plant associations – lodgepole pine wet, white fir, Shasta red fir, western hemlock, silver fir, and mountain hemlock in closed stands where average tree size is 20”dbh or greater. Approximately 4,176 acres of habitat currently exist across the Deschutes National Forest.

**Table 114. Existing Designated Route and Dispersed Camping Conditions within Pacific Fisher Habitat on the Deschutes National Forest.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	3,733 (89%)	441 (11%)	2 (0%)	2,540 (61%)	1,503 (36%)	133 (3%)	4,176
<b>Total</b>	<b>3,733 (89%)</b>	<b>441 (11%)</b>	<b>2 (0%)</b>	<b>2,540 (61%)</b>	<b>1,503 (36%)</b>	<b>133 (3%)</b>	<b>4,176</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 114 shows approximately 3,733 acres of Pacific fisher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 695 acres of habitat occur inside the road effect distance within those areas identified as closed (3,733 acres) resulting in the potential disturbance of 27% of the Pacific fisher habitat on the Deschutes NF.

**Table 115. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pacific Fisher on the Deschutes National Forest for Existing Designated Routes.**

Forest	Total Acres of Fisher Habitat	Acres of Fisher Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Fisher Habitat Disturbed/Percent of Total Habitat	Total Acres of Fisher Habitat Undisturbed/Percent of Total Habitat
Deschutes	4,176	695 (17%)	1,138 (27%)	3,038 (73%)
<b>Total</b>	<b>4,176</b>	<b>695 (17%)</b>	<b>1,138 (27%)</b>	<b>3,038 (73%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 17% of the fisher habitat for the Deschutes remains in areas where disturbance is occurring. There is no habitat on the Ochoco NF. See Table 117 for more information.

**Table 116. Designated Route and Dispersed Camping Conditions within Pacific Fisher Habitat on the Deschutes National Forest for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	4,176 (100%)	0	0	3,949 (95%)	226 (5%)	0	4,176
<b>Total</b>	<b>4,176 (100%)</b>	<b>0</b>	<b>0</b>	<b>3,949 (95%)</b>	<b>226 (5%)</b>	<b>0</b>	<b>4,176</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 117. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pacific Fisher on the Deschutes National Forest for Action Alternatives.**

Forest	Total Acres of Fisher Habitat	Acres of Fisher Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Fisher Habitat Disturbed/Percent of Total Habitat	Total Acres of Fisher Habitat Undisturbed/Percent of Total Habitat
Deschutes	4,176	695 (17%)	695 (17%)	3,481 (83%)
<b>Total</b>	<b>4,176</b>	<b>695 (17%)</b>	<b>695 (17%)</b>	<b>3,481 (83%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 118. Undisturbed Habitat Comparison for the Pacific Fisher**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Pacific Fisher	73%	83%	NA	NA

### **Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Pacific fisher and its habitat.

### **Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the Pacific fisher. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the Pacific fisher and its habitat on the Deschutes National Forest.

### **Pygmy Rabbit, Region 6 Sensitive**

#### ***Existing Condition***

The pygmy rabbit distribution is generally limited to eastern Oregon. This species is a sagebrush obligate and inhabits sagebrush shrubland habitats. They use areas of mature sagebrush shrubland for cover, security, and foraging habitat. Hager and Lienkaemper (2007) found active burrow systems utilized shrubs that were greater than 65 cm in height. In Oregon, pygmy rabbits are the only leporids to dig their own burrows. These systems are used as an indication to pygmy rabbit occurrence. A burrow system usually has two entrances, but has been found to have as many as ten (Verts and Carraway 1998).

During the spring and summer months, this species feeds on sagebrush, bitterbrush, forbs, and grasses while sagebrush comprises 99 percent of the winter diet. Pygmy rabbits also require soft, deep loose soil conditions suitable for excavation and maintenance of burrows (Cope and Berger 1992).

The pygmy rabbit is classified by the federal government as a species of concern because of its specialized habitat requirements and evidence of declining populations. The Oregon Department of Fish and Wildlife lists pygmy rabbits as “sensitive-vulnerable,” meaning that protective measures are needed if sustainable populations are to be maintained over time (Oregon Natural Heritage Program 2001).

A fine scale mapping project was initiated on the Bend-Fort Rock Ranger District, Deschutes National Forest, in 2005 to further refine sage grouse habitat in the Pine Mountain area. Three years of mapping have occurred mapping the majority of potential sage grouse habitat (approximately 13,000 acres). The project is not yet completed with remnant habitat to the south of Pine Mtn. left to map. There has been no similar mapping effort on the Ochoco National Forest. Mapped sage grouse habitat will be used as a surrogate for pygmy rabbit habitat as these species occupy similar habitats.

Three sage grouse habitats were mapped and defined – winter, nesting, and brood rearing and foraging habitat (USFS 2006b). Winter habitat is defined as Mtn. Big Sagebrush – Bitterbrush plant associations with large structure and appreciable shrub heights capable of providing cover above the accumulated snowpack. Nesting habitat is comprised of Mtn. Big Sage – Bitterbrush and Mtn. Big Sage/Idaho Fescue plant associations with appreciable live shrub cover, structural height, and forb diversity. Brood rearing and foraging habitat are defined as Mtn. Big Sage plant associations with lower shrub cover and more grass and forb components. These habitats will be analyzed for the Deschutes NF while sage/scab habitat will be used to simulate pygmy rabbit habitat on the Ochoco. Habitat may be over-estimated on the Ochoco and Deschutes NFs as not all sage/scab habitats will provide suitable conditions for the pygmy rabbit, especially soil conditions needed by the rabbit.

**Table 119. Existing Designated Route and Dispersed Camping Conditions within Pygmy Rabbit Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Pygmy Rabbit Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Brood/Forage</b>	2,150	0	116	2,266
<b>Nesting</b>	3,820	0	62	3,882
<b>Nesting/Brood/Forage</b>	191	0	0	191
<b>Nesting/Winter</b>	42	0	0	42
<b>Winter</b>	2,610	0	501	3,111
<b>Winter/Brood/Forage</b>	612	0	16	628
<b>Total</b>	<b>9,425</b>	<b>0</b>	<b>695</b>	<b>10,120</b>

**Table 120. Existing Designated Route and Dispersed Camping Conditions within Pygmy Rabbit Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage/Scab</b>	16,562	12,831	32,794	62,186
<b>Total</b>	<b>16,562</b>	<b>12,831</b>	<b>32,794</b>	<b>62,186</b>

Table 119 shows approximately 9,425 acres of pygmy rabbit habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,536 acres of habitat occur inside the road effect distance within those areas identified as closed (9,425 acres) resulting in the potential disturbance of 42% of the pygmy rabbit habitat on the Deschutes NF.

Table 120 shows approximately 16,562 acres of pygmy rabbit habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,752 acres of habitat occur inside the road effect distance within those areas identified as closed (16,562 acres) resulting in the potential disturbance of 29% of the pygmy rabbit habitat on the Ochoco NF.

**Table 121. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Pygmy Rabbit on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Pygmy Rabbit Habitat	Acres of Pygmy Rabbit Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pygmy Rabbit Habitat Disturbed/Percent of Total Habitat	Total Acres of Pygmy Rabbit Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	10,120	3,536 (35%)	4,231 (42%)	5,889 (58%)
<b>Ochoco</b>	62,186	17,752 (29%)	17,752 (29%)	44,434 (71%)
<b>Total</b>	<b>72,306</b>	<b>21,288</b> <b>(29%)</b>	<b>21,983</b> <b>(30%)</b>	<b>50,323</b> <b>(70%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the pygmy rabbit habitat for the Deschutes and 29% of the pygmy rabbit habitat for the Ochoco remains in areas where disturbance is occurring. See Table 124 for more information.

**Table 122. Designated Route and Dispersed Camping Conditions within Pygmy Rabbit Habitat on the Deschutes National Forest for the Action Alternatives.**

Deschutes National Forest				
Pygmy Rabbit Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
<b>Brood/Forage</b>	2,229	0	0	2,229
<b>Nesting</b>	3,861	0	0	3,861
<b>Nesting/Brood/Forage</b>	191	0	0	191
<b>Nesting/Winter</b>	42	0	0	42
<b>Winter</b>	3,109	0	0	3,109
<b>Winter/Brood/Forage</b>	628	0	0	628
<b>Total</b>	<b>10,060</b>	<b>0</b>	<b>0</b>	<b>10,060</b>

**Table 123. Designated Route and Dispersed Camping Conditions within Pygmy Rabbit Habitat on the Ochoco National Forest for the Action Alternatives.**

Ochoco National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage/Scab	62,181	0	0	62,181
<b>Total</b>	<b>62,181</b>	<b>0</b>	<b>0</b>	<b>62,181</b>

**Table 124. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Pygmy Rabbit on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Pygmy Rabbit Habitat	Acres of Pygmy Rabbit Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pygmy Rabbit Habitat Disturbed/Percent of Total Habitat	Total Acres of Pygmy Rabbit Habitat Undisturbed/Percent of Total Habitat
Deschutes	10,060	3,500 (35%)	3,500 (35%)	6,560 (65%)
Ochoco	62,181	17,749 (29%)	17,749 (29%)	44,432 (71%)
<b>Total</b>	<b>72,241</b>	<b>21,288 (29%)</b>	<b>21,288 (29%)</b>	<b>50,992 (71%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 125. Undisturbed Habitat Comparison for the Pygmy Rabbit**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Pygmy Rabbit	58%	65%	71%	71%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the pygmy rabbit and its habitat.

### Determination

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the pygmy rabbit and results in no change in disturbance to suitable habitat on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the pygmy rabbit and its habitat on the Deschutes National Forest and a **“No Impact”** to pygmy rabbit and its habitat on the Ochoco National Forest.

**California Wolverine, Region 6 Sensitive, MIS**

***Existing Condition***

Wilderness or remote country where human activity is limited appears essential to the maintenance of viable wolverine populations. Habitat use is probably dictated largely by food availability; wolverines are primarily scavengers, but also depend on a variety of prey items. High elevation alpine wilderness areas appear to be preferred in summer, which tends to effectively separate wolverines and humans. In winter, they tend to den in the ground under snow or in rocky ledges or talus slopes (Ingram 1973; Banci 1994). However, Copeland (1996) found they tended to prefer montane coniferous forest habitats during the winter. Wolverines make little use of young, thick timber and clear-cuts (Hornocker and Hash 1981). Wolverines were documented using burn areas in Idaho (Copeland 1996) from immediately after the fire to up to several years after the event. These seemed to be associated with following ungulate herds.

Magoun and Copeland (1998) described two types of dens: natal and maternal. Natal dens are used during parturition and occur more commonly in subalpine cirque basins associated with boulder talus slopes. Maternal dens are used subsequent to natal dens and before weaning and consist of a complex of dens associated with boulders or fallen trees. Magoun and Copeland (1998) believe that a critical feature of wolverine denning habitat is the dependability of deep snow to persist through the denning period (Febr. – May at least 1 m deep). Deep snow offers thermoregulatory advantages to kits. Boulders and fallen trees are incorporated into dens if available and covered with deep snow. These provide needed subnivean cavities. Dens without boulders or trees are found at higher elevations in drifted hard-packed snow.

Wolverines appear to be extremely wide-ranging and unaffected by geographic barriers such as mountain ranges, rivers, reservoirs, highways, or valleys. For these reasons, Hornocker and Hash (1981) concluded that wolverine populations should be treated as regional rather than local. However, Edelman and Copeland (1999) suggest that wolverine populations move along corridors of mountainous habitats and that features such as the Columbia River Gorge and shrub-steppe habitats serve as barriers to dispersal. They also conclude that sightings occurring across the arid mountains of Central Oregon may suggest a movement corridor from the Cascade Mountains to the Willowa Mountains.

Habitat for the wolverine occurs in the higher elevations on the Deschutes National Forests in the following plant associations – mountain hemlock where average tree size is 15”dbh or greater. Approximately 92,588 acres of habitat currently exist across the Deschutes National. No potential habitat was mapped on the Ochoco National Forest.

**Table 126. Existing Designated Route and Dispersed Camping Conditions within Wolverine Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	89,298 (96%)	3,287 (4%)	3 (0%)	53,592 (58%)	38,228 (41%)	768 (1%)	92,588
<b>Ochoco</b>	0	0	0	0	0	0	0
<b>Total</b>	<b>89,298 (96%)</b>	<b>3,287 (4%)</b>	<b>3 (0%)</b>	<b>53,592 (58%)</b>	<b>38,228 (41%)</b>	<b>768 (1%)</b>	<b>92,588</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 126 shows approximately 89,298 acres of wolverine habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,825 acres of habitat occur inside the road effect distance within those areas identified as closed (89,298 acres) resulting in the potential disturbance of 7% of the wolverine habitat on the Deschutes NF.

**Table 127. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Wolverine on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Wolverine Habitat	Acres of Wolverine Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Wolverine Habitat Disturbed/Percent of Total Habitat	Total Acres of Wolverine Habitat Undisturbed/Percent of Total Habitat
Deschutes	92,588	2,825 (3%)	6,115 (7%)	86,473 (93%)
Ochoco	0	0	0	0
<b>Total</b>	<b>92,588</b>	<b>2,825 (3%)</b>	<b>6,115 (7%)</b>	<b>86,473 (93%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 3% of the wolverine habitat for the Deschutes remains in areas where disturbance is occurring. There is no habitat on the Ochoco NF. See Table 129 for more information.

**Table 128. Designated Route and Dispersed Camping Conditions within Wolverine Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	92,588 (100%)	0	0	90,122 (97%)	2,461 (3%)	5 (0%)	92,588
Ochoco	0	0	0	0	0	0	0
<b>Total</b>	<b>92,588 (100%)</b>	<b>0</b>	<b>0</b>	<b>90,122 (58%)</b>	<b>2,461 (3%)</b>	<b>5 (0%)</b>	<b>92,588</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 129. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Wolverine on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Wolverine Habitat	Acres of Wolverine Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Wolverine Habitat Disturbed/Percent of Total Habitat	Total Acres of Wolverine Habitat Undisturbed/Percent of Total Habitat
Deschutes	92,588	2,825 (3%)	2,825 (3%)	89,763 (97%)
Ochoco	0	0	0	0
<b>Total</b>	<b>92,588</b>	<b>2,825 (3%)</b>	<b>2,825 (3%)</b>	<b>89,763 (97%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 130. Undisturbed Habitat Comparison for the California Wolverine**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
California Wolverine	93%	97%	0	0

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the California wolverine and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the California wolverine. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the California wolverine and its habitat on the Deschutes National Forest and a **“No Impact”** to the California wolverine and its habitat on the Ochoco National Forest.

**Townsend’s Big-eared Bat, Region 6 Sensitive and MIS**

***Existing Condition***

The Townsend’s big-eared bat (*Corynorhinus townsendii*) is a non-migratory bat that is highly dependent on caves, or cave-like structures including mines, for winter hibernation sites, maternity colonies for birthing and rearing young, and roost sites. It is named for its big ears that are about 1 ½ inches compared to its 3 to 4 inch long body. Winter hibernation sites that provide cold winter temperatures (just above freezing) and maternity sites that provide high temperatures free from disturbance are critical components needed by this species and are limited on the Forest. While mines in some areas of the western U.S. have provided alternate habitat, there are likely few mines that provide habitat for *C. townsendii* in Central Oregon. This species also uses buildings, bridges, rock crevices, and hollow cavities in snags or large diameter trees for roost sites and occasionally as maternity sites (Mazurek 2004), particularly in open montane, ponderosa pine, and juniper forests.

Like other species of bats, *C. townsendii* likely forages heavily in riparian areas, wetlands, and lakes, and along forest edges or ridges, particularly forest ecotones, where insects concentrate. Although *C.*

*townsendii* appear to avoid large, open areas, and areas of dense, regenerating forests, estimates of canopy coverage necessary to create suitable foraging conditions are unknown. It is considered a lepidopteran specialist bat as over 90% of its diet includes moth species (Pierson et al. 1999). It also preys on flies, lacewings, dung beetles, and sawflies. Townsend's were previously reported to have long nightly one-way movements (up to 14 miles) from cave habitats to forage at lakes on the Bend-Ft. Rock Ranger District (Dobkin et al. 1995).

Evidence suggests that *C. townsendii* use interim roosts (to which they show little fidelity) while moving between summer and winter grounds (Pearson et al. 1952, Dobkin et al. 1995). Interim roosts appear to serve as "staging grounds" and may foster commingling of the sexes for breeding, serve to apprise juveniles of the location of hibernacula, or promote synchronous arrival of pregnant females at maternity roosts. Mating occurs in late fall and occasionally in early winter during hibernation and bats usually hibernate between November and March or April. Like other north temperate bats, females of this species have fertilization that is delayed until spring when they move from winter hibernation sites to caves (or in some cases, separate cave areas) that provide warm temperatures for birthing and rearing young.

Threats to this species are numerous and populations have declined throughout the western U.S. Surveys at historic roost sites in California from 1987 to 1991 indicated a 52 percent reduction in numbers of maternity colonies and a 55 percent decline in number of animals (Pierson and Rainey 1998). In Oregon, half of the known colonies are believed to have been either extirpated or have experienced substantial decline in numbers (Pierson et al. 1999).

This bat is considered to be highly sensitive to human disturbance at winter hibernation and maternity sites. Urban development and the associated increase in human recreational visitation at cave habitats in Central Oregon are likely a significant threat to this species on the Forest and surrounding lands. In addition, conversion of native shrub and grasslands for urban development (and agricultural use) and use of pesticides potentially alters the composition and abundance of the insect community (Gruver and Keinath 2006).

Other activities that may affect cave habitat suitability include removal of vegetation near roost entrances (which can alter airflow and temperature inside caves) from timber harvest, brush removal, wildfire and prescribed fire, vegetation trampling from camping and trails, and road construction. In addition, actions that alter the flow of surface water can affect bats by flooding roosts or altering internal humidity levels (e.g., by creating or eliminating pools of water inside roosts). Gates installed on cave entrances to protect bats can potentially have negative microclimate effects on airflow, temperature, and humidity inside caves. The extent to which climate change may affect bat populations is not known but potential changes to vegetation, insect abundance and composition, and an increase in winter temperatures could reduce suitable habitat in the future. The recently discovered white-nosed syndrome (a plant fungus associated with or the cause of depletion of fat reserves in wintering bats) that has reduced populations of several bat species in the northeastern U.S. has not been documented in the West as of yet. Monitoring for this fungus or syndrome in cave habitats on the Forest is likely to increase in the future. These threats are compounded by the species' naturally low reproductive rate and sparse distribution in fragmented habitats.

Approximately 400 caves exist on the Deschutes National Forest and adjoining private and Bureau of Land Management Land (BLM). The majority of *C. townsendii* on the Deschutes inhabit caves in the eastern semi-arid desert areas of the Bend-Ft. Rock Ranger District. However, some are known to inhabit caves in forested lava areas at higher elevations on the Forest. They have been reported in other areas of the western U.S. at elevations up to 10,000 feet. Several mines occur on the Ochoco NF that may also provide habitat.

Several of these caves have been gated with bat friendly designs and monitoring is ongoing to determine effectiveness of these gates. Anecdotal reports indicate that some of these caves previously held several hundred hibernating Townsend's several decades ago where now winter surveys indicate very low numbers. The degree to which bats have abandoned these caves and now inhabit other caves (or mines) is not known. Knowledge of hibernacula and particularly maternity colonies on the Forests and elsewhere in Central Oregon is highly limited.

Habitat for the Townsend's big-eared bat includes caves on the Deschutes National Forest. There is no information available for the Ochoco on caves or mines. Therefore, rock will be used to represent potential habitat. Suitable habitat specific to the Townsend's big-eared bat has not been fully mapped at this time as assessments are generally conducted at a project level and as surveys are conducted to determine the location and use of known caves. Habitat will be over-estimated for this analysis because not all cave or rock habitat identified is considered suitable Townsend's big-eared bat habitat.

**Table 131. Existing Designated Route and Dispersed Camping Conditions within Cave and Rock Habitat on the Deschutes and Ochoco National Forests for the Townsend's big-eared bat.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	9,696	19,175	155	1,270	25,843	1,914	29,026
<b>Ochoco</b>	1,502	378	110	1,049	609	331	1,990
<b>Total</b>	<b>11,198</b>	<b>19,553</b>	<b>265</b>	<b>2,319</b>	<b>26,452</b>	<b>2,245</b>	<b>31,016</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 131 shows approximately 9,696 acres of cave habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 15,881 acres of habitat occur inside the road effect distance within those areas identified as closed (9,696 acres) resulting in the potential disturbance of 55% of the Townsend's big-eared bat habitat on the Deschutes NF.

Table 131 shows approximately 1,502 acres of rock habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 392 acres of habitat occur inside the road effect distance within those areas identified as closed (1,502 acres) resulting in the potential disturbance of 44% of the Townsend's big-eared bat habitat on the Ochoco NF.

**Table 132. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Townsend’s big-eared Bat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Townsend’s Big-eared Bat Habitat	Acres of Townsend’s Big-eared Bat Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Townsend’s Big-eared Bat Habitat Disturbed/Percent of Total Habitat	Total Acres of Townsend’s Big-eared Bat Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	29,026	15,881 (55%)	15,881 (55%)	13,145 (45%)
<b>Ochoco</b>	1,990	392 (20%)	879 (44%)	1,110 (56%)
<b>Total</b>	<b>31,016</b>	<b>16,273 (52%)</b>	<b>16,760 (54%)</b>	<b>14,255 (46%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 55% of the Townsend’s big-eared bat habitat for the Deschutes and 20% of the Townsend’s big-eared bat habitat for the Ochoco remains in areas where disturbance is occurring. See Table 134 for more information.

**Table 133. Existing Designated Route and Dispersed Camping Conditions within Cave and Rock Habitat on the Deschutes and Ochoco National Forests for the Townsend’s big-eared bat.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	29,026	0	0	20,069	8,329	628	29,026
<b>Ochoco</b>	1,987	0	0	1,838	148	2	1,988
<b>Total</b>	<b>31,013</b>	<b>0</b>	<b>0</b>	<b>21,907</b>	<b>8,477</b>	<b>630</b>	<b>31,014</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 134. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Townsend’s big-eared Bat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Townsend’s Big-eared Bat Habitat	Acres of Townsend’s Big-eared Bat Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Townsend’s Big-eared Bat Habitat Disturbed/Percent of Total Habitat	Total Acres of Townsend’s Big-eared Bat Habitat Undisturbed/Percent of Total Habitat
Deschutes	29,026	15,881 (55%)	15,881 (55%)	13,145 (45%)
Ochoco	1,988	393 (20%)	393 (20%)	1,594 (80%)
<b>Total</b>	<b>31,014</b>	<b>16,274 (52%)</b>	<b>16,274 (52%)</b>	<b>14,739 (48%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 135. Undisturbed Habitat Comparison for Townsend’s Big-eared Bat**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Townsend’s Big-eared Bat	45%	45%	56%	80%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Townsend’s big-eared bat and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in no change to disturbance to suitable habitat on the Deschutes National Forest for the Townsend’s big-eared bat and a decrease in disturbance to suitable habitat on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have **“No Impact”** to the Townsend’s big-eared bat and its habitat on the Deschutes National Forest and a **“Beneficial Impact”** to the Townsend’s big-eared bat and its habitat on the Ochoco National Forest.

**Oregon Spotted Frog, Federal Candidate and Region 6 Sensitive**

***Existing Condition***

The Oregon spotted frog (*Rana pretiosa*) is currently listed as a candidate species by USFWS. As a result, a Conservation Assessment (Cushman and Pearl 2007) for the Oregon spotted frog was developed in 2007 to gather the best scientific data on the species and to identify potential threats and management considerations.

Spotted frogs have a historic distribution that covers a small part of western North America, from southern British Columbia to northeastern California, and from the west side of the Willamette Valley to the east side of the Oregon Klamath basin. They have been extirpated in much of their range (70-90%) by

introduction of the bullfrog (*Rana catesbeiana*), habitat alteration and habitat loss through intensified agriculture, grazing, and urbanization (USGS 2003). Recent surveys (within the last 20 years) suggest that Oregon spotted frogs remain at 22% (13/58) of historic sites (Cushman and Pearl 2007).

Oregon spotted frogs are the most aquatic of the native ranid frogs in the Pacific Northwest (Leonard et al. 1993, Cushman and Pearl 2007). The frog’s eye placement and degree of webbing on the hind feet suggest the frog is ideally suited for aquatic behavior. Post-metamorphic stages are usually found among herbaceous wetland vegetation (e.g. sedges, rushes, grasses or floating mats of submergent plants) in or near perennial water. These habitats often include areas of warm water. Post-metamorphic Oregon spotted frogs can also utilize pools, ponds, and small floodplain wetlands associated with permanent bodies of water, but where breeding rarely occurs. (Cushman and Pearl 2007).

Watson et al. (2003) summarized conditions required for the completion of the Oregon spotted frog life cycle based on population studies in Washington. These include: shallow water areas for egg and tadpole survival, perennial deep moderately vegetated pools for adult and juvenile survival in the dry season, and perennial water for protecting all age classes during cold wet weather. Pearl and Hayes (2004) also noted that Oregon spotted frogs are generally associated with wetland complexes greater than 4 ha in size with extensive emergent marsh coverage that warms substantially during seasons when the frogs are active at the surface. In addition, they noted that sites always include some permanent water juxtaposed to seasonally inundated habitat. (Cushman and Pearl 2007).

Oregon spotted frogs typically breed in water 2-30 cm deep. Grasses, sedges, and rushes are usually present, though eggs are laid where the vegetation is low or sparse. In central Oregon, the frogs are found in lakes and marshes up to 1575 m in elevation, where snow and ice cover their habitat for months. In some sites, Oregon spotted frogs are known to overwinter in perennially flowing springs or channels that do not freeze completely (Cushman and Pearl 2007).

Often found in the flooded upland adjacent to permanent water, the diet of spotted frogs consist mainly of insect material including moths, water striders, hoverflies, grasshoppers, spiders, beetles, and caddisflies.

Potential threats to this species includes loss and alteration of marsh habitat, plant succession and other vegetation changes, interactions with non-native fish and bullfrogs, livestock grazing, water quality degradation, isolation, drought, and diseases.

Habitat for the Oregon spotted frog includes Class 1, 2, and 3 streams, lakes, and wetlands. Suitable habitat specific to the Oregon spotted frog has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because habitat for this species is only limited to warmer waters with emergent vegetation.

**Table 136. Existing Designated Route and Dispersed Camping Conditions within Oregon Spotted Frog Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
<b>Class 1</b>	4,169	6,986	574	11,729
<b>Class 2</b>	4,094	7,017	325	11,436
<b>Class 3</b>	2,245	730	55	3,030
<b>Lake</b>	16,082	14,316	4,266	34,663
<b>Wetlands</b>	9,489	17,981	1,049	28,518
<b>Total</b>	<b>36,079</b>	<b>47,030</b>	<b>6,269</b>	<b>89,376</b>

**Table 137. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Oregon Spotted Frog on the Deschutes National Forest for Existing Designated Routes.**

Forest	Total Acres of Oregon Spotted Frog Habitat	Acres of Oregon Spotted Frog Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Oregon Spotted Frog Habitat Disturbed/Percent of Total Habitat	Total Acres of Oregon Spotted Frog Habitat Undisturbed/Percent of Total Habitat
Deschutes	89,376	20,665 (23%)	73,962 (83%)	15,414 (17%)
<b>Total</b>	<b>89,376</b>	<b>20,665</b> <b>(23%)</b>	<b>73,962</b> <b>(83%)</b>	<b>15,414</b> <b>(17%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 136 shows approximately 36,079 acres of Oregon spotted frog habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 20,665 acres of habitat occur inside the road effect distance within those areas identified as closed (36,079 acres) resulting in the potential disturbance of 83% of the Oregon spotted frog habitat on the Deschutes NF.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 51% of the Oregon spotted frog habitat for the Deschutes remains in areas where disturbance is occurring. See Table 139 for more information.

**Table 138. Designated Route and Dispersed Camping Conditions within Oregon Spotted Frog Habitat on the Deschutes National Forest for the Action Alternatives.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Class 1	8,345	3,256	132	11,733
Class 2	9,994	1,437	8	11,439
Class 3	2,769	238	23	3,030
Lake	33,966	653	42	34,661
Wetlands	9,489	17,981	1,049	28,518
<b>Total</b>	<b>64,563</b>	<b>23,565</b>	<b>1,254</b>	<b>89,382</b>

**Table 139. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Oregon Spotted Frog on the Deschutes National Forest for Action Alternatives.**

Forest	Total Acres of Oregon Spotted Frog Habitat	Acres of Oregon Spotted Frog Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Oregon Spotted Frog Habitat Disturbed/Percent of Total Habitat	Total Acres of Oregon Spotted Frog Habitat Undisturbed/Percent of Total Habitat
Deschutes	89,382	20,665 (23%)	45,484 (51%)	43,898 (49%)
<b>Total</b>	<b>89,382</b>	<b>20,665 (23%)</b>	<b>45,484 (51%)</b>	<b>43,898 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 140. Undisturbed Habitat Comparison for the Oregon Spotted Frog**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Oregon Spotted Frog</b>	17%	49%	NA	NA

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Oregon spotted frog and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the Oregon spotted frog. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the Oregon spotted frog and its habitat on the Deschutes National Forest.

**Columbia Spotted Frog, Federal Candidate and R6 Sensitive**

***Existing Condition***

The Columbia spotted frog (*Rana luteiventris*) ranges from southern Alaska to northern Nevada. There are four recognized populations of Columbia spotted frogs: Northern, Great Basin, Wasatch, and West Desert. Frogs in the Northern population are considered to be abundant; however, the other three populations are either declining or locally extinct. The Great basin population occurs in central and eastern Oregon, southwest Idaho, and northern Nevada. In 1993, the U.S. Fish and Wildlife Service listed the Great Basin Distinct Population Segment as a Candidate species under the Endangered Species Act (U.S. Fish and Wildlife Service 1993). In Oregon, it potentially occurs in Baker, Crook, Grant, Harney, Jefferson, Lake, Malheur, Umatilla, Union, Wallowa, and Wheeler counties (U.S. Fish and Wildlife Service 2008c). The Columbia spotted frog is nearly morphologically identical to the Oregon spotted frog but they differ genetically and occupy different ranges (Green et al. 1997).

Spotted frogs are highly aquatic and live in or near permanent bodies of water, including lakes, ponds, slow streams and marshes; movements of spotted frogs are usually limited to wet riparian corridors. Standing water, flooded meadows, and willows provide breeding, foraging, and overwintering habitat. Most spotted frogs hibernate (dormant state in winter) and aestivate (dormant state in summer). Hibernation occurs in spring-fed ponds with willows. The stream or pond banks are often vegetated with sedges, rushes, grasses and forbs, with small bare areas at the water's edge where the frogs can sun themselves and still remain relatively hidden (Bull 2005).

In a 9-year study of Columbia spotted frogs in northeastern Oregon (Bull 2005), breeding was observed as early as March at the warmest sites and the lowest elevations (3,000 feet) and as late as June at the highest elevation site (7,300 feet). Larvae remained in habitats with abundant aquatic or emergent vegetation or coarse woody debris, which provided rich food supplies (algae, etc.) and protection from predators. Metamorphosis occurred between July at the lower elevations and September at the higher elevations, with timing also being influenced by weather and water temperature. Recently metamorphosed frogs were found the first week in August in the river up to 1,000 feet from breeding ponds at the low-elevation sites and were found in September in seeps and temporary pools in subalpine fir. Breeding ponds at elevations below 5,900 feet were dominated by duckweed (*Lemna minor* L.), pondweed (*Potamogeton* sp.), and buttercup (*Ranunculus* sp.). Emergent and aquatic vegetation, benthic sediment, and coarse woody debris were all used by larvae as cover from predators.

Pearl et al. (2007) found that in the Blue Mountains of northeastern Oregon, 88% of oviposition sites were in waters less than 8 inches in depth and 80% of sites were less than 7 feet from shore in dense spikerush, sedges, and hydrophytic grasses. Shallow water depths likely provided warmer temperatures and refuge from predators. Frogs moved to overwintering sites between late August and mid-October. The maximum travel distance to overwintering sites was 1.4 miles.

The diet of Columbia spotted frog adults includes insects, mollusks, crustaceans, and arachnids while larvae eat algae and organic debris. Predators of spotted frog adults include herons, garter snakes, introduced fish, and American bullfrogs. Larvae may be consumed by the larvae of dragon flies, predacious diving beetles, fish and garter snakes.

Causes of mortality to this species include loss and degradation of wetlands, disease, parasites, wildfire, predation from native and introduced species of fish and the American bullfrog. Grazing may have both beneficial and negative impacts. Negative impacts from grazing include fecal contamination and eutrophication of water that may lead to amphibian malformations (Johnson et al. 2007), vegetation removal and soil compaction which would decrease hiding cover and increase desiccation when traveling, trampling of egg masses or young frogs, and bank destabilization at overwintering sites. In some situations, certain levels of grazing may benefit spotted frog habitat by removing vegetation, creating openings, and increasing solar radiation, which would provide areas for amphibians to bask and forage (Bull and Hayes 2000).

Limited research on short-term effects from wildfire to amphibians including pond-dwelling species does not indicate significant detrimental effects to amphibians from wildfire, and wildfire may result in positive benefits (Hossack and Corn 2007). Historical periodic wildfires in riparian vegetation likely created open habitat in meadows and riparian forests favorable to pond-dwelling amphibians (Cushman and Pearl 1997). A lack of wildfire in riparian habitats may result in encroachment of conifers and other woody vegetation which could increase canopy cover and therefore reduce water temperatures, degrading habitat for egg-laying, hatching, and transformation of larvae. However, depending on the extent and severity, short-term effects could include mortality of tadpoles or juveniles and loss of invertebrate prey for juveniles and adults (Bull and Hayes 2001) and removal of coarse woody debris important for microhabitat. Long-term detrimental effects from wildfire to amphibians are not well-studied (Pilliod et

al. 2003). Pond-dwelling frogs such as the Columbia spotted frog may be less affected directly by wildfire than other frog species as they are highly aquatic and rarely use terrestrial habitat (Pilliod et al. 2003). Wildfire suppression activities that remove water from breeding or overwintering sites could be detrimental to this species.

Habitat for the Columbia spotted frog includes Class 1, 2, and 3 streams, lakes, and wetlands. Suitable habitat specific to the Columbia spotted frog has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because habitat for this species is only limited to warmer waters with emergent vegetation.

**Table 141. Existing Designated Route and Dispersed Camping Conditions within Columbia Spotted Frog Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	3,659	3,836	2,095	9,590
<b>Class 2</b>	6,031	11,574	10,567	28,172
<b>Class 3</b>	2,684	5,498	4,393	12,575
<b>Lake</b>	277	66	45	388
<b>Wetlands</b>	2,426	5,282	1,397	9,105
<b>Total</b>	<b>15,077</b>	<b>26,256</b>	<b>18,497</b>	<b>59,830</b>

**Table 142. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Columbia Spotted Frog on the Deschutes National Forest for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Columbia Spotted Frog Habitat</b>	<b>Acres of Columbia Spotted Frog Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Columbia Spotted Frog Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Columbia Spotted Frog Habitat Undisturbed/Percent of Total Habitat</b>
<b>Ochoco</b>	59,830	27,204 (45%)	27,204 (45%)	32,626 (54%)
<b>Total</b>	<b>59,830</b>	<b>27,204 (45%)</b>	<b>27,204 (45%)</b>	<b>32,626 (54%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 141 shows approximately 15,077 acres of Columbia spotted frog habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 27,204 acres of habitat occur inside the road effect distance within those areas identified as closed (15,077 acres) resulting in the potential disturbance of 45% of the Columbia spotted frog habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 45% of the Columbia spotted frog habitat for the Ochoco remains in areas where disturbance is occurring. See Table 144 for more information.

**Table 143. Designated Route and Dispersed Camping Conditions within Columbia Spotted Frog Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	7,135	2,096	364	9,595
<b>Class 2</b>	20,196	5,846	2,132	28,174
<b>Class 3</b>	9,502	2,104	974	12,580
<b>Lake</b>	367	16	6	389
<b>Wetlands</b>	6,712	2,238	155	9,105
<b>Total</b>	<b>43,912</b>	<b>12,300</b>	<b>3,631</b>	<b>59,843</b>

**Table 144. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Columbia Spotted Frog on the Deschutes National Forest for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Columbia Spotted Frog Habitat</b>	<b>Acres of Columbia Spotted Frog Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Columbia Spotted Frog Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Columbia Spotted Frog Habitat Undisturbed/Percent of Total Habitat</b>
<b>Ochoco</b>	59,843	27,204 (45%)	27,204 (45%)	32,626 (54%)
<b>Total</b>	<b>59,843</b>	<b>27,204 (45%)</b>	<b>27,204 (45%)</b>	<b>32,626 (54%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 145. Undisturbed Habitat Comparison for the Columbia Spotted Frog**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Columbia Spotted Frog</b>	NA	NA	54%	54%

### **Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Columbia spotted frog and its habitat.

### **Determination**

Implementation of the Travel Management Rule will result in no change to disturbance to suitable habitat on the Ochoco National Forest for the Columbia spotted frog. Therefore, Alternatives 2 and 3 will have **“No Impact”** to the Columbia spotted frog and its habitat on the Ochoco National Forest.

### **Crater Lake Tightcoil, Region 6 Sensitive**

#### ***Existing Condition***

“The Crater Lake Tightcoil may be found in perennially wet situations in mature conifer forests, among rushes, mosses and other surface vegetation or under rocks and woody debris within 10 m. of open water in wetlands, springs, seeps and riparian areas, generally in areas which remain under snow for long periods during the winter. Riparian habitats in the Eastern Oregon Cascades may be limited to the extent of permanent surface moisture, which is often less than 10 m. from open water” (Duncan et al. 2003).

Threats to the species include activities that compact soils, reduce litter and/or vegetative cover, or impact potential food sources (i.e. livestock grazing, heavy equipment use, ORV's, and camping on occupied habitats). Fluctuations from removal of ground vegetation on ground temperature and humidity may be less extreme at higher elevations and on wetter sites, but no studies have been conducted to evaluate such a theory. These snails appear to occur on wetter sites than general forest conditions, so activities that would lower the water table or reduce soil moisture would degrade habitat (Burke et al. 1999).

Intense fire that burns through the litter and duff layers is devastating to most gastropods, and even light burns during seasons when these animals are active can be expected to have more serious impacts than burns during their dormant periods. Snowmobiling or skiing would impact these snails if snow, over their occupied habitats, is compacted losing its insulative properties and allowing the litter or ground to freeze (Burke et al. 1999).

Habitat for the Crater Lake tightcoil includes Class 1, 2, 3, and 4 streams and lake and wetland buffers. Suitable habitat specific to the Crater Lake tightcoil has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because habitat for this species is only limited to within 10 meters of the water's edge and for this analysis, the entire riparian buffer is included. It also includes water bodies in drier plant associations not known to support the Crater Lake tightcoil.

**Table 146. Existing Designated Route and Dispersed Camping Conditions within Crater Lake Tightcoil Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	4,169	6,986	574	11,729
<b>Class 2</b>	4,094	7,017	325	11,436
<b>Class 3</b>	2,245	730	55	3,030
<b>Class 4</b>	8,211	6,494	561	15,266
<b>Lake</b>	10,412	6,703	991	18,106
<b>Wetland Buffer</b>	5,929	7,440	248	13,617
<b>Total</b>	<b>35,060</b>	<b>35,370</b>	<b>2,754</b>	<b>73,184</b>

**Table 147. Existing Designated Route and Dispersed Camping Conditions within Crater Lake Tightcoil Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	3,659	3,836	2,095	9,590
<b>Class 2</b>	6,031	11,574	10,567	28,172
<b>Class 3</b>	2,684	5,498	4,393	12,575
<b>Class 4</b>	6,560	5,103	6,452	18,116
<b>Lake</b>	147	120	179	446
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Total</b>	<b>21,373</b>	<b>30,216</b>	<b>25,054</b>	<b>76,644</b>

**Table 148. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Crater Lake Tightcoil on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Crater Lake Tightcoil Habitat</b>	<b>Acres of Crater Lake Tightcoil Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Crater Lake Tightcoil Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Crater Lake Tightcoil Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	73,184	22,490 (31%)	60,614 (83%)	12,570 (17%)
<b>Ochoco</b>	76,644	31,992 (42%)	31,992 (42%)	44,652 (58%)
<b>Total</b>	<b>149,828</b>	<b>54,482 (36%)</b>	<b>92,606 (62%)</b>	<b>57,222 (38%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 146 shows approximately 35,060 acres of Crater Lake tightcoil habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 22,490 acres of habitat occur inside the road effect distance within those areas identified as closed (35,060

acres) resulting in the potential disturbance of 83% of the Crater Lake tightcoil habitat on the Deschutes NF.

Table 147 shows approximately 21,373 acres of Crater Lake tightcoil habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 31,992 acres of habitat occur inside the road effect distance within those areas identified as closed (21,373 acres) resulting in the potential disturbance of 42% of the Crater Lake tightcoil habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 46% of the Crater Lake tightcoil habitat for the Deschutes and 42% of the Crater Lake tightcoil habitat for the Ochoco remains in areas where disturbance is occurring. See Table 151 for more information.

**Table 149. Designated Route and Dispersed Camping Conditions within Crater Lake Tightcoil Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	8,345	3,256	132	11,733
<b>Class 2</b>	9,994	1,437	8	11,439
<b>Class 3</b>	2,769	238	23	3,030
<b>Class 4</b>	12,045	3,119	103	15,267
<b>Lake</b>	17,059	862	192	18,113
<b>Wetland Buffer</b>	11,788	1,778	50	13,616
<b>Total</b>	<b>62,000</b>	<b>10,690</b>	<b>508</b>	<b>73,198</b>

**Table 150. Existing Designated Route and Dispersed Camping Conditions within Crater Lake Tightcoil Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1</b>	7,135	2,096	364	9,595
<b>Class 2</b>	20,196	5,846	2,132	28,174
<b>Class 3</b>	9,502	2,104	974	12,580
<b>Class 4</b>	14,867	2,183	1,070	18,120
<b>Lake</b>	343	64	40	447
<b>Wetland Buffer</b>	6,293	1,320	133	7,746
<b>Total</b>	<b>58,336</b>	<b>13,613</b>	<b>4,713</b>	<b>76,662</b>

**Table 151. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Crater Lake Tightcoil on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Total Acres of Crater Lake Tightcoil Habitat	Acres of Crater Lake Tightcoil Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Crater Lake Tightcoil Habitat Disturbed/Percent of Total Habitat	Total Acres of Crater Lake Tightcoil Habitat Undisturbed/Percent of Total Habitat
Deschutes	73,184	22,490 (31%)	33,674 (46%)	39,510 (54%)
Ochoco	76,662	31,992 (42%)	31,992 (42%)	44,652 (58%)
<b>Total</b>	<b>149,846</b>	<b>54,482 (36%)</b>	<b>65,666 (44%)</b>	<b>84,162 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 152. Undisturbed Habitat Comparison for the Crater Lake Tightcoil**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Crater Lake Tightcoil	17%	54%	58%	58%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Crater Lake tightcoil and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the Crater Lake tightcoil and no change on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the Crater Lake tightcoil and its habitat on the Deschutes National Forest and **“No Impact”** to the Crater Lake tightcoil and its habitat on the Ochoco National Forest.

**Silver-bordered Fritillary, Region 6 Sensitive**

***Existing Condition***

The silver-bordered fritillary is a holarctic species ranging from the Appalachians, Midwest, Rockies, and the Cascades. This species is known from three locations in Oregon – Big Summit Prairie (Crook Co.), the Strawberry Mountains (Grant Co.), and the southern Willowa range north of Halfway (Baker Co.) (Pyle 2002, Warren 2005). They are associated with open riparian areas, bogs, and marshes dominated by *Salix* and larval foodplants (marsh violet, bog violet). The adults nectar on various composites, mints, and *Verbena*. Populations from Crook and Grant counties fly from early June to mid-August, in what is apparently a single annual brood. Threats include small populations that are stressed by habitat succession and drying (Pyle 2002).

Habitat for the silver-bordered fritillary includes wetlands. Wetlands include both the wetland and the associated buffer. Suitable habitat specific to the silver-bordered fritillary has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because all wetlands are mapped and may not contain food plants used by this species.

**Table 153. Existing Designated Route and Dispersed Camping Conditions within Silver-bordered Fritillary Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetlands</b>	15,418	25,421	1,297	42,135
<b>Total</b>	<b>15,418</b>	<b>25,421</b>	<b>1,297</b>	<b>42,135</b>

**Table 154. Existing Designated Route and Dispersed Camping Conditions within Silver-bordered Fritillary Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Wetlands</b>	4,718	9,367	2,765	16,850
<b>Total</b>	<b>4,718</b>	<b>9,367</b>	<b>2,765</b>	<b>16,850</b>

Table 153 shows approximately 15,418 acres of silver-bordered fritillary habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 11,271 acres of habitat occur inside the road effect distance within those areas identified as closed (15,418 acres) resulting in the potential disturbance of 90% of the silver-bordered fritillary habitat on the Deschutes NF.

Table 154 shows approximately 4,718 acres of silver-border fritillary habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 7,436 acres of habitat occur inside the road effect distance within those areas identified as closed (4,718 acres) resulting in the potential disturbance of 44% of the silver-bordered fritillary habitat on the Ochoco NF.

**Table 155. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Silver-bordered Fritillary on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Silver-bordered Fritillary Habitat	Acres of Silver-bordered Fritillary Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Silver-bordered Fritillary Habitat Disturbed/Percent of Total Habitat	Total Acres of Silver-bordered Fritillary Undisturbed/Percent of Total Habitat
Deschutes	42,135	11,271 (27%)	37,988 (90%)	4,147 (10%)
Ochoco	16,850	7,436 (44%)	7,436 (44%)	9,414 (56%)
<b>Total</b>	<b>58,985</b>	<b>18,707</b> <b>(32%)</b>	<b>45,424</b> <b>(77%)</b>	<b>13,561</b> <b>(23%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the silver-bordered fritillary habitat for the Deschutes and 44% of the silver-bordered fritillary habitat for the Ochoco remains in areas where disturbance is occurring. See Table 158 for more information.

**Table 156. Designated Route and Dispersed Camping Conditions within Silver-bordered Fritillary Habitat on the Deschutes National Forest for the Action Alternatives**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Wetlands	37,089	4,887	157	42,133
<b>Total</b>	<b>37,089</b>	<b>4,887</b>	<b>157</b>	<b>42,133</b>

**Table 157. Designated Route and Dispersed Camping Conditions within Silver-bordered Fritillary Habitat on the Ochoco National Forest for the Action Alternatives**

Ochoco National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Wetlands	13,005	3,558	288	16,851
<b>Total</b>	<b>13,005</b>	<b>3,558</b>	<b>288</b>	<b>16,851</b>

**Table 158. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Silver-bordered Fritillary on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Total Acres of Silver-bordered Fritillary Habitat	Acres of Silver-bordered Fritillary Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Silver-bordered Fritillary Habitat Disturbed/Percent of Total Habitat	Total Acres of Silver-bordered Fritillary Undisturbed/Percent of Total Habitat
Deschutes	42,133	11,271 (27%)	16,315 (39%)	25,818 (61%)
Ochoco	16,851	7,436 (44%)	7,436 (44%)	9,414 (56%)
<b>Total</b>	<b>58,984</b>	<b>18,707</b> <b>(32%)</b>	<b>23,751</b> <b>(40%)</b>	<b>35,232</b> <b>(60%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 159. Undisturbed Habitat Comparison for the Silver-bordered Fritillary**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Silver-bordered Fritillary	10%	61%	56%	56%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the silver-bordered fritillary and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes National Forest for the silver-bordered fritillary and no change on the Ochoco National Forest. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the silver-bordered fritillary and its habitat on the Deschutes National Forest and **“No Impact”** to the silver-bordered fritillary and its habitat on the Ochoco National Forest.

**Johnson’s Hairstreak, Region 6 Sensitive**

***Existing Condition***

The Johnson’s hairstreak is an uncommon butterfly with a distribution limited to the Pacific Northwest (USFS 2008b). It has been documented from Salem, Eugene, Coos Bay and Medford BLM districts and from the Willamette, Deschutes, Umpqua, Rouge-River/Siskiyou, Fremont-Winema, Umatilla and Wallowa-Whitman National Forests. Most Oregon records (n=52) are from 2000’ elevation or greater with the majority from 3500’ or more to 5-6000’ elevation. They are thought to be late-successional associated because of its dependence upon dwarf mistletoe. Dwarf mistletoes generally increase in incidence and intensity in older stands, however both young and maturing stands host this as well (USFS 2008b).

Larvae feed exclusively on the aerial shoots of dwarf mistletoes (USFS 2008b). Adults sip nectar at available flowers of several species (Actostaphylos, Ceanothus, Cornus, dandelion, Fragaria, Rorippa, and Spraguea) and nearby water and mud puddles (USFS 2008b). There are several closely related species with overlapping ranges making identification difficult. The Thicket Hairstreak larvae are undistinguishable with those of the Johnson’s Hairstreak. Since this species spends so much time in the top of the forest canopy this may limit detection.

Threats to this species includes timber harvest in mistletoe infested areas, large stand replacement fires, Btk (insecticide) use, herbicide use on forage species, and possible hybridization with the Thicket Hairstreak (USFS 2008b).

Great gray owl habitat analysis will be used as a surrogate for the Johnson’s hairstreak as it includes those plant associations with mistletoe. Habitat for the great gray owl occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, silver fir, western hemlock, and subalpine fir where the average tree size is 15”dbh or greater. Suitable habitat specific to the Johnson’s hairstreak has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not all habitats assessed will have mistletoe.

**Table 160. Existing Designated Route and Dispersed Camping Conditions within Johnson’s Hairstreak Habitat on the Deschutes National Forest.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Johnson’s Hairstreak Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	118,201 (60%)	71,431 (36%)	8,343 (4%)	51,157 (26%)	122,043 (62%)	24,776 (12%)	197,976
<b>Ochoco</b>	32,859 (44%)	21,758 (29%)	19,379 (26%)	27,806 (38%)	26,940 (36%)	19,250 (26%)	73,996
<b>Total</b>	<b>151,060 (56%)</b>	<b>93,189 (34%)</b>	<b>27,722 (10%)</b>	<b>78,963 (29%)</b>	<b>148,983 (55%)</b>	<b>44,026 (16%)</b>	<b>271,972</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 160 shows approximately 118,201 acres of Johnson’s hairstreak habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 110,569 acres of habitat occur inside the road effect distance within those areas identified as closed (218,161 acres) resulting in the potential disturbance of 96% of the Johnson’s hairstreak habitat on the Deschutes NF.

Table 160 shows approximately 32,859 acres of Johnson’s hairstreak habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,669 acres of habitat occur inside the road effect distance within those areas identified as closed (32,859 acres) resulting in the potential disturbance of 79% of the Johnson’s hairstreak habitat on the Ochoco NF.

**Table 161. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Johnson’s Hairstreak on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Johnson’s Hairstreak Habitat	Acres of Johnson’s Hairstreak Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Johnson’s Hairstreak Habitat Disturbed/Percent of Total Habitat	Total Acres of Johnson’s Hairstreak Undisturbed/Percent of Total Habitat
Deschutes	197,976	110,569 (56%)	190,344 (96%)	7,632 (4%)
Ochoco	73,996	17,669 (24%)	58,806 (79%)	15,190 (21%)
<b>Total</b>	<b>271,972</b>	<b>128,238 (47%)</b>	<b>249,150 (92%)</b>	<b>22,822 (8%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 56% of the Johnson’s hairstreak habitat for the Deschutes and 24% of the Johnson’s hairstreak habitat for the Ochoco remains in areas where disturbance is occurring. See Table 163 for more information.

**Table 162. Designated Route and Dispersed Camping Conditions within Johnson’s Hairstreak Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Johnson’s Hairstreak Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	197,899 (100%)	64 (0%)	0	137,312 (69%)	53,423 (27%)	7,228 (4%)	197,963
Ochoco	73,993 (100%)	0	0	66,900 (90%)	5,475 (7%)	1,618 (2%)	73,993
<b>Total</b>	<b>271,892 (100%)</b>	<b>64 (0%)</b>	<b>0</b>	<b>204,212 (75%)</b>	<b>58,898 (22%)</b>	<b>8,846 (3%)</b>	<b>271,956</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 163. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Johnson’s Hairstreak Habitat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Johnson’s Hairstreak Habitat	Acres of Johnson’s Hairstreak Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Johnson’s Hairstreak Habitat Disturbed/Percent of Total Habitat	Total Acres of Johnson’s Hairstreak Habitat Undisturbed/Percent of Total Habitat
Deschutes	197,963	110,569 (56%)	110,633 (56%)	87,330 (44%)
Ochoco	73,993	17,669 (24%)	17,669 (24%)	56,324 (76%)
<b>Total</b>	<b>271,956</b>	<b>128,238 (47%)</b>	<b>128,302 (47%)</b>	<b>143,654 (53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 164. Undisturbed Habitat Comparison for the Johnson’s Hairstreak**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Johnson’s Hairstreak	4%	44%	21%	76%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Johnson’s hairstreak and its habitat.

**Determination**

Implementation of the Travel Management Rule will result in a decrease in disturbance to suitable habitat on the Deschutes and Ochoco National Forests for the Johnson’s hairstreak. Therefore, Alternatives 2 and 3 will have a **“Beneficial Impact”** to the Johnson’s hairstreak and its habitat on the Deschutes and Ochoco National Forests.

**Appendix 1. Current habitat and reproductive status of each northern spotted owl home range on the Deschutes NF as of March 2008.**

Forest Owl Pair Number	Forest Site Name	Current NRF w/in 1.2 mi.	Current NRF w/in .7 mi.	Status 95	Status 96	Status 97	Status 98	Status 99	Status 00	Status 01	Status 02	Status 03	Status 04	Status 05	Status 06	Status 07
1001	Cultus Mountain	1,041	628	NA	unk	P-1	P-1									
1002	Applejack	398	157	P	P	unk	NA	P	unk	unk	P	unk	unk	unk	unk	unk
1003	Benchmark	624	217	P	R/1	unk	NA	P	NA	unk	NA	unk	unk	unk	unk	P-1
1004	Deer Lake	550	348	P-1	unk	NA	unk	unk								
1005	Sheridan Mountain	156	104	S+1	unk	unk	P	unk	P-1	unk						
1006	Lucky Lake	68	0	P	unk	unk	NA	unk								
1007	Three Trappers Bts.	525	250	unk	P											
2001	McCool Butte	639	221	NA	Na	NA	NA	unk	NA	unk	unk	NA	B	NA	NA	unk
2002	Hamner Butte	1,558	603	P	P	P	NA	NA	NA	P	NA	R/1	P	R/?	NA	P-1
2003	Ringo Butte	906	350	P	R/1	unk	R/?	unk	NA	unk	NA/NTG	NA/NTG	S/NTG	P-2	NA	unk
2004	Maklaks Mountain	643	269	R/1	R/1	P-1	P	unk	NA	unk	R/2	NA	R/2	R/1	NA	P-1
2005	Moore Cr.	755	439	P	P	unk	P	NA	NA	unk	R/1	R/?	NTG	NA	NA	unk
2007	Crescent Lake	352	115	NA	unk	unk	P-1/B	unk	unk	unk	unk	R/?	NA	NA	NA	unk
2008	Saddle Butte	272	157	P-1	R/1	NA	R/2	unk	unk	unk	NA	NA	NA	NA	NA	unk
2009	Big Marsh	642	229	P	unk	unk	P	NA	unk	P	P	P	P	P-1	P	P-1
2010	Royce Mountain	805	281	P-1	NA	P-1	NA	NA	NA	unk	S	S	NA	NA	NA	unk
2011	Moore Creek Tr.	740	280	NA	unk	unk	NA	unk	NA	unk	NA	NA	NA	S	P	unk
2012	Cappy Mountain	530	341	NA	NA	NA	R/1	P	unk	unk	unk	P	P-2	NA	NA	unk
2013	Willamette Pass	739	299	unk	R/2	P	NA	NA	NA	unk						
2014	Trapper Creek	392	214	unk	P	P	unk									
5001	Castle	582	280	unk	NA	NA	unk	unk								

Forest Owl Pair Number	Forest Site Name	Current NRF w/in 1.2 mi.	Current NRF w/in .7 mi.	Status 95	Status 96	Status 97	Status 98	Status 99	Status 00	Status 01	Status 02	Status 03	Status 04	Status 05	Status 06	Status 07
	Rocks.															
5002	Candle Creek	179	37	unk	NA	unk	unk	unk								
5005	Jefferson Lakes	185	57	unk	unk	P-1	unk	unk	unk	unk	unk	unk	NTG	unk	unk	unk
5011	Trout Creek	1,363	561	unk	unk	unk	NA	unk	NA	NA	NA	unk	unk	NA	NA	NA
5012	Davis Creek	332	171	NA	unk	NA	unk	NA	unk	NA	NA	unk	NA	NA	NA	NA
5015	Bluegrass Butte	314	137	unk	unk	unk	R/1	NA	R/2	R/?	NA	unk	P-1	P-1	unk	unk
5018	Suttle	20	6	P-1	NA	P-1	P-1	NA	unk	NA	NA	NTG	P-1	NA	unk	unk
5019	Suttle 96	67	16	unk	R/2	NA	unk	NA	unk	NA	NA	NTG	P-1	NA	unk	unk
5020	Suttle South	64	33	R/2	P+1	P	R-?	NA	R/2	S	NA	NTG	NA	NA	unk	unk
5022	Obsidian	1,045	488	unk	unk	unk	unk	unk	unk	P	P	R/2	P-1	P-1	B	NA
5023	Black Crater	946	449	unk	unk	unk	unk	unk	unk	P	unk	unk	unk	unk	P	P

B= Barred Owl                      NA = surveyed; not active                      NA# = Final year of survey for territory                      NTG = Nest Tree Gone (Fallen)  
 P = pair site, occupied              P-1 = pair site occupied, 1 bird located                      P+1= pair site, occupied 3 owls located                      R/# = pair, nesting attempt/# of young  
 S = single site, single bird              S+1 = single site, 2 owls pair not confirmed                      unk = unknown site status

\* One adult and one juvenile owl were located on Hamner Butte in late July following the Davis Mountain Fire. Since there were no responses during two Hamner Butte surveys earlier in the year, it is unclear whether the adult and juvenile located were from the Hamner Butte site or birds that had moved from the Davis Mountain site to escape the fire.

Parker Creek and Cabot Creek sites described in the 2001 BA are not shown here. Cabot Creek was found to be the Abbot/Cabot pair site. Parker Creek is located on the Warm Springs Reservation and is being tracked by the tribe. Trapper Creek is a new site added since 2003. Three Trappers Buttes is a new site added since 2006.

1.2 mile radius home range = 2,895 acres	0.7 mile radius = 985 acres
40% of 1.2 mile home range = 1,158 acres	50% of 0.7 mile radius = 493 acres

**Table 2. Historic Spotted Owl Sites on the Deschutes National Forest as of March 2008.**

Forest Owl Pair Number	Forest Site Name	Forest Owl Pair Number	Forest Site Name
2006	Davis Mountain	5010	Dry Creek
5003	Abbot/Cabot	5013	Canyon Creek
5004	Brush Creek	5014	Bear Valley
5006	First Creek	5016	Santiam Pass
5007	Key West	5017	Spring Creek
5008	Cache Mountain West	5021	Upper Canyon Creek
5009	Cache Mountain East		

Due the lack of habitat existing in the core areas or the nest tree falling, these owl sites will no longer be tracked. They will be moved to historic sites. The primary disturbance events that lead to the loss of these sites are fires.

**Appendix 2. Reproductive History of Deschutes Basin Bald Eagle Pairs (Isaacs and Anthony 2005). This table is split out by zones, then by county and subdivision/site relationship.**

Bald Eagle Pair Name	Zone/Ownership	Year Nest First Located or Info Collected	Statu s 97	Statu s 98	Statu s 99	Statu s 00	Statu s 01	Statu s 02	Statu s 03	Statu s 04	Statu s 05	Statu s 07	Statu s 08
<b>Wheeler Co.</b>													
Rock Creek Lake	9/ONF	1992	1	2	1	A?	1	oF	2	2	1/c		
<b>Crook Co.</b>													
Awbrey Mt.	11/PVT	1991	oF	1	oF	2	1	*2	2	-	oF		
Grizzly Mt.	11/BLM	1991	1	2	2	oF	oF	1	1	oF	F		
McKay Creek	11/PVT	1987	2	O?	2	F	2	2	*2	2	3		
Shady Creek Res.	11/ONF	1997	oF	2	2	2	*oF	O?	F	2	1		
Huston Lake	11/PVT	2000	N/A	N/A	N/A	1	1	CG, O?	U	ND/O?	NS		
Ochoco Creek	11/BLM	1999	N/A	N/A	2	1	oF	1	2	2	ND,oF		
Combs Flat	11/PVT	1997	oF	oF	oF	oF	TD,U	N,U	U	NS	NS		
Wolf Creek	11/ONF	1998	N/A	oF	2	1	2	2	2d	2	1		
Bonnieview/Lucky Wickiup	11/BLM-PV	2004	N/A	*F	1								
Rabbit Valley 1/ Rabbit Valley 2	11/PVT-BLM	1999	N/A	N/A	O?	2	2	2	oF/o	1	1		
North Alkali Flat/Owl Creek	11/BLM	1996	A?	1	1	oF	2	*F	F	2	F		
Miller Lake	11/ONF	1999	N/A	N/A	A?	2	2	1	oF	oF	oF		
Antelope Flat Res.	11/ONF	1998	N/A	oF	F	1	1	2	1	1	1		
<b>Jefferson Co.</b>													
Seekseeque Cr.	11/WST	1989	1	1	1	1	1	1	1	1	3	F	F
Eyerly/Monty Camp	11/WST	1981	2	1	F	F	*2	1	*oF	1	oF	2	F
Box Canyon/L.	11/WST	1979	1	oF	2d	2	F	1	oF	1	1	F	F

Bald Eagle Pair Name	Zone/Ownership	Year Nest First Located or Info Collected	Status 97	Status 98	Status 99	Status 00	Status 01	Status 02	Status 03	Status 04	Status 05	Status 07	Status 08
Billy Chinook													
Big Bend	11/DNF	2003	N/A	N/A	N/A	N/A	N/A	N/A	*oF	2	2	2	3
Fly Creek/Fly Creek Mouth	11/PGE	1995	2	1d	2	2	oF	2/n	ND	*oF	1d	2	3d
Spring Creek/Street Cr. Mouth	11/DNF	1996	F	oF	1	F	2	1/n	*1	1d	1d	1	F
Canadian Bench	11/BLM	2000	N/A	N/A	N/A	oF	F	oF	oF	oF	oF	al	F
Wizard Falls	11/DNF	1995	1	2	2	2	2	2	2	2d	2	2	O?
Big Canyon	11/PVT	1994	1	oF	3	1	2	2	oF	U	U	2	3d
Lower Desert	11/PVT	1987	1	2	1	oF	1d	ND, O?	2	1	2	2	3
Suttle Lake	11/DNF	1971	1	2	oF	oF	2	1	1d/n	A?/s	2	N	N
<b>Deschutes Co.</b>													
Camp Polk	11/DNF	2005	N/A	oF									
Cloverdale	11/DNF	1986	oF	oF	O?	1	2	2	2	2	2	2	O?
Shevlin Park	11/CI	1986	NS	U	U	NS	NS	NS	NS	NS	NS		
East L/Paulina L	11/DNF	1973	1	oF	oF	2/c	oF	oF	oF	1	oF	1	NS
Bates Butte	11/OPR	1971	3	oF	1	2	2	1	2	2	2	1	1
Tetherow Meadow	11/DNF	1988	oF	1	1	1	1	F	F	1	1	1	1
Deschutes R. Oxbow	11/DNF	1990	1	oF	1	2	F	1	1	1	2	1	oF/s
Pringle Falls Junction	11/DNF	2003	N/A	N/A	N/A	N/A	N/A	N/A	F	F	U	U	U
Elk Lake/Hosmer Lake	11/DNF	1971	oF	2	1	2	2	2	2	O?	1	2	O
Lava Lake	11/DNF	1987	oF	oF	*oF	oF	2	oF	F	2	1	1	NS
Benchmark Butte	11/DNF	1971	oF	2	2	NS	NS	oF	F	oF	oF	1	1
Cultus River	11/DNF	2000	N/A	N/A	N/A	F	1	2	2	1	1	1	ND
Quinn River/Lemish Butte	11/DNF	1972	1	1	F	oF	2	oF	oF	oF	oF	oF	1
Crane Prairie Res. W	11/DNF	1974	2	1	F	oF	oF	1	F	1	1	1	F
Crane Prairie Res. S/SE	11/DNF	1971	1	F	2	oF	F	1	2	F/c	1	1	F
Crane Prairie Res. SW	11/DNF	1993	1	2	1	F/c	2	F	1	2	F	2	1
Crane Prairie Res. E	11/DNF	1971	oF	2	2	oF	2	*1	1	2	oF	2	2
Crane Prairie Res. NE	11/DNF	1971	oF	oF	CG, oF	O?	CG, O?	CG, O?	CG, U	CG, U	CG, U	U	U
Wuksi Butte	11/DNF	1993	1	1	1	2	2	2	2	1	2	F	O
Brown's Mt.	11/DNF	1975	2	1	2	F	oF	F	oF	oF	oF	2	U
Brown's Peak		2007										oF	U
Brown's Creek	11/DNF	1971	2	F	2	2	2, ND	2	1	F	1	2	U
Brown's Crossing	11/DNF	2001	N/A	N/A	N/A	N/A	oF	oF	oF	oF	U	1	1
Wickiup Res. N	11/DNF	1971	1	oF	1	2	F	2	oF	oF	oF	oF	2

Bald Eagle Pair Name	Zone/Ownership	Year Nest First Located or Info Collected	Status 97	Status 98	Status 99	Status 00	Status 01	Status 02	Status 03	Status 04	Status 05	Status 07	Status 08
Wickiup Butte	11/DNF	2005	N/A	oF	U								
Wickiup Res. E/Haner Park	11/DNF	2007										oF	oF
Wickiup Res. E/Wickiup Dam	11/DNF	1980	2	2	1	2	1	oF	1	1	F	F/s	1
Eaton Butte	11/DNF	1981	oF	1	1	2	2	2	1	1	F	2	2
Wickiup Res. S/Wickiup Res. W	11/DNF	1978	1	2	oF	oF	oF	oF	oF	2	2	1	1
Round Swamp	11/DNF	1971	oF	1	2	oF	F	2	2,ND/n*	2/s	1	oF	oF
Davis L W/NW	11/DNF	1973	2	F	oF	F	1	oF	1/n	*oF	2	oF	oF
Davis Lake West	11/DNF	2002	N/A	N/A	N/A	N/A	N/A	1	1	2	1	oF	oF
Davis Creek	11/DNF	1971	*oF	1	2	1	oF	1	2	2	2	2	U
<b>Klamath Co.</b>													
Odell Lake NW/ Odell Lake W	11/DNF	1974	1	2	1	1	2	F/j	*2d	1	oF	oF	oF
Crystal Creek/ Serenity Bay/ Pebble Bay	11/DNF	1997	1	F	1	1	2	2/j	2	oF	oF	2	oF
Odell Lake NE	11/DNF	1983	al	al	al	al	al	al	oF	oF	oF	oF	oF
Triple Thunder/ Rosary Creek	11/DNF	1975	2	2	2	1	1	2	2	1	2	oF	oF
Odell Lake SE	11/DNF	1978	F	1	2	oF	oF	1	F	1	1	2	oF
Odell Creek/ Resort Ridge	11/DNF	2005	N/A	2/j	2	oF	oF						
Chinquapin Pt.	11/DNF	2006										1	oF
Pengra Pass	11/DNF	1998		1	1	F	1	2	2	1	1	1	2
Highway 58	11/DNF	2007										1	oF
Lava Flow	11/DNF	1993	F	1	1	1	2	2	1	oF	*oF	oF	oF
Davis Lake SE	11/DNF	1971	oF	oF	F	2	*2	oF	2/n	1/s	2	2	1
Tranquil Cove	11/DNF	2002	N/A	N/A	N/A	N/A	N/A	1	2d	1	2	2	oF
Crescent Lake	11/DNF	1971	1	oF	2	F	F	1	oF	F	oF	1	oF
<b>Lake Co.</b>													
Flat Top	22/DNF	1997	1	oF	2	2	1	2	2	1	1	oF	1
Squaw Ridge	22/DNF	2007										2	2

KEY TO ABBREVIATIONS:

RECOVERY ZONES: 9 = Blue Mountains, 11 = High Cascades, 22 = Klamath Basin

LANDOWNERS: BLM = Bureau of Land Management, CI = City, DNF = Deschutes National Forest, ONF = Ochoco National Forest, OPR = Oregon Parks and Recreation, PGE = Portland General Electric, PVT = Private, WST = Warm Springs Tribe

**SITE AND NEST STATUS:**

- \* = Nest was built or rebuilt since last observed.
- oF = Occupied or breeding failure;  $\geq 1$  adult and a nest observed during the breeding season; no evidence of eggs or young.
- O? = Occupied, outcome unknown; adult eagle(s) observed; but no nest located, or outcome not determined; repaired nest but no adult eagle(s) observed.
- A? = Active, outcome unknown; evidence of eggs observed, outcome not determined.
- U = Site unoccupied; site apparently not occupied by eagles.
- al = Alternate; nest not used for nesting; one of two or more nests at an occupied site.
- F = Active or nesting failure; nest with evidence of eggs, but no young raised.
- = Status unknown; also used when the survey was too early or too late in the nesting season, or inadequate for some other reason.
- ND = Nest down.
- NS = Nest site not surveyed.
- N = Nest no longer exists.
- TD = Nest tree blown down or the top broke out; tree can no longer support a nest.
- CG = Nest used by Canada geese.
- 1, 2, 3 = 1, 2, or 3 nestlings  $> 4$  or 5 weeks old present when the nest was last observed; partly feathered and feathered.
- 1d, 2d, 3d = 1, 2, or 3 nestlings  $\geq 4$  or 5 weeks old present when the nest was last observed; downy.
- N/A = Not applicable. Nest not in existence at this time.

**SPECIAL NOTES:**

- /c = Nest used or location(s) uncertain; need to determine or verify locations or territories
- /j = Camera installed after nesting season.
- /n = Nest tree burned in a wildfire.
- /o = Nest tree hit by lightning; nest partially destroyed.
- /s = First year nest tree was observed to be 100% dead.

**Appendix 3. Wildlife Project PDC Compliance Checklist.**

<b>Project Design Criteria Compliance Checklist (attach to BE/BA)</b>	<b>Applies to project (Yes/No)</b>	<b>Project Complies (Yes/No)</b>
<b>Spotted Owl (all land allocations)</b>		
A.1. Do not work disruptively w/in ¼ mile (1 mi. for blasting) of spotted owl activity center 3/1-9/30	NA	
A.2. Do not work outside of restriction period unless emergency work is warranted	NA	
A.3. Do not remove hazard trees unless DWD needs are met in project area as in LRMP or LSRA	NA	
A.4. Only remove hazard trees if they pose a liability to recreation residences, private landowners, campgrounds, or special use permittees	NA	
A.5. Survey projects with NRF to Regional Protocol or implement seasonal restriction	NA	
A.6. Use smoke management forecasts in order to minimize smoke entering into suitable habitat	NA	
A.7. Options for reducing hazard trees should be explored: topping, closing or moving sites, etc.	NA	
<b>Spotted Owl (CHU's, LSR's, and Core Areas)</b>		

<b>Project Design Criteria Compliance Checklist (attach to BE/BA)</b>	<b>Applies to project (Yes/No)</b>	<b>Project Complies (Yes/No)</b>
B.1. Do not remove, downgrade, or degrade constituent elements of critical habitat	NA	
B.2. Promote LSOG conditions where plant associations are capable of sustaining NRF	NA	
B.3. DWD objectives are met by plant association as described in the desired LSR condition	NA	
B.4. Stands not capable of becoming NRF should be managed to provide for dispersal habitat	NA	
<b>Spotted Owl (Matrix)</b>		
C.1. Maintain 100 acres of NRF habitat (core area) around all known activity centers	NA	
C.2. Maintain all late-successional patches in fifth field watersheds currently comprised of 15% or less late-successional forests	NA	
C.3. Maintain dispersal habitat between 100-acre core areas and LSRs	NA	
C.4. Maintain all existing NRF habitats for connectivity	NA	
C.5. Promote climatic climax LSOG habitat in plant associations capable of sustaining NRF habitat	NA	
C.6. On lands not capable of becoming NRF promote that development of habitat for other LSOG dependent species	NA	
C.7. Maintain 100 acres of NRF habitat (core areas) around all newly discovered activity centers	NA	
<b>Bald Eagle (all land allocations)</b>		
A.1. No new human disturbance w/in 1/4 mile non line-of-sight or 1/2 mile line-of-sight (1.0 mile for blasting) of known bald eagle nests between January 1 and August 31	NA	
A.2. Within 400 m of bald eagle winter roosts, disturbing activities are restricted from 11/1-4/30	NA	
<b>Bald Eagle (outside of Bald Eagle Management Areas [BEMA])</b>		
B.1. A BE is completed to determine if the use of the area by eagles is incidental or essential.	NA	
B.2. Protect essential habitat from adverse modification	NA	
B.3. If the area is designated as essential habitat, the LRMP should be amended	NA	
B.4. Predator and rodent control using baited traps and/or poisons should not take place within 1 mile of an active bald eagle nest or ¼ mile of a known roost	NA	
<b>Bald Eagle (BEMA and essential habitat as determined in B)</b>		
C.1. No fuelwood cutting or gathering in BEMAs unless all C.1. conditions are met	NA	
C.2. Use smoke management forecasts in order to minimize smoke entering into suitable habitat	NA	
C.3. Predator and rodent control using baited traps and/or poisons will not take place within BEMAs	NA	
C.4. Promote the development of large trees for nesting, roosting, perching in all BEMAs	NA	
C.5. Preserve all snags within 500 m of a nest and within a nesting territory protect all snags used repeatedly for roosting/foraging and/or communal roosts	NA	
C.6. Do not create or expand recreation facilities in BEMAs	NA	
C.7. Protect all existing nesting, roosting, and perch trees	NA	
<b>Oregon and Columbia Spotted Frogs</b>		

<b>Project Design Criteria Compliance Checklist (attach to BE/BA)</b>	<b>Applies to project (Yes/No)</b>	<b>Project Complies (Yes/No)</b>
A. Do not fragment or convert wetland habitat to upland habitat through management activities	NA	
B.1. Do not allow in channel, lake, or shoreline digging except as needed for restoration	NA	
B.2. Comply with Fish PDC: (c) Sediment and Substrate 1,2,3,6,7,8,9,10, (d) Bank Stability 1,2, and (g) Livestock Grazing 3,4,5	NA	
C. No changes in stream, spring, lake, or wetland hydrology except as needed for restoration	NA	
C.1. In reservoir habitats, maintain or develop shallow water habitat with emergent veg through July	NA	
C.2. Do not allow removal of fish passage if it causes introduction of non-native species	NA	
D. Activities within the channel migration zone or 100-year floodplain are restricted 3/1 thru 5/31	NA	

<b>Project Design Criteria Compliance Checklist (attach to BE/BA)</b>	<b>Applies to project (Yes/No)</b>	<b>Project Complies (Yes/No)</b>
Oregon and Columbia Spotted Frogs (Continued)		
E. Maintain connectivity through properly functioning streams, marsh, in stream, and floodplain vegetation. Restore native sedges, rushes, and willows where possible and appropriate	NA	
F. Use of pesticides, herbicides, and similar potential contaminants are prohibited in and immediately adjacent to wetland habitat. Be conservative when estimating drift to avoid any contamination	NA	
Did we implement PDC, recommendations, or minimization measures per the BA?	NA	
Were the PDC and/or recommendations effective relative to the effect conclusions?	NA	
What, if any, PDC, recommendations were particularly difficult to implement?	NA	
Is there a need to modify or create a new PDC to address a new or existing issue or impact?	NA	

**Appendix 4. Spotted Owl Baseline Project Monitoring Form for NLAA Program Activities.**

**Spotted Owl**

Project-level effects as determined by: <u>Lauri Turner</u>			Date <u>07/15/09</u>
<b>Biological Evaluation</b> <u>    </u>		<b>Biological Assessment</b> <u>  X  </u>	<b>Programmatic Version</b> <u>06-09</u>
<b>Forest</b>	<u>Deschutes</u>	<b>District</b> <u>    </u>	<b>Geographic Area</b> <u>    </u>
<b>Project Name</b> <u>Travel Management Rule</u>		<b>Program Type</b> <u>    </u>	
<b>Project Type</b> <u>    </u>		<u>    </u>	
<b>Consultation</b> (circle one)	<u>None</u>	<u>    </u>	<u>Informal</u>
<b>Total Project Acres</b> <u>    </u>			

Land Allocation	Total Acres Project Area	Planned Habitat Effects	
		NRF Degrade (Remains NRF)	Degrade Dispersal
<u>NW Forest Plan</u>			
<u>AWD</u>			
<u>LSRname:</u>			
<u>LSRname:</u>			
<u>CR</u>			
<u>Matrix</u>			
<u>Critical Habitat</u>			
<u>CHU#:</u>			
<u>CHU#:</u>			
<u>CHU#:</u>			
<b>TOTAL</b>			

Total as of (date):

Total as of (date):

Land Allocation	Actual Habitat Effects		Actual Habitat Effects	
	NRF Degrade (Remains NRF)	Dispersal Degrade	NRF Degrade (Remains NRF)	Dispersal Degrade
<u>NW Forest Plan</u>				
<u>AWD</u>				
<u>LSRname:</u>				
<u>LSRname:</u>				
<u>CR</u>				
<u>Matrix</u>				
<u>Critical Habitat</u>				
<u>CHU#:</u>				

Land Allocation	Actual Habitat Effects		Actual Habitat Effects	
	<b>NRF Degrade</b> (Remains NRF)	<b>Dispersal Degrade</b>	<b>NRF Degrade</b> (Remains NRF)	<b>Dispersal Degrade</b>
CHU#:				
CHU#:				
<b>TOTAL</b>				
Describe the purpose of the project.				
Describe the purpose of treating NRF habitat?				
Describe the purpose of treating dispersal?				
Did the project achieve your objective?				

Project Completion Date: 7/22/09 Signature: /s/ Lauri Turner

B-6.3 Wildlife Report

**Wildlife Report  
for Management Indicator Species,  
Species of Concern from the Northwest Forest Plan,  
and Landbirds**

Travel Management Rule

**Prepared by:**

**Lauri Turner  
Wildlife Biologist**

**Author's Signature:** /s/ Lauri Turner

**Date:** 7/22/09

## **Executive Summary**

A Wildlife Report was completed describing the impacts to management indicator species (MIS) and species of concern (landbirds and/or NWFP species) associated with the Travel Management Rule on the Deschutes and Ochoco National Forests.

Twenty-one management indicator species on the Deschutes National Forest and 8 management indicator species on the Ochoco National Forest and/or their habitats are known or suspected to occur within the project area. In addition, 37 landbirds on the Deschutes National Forest and 36 landbird species on the Ochoco National Forest and/or their habitats are known or suspected to occur within the project area. The following is a summary of the findings of the Wildlife Report on the impacts of the proposed alternatives.

1. Implementation of Alternatives 2 and 3 will result in decreased disturbance for 17 management indicator species (MIS) on the Deschutes and 3 MIS on the Ochoco while 4 MIS on the Deschutes and 5 MIS on the Ochoco remain unchanged.
2. Implementation of Alternatives 2 and 3 will result in decreased disturbance for 28 landbird species on the Deschutes and 15 landbird species on the Ochoco while 9 landbird species on the Deschutes and 21 landbird species on the Ochoco remain unchanged.
3. Implementation of the Travel Management Rule will greatly reduce disturbance in MA-7 with a 38% decrease in disturbance throughout this area.
4. 8 of the 11 KEHAs on the Deschutes National Forest showed a decrease in disturbance while the remaining three remained constant. Overall, there was an 18% decrease in disturbance for the total KEHA acres across the forest.
5. General Forest Winter Range is the only allocation to show a decrease in disturbance on the Ochoco NF going from 13% to 78% of the area now undisturbed. Winter Range, Metolius Deer Winter Range, and Antelope Winter Range all remained constant. This is due to those areas of the forest already being closed to cross country travel prior to the implementation of the Travel Management Rule.
6. Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes, Ochoco, and Crooked River National Grassland Land and Resource Management Plans for MIS. Motorized traffic will be limited to designated routes, road densities will remain unchanged, habitat will not be removed or altered, and disturbance will be decreased while disturbance is decreased for many species.
7. Implementation of the Travel Management Rule is consistent with the biological objectives outlined in the Conservation Strategies for Landbirds of the East-slope Cascades, Columbia Plateau, and Northern Rocky Mountains. Habitat will not be removed or altered and disturbance is decreased for many species.

## METHODS/ASSUMPTIONS

### Scientific Literature Review

Relevant, recent literature was reviewed on the general effects of both motorized and non-motorized use of roads on wildlife. However, literature is not available for all species or types of conditions found on the forests. Much of the information used came from Forman et al. (2003), Gaines et al. (2003), AMEC (2005), Montana TWS (1999), and Ouren et al. (2007). The Forman et al. (2003) publication dealt primarily with highly traveled, paved roads. Most forest roads are not paved nor utilized to the extent that paved roads are. Speeds are also much slower on forest roads than paved roads and use varies widely across the Forest with some roads rarely utilized. It will be noted where effects may be overstated due to the difference in circumstances.

Ouren et al. (2007), Gaines et al. (2003), and Montana TWS (1999) are all literature reviews or bibliographies conducted on the effects of recreation and off-highway vehicle or linear route impacts on wildlife species and habitat. The AMEC (2005) publication provided information on the effects of noise on wildlife. From the review of literature, it was determined that disturbance from roads has the greatest effect on wildlife species and habitat as it relates to the implementation of the Travel Management Rule. Therefore, effects will be analyzed and measured by acres of disturbed and undisturbed habitat.

### Road Data

Roads information for both forests was gathered from the forest engineering department and information housed in the Geographic Information System (GIS) for each forest. This information was used to determine direct habitat lost, likelihood of direct mortality, and was used to provide context to the indirect effect of habitat lost (habitat quality). Direct habitat lost was calculated by multiplying the average width of forest roads by the total miles. This calculation was completed on all roads occurring on the Forests and includes closed roads, as well as, roads currently open. Single lane roads average approximately 14 feet wide while double lane roads average 24 feet in width, which includes the shoulder area.

### Road Assumptions

To simplify the analysis, but still adequately capture the impacts, the following assumptions were made relative to the average traffic speed and volume (cars/day) use occurring on forest roads on the Deschutes and Ochoco National Forests.

**Table 1. Average traffic speed and daily volume rates for Deschutes NF roads.\***

Surface	Lanes	Average Speed	Volume Rate (Cars/Day)
PAVED	1 – Single Lane	25	50
	2 – Double Lane	50	100
GRAVEL	1 – Single Lane	35	20
	2 – Double Lane	40	25
IMPROVED	1 – Single Lane	30	5
	2 – Double Lane	35	10
NATIVE	1 – Single Lane	20	1
	2 – Double Lane	25	5

\*Calculations were completed on Forest Service roads only. Therefore, State highways and county owned roads were not included.

**Table 2. Average traffic speed and daily volume rates for Ochoco NF roads (includes CRNG)\*.**

Surface	Lanes	Average Speed	Volume Rate (Cars/Day)
PAVED	1 – Single Lane	45	40
	2 – Double Lane	50	50
GRAVEL	1 – Single Lane	35	20
	2 – Double Lane	40	25
IMPROVED	1 – Single Lane	25	2
NATIVE	1 – Single Lane	20	1

\*Calculations were completed on Forest Service roads only. Therefore, State highways and county owned roads were not included.

In addition, five state highways run through the forests (Highways 20, 26, 58, 97, and 126). Noise due to traffic volumes is higher along these roadways. The Cascades Lakes Highway (Road 46), the Metolius Basin, the East Fort Rock OHV area, McKay Creek, Walton Lake, Big Summit Prairie, and Henderson Flat area also receive greater use and effects are likely higher surrounding these roads as well.

**Road Effect Distance (200 meter buffer)**

Literature was reviewed to determine at what distance from roads impacts are seen relative to disturbance and edge effects. Forman (2000) described a “road effect distance” of 200 meters for secondary roads to calculate the indirect loss of habitat and the displacement of many species. Forman also mentions the road effect zone is highly variable and is dependent on the species affected, adjacent habitat, road type, and traffic volume. Noss and Cooperrider (1994) report edge effects are not linear and the zone varies in width depending on what is being measured. They report edge effects seen as far as 240 meters. Therefore, the 200 meter road effect distance will be used to assess edge effects as well. This distance may over-estimate effects for some species and will under-estimate effects for others. However, this distance captures known effects for many species and provides a relevant measure of change between the existing condition and the alternatives. The 200 meter road effect distance will also include those effects for motorized access for dispersed camping. Vehicles accessing dispersed campsites are usually traveling at a very low rate of speed for short distance (no more than 300 feet). Engines are only on for short periods of time and therefore, effects realized for the 200 meter road effect zone will include those for motorized access for dispersed camping as well. This 200 meter road effect distance will be referred to as disturbed habitat in the analysis.

**Closed, Open and High Impact Areas**

There are currently few restrictions to cross country travel across the forests except in designated areas (e.g. wilderness, research natural areas, fire areas, green dot areas). These designated areas have closure orders that prohibit cross country travel and are classified as closed on the maps and in the analysis. In closed areas, just those acres associated with roads and the road effect distance (200 meter buffer either side of open roads) was considered disturbed and/or of decreased habitat quality.

The remaining forest was categorized as open. Since, at any time, there may be off-road use regardless if there is an established trail, user created or not, roads and trails were not buffered. Analyzing the area as a whole will account for the indirect effects of potential disturbance and decreased habitat quality due to disturbance rather than buffering just open system roads.

Because the alternatives close the forests to cross country travel except on designated routes or in designated areas, both forests will be classified as closed with acres of disturbance and/or decreased habitat quality associated with only open roads and their buffers.

### **Habitat Analysis, Viable Ecosystems Model, Geographic Information System**

Habitat for the various species was determined by the Viable Ecosystems Model (Viable). The Geographic Information System (GIS) program ArcMap was used to overlay this habitat with the road effect distance to determine and illustrate the amount of habitat that is likely to be disturbed and of decreased habitat quality for most species. Undisturbed habitat will therefore, occur more than 200 meters from open roads and outside identified buffers.

Viable was not able to map habitat for riparian, special habitat, or niche species. Riparian species select for riparian vegetation or other characteristics found adjacent to streams and water bodies. This information was not available in a GIS map. Riparian buffers were used as a surrogate for riparian habitat. Riparian habitat may be over-estimated as riparian habitat characteristics are not likely to occur within the entire buffer distance and not every water body may contain suitable habitat for each species. For the road effect distance analysis, the wetland buffer and lake buffer were not identified separately but included in the total acreage given for wetlands and lakes. This will over-estimate habitat because the entire water body is included. However, the buffers were used as a means for comparison between the alternatives. In addition, the analysis does not differentiate between areas identified as motorized access for dispersed camping and areas identified as off designated routes. The analysis combined these areas.

**Table 3. Riparian Habitat and Associated Buffers used in Analysis.**

<b>Riparian Habitat</b>	<b>Buffer Distance</b>	<b>Comments</b>
Class 1 Stream	300 feet	Fish-bearing
Class 2 Stream	300 feet	Fish-bearing
Class 3 Stream	150 feet	Perennially non-fish bearing
Class 4 Stream	100 feet	Intermittent
Lakes	300 feet	
Wetland	150 feet	
Wetland Buffer	150 feet	

Mapped special habitats on the Deschutes National Forest include hardwoods, alpine meadows, meadow, alpine shrubs, mesic shrubs, rock, xeric shrublands (scablands), and caves. Mapped special habitats on the Ochoco National Forest include alder/willow, aspen, cottonwood, grassland, mtn. mahogany, meadow, rock and sage/scab. Special habitat information is available as separate layers in GIS for each forest. The analysis does not differentiate between areas identified as motorized access for dispersed camping and areas identified as off designated routes. The analysis combined these areas. As with the riparian habitat, habitat may be over-estimated as each area mapped may not contain suitable habitat for each species within the entire mapped area. However, acres of special habitats were used as a means of comparison between the alternatives.

### **Viable Ecosystems Model**

The Ochoco and Deschutes Viable Ecosystems Management Guide (VEMG) was developed to classify vegetation on a landscape basis. “The Viable Ecosystem model provides a process to apply ecosystem management concepts to project level planning. This system compares existing vegetation with site potential. The model focuses on relationships between combinations of vegetation structure and species composition, and habitat requirements for animals, insects and plants. Viable Ecosystems is a useful tool for cumulative effects analysis of broad scale changes in vegetation at a subwatershed to Forest-wide scale and subsequent changes in animal, insect or plant communities.”

Viable stratifies the environment along a gradient of size, structure, species composition, and relative tree density. The various classifications are then linked to wildlife habitat requirements. For example, a

classification with a value of 56152 is white fir (56), early seral (1), medium/large structure (5), and **low density (2)** and would typically have a single story (low density) dominated by ponderosa pine (early seral in white fir) 21" dbh or greater (medium/large structure). This provides nesting habitat for white-headed woodpeckers. A value of 56351 would equate to white fir (56), late seral (3), medium/large structure (5), and **high density (1)** and would be a multi-storied stand dominated by white fir 21" dbh or greater and provide habitat for pileated woodpeckers. All values that provide habitat for species were used. In addition to the mixed conifer value of 56152 using the white-headed woodpecker example, any seral stage dominated by ponderosa pine, medium/large structure, and low density would provide similar open ponderosa pine habitat and was used in determining amounts of white-headed woodpecker habitat across the Deschutes and Ochoco National Forests and Crooked River Grassland.

The 2004 satellite imagery layer was used to develop the Viable map. Data is mapped on a 25 meter pixel grid, meaning the map is divided up on a 25 meter grid and that every 25 meter square (pixel) is assigned a value (i.e. 56351) that relates to a stratum of size, structure, tree species composition, and relative tree density. Criteria used (vegetation, seral state, structure, and density) to determine habitat for each species is described in existing condition of each species.

### **GIS Analysis and ArcMap**

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. The information can be related to visual data (maps), tabular data (tables, spreadsheets, or data bases) and used to run models (create new data set from existing data based on criteria or specific conditions). ArcMap is a component of the ArcGIS program. The client software developed by Economic and Social Research Institute (ESRI) was used for the processing and presentation of GIS data.

### **Northern Spotted Owl**

The analysis conducted for the northern spotted owl includes a forest-wide analysis of all nesting, roosting, and foraging (NRF) habitat, Critical Habitat Units, known home ranges, and late-successional reserves. NRF acres used are derived from the March 2008 update to the 2006-2009 Deschutes and Ochoco Programmatic Biological Assessment and reflect the most current situation. There are two different versions of Critical Habitat. Where CHU is used refers to the area reflected in the 2008 update to the Critical Habitat Rule. Historic CHU refers to the area identified in the 1992 Critical Habitat Rule. Both versions are being analyzed due to a potential remand of the 2008 Rule. An analysis of each home range has also been conducted. A 1.2 mile radius circle is used as a home range distance in the Cascade Range. This equates to approximately 2,882 acres. The analysis will show some home ranges total less than 2,882 acres. Those home ranges that total less than 2,882 acres include private land, water, or other state/federal lands not under our jurisdiction.

### **Species Analysis**

Sensitive species were only analyzed for the forest they are identified for in the R6 Regional Forester's Sensitive Species list. Management Indicator Species (MIS) were only analyzed for the forest they are identified for in each forest's respective Land and Resource Management Plan. Surveys have not been conducted for each species. In some cases, no surveys have occurred and in others, surveys may not have been conducted on a consistent basis. Incidental observations may also contribute to known sitings.

### **Other Assumptions**

#### **No New Roads or Trails**

The proposed action and alternatives do not propose to develop new roads or trails or actively rehabilitate roads and trails. As such, it is assumed no additional wildlife habitat (no habitat lost) will be impacted as a result of implementation of the travel management rule.

### **Change in Noise and Disturbance**

Noise disturbance from vehicle use on roads and the associated fragmentation (edge effect) are primary effects to wildlife species and habitat. These effects affect the quality of habitat and species use adjacent to roads. Effects to a variety of species have been documented in the literature, many of which do not occur on the Deschutes or Ochoco National Forests. Data is not available for all species or conditions found on our forests. Therefore, we assume that species in the same family would experience similar effects.

Disturbance will continue within the road effect zone (200 meters each side of roads) with the implementation of the Travel Management Rule. Decreased habitat quality, reduced reproductive potential, and avoidance of the road effect zone are a result of habitat alteration physically or due to disturbance.

Disturbance will decrease beyond the road effect zone with the implementation of the travel management rule and as a result, habitat quality will increase.

### **Mortality**

Mortality rates will be similar as the existing condition on open system roads because traffic volumes or the level of the roads won't change with the implementation of this action. Mortality rates will decrease in areas closed due to the implementation of the travel management rule.

### **Motorized Access for Dispersed Camping/Alternatives 2 and 3**

Alternatives 2 and 3 are analyzed together as they have the same general effects to wildlife species and habitats. Differences between the alternatives relative to this analysis are minor and not measurable. The major difference between Alternatives 2 and 3 is where motorized access for dispersed camping is allowed. In Alternative 2, there are both areas open to motorized access for dispersed camping (within 300' of a designated route) and special provision areas where access is limited to existing, designated, and defined camp sites (see list of special provision areas in Chapter 2). Alternative 3 only allows access to existing, designated, of defined sites. There are no open areas in Alternative 3.

Approximately 353,686 acres are open to motorized access for dispersed camping yearlong or seasonally on the Deschutes NF and 69,733 acres on the Ochoco NF. In addition, 51,044 acres occur in special provision areas for the Deschutes NF and 54,594 acres for the Ochoco NF. Implementation of Alternative 3 would limit motorized access for dispersed camping to existing, designated, and defined sites only. Therefore, Alternative 3 will result in an estimated 57,116 acres on the Deschutes NF and 33,289 acres on the Ochoco NF would be available for motorized access for dispersed camping. The assumption made is Alternative 3 would result in less disturbance overall, therefore increasing habitat quality for many species.

Other assumptions made relative to motorized access for dispersed camping include:

- Motorized access for dispersed camping usually occurs near local attractions (e.g. water, scenery, and recreational activities)
- No new sites will be developed under Alternative 3 as access is limited to existing, designated, and defined sites
- Use (number of days occupied) of dispersed campsites may increase with Alternative 3
- There may be more demand for motorized access for dispersed camping in the long term due to the increase in population growth of the local area
- Recreation use will increase with population growth rates
- The basic dispersed site vehicular impact area is approximately 0.17 acres (100 feet by 75 feet)

**Riparian**

See riparian assumptions under the fisheries section as these apply here relative to the size and location of water bodies and analysis assumptions.

**Evaluation Criteria and Comparison Measures**

Evaluation criteria are developed to illustrate the effects to wildlife and how those effects differ by alternative. In this analysis, disturbance is a major effect of roads on habitat quality, quantity, and species life needs. Using the same units of measure allows the major impacts to be easily understood and compared, providing the Decision Maker the necessary data to make an informed decision.

**Units of Measure**

Suitable habitat for each wildlife species analyzed in this document has been impacted across the project area primarily by noise disturbance and fragmentation of habitat. The following measure will be used to evaluate the impacts and associated effects of the planned activities:

1. The acres of potential suitable habitat as calculated by Viable located outside the disturbed road effect zone (200 meters either side of the road), otherwise known as undisturbed habitat.

**Analysis**

An analysis was conducted for each species to calculate the acres of undisturbed and disturbed habitat by alternative. The following will outline the steps taken to calculate the acres of undisturbed habitat as well as explain the rationale used.

Potentially suitable habitat was overlaid with areas open, closed, and seasonally closed to travel off designated routes to determine the number of acres occurring in each category by alternative. Habitat was also overlaid with areas closed, open, or open seasonally to travel off designated routes for the purpose of motorized access for dispersed camping by alternative to determine the number of acres in each dispersed camping access category. The analysis populated the following table.

Existing Designated Routes			Existing Dispersed Camping			Total Acres of Habitat
Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	

The acres reflected in the table refer to the area adjacent to roads and not to the roads themselves. For example, for “Acres Closed”, the area adjacent to the roads is closed to travel off designated routes. However, open roads are still traveling through this habitat resulting in disturbance within the road effect distance (200 meters each side of open roads). For “Acres Open”, the area is open adjacent to roads to travel off designated routes and disturbance could occur anywhere. Therefore, disturbance is not confined to the road effect distance but to the open area as a whole. For “Acres Open Seasonally”, the adjacent area is open to travel off designated routes during the appropriate season of use. “Total Acres of Habitat” refers to the total number of potentially suitable habitat acres by forest for the identified species as generated by Viable or the special habitat or riparian analysis.

Motorized Access for Dispersed Camping – The analysis was conducted the same way as above for designated routes except the acres refer to the areas identified as those closed, open, or open seasonally to motorized access for dispersed camping along an area 300’ adjacent to open roads or within special provision areas.

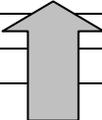
The information from these tables was used to determine the amount of undisturbed and disturbed habitat by alternative. The following will describe how the information from the tables above was used.

**Disturbed and Undisturbed Habitat Tables**

An analysis was conducted to determine the amount of habitat disturbed and undisturbed for each species by forest and alternative. A 200 meter buffer was applied to either side of open system roads to determine the number of habitat acres within the road effect distance. This will help to determine the amount of disturbed habitat even in areas classified as closed to travel off designated routes. Acres within the road effect distance are considered disturbed habitat. The following will describe how the disturbed and undisturbed habitat acres were calculated.

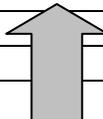
**Step 1.** The total acres of habitat by forest by species are transferred from the first table to this table. These acres refer to the current habitat acres calculated by Viable for each species or allocation by forest.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat



**Step 2.** Acres of Habitat within the Road Effect Zone were calculated by GIS and refer to those habitat or allocation acres occurring within the 200 meter buffer either side of open roads for the identified species or allocation. These acres appear in the second column.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat



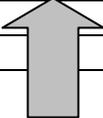
**Step 3.** Acres of disturbed and undisturbed habitat are generated.

Undisturbed habitat – The Road Effect Distance acres are subtracted from the Acres Closed column (from the first table) to determine the total acres of undisturbed habitat. This results in those acres outside the 200 meter road effect zone.

**Step 4.** Disturbed Habitat – The undisturbed habitat acres are subtracted from the total acres of habitat column to generate the disturbed habitat acres.

If the acres in the Acres Closed column are less than those for the road effect distance, the road effect distance acres are transferred to the Disturbed Habitat column. This occurs when there are more acres of habitat within the road effect distance than occur in the area closed to travel off designated routes. The Disturbed Habitat acres are then subtracted from the Total Acres of Habitat to generate the Undisturbed Habitat Acres.

Total Acres of Habitat	Acres of Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Habitat Disturbed/Percent of Total Habitat	Total Acres of Habitat Undisturbed/Percent of Total Habitat



**Management Indicator Species and Other Species of Concern**

The Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA 1990a), the Ochoco National Forest LRMP (USDA 1989a), and the Crooked River National Grassland LRMP (USDA 1989b) identified a group of wildlife species as management indicator species (MIS). These species were selected because they represent other species with similar habitat requirements. Management indicator species can be used to assess the impacts of management activities for a wide range of wildlife species with similar habitat needs (FSM 2620.5). Those management indicator species selected for the Deschutes National Forest include the bald eagle, northern spotted owl, golden eagle, red-tail hawk, osprey, northern goshawk, Cooper’s hawk, sharp-shinned hawk, great gray owl, great blue heron, woodpeckers (cavity nesters), peregrine falcon, California wolverine, elk, mule deer, American marten, Townsend’s big-eared bat, and waterfowl. Management indicator species selected for the Ochoco National Forest include the northern flicker, pileated woodpecker, and primary cavity excavators while the Crooked River National Grassland selected only the northern flicker. All but the following have been covered in previous sections (TES section) and will be discussed below: northern goshawk, Cooper’s hawk, sharp-shinned hawk, great gray owl, great blue heron, golden eagle, osprey, waterfowl, red-tail hawk, osprey, northern flicker, pileated woodpecker and other woodpeckers, bats, American marten, elk, mule deer, and antelope (pronghorn).

In addition to the above mentioned MIS species there have been a number of wildlife species deemed species in which analysis is required (i.e. antelope) or “species of concern” either through the Northwest Forest Plan (e.g. bats; pg C-43) or through other directives (e.g., landbirds, see Birds of Conservation Concern section).

**Table 4. Management Indicator Species Summary for the Deschutes and Ochoco National Forests and Crooked River Grassland (covered in this section).**

Species	Habitat	Deschutes or Ochoco	Presence in Project Area
Northern Goshawk ( <i>Accipiter gentiles</i> )	Mature and old-growth forests; especially high canopy closure and large trees	Deschutes	Yes
Coopers Hawk ( <i>Accipiter cooperi</i> )	Similar to goshawk, can also use mature forests with high canopy closure/tree density	Deschutes	Yes
Sharp-shinned Hawk ( <i>Accipiter striatus</i> )	Similar to goshawk in addition to young, dense, even-aged stands	Deschutes	Yes
Great Gray Owl ( <i>Strix nebulosa</i> )	Mature and old growth forests associated with openings and meadows	Deschutes	Yes
Great Blue Heron ( <i>Ardea herodias</i> )	Riparian edge habitats including lakes, streams, marshes and estuaries	Deschutes	Yes
Golden Eagle ( <i>Aquila chrysaetos</i> )	Large open areas with cliffs and rock outcrops	Deschutes	Yes
Waterfowl*	Lakes, ponds, streams	Deschutes	Yes
Red-tailed Hawk ( <i>Buteo jamaicensis</i> )	Large snags, open country interspersed with forests	Deschutes	Yes
Osprey ( <i>Pandion haliaetus</i> )	Large snags associated with fish bearing water bodies	Deschutes	Yes
Neotropical Migrants*	Various habitats		Yes
Bats*	Forested areas, riparian	Deschutes	Yes
Northern Flicker ( <i>Colaptes auratus</i> )	Open woodlands	Ochoco	Yes
Pileated Woodpecker ( <i>Dryocopus pileatus</i> )	Dense, mature forests with large snags and logs	Ochoco	Yes
American Marten ( <i>Martes americana</i> )	Mixed Conifer or High Elevation late successional forests with abundant down woody material	Deschutes	Yes
Elk ( <i>Cervus elephas</i> )	Mixed habitats	Deschutes	Yes
Mule Deer ( <i>Odocoileus hemionus</i> )	Mixed habitats	Deschutes	Yes
Snags and Down Wood Associated Species and Habitat* or Primary Cavity Excavators	Snags and down woody material	Deschutes and Ochoco	Yes

\* - See Appendix 1 for a listing of species and scientific names for these categories.

## MANAGEMENT INDICATOR SPECIES

### Northern Goshawk

#### *Existing Condition*

The goshawk is considered a management indicator species in the Deschutes Land and Resource Management Plan. This species is associated with mature and late-successional forests. All mature and late-successional habitats are considered potential nesting habitat and earlier forested seral stages are considered potential foraging habitat. Moist mixed conifer and moist ponderosa pine late-successional areas are preferred habitats, although forest structure appears to be the more limiting factor to goshawk habitat rather than stand composition (i.e. tree species). Preferred nest stands have a minimum of 40% canopy closure; and the nest sites within these stands have >60% canopy closure (Reynolds et al. 1991).

There are no BBS (Breeding Bird Survey) data available for the state of Oregon due to the low detectability of this species using BBS methods. However, for western North America, BBS data (1966-1995) show a stable trend (Wisdom et al. 2000). There is a separate trend for fall migration conducted by Hawkwatch International from 4 locations in Utah and New Mexico. Data indicate an average decline of 4% annually between 1977 and 1991 (Wisdom et al. 2000).

#### **Road Impacts**

Disturbance at specific sites and collection were road associated factors identified by Gaines et al. (2003). Human disturbance to nests have been a suspected cause of nest abandonment (Reynolds et al. 1992). In addition, roads may facilitate access for falconers to remove young from nests (Erdman et al. 1998 in Gaines et al. 2003). It is suspected that falconers have visited various nests on the two forests (K.Hennings, M.Gregg, pers.comm).

Grubb et al. (1998) found goshawks showed no discernible behavioral responses to traffic greater than 400 meters from nest sites in forested habitats with noise levels below 54dB. In addition, Jones (1979) recommended a 400-500 meter buffer around goshawk nest sites from March 1 through September 30 to protect against disturbance. However, in a study conducted by Bautista et al. (2004), increased traffic levels were found not to impact the presence of goshawks near roads. This may be in part due to traffic being a routine disturbance and/or prey was more abundant near roads either as roadkill or live prey.

#### **Environmental Consequences**

##### **Alternative 1 – No Action**

##### ***Direct and Indirect Impacts***

Direct effects will include the continued disturbance from existing use at nest sites near roads during the nesting period (March 1 through August 31).

Habitat occurs throughout the Deschutes and Ochoco National Forests in most plant associations except juniper where average tree size is 15" dbh or greater. Approximately 278,926 acres of habitat currently exist across the Deschutes National Forest and approximately 73,229 acres of habitat occurs on the Ochoco National Forest for a total of 352,155 acres.

**Table 5. Existing Designated Route and Dispersed Camping Conditions within Northern Goshawk Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Goshawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	200,845 (72%)	70,067 (25%)	8,014 (3%)	102,622 (37%)	152,381 (55%)	23,923 (8%)	278,926
<b>Ochoco</b>	32,187 (44%)	21,664 (30%)	19,379 (26%)	27,168 (37%)	26,812 (37%)	19,250 (26%)	73,229
<b>Total</b>	233,032 (66%)	91,731 (26%)	27,393 (8%)	129,790 (37%)	179,193 (51%)	43,173 (12%)	352,155

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 5 shows approximately 200,845 acres occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 108,249 acres of habitat occur inside the road effect distance within those areas identified as closed (200,245 acres) resulting in the potential disturbance of 67% of the goshawk habitat on the Deschutes NF.

**Table 6. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Northern Goshawk Habitat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Goshawk Habitat	Acres of Goshawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Goshawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Goshawk Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	278,926	108,249 (39%)	186,330 (67%)	92,596 (33%)
<b>Ochoco</b>	73,229	17,580 (24%)	58,622 (80%)	14,607 (20%)
<b>Total</b>	<b>352,155</b>	<b>125,829 (36%)</b>	<b>244,952 (70%)</b>	<b>107,203 (30%)</b>

## Action Alternatives

### *Direct and Indirect Impacts*

Direct effects will include the continued disturbance at nest sites within the road effect distance during the nesting period (March 1 through August 31).

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the

disturbance potential. Therefore, only 39% of the goshawk habitat for the Deschutes and 24% of the goshawk habitat for the Ochoco remains in areas where disturbance is occurring. See Table 8 for more information.

**Table 7. Designated Route and Dispersed Camping Conditions within Northern Goshawk Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Goshawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	278,870 (100%)	45 (0%)	0	219,469 (79%)	52,607 (19%)	6,838 (2%)	278,917
<b>Ochoco</b>	73,227 (100%)	0	0	66,155 (90%)	5,453 (7%)	1,618 (2%)	73,227
<b>Total</b>	<b>352,097 (100%)</b>	<b>45 (0%)</b>	<b>0</b>	<b>285,624 (81%)</b>	<b>58,060 (16%)</b>	<b>8,456 (2%)</b>	<b>352,144</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 8. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Northern Goshawk Habitat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Goshawk Habitat	Acres of Goshawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Goshawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Goshawk Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	278,917	108,249 (39%)	108,296 (39%)	170,621 (61%)
<b>Ochoco</b>	73,227	17,578 (24%)	17,578 (24%)	55,649 (76%)
<b>Total</b>	<b>352,144</b>	<b>125,827 (36%)</b>	<b>125,874 (36%)</b>	<b>226,270 (64%)</b>

### Summary

**Table 9. Undisturbed Habitat Comparison for the Northern Goshawk**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Northern Goshawk</b>	33%	61%	20%	76%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the northern goshawk and its habitat.

### Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## Cooper's and Sharp-shinned Hawks

### *Existing Condition*

The Cooper's and sharp-shinned hawks are considered MIS species in the Deschutes LRMP. They often use dense cover in which to hunt and nest. Cooper's hawks tend to select nest sites in dense second growth of mixed conifer or ponderosa pine stands (Jackman and Scott 1975). Moore and Henney (1983) noted this species would routinely utilize mistletoe brooms as nesting sites. Sharp-shinned hawks utilize thickets in mixed conifer and deciduous woods. Generally, nesting habitat has been grouped into 3 types by Reynolds (1976): young, even-aged conifer stands with single-layered canopies; mature, old-growth stands of mixed conifer with multi-layered canopies; and dense stands of aspen.

Habitat was calculated for the both the Cooper's and sharp-shinned hawks in Viable. Habitat for both species occurs throughout the Deschutes and Ochoco National Forests in the lodgepole pine, ponderosa pine, white fir, Douglas-fir, western hemlock, silver fir, mountain hemlock and white-bark pine plant associations. Cooper's hawk habitat occurs where average tree size is 15" dbh or greater in dense stands and sharp-shinned hawk habitat occurs in even-aged stands with trees 10-20" dbh. Approximately 279,019 acres of Cooper's hawk habitat currently exist across the Deschutes National Forest and approximately 68,791 acres of habitat occurs on the Ochoco National Forest for a total of 347,810 acres. Approximately 342,974 acres of sharp-shinned hawk habitat currently exists across the Deschutes NF and approximately 128,091 acres of habitat occurs on the Ochoco NF for a total of 471,066 acres.

### *Cooper's Hawk*

**Table 10. Existing Designated Route and Dispersed Camping Conditions within Cooper's Hawk Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Cooper's Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	102,643 (37%)	152,452 (55%)	23,924 (8%)	200,906 (72%)	70,099 (25%)	8,014 (3%)	279,019
<b>Ochoco</b>	30,464 (44%)	19,642 (29%)	18,685 (27%)	25,744 (37%)	24,465 (36%)	18,582 (27%)	68,791
<b>Total</b>	<b>133,107 (38%)</b>	<b>172,094 (49%)</b>	<b>42,609 (12%)</b>	<b>226,650 (65%)</b>	<b>94,564 (27%)</b>	<b>26,596 (8%)</b>	<b>347,810</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 10 shows approximately 102,643 acres of Cooper's hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 108,267 acres of habitat occur inside the road effect distance within those areas identified as closed (102,643 acres) resulting in the potential disturbance of 39% of the Cooper's hawk habitat on the Deschutes NF.

Table 10 shows approximately 30,464 acres of Cooper's hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 16,316 acres of habitat occur inside the road effect distance within those areas identified as closed (30,464 acres) resulting in the potential disturbance of 79% of the Cooper's hawk habitat on the Ochoco NF.

**Table 11. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Cooper’s Hawk Habitat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Cooper’s Hawk Habitat	Acres of Cooper’s Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Cooper’s Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Cooper’s Hawk Habitat Undisturbed/Percent of Total Habitat
Deschutes	279,019	108,267 (39%)	108,267 (39%)	170,752 (61%)
Ochoco	68,791	16,316 (24%)	54,643 (79%)	14,148 (21%)
<b>Total</b>	<b>347,810</b>	<b>124,583 (36%)</b>	<b>162,910 (47%)</b>	<b>184,900 (53%)</b>

*Sharp-shinned Hawk*

**Table 12. Existing Designated Route and Dispersed Camping Conditions within Sharp-shinned Hawk Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Sharp-shinned Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	218,161 (64%)	98,494 (29%)	26,319 (8%)	94,307 (27%)	193,483 (56%)	55,184 (16%)	342,974
Ochoco	46,445 (36%)	42,699 (33%)	38,948 (30%)	30,849 (24%)	53,845 (42%)	43,398 (34%)	128,091
<b>Total</b>	<b>264,606 (56%)</b>	<b>141,193 (30%)</b>	<b>65,267 (14%)</b>	<b>125,156 (27%)</b>	<b>247,328 (52%)</b>	<b>98,582 (21%)</b>	<b>471,066</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 12 shows approximately 218,161 acres of sharp-shinned hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 154,538 acres of habitat occur inside the road effect distance within those areas identified as closed (218,161 acres) resulting in the potential disturbance of 81% of the sharp-shinned hawk habitat on the Deschutes NF.

Table 12 shows approximately 46,445 acres of sharp-shinned hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 39,251 acres of habitat occur inside the road effect distance within those areas identified as closed (46,445 acres) resulting in the potential disturbance of 94% of the sharp-shinned hawk habitat on the Ochoco NF.

**Table 13. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Sharp-shinned Hawk Habitat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Sharp-shinned Hawk Habitat	Acres of Sharp-shinned Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Sharp-shinned Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Sharp-shinned Hawk Habitat Undisturbed/Percent of Total Habitat
Deschutes	342,974	154,538 (45%)	279,351 (81%)	63,623 (19%)
Ochoco	128,091	39,251 (31%)	120,897 (94%)	7,194 (6%)
<b>Total</b>	<b>471,066</b>	<b>193,789 (41%)</b>	<b>400,248 (85%)</b>	<b>70,817 (15%)</b>

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Direct effects will include the continued disturbance at nest sites within the road effect distance during the nesting period (April 15 through August 31).

#### *Cooper's Hawk*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the Cooper's habitat for the Deschutes and 24% of the Cooper's habitat for the Ochoco remains in areas where disturbance is occurring. See Table 15 for more information.

**Table 14. Designated Route and Dispersed Camping Conditions within Cooper's Hawk Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Cooper's Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	278,963 (100%)	45 (0%)	0	219,556 (79%)	52,613 (19%)	6,838 (2%)	279,007
Ochoco	68,788 (100%)	0	0	62,263 (91%)	4,966 (7%)	1,558 (2%)	68,788
<b>Total</b>	<b>347,751 (100%)</b>	<b>45 (0%)</b>	<b>0</b>	<b>281,819 (81%)</b>	<b>57,579 (17%)</b>	<b>8,396 (2%)</b>	<b>347,795</b>

Percentages show percentage of total suitable habitat.

**Table 15. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Cooper’s Hawk Habitat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Cooper’s Hawk Habitat	Acres of Cooper’s Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Cooper’s Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Cooper’s Hawk Habitat Undisturbed/Percent of Total Habitat
Deschutes	279,007	108,267 (39%)	108,311 (39%)	170,696 (61%)
Ochoco	68,788	16,316 (24%)	16,316 (24%)	52,472 (76%)
<b>Total</b>	<b>347,795</b>	<b>124,583 (36%)</b>	<b>124,627 (36%)</b>	<b>223,168 (64%)</b>

**Sharp-shinned Hawk**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 45% of the sharp-shinned habitat for the Deschutes and 31% of the sharp-shinned habitat for the Ochoco remains in areas where disturbance is occurring. See Table 17 for more information.

**Table 16. Designated Route and Dispersed Camping Conditions within Sharp-shinned Hawk Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Sharp-shinned Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	342,765 (100%)	185 (0%)	0	256,028 (75%)	70,003 (20%)	16,920 (5%)	342,950
Ochoco	128,089 (100%)	0	0	109,496 (85%)	13,781 (11%)	4,813 (4%)	128,089
<b>Total</b>	<b>470,854 (100%)</b>	<b>185 (0%)</b>	<b>0</b>	<b>365,524 (78%)</b>	<b>83,784 (18%)</b>	<b>21,733 (5%)</b>	<b>471,039</b>

Percentages show percentage of total suitable habitat.

**Table 17. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Sharp-shinned Hawk Habitat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Sharp-shinned Hawk Habitat	Acres of Sharp-shinned Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Sharp-shinned Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Sharp-shinned Hawk Habitat Undisturbed/Percent of Total Habitat
Deschutes	342,974	154,538 (45%)	154,747 (45%)	188,227 (55%)
Ochoco	128,091	39,251 (31%)	39,251 (31%)	88,840 (69%)
<b>Total</b>	<b>471,066</b>	<b>193,789 (41%)</b>	<b>193,998 (41%)</b>	<b>277,067 (59%)</b>

**Summary**

**Table 18. Undisturbed Habitat Comparison for the Cooper’s and Sharp-shinned Hawks**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Cooper’s Hawk	61%	61%	21%	76%
Sharp-shinned Hawk	19%	55%	6%	69%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the Cooper’s or sharp-shinned hawks and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

**Great Gray Owl**

*Existing Condition*

This species was identified in the NWFP (USDA 1994a) as a protection buffer species requiring surveys due to an apparent range expansion resulting from opening up dense-canopied stands with shelterwood type harvest activities. A Regional survey protocol was developed in 1995 (USDA 1995) and was updated in January of 2004 (Version 3.0) (USDA/USDI 2004a). An amendment to the NWFP occurred in 2001 which moved the great gray owl from a protection buffer species to a Category C species. This category contained uncommon species for which pre-disturbance surveys are practical. Therefore, surveys were conducted at the project level prior to habitat disturbing activities. All known nest sites will be managed according to Management Recommendations; however these have not been established to date. An amendment in 2004 removed or modified the survey and manage requirements identifying eligible species for inclusion on the Regional Forester’s Sensitive Species list. The great gray owl was not included on this list but is still considered a Management Indicator Species in the Deschutes LRMP.

This species is associated with mature stands associated with meadows or like openings. Mixed conifer/lodgepole pine/mountain hemlock communities associated with meadows are considered the preferred habitat for this species. Recent studies in the Blue Mountains (Bull and Henjum 1990, Bull et al. 1988) have shown that owls will inhabit openings created by timber harvest activities, especially those that mimic natural gaps.

Great gray owls hunt from perches and can detect prey by sound alone which allows capture of prey beneath the snow. They utilize small prey, primarily pocket gophers and voles. Great gray owls forage in openings, along forest edges, or in open understory stands. (USDA/USDI 2004a). Bull and Henjum (1990) found them utilizing forested stands with less than 59% canopy cover in eastern Oregon while Goggans and Platt (1992) found the birds using recent regeneration harvest units (0-10 years) on the west-slope of the Cascades until these sites became too dense. This habitat is ephemeral in nature but it may allow occupancy of habitat due to the proximity to suitable nesting habitat. Forsman and Bryan (1984) found that meadows where snow persisted beyond mid-April were not occupied. Snow conditions may not allow successful foraging due to the formation of a thick icy crust during this period. This finding may suggest that great gray owl habitat is more likely to be found in the mid to lower elevations (3,000-4,000 ft.).

Great gray owls do not build their own nests and are dependent on structures built by other species (i.e. ravens, red-tailed hawks, goshawk and Cooper’s hawks) or existing substrate like broken top snags or mistletoe platforms. Great gray owls in this region show a high site fidelity to their nest site and exhibit only short seasonal movements. Bull and Henjum (1990) found that great grays prefer to nest in mature and old stands with a fairly open understory and a dense overstory. However, the availability of nest sites and suitable foraging habitat and their proximity to one another seem to dictate use by great grays.

Habitat for the great gray owl occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, silver fir, western hemlock, and subalpine fir where the average tree size is 15”dbh or greater. Approximately 197,976 acres of habitat currently exist across the Deschutes National Forest and approximately 73,996 acres of habitat occurs on the Ochoco National Forest for a total of 271,972 acres. Viable overestimates great gray owl habitat as it only accounts for the size, structure, and species composition. It does not account for the spatial aspect where suitable habitat is only adjacent to openings and/or meadows. Therefore, large blocks of habitat may be identified without being adjacent to the other habitat component (openings).

**Table 19. Existing Designated Route and Dispersed Camping Conditions within Great Gray Owl Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Great Gray Owl Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	118,201 (60%)	71,431 (36%)	8,343 (4%)	51,157 (26%)	122,043 (62%)	24,776 (12%)	197,976
<b>Ochoco</b>	32,859 (44%)	21,758 (29%)	19,379 (26%)	27,806 (38%)	26,940 (36%)	19,250 (26%)	73,996
<b>Total</b>	<b>151,060 (56%)</b>	<b>93,189 (34%)</b>	<b>27,722 (10%)</b>	<b>78,963 (29%)</b>	<b>148,983 (55%)</b>	<b>44,026 (16%)</b>	<b>271,972</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 19 shows approximately 118,201 acres of great gray owl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 110,569 acres of habitat occur inside the road effect distance within those areas identified as closed (218,161 acres) resulting in the potential disturbance of 96% of the great gray owl habitat on the Deschutes NF.

Table 19 shows approximately 32,859 acres of great gray owl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,669 acres of habitat occur inside the road effect distance within those areas identified as closed (32,859 acres) resulting in the potential disturbance of 79% of the great gray owl habitat on the Ochoco NF.

**Table 20. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Great Gray Owl Habitat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Great Gray Owl Habitat</b>	<b>Acres of Great Gray Owl Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Great Gray Owl Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Great Gray Owl Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	197,976	110,569 (56%)	190,344 (96%)	7,632 (4%)
<b>Ochoco</b>	73,996	17,669 (24%)	58,806 (79%)	15,190 (21%)
<b>Total</b>	<b>271,972</b>	<b>128,238 (47%)</b>	<b>249,150 (92%)</b>	<b>22,822 (8%)</b>

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Direct effects will include the continued disturbance at nest sites within the road effect distance during the nesting period (March 1 through June 30).

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 56% of the great gray owl habitat for the Deschutes and 24% of the great gray owl habitat for the Ochoco remains in areas where disturbance is occurring. See Table 22 for more information.

**Table 21. Designated Route and Dispersed Camping Conditions within Great Gray Owl Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Great Gray Owl Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	197,899 (100%)	64 (0%)	0	137,312 (69%)	53,423 (27%)	7,228 (4%)	197,963
<b>Ochoco</b>	73,993 (100%)	0	0	66,900 (90%)	5,475 (7%)	1,618 (2%)	73,993
<b>Total</b>	<b>271,892</b> <b>(100%)</b>	<b>64</b> <b>(0%)</b>	<b>0</b>	<b>204,212</b> <b>(75%)</b>	<b>58,898</b> <b>(22%)</b>	<b>8,846</b> <b>(3%)</b>	<b>271,956</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 22. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Great Gray Owl Habitat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Great Gray Owl Habitat	Acres of Great Gray Owl Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Great Gray Owl Habitat Disturbed/Percent of Total Habitat	Total Acres of Great Gray Owl Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	197,963	110,569 (56%)	110,633 (56%)	87,330 (44%)
<b>Ochoco</b>	73,993	17,669 (24%)	17,669 (24%)	56,324 (76%)
<b>Total</b>	<b>271,956</b>	<b>128,238</b> <b>(47%)</b>	<b>128,302</b> <b>(47%)</b>	<b>143,654</b> <b>(53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 23. Undisturbed Habitat Comparison for the Great Gray Owl**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Great Gray Owl</b>	4%	44%	21%	76%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the great gray owl and its habitat.

### Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## Great Blue Heron

### *Existing Condition*

The great blue heron is one of the most wide-ranging waterbirds in Oregon (Marshall et al. 2003 p. 62). Highly adaptable, it is found along estuaries, streams, marshes and lakes throughout the state. Nest locations are determined by their proximity to suitable foraging habitat. Great blue herons nest in colonies within shrubs, trees and river channel markers where there is little disturbance (Marshall et al. 2003 pp. 62-64). Tree species utilized include ponderosa pine, Douglas fir, and black cottonwood. While the average diameter of nest trees is 4.5 feet and the average height is 79 feet, they use a wide range of sizes from 1.5 to 6 feet in diameter and 43 to 120 feet tall (Marshall et al. 2003 pp. 62-64 ). They hunt shallow waters of lakes and streams, wet or dry meadows feeding on fish, amphibians, aquatic invertebrates, reptiles, mammals and birds.

Habitat for the great blue heron on the Deschutes and Ochoco NF's include Class 1, 2, and 3 streams, lakes, wetlands, and meadows. Wetlands and lakes include both the wetland or water body and the associated buffer. Suitable habitat specific to the great blue heron has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because the buffers may not include habitat with tree sizes necessary for nesting.

**Table 24. Existing Designated Route and Dispersed Camping Conditions within Great Blue Heron Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Class 3 Stream</b>	2,245	730	55	3,030
<b>Lake</b>	10,412	6,703	991	18,106
<b>Wetlands</b>	15,418	25,421	1,297	42,135
<b>Meadow</b>	7,777	485	0	8,262
<b>Total</b>	<b>44,115</b>	<b>47,342</b>	<b>3,242</b>	<b>94,698</b>

**Table 25. Existing Designated Route and Dispersed Camping Conditions within Great Blue Heron Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	3,659	3,836	2,095	9,591
<b>Class 2 Stream</b>	6,031	11,574	10,567	28,172
<b>Class 3 Stream</b>	2,684	5,498	4,393	12,575
<b>Lake</b>	147	120	179	447
<b>Wetlands</b>	4,718	9,367	2,765	16,850
<b>Meadow</b>	5,170	3,984	1,990	11,144
<b>Total</b>	<b>22,409</b>	<b>34,379</b>	<b>21,989</b>	<b>78,778</b>

**Table 26. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Great Blue Heron on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Great Blue Heron Habitat</b>	<b>Acres of Great Blue Heron Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Great Blue Heron Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Great Blue Heron Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	94,698	25,623 (27%)	76,206 (80%)	18,492 (20%)
<b>Ochoco</b>	78,778	35,654 (45%)	35,654 (45%)	43,124 (55%)
<b>Total</b>	<b>173,476</b>	<b>61,277 (35%)</b>	<b>111,860 (64%)</b>	<b>61,616 (36%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 24 shows approximately 44,115 acres of great blue heron habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 25,623 acres of habitat occur inside the road effect distance within those areas identified as closed (44,115 acres) resulting in the potential disturbance of 80% of the great blue heron habitat on the Deschutes NF.

Table 25 shows approximately 22,409 acres of great blue heron habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 35,654 acres of habitat occur inside the road effect distance within those areas identified as closed (22,409 acres) resulting in the potential disturbance of 45% of the great gray owl habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the great blue heron habitat for the Deschutes and 45% of the great blue heron habitat for the Ochoco remains in areas where disturbance is occurring. See Table 29 for more information.

**Table 27. Designated Route and Dispersed Camping Conditions within Great Blue Heron Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	8,345	3,256	132	11,733
<b>Class 2 Stream</b>	9,994	1,437	8	11,439
<b>Class 3 Stream</b>	2,769	238	23	3,030
<b>Lake</b>	17,059	862	192	18,113
<b>Wetlands</b>	37,089	4,887	157	42,133
<b>Meadow</b>	8,264	0	0	8,262
<b>Total</b>	<b>83,520</b>	<b>10,680</b>	<b>512</b>	<b>94,710</b>

**Table 28. Designated Route and Dispersed Camping Conditions within Great Blue Heron Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	7,135	2,096	364	9,595
<b>Class 2 Stream</b>	20,196	5,846	2,132	28,174
<b>Class 3 Stream</b>	9,502	2,104	974	12,580
<b>Lake</b>	343	64	40	447
<b>Wetlands</b>	13,005	3,558	288	16,851
<b>Meadow</b>	11,141	0	0	11,141
<b>Total</b>	<b>61,322</b>	<b>13,668</b>	<b>3,798</b>	<b>78,788</b>

**Table 29. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Great Blue Heron on the Deschutes and Ochoco National Forests for Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Great Blue Heron Habitat</b>	<b>Acres of Great Blue Heron Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Great Blue Heron Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Great Blue Heron Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	94,710	25,623 (27%)	36,813 (39%)	57,897 (61%)
<b>Ochoco</b>	78,788	35,654 (45%)	35,654 (45%)	43,124 (55%)
<b>Total</b>	<b>173,498</b>	<b>61,277 (35%)</b>	<b>72,467 (42%)</b>	<b>101,021 (58%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 30. Undisturbed Habitat Comparison for the Great Blue Heron**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Great Blue Heron</b>	20%	61%	55%	55%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the great blue heron and its habitat.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

**Golden Eagle**

*Existing Condition*

The golden eagle is a common to uncommon yearlong resident east of the Cascades. It inhabits shrub steppe, juniper, open ponderosa pine and mixed conifer, and deciduous habitats. The golden eagle prefers to forage in open shrub habitat. Suitable nesting habitat includes mountains, canyons, and rolling hills with two-thirds of the nests occurring on ledges and the remaining one-third found in mature trees. Nest trees are typically big ponderosa pine with large limb structure. Golden eagle territories may contain several nests. For example, one territory near Lake Billy Chinook contains 11 known nests. They prey primarily on black-tailed jackrabbits however in central Oregon the black-tailed jackrabbit population is depressed. Therefore, their diet includes mountain cottontail, ground squirrels, marmots, woodrats, small mammals, salmon, and birds like pheasant, mourning doves, and waterfowl. In 1982, the golden eagle population for Oregon was estimated at 1000 to 1500 pairs but the population trend for Oregon is unknown. Threats for this species include urban sprawl, residential developments, and impacts from off-highway vehicles. (Marshall et al. 2003 pp. 160-162).

Habitat for the golden eagle occurs sparingly across the Deschutes and Ochoco National Forests and the Crooked National Grasslands (CRNG) in open habitats (grasslands and shrub steppe) and open ponderosa pine where trees are absent or large enough to hold a nest. Habitat occurs primarily on the CRNG, fringe habitats near the forest boundaries, and in old fire areas. Approximately 53,360 acres of habitat currently exist across the Deschutes National Forest and approximately 84,054 acres of habitat occurs on the Ochoco National Forest for a total of 137,414 acres.

**Table 31. Existing Designated Route and Dispersed Camping Conditions within Golden Eagle Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Golden Eagle Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	32,983 (62%)	9,763 (18%)	10,614 (20%)	17,838 (33%)	17,857 (33%)	17,665 (33%)	53,360
<b>Ochoco</b>	70,522 (84%)	1,753 (2%)	11,780 (14%)	69,928 (83%)	2,637 (3%)	11,490 (14%)	84,054
<b>Total</b>	<b>103,505 (75%)</b>	<b>11,516 (8%)</b>	<b>22,394 (16%)</b>	<b>87,766 (64%)</b>	<b>20,494 (15%)</b>	<b>29,155 (21%)</b>	<b>137,414</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 31 shows approximately 32,983 acres of golden eagle habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 25,465 acres of habitat occur inside the road effect distance within those areas identified as closed (32,983 acres) resulting in the potential disturbance of 86% of the golden eagle habitat on the Deschutes NF.

Table 31 shows approximately 70,522 acres of golden eagle habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 34,347 acres of habitat occur inside the road effect distance within those areas identified as closed (70,522 acres) resulting in the potential disturbance of 57% of the golden eagle habitat on the Ochoco NF.

**Table 32. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Golden Eagle on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Golden Eagle Habitat</b>	<b>Acres of Golden Eagle Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Golden Eagle Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Golden Eagle Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	53,360	25,465 (48%)	45,842 (86%)	7,518 (14%)
<b>Ochoco</b>	84,054	34,347 (41%)	47,879 (57%)	36,175 (43%)
<b>Total</b>	<b>137,414</b>	<b>59,812 (44%)</b>	<b>93,721 (68%)</b>	<b>43,693 (32%)</b>

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 48% of the golden eagle habitat for the Deschutes and 41% of the golden eagle habitat for the Ochoco remains in areas where disturbance is occurring. See Table 34 for more information.

**Table 33. Designated Route and Dispersed Camping Conditions within Golden Eagle Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Golden Eagle Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	53,329 (100%)	22 (0%)	0	39,842 (75%)	7,739 (14%)	5,770 (11%)	53,351
<b>Ochoco</b>	84,013 (100%)	0	11 (0%)	65,822 (78%)	12,722 (15%)	5,480 (6%)	84,024
<b>Total</b>	<b>137,342 (100%)</b>	<b>22 (0%)</b>	<b>11 (0%)</b>	<b>105,664 (77%)</b>	<b>20,461 (15%)</b>	<b>11,250 (8%)</b>	<b>137,375</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 34. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Golden Eagle on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Golden Eagle Habitat	Acres of Golden Eagle Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Golden Eagle Habitat Disturbed/Percent of Total Habitat	Total Acres of Golden Eagle Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	53,351	25,465 (48%)	25,487 (48%)	27,864 (52%)
<b>Ochoco</b>	84,024	34,347 (41%)	34,358 (41%)	49,666 (59%)
<b>Total</b>	<b>137,375</b>	<b>59,812 (44%)</b>	<b>59,845 (44%)</b>	<b>77,530 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 35. Undisturbed Habitat Comparison for the Golden Eagle**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Golden Eagle	14%	52%	43%	59%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the golden eagle and its habitat.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## Waterfowl

### *Existing Condition*

Open lakes, ponds, streams, rivers, and wet/dry meadows provide foraging habitat for most waterfowl species. Some species utilize large snags for nesting, while others utilize open grassy areas near the water's edge. Most waterfowl diets consist primarily of vegetation although some animal matter (caddisflies, crustaceans, and mollusks) may be consumed (Csuti et. al 1997 pp. 66, 84-87, 89, 96, 99-102).

Habitat for waterfowl on the Deschutes and Ochoco NF's include Class 1, 2, and 3 streams, lakes, wetlands, and meadows. Wetlands and lakes include both the wetland and water body and the associated buffer. Suitable habitat specific to waterfowl has not been mapped at this time as assessments are generally conducted at a project level. Habitat may be over-estimated for this analysis because the entire buffer may not be suitable for nesting.

**Table 36. Existing Designated Route and Dispersed Camping Conditions within Waterfowl Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Class 3 Stream</b>	2,245	730	55	3,030
<b>Lake</b>	10,412	6,703	991	18,106
<b>Wetlands</b>	15,418	25,421	1,297	42,135
<b>Meadow</b>	7,777	485	0	8,262
<b>Total</b>	<b>44,115</b>	<b>47,342</b>	<b>3,242</b>	<b>94,698</b>

**Table 37. Existing Designated Route and Dispersed Camping Conditions within Waterfowl Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	3,659	3,836	2,095	9,591
<b>Class 2 Stream</b>	6,031	11,574	10,567	28,172
<b>Class 3 Stream</b>	2,684	5,498	4,393	12,575
<b>Lake</b>	147	120	179	447
<b>Wetlands</b>	4,718	9,367	2,765	16,850
<b>Meadow</b>	5,170	3,984	1,990	11,144
<b>Total</b>	<b>22,409</b>	<b>34,379</b>	<b>21,989</b>	<b>78,777</b>

**Table 38. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Waterfowl on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Waterfowl Habitat</b>	<b>Acres of Waterfowl Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Waterfowl Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Waterfowl Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	94,698	25,623 (27%)	76,206 (80%)	18,492 (20%)
<b>Ochoco</b>	78,777	35,654 (45%)	35,654 (45%)	43,124 (55%)
<b>Total</b>	<b>173,475</b>	<b>61,277 (35%)</b>	<b>111,860 (64%)</b>	<b>61,616 (36%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 36 shows approximately 44,115 acres of waterfowl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 25,623 acres of habitat occur inside the road effect distance within those areas identified as closed (44,115 acres) resulting in the potential disturbance of 80% of the waterfowl habitat on the Deschutes NF.

Table 37 shows approximately 22,409 acres of waterfowl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 35,654 acres of habitat occur inside the road effect distance within those areas identified as closed (22,409 acres) resulting in the potential disturbance of 45% of the waterfowl habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 39% of the waterfowl habitat for the Deschutes and 45% of the waterfowl habitat for the Ochoco remains in areas where disturbance is occurring. See Table 41 for more information.

**Table 39. Designated Route and Dispersed Camping Conditions within Waterfowl Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	8,345	3,256	132	11,733
<b>Class 2 Stream</b>	9,994	1,437	8	11,439
<b>Class 3 Stream</b>	2,769	238	23	3,030
<b>Lake</b>	17,059	862	192	18,113
<b>Wetlands</b>	37,089	4,887	157	42,133
<b>Meadow</b>	8,264	0	0	8,262
<b>Total</b>	<b>83,520</b>	<b>10,680</b>	<b>512</b>	<b>94,710</b>

**Table 40. Designated Route and Dispersed Camping Conditions within Waterfowl Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	7,135	2,096	364	9,595
<b>Class 2 Stream</b>	20,196	5,846	2,132	28,174
<b>Class 3 Stream</b>	9,502	2,104	974	12,580
<b>Lake</b>	343	64	40	447
<b>Wetlands</b>	13,005	3,558	288	16,851
<b>Meadow</b>	11,141	0	0	11,141
<b>Total</b>	<b>61,322</b>	<b>13,668</b>	<b>3,798</b>	<b>78,788</b>

**Table 41. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Waterfowl on the Deschutes and Ochoco National Forests for Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Waterfowl Habitat</b>	<b>Acres of Waterfowl Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Waterfowl Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Waterfowl Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	94,710	25,623 (27%)	36,813 (39%)	57,897 (61%)
<b>Ochoco</b>	78,788	35,654 (45%)	35,654 (45%)	43,124 (55%)
<b>Total</b>	<b>173,498</b>	<b>61,277 (35%)</b>	<b>72,467 (42%)</b>	<b>101,021 (58%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 42. Undisturbed Habitat Comparison for Waterfowl**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Waterfowl</b>	20%	61%	55%	55%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for waterfowl and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

**Red-tailed Hawk**

*Existing Condition*

The red-tailed hawk is found throughout the state in every habitat and at every elevation, although scarce in dense forests (Marshall et al. 2003 p. 156). They are perch hunters (trees, utility poles, etc.) and inhabit mixed country of open areas interspersed with woods (agricultural areas, grasslands, woodlands, meadows). They roost in thick conifers and nest in large conifer snags often in the tallest tree on the edge of the timber (Jackman and Scott 1975). They feed mainly on small to medium prey including ground squirrels, cottontails, voles, pocket gophers, snakes (Marshall et al. 2003 p.157) but may also take larger mammals (skunks), birds, reptiles, and insects (Jackman and Scott 1975).

Past harvest activities had produced habitat conditions favorable for red-tailed hawks by clear-cutting stands adjacent to mature and late-seral stands. This provided open areas for foraging adjacent to potential roosting and nesting habitat.

A specific habitat analysis was not conducted for the red-tailed hawk. Therefore, the habitat analysis for the Lewis’ woodpecker will be used as a surrogate for red-tailed hawk habitat. Although habitat for the Lewis’ woodpecker and red-tailed hawk do not overlap directly, Lewis’ woodpecker habitat is very open and can approximate potential red-tailed hawk habitat. Habitat for the Lewis’ woodpecker occurs sparingly throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, and white fir in open stands where average tree size is 15”dbh or greater. Approximately 7,390 acres of habitat currently exist across the Deschutes National Forest and approximately 4,471 acres of habitat occurs on the Ochoco National Forest for a total of 11,861 acres.

**Table 43. Existing Designated Route and Dispersed Camping Conditions within Red-tailed Hawk Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	3,044 (41%)	4,099 (55%)	247 (3%)	861 (12%)	5,966 (81%)	563 (8%)	7,390
<b>Ochoco</b>	731 (16%)	1,574 (35%)	2,166 (48%)	375 (8%)	1,942 (43%)	2,155 (48%)	4,471
<b>Total</b>	<b>3,775 (32%)</b>	<b>5,673 (48%)</b>	<b>2,413 (20%)</b>	<b>1,236 (10%)</b>	<b>7,908 (67%)</b>	<b>2,718 (23%)</b>	<b>11,861</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 43 shows approximately 3,044 acres of red-tailed hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 4,674 acres of habitat occur inside the road effect distance within those areas identified as closed (3,044 acres) resulting in the potential disturbance of 63% of the red-tailed hawk habitat on the Deschutes NF.

Table 43 shows approximately 731 acres of red-tailed hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 1,645 acres of habitat occur inside the road effect distance within those areas identified as closed (731 acres) resulting in the potential disturbance of 37% of the red-tailed hawk habitat on the Ochoco NF.

**Table 44. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Red-tailed Hawk on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Red-tailed Hawk Habitat</b>	<b>Acres of Red-tailed Hawk Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Red-tailed Hawk Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Red-tailed Hawk Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	7,390	4,674 (63%)	4,674 (63%)	2,716 (38%)
<b>Ochoco</b>	4,471	1,645 (37%)	1,645 (37%)	2,826 (63%)
<b>Total</b>	<b>11,861</b>	<b>6,319 (53%)</b>	<b>6,319 (53%)</b>	<b>5,542 (47%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 63% of the red-tailed hawk habitat for the Deschutes and 37% of the red-tailed hawk habitat for the Ochoco remains in areas where disturbance is occurring. See Table 46 for more information.

**Table 45. Designated Route and Dispersed Camping Conditions within Red-tailed Hawk Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Red-tailed Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	7,390 (100%)	0	0	4,555 (62%)	2,755 (37%)	79 (1%)	7,390
<b>Ochoco</b>	4,471 (100%)	0	0	3,776 (84%)	477 (11%)	218 (5%)	4,471
<b>Total</b>	<b>11,861 (100%)</b>	<b>0</b>	<b>0</b>	<b>8,331 (70%)</b>	<b>3,232 (27%)</b>	<b>297 (3%)</b>	<b>11,861</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 46. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Red-tailed Hawk on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Red-tailed Hawk Habitat	Acres of Red-tailed Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Red-tailed Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Red-tailed Hawk Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	7,390	4,674 (63%)	4,674 (63%)	2,716 (38%)
<b>Ochoco</b>	4,471	1,645 (37%)	1,645 (37%)	2,826 (63%)
<b>Total</b>	<b>11,861</b>	<b>6,319 (53%)</b>	<b>6,319 (53%)</b>	<b>5,542 (47%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 47. Undisturbed Habitat Comparison for the Red-tailed Hawk**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Red-tailed Hawk</b>	38%	38%	63%	63%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the red-tailed hawk and its habitat.

### Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## Osprey

### *Existing Condition*

Osprey are specialized for catching fish. They nest near lakes and rivers in the tops of large snags or they may use artificial platforms if available. Their main prey is live fish – slow-moving species that swim near the surface. However, they may also take other vertebrate species (birds, reptiles, and small mammals) but this represents a very small proportion of their diet (Csuti et. al 1997 p. 105).

Habitat for osprey on the Deschutes and Ochoco NF's includes Class 1 and 2 streams and lakes. Lakes include both the water body and associated buffer. Suitable habitat specific to osprey has not been mapped at this time as assessments are generally conducted at a project level. Habitat may be over-estimated for this analysis because the entire buffer may not contain large snags suitable for nesting.

**Table 48. Existing Designated Route and Dispersed Camping Conditions within Osprey Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	4,169	6,986	574	11,729
<b>Class 2 Stream</b>	4,094	7,017	325	11,436
<b>Lakes</b>	10,412	6,703	991	18,106
<b>Total</b>	<b>18,675</b>	<b>20,706</b>	<b>1,890</b>	<b>41,271</b>

**Table 49. Existing Designated Route and Dispersed Camping Conditions within Osprey Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	3,659	3,836	2,095	9,591
<b>Class 2 Stream</b>	6,031	11,574	10,567	28,172
<b>Lake</b>	147	120	179	447
<b>Total</b>	<b>9,837</b>	<b>15,530</b>	<b>12,841</b>	<b>38,208</b>

**Table 50. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Osprey on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Osprey Habitat</b>	<b>Acres of Osprey Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Osprey Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Osprey Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	41,271	12,548 (30%)	35,144 (85%)	6,127 (15%)
<b>Ochoco</b>	38,208	17,824 (47%)	17,824 (47%)	20,384 (53%)
<b>Total</b>	<b>79,479</b>	<b>30,372 (38%)</b>	<b>52,968 (67%)</b>	<b>26,511 (33%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 48 shows approximately 18,675 acres of osprey habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 12,548 acres of habitat occur inside the road effect distance within those areas identified as closed (18,675 acres) resulting in the potential disturbance of 85% of the osprey habitat on the Deschutes NF.

Table 49 shows approximately 9,837 acres of osprey habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,824 acres of habitat occur inside the road effect distance within those areas identified as closed (9,837 acres) resulting in the potential disturbance of 47% of the osprey habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
*Direct and Indirect Impacts*

Implementation of the Action Alternatives will close the forest to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. . In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 45% of the osprey habitat for the Deschutes and 47% of the osprey habitat for the Ochoco remains in areas where disturbance is occurring. See Table 53 for more information.

**Table 51. Designated Route and Dispersed Camping Conditions within Osprey Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	8,345	3,256	132	11,733
<b>Class 2 Stream</b>	9,994	1,437	8	11,439
<b>Lakes</b>	17,059	862	192	18,113
<b>Total</b>	<b>35,398</b>	<b>5,555</b>	<b>332</b>	<b>41,285</b>

**Table 52. Designated Route and Dispersed Camping Conditions within Osprey Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Class 1 Stream</b>	7,135	2,096	364	9,595
<b>Class 2 Stream</b>	20,196	5,846	2,132	28,174
<b>Lake</b>	343	64	40	447
<b>Total</b>	<b>27,674</b>	<b>8,006</b>	<b>2,536</b>	<b>38,216</b>

**Table 53. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Osprey on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Osprey Habitat	Acres of Osprey Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Osprey Habitat Disturbed/Percent of Total Habitat	Total Acres of Osprey Habitat Undisturbed/Percent of Total Habitat
Deschutes	41,285	12,548 (30%)	18,435 (45%)	22,850 (55%)
Ochoco	38,216	17,824 (47%)	17,824 (47%)	20,384 (53%)
<b>Total</b>	<b>79,501</b>	<b>30,372 (38%)</b>	<b>36,259 (46%)</b>	<b>43,234 (54%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 54. Undisturbed Habitat Comparison for the Osprey**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Osprey	15%	55%	53%	53%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the osprey and its habitat.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

**Bats**

*Existing Condition*

Most bat species are associated with foraging within forested areas while a few other species are closely associated with foraging in and adjacent to riparian areas. Several surveys have been conducted on forest to determine what species and habitats bats are using (Perlmeier 1996 and 1997, Perkins 1998, district files). See Table 54 for a breakdown of the potential bat species that could be found in the Travel Management Rule Project Area and their habitat characteristics (Csuti et. al 1997 pp. 338-342, 344, 345, 347, 348, 350, and 351; NatureServe 2009).

**Table 55. Potential bat species and habitat requirements for the Travel Management Rule Project Area.**

Species	Forage Substrate	Roost Site	Main Prey Species	Comments
California Myotis	Forest edges and over water	Cliff faces, tree crevices, caves and structures	Butterflies and small flies	
Western Small-footed bat	Ponderosa pine and mixed conifer forests	Rock crevices, under boulders, and beneath bark	Small insects	Will also forage over rocks
Yuma Myotis	Riparian, moist woodlands, and open forests	Buildings, caves, and bridges	Moths, midges, flies, and termites	Closely associated with water and very sensitive to disturbance
Little Brown Myotis	Moist forests and riparian areas		Flying insects	Closely associated with water
Long-legged Myotis	Coniferous forests and riparian areas	Crevice, buildings, and caves	Moths	Closely associated with forests
Long-eared Myotis	Forested habitats and forested edges		Moths	
Silver-haired bat	Forested areas and over ponds and streams	Under bark	Soft-bodied prey	Deforestation and loss of snags is a threat
Big Brown Bat	More common in deciduous versus coniferous forests	Structures	Beetles	Forages over open areas and uses hollow trees
Hoary Bat	Riparian and brushy areas	Trees	Moths	Solitary forest dwelling
Pallid Bat	Arid regions and open forest types	Cliff faces, caves, and buildings	Flightless arthropods	Forages on ground and very intolerant to disturbance
Townsend's Big-eared Bat	Arid regions and open forest types	Buildings, caves, mines, and bridges	Moths primarily, flies, true bugs, and beetles	Presence of suitable roosts more important than vegetation type; very intolerant to human disturbance
Fringed Myotis	Forested and riparian areas	Shrubs and may forage on the ground. Structures used for maternity colonies	Beetles, moths, crickets, crane flies, and spiders	Rare in Oregon and very sensitive to human disturbance.
Canyon Bat (formerly Western Pipistrelle)	Shrub-steppe and juniper woodlands	Rock crevices, under rocks, burrows	Small flying insects such as mosquitoes, flying ants, and moths	Slow flyer
Spotted Bat	Variety of habitat types from ponderosa pine to desert water holes; cliff habitat	Caves, rock crevices, cliffs	Moths	Solitary foragers and very rare. Detected at Dry Canyon and Smith Rocks

***Long-eared Myotis***

Habitat for the long-eared myotis occurs in minor amounts throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas fir, white fir, subalpine fir, Shasta red fir, western hemlock, silver fir, mountain hemlock, and whitebark pine where the average tree size is 20”dbh or greater. Approximately 30,098 acres of habitat currently exist across the Deschutes National Forest and approximately 5,404 acres of habitat occurs on the Ochoco National Forest for a total of 35,502 acres.

**Table 56. Existing Designated Route and Dispersed Camping Conditions within Long-eared Myotis Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Long eared Myotis Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	21,168 (70%)	7,726 (26%)	1,204 (4%)	10,180 (34%)	15,091 (50%)	4,827 (16%)	30,098
<b>Ochoco</b>	3,072 (57%)	1,397 (26%)	934 (17%)	2,813 (52%)	1,676 (31%)	916 (17%)	5,404
<b>Total</b>	<b>24,240 (68%)</b>	<b>9,123 (26%)</b>	<b>2,138 (6%)</b>	<b>12,993 (36%)</b>	<b>16,767 (47%)</b>	<b>5,743 (16%)</b>	<b>35,502</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 56 shows approximately 21,168 acres of long-eared myotis habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 14,594 acres of habitat occur inside the road effect distance within those areas identified as closed (21,168 acres) resulting in the potential disturbance of 78% of the long-eared myotis habitat on the Deschutes NF.

Table 56 shows approximately 3,072 acres of long-eared myotis habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 954 acres of habitat occur inside the road effect distance within those areas identified as closed (3,072 acres) resulting in the potential disturbance of 61% of the long-eared myotis habitat on the Ochoco NF.

**Table 57. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Long-eared Myotis on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Long-eared Myotis Habitat	Acres of Long-eared Myotis Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Long-eared Myotis Habitat Disturbed/Percent of Total Habitat	Total Acres of Long-eared Myotis Habitat Undisturbed/Percent of Total Habitat
Deschutes	30,098	14,594 (48%)	23,524 (78%)	6,574 (22%)
Ochoco	5,404	954 (18%)	3,286 (61%)	2,118 (39%)
<b>Total</b>	<b>35,502</b>	<b>15,548 (44%)</b>	<b>26,810 (76%)</b>	<b>8,692 (24%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

***Long-legged Myotis***

Habitat for the long-legged myotis occurs in very minor amounts on the Deschutes and Ochoco National Forests in the following plant associations – subalpine fir, Shasta red fir, silver fir, and mountain hemlock in montane stands where the average tree size is 20”dbh or greater. Approximately 6,386 acres of habitat currently exist across the Deschutes National Forest and approximately 135 acres of habitat occurs on the Ochoco National Forest for a total of 6,521 acres.

**Table 58. Existing Designated Route and Dispersed Camping Conditions within Long-legged Myotis Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Long legged Myotis Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	6,028 (94%)	358 (6%)	0	4,500 (70%)	1,862 (29%)	25 (<1%)	6,386
Ochoco	127 (94%)	7 (6%)	0	119 (88%)	17 (12%)	0	135
<b>Total</b>	<b>6,155 (94%)</b>	<b>365 (6%)</b>	<b>0</b>	<b>4,619 (71%)</b>	<b>1,879 (29%)</b>	<b>25 (&lt;1%)</b>	<b>6,521</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 58 shows approximately 6,028 acres of long-legged myotis habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 268 acres of habitat occur inside the road effect distance within those areas identified as closed (6,028 acres) resulting in the potential disturbance of 10% of the long-legged myotis habitat on the Deschutes NF.

Table 58 shows approximately 127 acres of long-legged myotis habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still

open roads traversing through habitat, resulting in potential disturbance. Approximately 19 acres of habitat occur inside the road effect distance within those areas identified as closed (127 acres) resulting in the potential disturbance of 20% of the long-legged myotis habitat on the Ochoco NF.

**Table 59. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Long-legged Myotis on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Long-legged Myotis Habitat	Acres of Long-legged Myotis Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Long-legged Myotis Habitat Disturbed/Percent of Total Habitat	Total Acres of Long-legged Myotis Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	6,386	268 (4%)	626 (10%)	5,760 (90%)
<b>Ochoco</b>	135	19 (14%)	27 (20%)	108 (80%)
<b>Total</b>	<b>6,521</b>	<b>287 (4%)</b>	<b>653 (10%)</b>	<b>5,868 (90%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Silver-haired Bat**

Habitat for the silver-haired bat occurs in minor amounts on the Deschutes National Forest and is virtually non-existent on the Ochoco National Forest in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, Shasta red fir, western hemlock, silver fir, and whitebark pine where the average tree size is 20” dbh or greater. Approximately 2,081 acres of habitat currently exist across the Deschutes National Forest and approximately 5 acres of habitat occurs on the Ochoco National Forest for a total of 2,086 acres.

**Table 60. Existing Designated Route and Dispersed Camping Conditions within Silver-haired Bat Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Silver hair Bat Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	1,292 (62%)	699 (34%)	91 (4%)	451 (22%)	1,229 (59%)	401 (19%)	2,081
<b>Ochoco</b>	2 (40%)	1 (20%)	2 (40%)	1 (20%)	2 (40%)	2 (40%)	5
<b>Total</b>	<b>1,294 (62%)</b>	<b>700 (33%)</b>	<b>93 (4%)</b>	<b>452 (22%)</b>	<b>1,231 (59%)</b>	<b>403 (19%)</b>	<b>2,086</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 60 shows approximately 1,292 acres of silver-haired bat habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 1,080 acres of habitat

occur inside the road effect distance within those areas identified as closed (1,292 acres) resulting in the potential disturbance of 90% of the silver-haired bat habitat on the Deschutes NF.

Table 60 shows approximately 2 acres of silver-haired bat habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2 acres of habitat occur inside the road effect distance within those areas identified as closed (2 acres) resulting in the potential disturbance of 60% of the silver-haired bat habitat on the Ochoco NF.

**Table 61. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Silver-haired Bat on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Silver-haired Bat Habitat</b>	<b>Acres of Silver-haired Bat Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Silver-haired Bat Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Silver-haired Bat Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	2,081	1,080 (52%)	1,869 (90%)	212 (10%)
<b>Ochoco</b>	5	2 (40%)	3 (60%)	0
<b>Total</b>	<b>2,086</b>	<b>1,082 (52%)</b>	<b>1,871 (90%)</b>	<b>212 (10%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

##### ***Long-eared Myotis***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 49% of the long-eared myotis habitat for the Deschutes and 18% of the long-eared myotis for the Ochoco remains in areas where disturbance is occurring. See Table 63 for more information.

**Table 62. Designated Route and Dispersed Camping Conditions within Long-eared Myotis Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Long eared Myotis Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	30,082 (100%)	16 (0%)	0	22,359 (74%)	6,130 (20%)	1,609 (5%)	30,098
<b>Ochoco</b>	5,404 (100%)	0	0	5,078 (94%)	278 (5%)	48 (1%)	5,404
<b>Total</b>	<b>35,486 (100%)</b>	<b>16 (0%)</b>	<b>0</b>	<b>27,437 (77%)</b>	<b>6,408 (18%)</b>	<b>1,657 (5%)</b>	<b>35,502</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 63. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Long-eared Myotis on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Long-eared Myotis Habitat	Acres of Long-eared Myotis Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Long-eared Myotis Habitat Disturbed/Percent of Total Habitat	Total Acres of Long-eared Myotis Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	30,098	14,594 (48%)	14,610 (49%)	15,488 (51%)
<b>Ochoco</b>	5,404	954 (18%)	954 (18%)	4,450 (82%)
<b>Total</b>	<b>35,502</b>	<b>15,548 (44%)</b>	<b>15,564 (44%)</b>	<b>19,938 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### *Long-legged Myotis*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 4% of the long-legged myotis habitat for the Deschutes and 14% of the long-legged myotis for the Ochoco remains in areas where disturbance is occurring. See Table 65 for more information.

**Table 64. Designated Route and Dispersed Camping Conditions within Long-legged Myotis Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Long legged Myotis Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	6,386 (100%)	0	0	6,295 (70%)	91 (29%)	0	6,386
<b>Ochoco</b>	135 (100%)	0	0	133 (88%)	2 (12%)	0	135
<b>Total</b>	<b>6,521 (100%)</b>	<b>0</b>	<b>0</b>	<b>6,428 (99%)</b>	<b>93 (1%)</b>	<b>0</b>	<b>6,521</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 65. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Long-legged Myotis on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Long-legged Myotis Habitat	Acres of Long-legged Myotis Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Long-legged Myotis Habitat Disturbed/Percent of Total Habitat	Total Acres of Long-legged Myotis Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	6,386	268 (4%)	268 (4%)	6,118 (96%)
<b>Ochoco</b>	135	19 (14%)	19 (14%)	116 (86%)
<b>Total</b>	<b>6,521</b>	<b>287 (4%)</b>	<b>287 (4%)</b>	<b>6,234 (96%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### ***Silver-haired Bat***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 52% of the silver-haired bat habitat for the Deschutes and 40% of the silver-haired bat for the Ochoco remains in areas where disturbance is occurring. See Table 67 for more information.

**Table 66. Designated Route and Dispersed Camping Conditions within Silver-haired Bat Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Silver hair Bat Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	2,072 (100%)	9 (0%)	0	1,447 (70%)	538 (26%)	96 (5%)	2,081
<b>Ochoco</b>	5 (100%)	0	0	4 (80%)	1 (20%)	0	5
<b>Total</b>	<b>2,077 (100%)</b>	<b>9 (0%)</b>	<b>0</b>	<b>1,451 (70%)</b>	<b>539 (26%)</b>	<b>96 (5%)</b>	<b>2,086</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 67. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Silver-haired Bat on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Silver-haired Bat Habitat	Acres of Silver-haired Bat Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Silver-haired Bat Habitat Disturbed/Percent of Total Habitat	Total Acres of Silver-haired Bat Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	2,081	1,080 (52%)	1,089 (52%)	992 (48%)
<b>Ochoco</b>	5	2 (40%)	2 (40%)	3 (60%)
<b>Total</b>	<b>2,086</b>	<b>1,082 (52%)</b>	<b>1,091 (52%)</b>	<b>995 (48%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 68. Undisturbed Habitat Comparison for the Long-eared Myotis, Long-legged Myotis, and Silver-haired Bat**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Long-eared Myotis</b>	22%	51%	39%	82%
<b>Long-legged Myotis</b>	90%	96%	80%	86%
<b>Silver-haired Bat</b>	10%	48%	0	60%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the long-eared myotis, long-legged myotis, and silver-haired bat and their habitats.

## Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## American Marten

### *Existing Condition*

The American marten is associated with mixed conifer and high elevation hemlock/lodgepole pine late-successional habitats, and is a focal species for climax habitats. Marten habitat generally involves a dense-canopy (greater than 40% canopy cover) and supports significant amounts of large down logs ( $\geq 20$ " dbh at rest sites and  $> 30$ " dbh at den sites, 8-20/acre) and snags (2-3/acre)  $\geq 20$ " dbh. Moist forests where marten are usually found have down woody material densities as high as 39 pieces per acre with 40% of the pieces  $> 20$ " dbh. Raphael and Jones (1997) found that martens use snags and logs with intermediate levels of decay with greatest use in the larger (30 inches in diameter or larger) size classes when available. Especially significant are riparian areas, ridgetops, and areas where high concentrations of down logs and snags occur (Ruggiero et al. 1994). Natal dens are largely found in trees, logs, and rocks (Ruggiero et al. 1994)). Martens mainly eat forest rodent species (e.g. squirrels) or riparian rodent species (e.g. voles). Complex physical structure, especially near the ground, helps provide foraging/hunting areas and shelter from weather and predators (Buskirk and Powell 1994 as cited in Ruggiero et al. 1994). Canopy cover plays a greater role in winter where marten select for higher canopy cover during snow periods than snow-free periods. A study conducted in lodgepole pine forests of the Winema National Forest estimated 0.2 live trees, 0.3 snags, 0.6 logs and 1.3 slash piles/ha (0.08 live, 0.12 snags, 0.24 logs, and 0.52 slash piles per acre) of appropriate size would meet denning and resting needs (Raphael and Jones 1997).

Habitat for the marten occurs sparingly throughout the Deschutes and Ochoco National Forests in higher elevations in the following plant associations – lodgepole pine, ponderosa pine where lodgepole pine is a component, Douglas-fir, white fir, subalpine fir, Shasta red fir, western hemlock, silver fir, mountain hemlock, and whitebark pine in dense stands where the average tree size is 15" dbh or greater. Approximately 76,377 acres of habitat currently exist across the Deschutes National Forest and approximately 22,505 acres of habitat occurs on the Ochoco National Forest for a total of 98,882 acres.

**Table 69. Existing Designated Route and Dispersed Camping Conditions within Marten Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Marten Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	68,616 (90%)	7,616 (10%)	145 (<1%)	38,291 (50%)	36,101 (47%)	1,986 (3%)	76,377
<b>Ochoco</b>	11,482 (51%)	6,912 (31%)	4,111 (18%)	10,383 (48%)	8,166 (36%)	3,957 (18%)	22,505
<b>Total</b>	<b>80,098 (81%)</b>	<b>14,528 (15%)</b>	<b>4,256 (4%)</b>	<b>48,674 (49%)</b>	<b>44,267 (45%)</b>	<b>5,943 (6%)</b>	<b>98,882</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 69 shows approximately 68,616 acres of marten habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 11,823 acres of habitat occur inside the road effect distance within those areas identified as closed (68,616 acres) resulting in the potential disturbance of 26% of the marten habitat on the Deschutes NF.

Table 69 shows approximately 11,482 acres of marten habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 4,196 acres of habitat occur inside the road effect distance within those areas identified as closed (11,482 acres) resulting in the potential disturbance of 68% of the marten habitat on the Ochoco NF.

**Table 70. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Marten on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Marten Habitat</b>	<b>Acres of Marten Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Marten Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Marten Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	76,377	11,823 (15%)	19,584 (26%)	56,793 (74%)
<b>Ochoco</b>	22,505	4,196 (19%)	15,219 (68%)	7,286 (32%)
<b>Total</b>	<b>98,882</b>	<b>16,019 (16%)</b>	<b>34,803 (35%)</b>	<b>64,079 (65%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 15% of the marten habitat for the Deschutes and 19% of the marten for the Ochoco remains in areas where disturbance is occurring. See Table 72 for more information.

**Table 71. Designated Route and Dispersed Camping Conditions within Marten Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Marten Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	76,377 (100%)	0	0	69,792 (91%)	6,448 (8%)	136 (0%)	76,377
<b>Ochoco</b>	22,505 (100%)	0	0	20,919 (93%)	1,421 (6%)	165 (1%)	22,505
<b>Total</b>	<b>98,882 (100%)</b>	<b>0</b>	<b>0</b>	<b>90,711 (92%)</b>	<b>7,869 (8%)</b>	<b>301 (0%)</b>	<b>98,882</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 72. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Marten on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Marten Habitat	Acres of Marten Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Marten Habitat Disturbed/Percent of Total Habitat	Total Acres of Marten Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	76,377	11,823 (15%)	11,823 (15%)	64,554 (85%)
<b>Ochoco</b>	22,505	4,196 (19%)	4,196 (19%)	18,309 (81%)
<b>Total</b>	<b>98,882</b>	<b>16,019 (16%)</b>	<b>16,019 (16%)</b>	<b>82,863 (84%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 73. Undisturbed Habitat Comparison for the Marten**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Marten</b>	74%	85%	32%	81%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the marten and its habitat.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes National Forest Land Resource Management Plan. There will be no habitat altered or removed and disturbance will be decreased.

## Big Game

### *Existing Condition*

**Deer:** There is one allocation for managing deer habitat on the Deschutes National Forest –MA-7 (Transition and Winter Range). In addition, a biological winter, transition and summer range map was developed by Oregon Department of Fish and Wildlife (ODFW) that is referenced but is not considered an official allocation in the Deschutes LRMP and summer range which has specific standards and guidelines in the LRMP but is not a specific allocation. Management of summer range is designed to provide adequate habitat quantity and quality to meet herd management objectives established jointly with ODFW. This requires a mosaic of forested conditions utilizing security and thermal cover, travel corridors, visual screens, and management of harassment potential from other activities (e.g. roads and other recreation use). This will not be analyzed in this project as this is not a specific allocation. The goal for managing MA-7 is to manage vegetation to provide optimum habitat conditions on deer winter and transition ranges while providing for some livestock forage, wood products, visual quality, and recreation opportunities.

The Crooked River National Grassland (CRNG) has one allocation for managing deer – MA-G2 Metolius Deer Winter Range. The primary objective of this area is to manage for big game winter range habitat by producing high quality deer winter range habitat.

The Ochoco National Forest has two allocations for management of big game habitat (including deer, elk, and antelope to a small degree). MAF-20 – Winter Range is managed for big game use on winter range with this seen as the primary activity and other management activities and human use restricted from December 1 through May 1. MAF-21 – General Forest Winter Range is managed for timber production with management activities designed and implemented to recognize big game habitat needs.

**Elk:** The Deschutes NF has one primary allocation for the management of elk habitat on forest in addition to forest-wide standards and guidelines for vegetation management. Eleven Key Elk Habitat Areas (KEHAs) occur across the forest to provide optimum habitat conditions for both summering and wintering elk herds.

**Antelope:** The Crooked River National Grassland (CRNG) has one allocation for managing antelope – Antelope Winter Range which is managed to provide the maximum number of wintering antelope (200-350).

**Table 74. Big game habitat acres for the Travel Management Rule project area.**

<b>Deer Habitat Type</b>	<b>Acres of Habitat</b>	<b>Percent of Project Area*</b>
Management Area 7 - Des	207,322	13%
MA-G2 – Metolius Deer Winter Range - CRNG	12,770	2%
MAF-20 – Winter Range - Och	36,372	5%
MAF-21 – General Forest Winter Range - Och	82,623	11%
<b>Elk Habitat Type</b>	<b>Acres of Habitat</b>	<b>Percent of Project Area*</b>
Key Elk Habitat Area	53,852	3%
<b>Antelope Habitat Type</b>	<b>Acres of Habitat</b>	<b>Percent of Project Area*</b>
Antelope Winter Range	30,935	4%

\*Percent of the forest the allocation pertains too.

**Road Densities**

The Deschutes NF LRMP has set desired road densities for MA-7, KEHAs, and general summer range areas. The Ochoco NF LRMP nor the Crooked River National Grassland have desired road densities identified. Deschutes LRMP target road densities for the summer range are 2.5 miles/sq. mile while road densities for MA-7 are 1.0-2.5 miles/sq. mile. Target road densities for KEHAs are much lower ranging from 0.5 to 1.5 miles/sq. mile. The status of roads, whether open or closed, will not change as a result of this project. Therefore, road densities will not be analyzed for the Travel Management Rule.

**Road Impacts**

Literature has shown varying responses of deer and elk to roads and road use. In a literature review of linear recreation route effects on wildlife, Gaines et al. (2003) reported that as traffic volume increased, the mean distance elk moved away from roads increased (Johnson et al. 2000 in Gaines et al. 2003). See Table 75 for more information.

**Table 75. Mean distance from roads for elk reported by Gaines et al. (2003).**

Traffic Volume	Vehicles Per Time	Mean Distance Elk Moved Away from Roads
Low Traffic	0-1 vehicles/12 hours	869-890 meters
Moderate Traffic	2-4 vehicles/12 hours	909-1032 meters
High Traffic	>4 vehicles/12 hours	1103-1560 meters

Rowloff (1998 in Gaines et al. 2003) and Rowland et al. (2000) suggested a spatially explicit roads variable based on distance to open roads was more appropriate than using road density as an index for summer range. Johnson et al. (2000) also showed that differing traffic levels have different impacts on deer and elk habitat use. Therefore, to assess road and trail effects on deer and elk, roads would be buffered by those distances shown in Table 76. This zone of influence may be modified by topography but this area becomes the area influenced by roads (Gaines et al. 2003).

**Table 76. Zone of Influence applied to each side of road for deer and elk (Gaines et al. 2003).**

Trail or Road Type and Status	Zone of Influence*
Motorized trails	300 meters
Closed road (no vehicle traffic but open to ATVs)	300 meters
Low Traffic (0-1 vehicles/12 hours)	900 meters
Moderate Traffic (2-4 vehicles/12 hours)	1000 meters
High Traffic (>4 vehicles/12 hours)	1300 meters

\*Zone of Influence – similar definition as road effect distance.

Studies on ungulates and carnivores have shown heavily traveled roads are avoided or used little in comparison to lightly traveled roads (Forman et al. 2003: 797, 615, 913, 579, 350, 302, Rowland et al. 2005). Wisdom et al. (2005) found similar results for elk but not necessarily for deer. In a study looking at spatial partitioning between elk and deer, Wisdom et al. (2005) found elk were generally farther from roads with traffic rates as low as  $\geq 1$  vehicle/12 hours during day and nighttime hours while deer were found closer to roads. In addition, another study conducted by Wisdom et al. (2005) on the effects of off-road recreation on mule deer and elk, showed elk had greater flight probabilities and movement rates for all four off-road activities measured (ATV, mountain biking, horseback riding, and hiking) compared to no human activity. Elk reactions were more pronounced during the ATV and mountain biking activities than to horseback riding

and hiking. Lyon (1979) reported the area of avoidance for elk is generally ¼ to ½ mile from a road depending on the amount of traffic, road quality, and density of cover near roads. Rowland et al. (2005) reported the primary effect of roads on elk was habitat fragmentation. There are fewer patches of cover large enough to function effectively (Rowland et al. 2000). This study (Rowland et al. 2004) also documented three main direct impacts on elk. They are as follows:

- Elk avoid areas near roads.
- Elk vulnerability to mortality from hunter harvest, both legal and illegal, increases as open road density increases.
- In areas of high road densities, elk exhibit higher stress levels (Rowland et al. 2005) and energetic costs of moving away from roads may be substantial (Cole et al. 1997).

In contrast, Wisdom et al. (2005) found mule deer showed little measurable response to off-road activities. Movement rates were slightly increased during all off-road activities except during ATV use. Stankowich (2008) and Krausman et al. (2006) showed similar responses of mule deer. They found humans afoot have more impact than other stimuli (vehicles, noise, horseback) studied. Ferris and Kutilek (1989 in Montana TWS 1999) found black-tailed deer avoided OHV areas during high peak use but returned to established home ranges after traffic levels subsided.

In another study by Yarmoloy (1988 in Ouren et al. 2007), mule deer disturbed by OHVs altered their patterns of foraging and use of habitat while deer in undisturbed areas did not. Yarmoloy found disturbance of deer resulted in decreased reproductive success (less fawns) while undisturbed deer showed no change in reproductive success.

#### Deschutes NF - MA-7

**Table 77. Existing Designated Route and Dispersed Camping Conditions within MA-7 Deer Habitat on the Deschutes National Forest.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of MA-7 Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes MA-7</b>	129,350 (62%)	27,078 (13%)	50,894 (25%)	65,173 (31%)	68,054 (33%)	74,095 (36%)	207,322
<b>Total MA-7 Acres</b>	<b>129,350 (62%)</b>	<b>27,078 (13%)</b>	<b>50,894 (25%)</b>	<b>65,173 (31%)</b>	<b>68,054 (33%)</b>	<b>74,095 (36%)</b>	<b>207,322</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 77 shows approximately 129,350 acres of the MA-7 area occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through the area, resulting in potential disturbance. Approximately 103,835 acres of habitat occur inside the road effect distance within those areas identified as closed (129,350 acres) resulting in the potential disturbance of 88% of the MA-7 area on the Deschutes NF.

**Table 78. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the MA-7 area on the Deschutes National Forest for Existing Designated Routes.**

Forest	Total Acres of MA-7	Acres of MA-7 within the Road Effect Distance/Percent of Total Habitat	Total Acres of MA-7 Disturbed/Percent of Total Habitat	Total Acres of MA-7 Undisturbed/Percent of Total Habitat
Deschutes	207,322	103,835 (50%)	181,807 (88%)	25,515 (12%)
<b>Total</b>	<b>207,322</b>	<b>103,835 (50%)</b>	<b>181,807 (88%)</b>	<b>25,515 (12%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Deschutes NF – Key Elk Habitat Areas**

**Table 79. Existing Designated Route and Dispersed Camping Conditions within Key Elk Habitat Areas on the Deschutes National Forest.**

KEHA	Existing Designated Routes			Existing Dispersed Camping			Total Acres of KEHA Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Clover Meadow</b>	2,833	143	0	0	2,937	39	2,976
<b>Crane Prairie</b>	8,834	0	0	593	6,627	1,615	8,834
<b>Davis</b>	1,881	203	0	1,834	203	47	2,084
<b>Fall River</b>	6,109	652	0	0	6,573	188	6,761
<b>Fly</b>	513	124	0	0	637	0	637
<b>Hemlock</b>	2,295	216	0	0	2,511	0	2,511
<b>Kiwa Butte</b>	529	1	0	0	530	0	530
<b>Lower Metolius</b>	5,920	0	0	1,237	4,683	0	5,920
<b>Maklaks</b>	1,176	441	0	0	1,617	0	1,617
<b>Ryan Ranch</b>	12,539	3,654	4,256	3,726	12,305	4,417	20,448
<b>Tumalo Mtn.</b>	1,533	0	0	863	670	0	1,533
<b>Total KEHA Acres</b>	<b>44,162</b>	<b>5,434</b>	<b>4,256</b>	<b>8,253</b>	<b>39,293</b>	<b>6,306</b>	<b>53,852</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 79 shows approximately 44,162 acres of the KEHAs occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through the area, resulting in potential disturbance. Approximately 23,581 acres of habitat occur inside the road effect distance within those areas identified as closed (44,162 acres) resulting in the potential disturbance of 62% of the KEHAs on the Deschutes NF.

**Table 80. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the MA-7 area on the Deschutes National Forest for Existing Designated Routes.**

<b>Key Elk Habitat Area</b>	<b>Total Acres of KEHA</b>	<b>Acres of KEHA within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of KEHA Disturbed/Percent of Total Habitat</b>	<b>Total Acres of KEHA Undisturbed/Percent of Total Habitat</b>
<b>Clover Meadow</b>	2,976	341 (11%)	484 (16%)	2,492 (84%)
<b>Crane Prairie</b>	8,834	4,492 (51%)	4,492 (51%)	4,342 (49%)
<b>Davis</b>	2,084	916 (44%)	1,119 (54%)	965 (46%)
<b>Fall River</b>	6,761	3,007 (44%)	3,659 (54%)	3,102 (46%)
<b>Fly</b>	637	387 (61%)	511 (80%)	126 (20%)
<b>Hemlock</b>	2,511	871 (35%)	1,087 (43%)	1,424 (57%)
<b>Kiwa Butte</b>	530	68 (13%)	69 (13%)	461 (87%)
<b>Lower Metolius</b>	5,920	2,428 (41%)	2,428 (41%)	3,492 (59%)
<b>Maklaks</b>	1,617	258 (16%)	699 (43%)	918 (57%)
<b>Ryan Ranch</b>	20,448	10,813 (53%)	18,722 (92%)	1,726 (8%)
<b>Tumalo Mtn.</b>	1,533	0	0	1,533 (100%)
<b>Total KEHA Acres</b>	<b>53,852</b>	<b>23,581 (44%)</b>	<b>33,270 (62%)</b>	<b>20,581 (38%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Ochoco NF – Winter Range**

**Table 81. Existing Designated Route and Dispersed Camping Conditions within Winter Range Areas on the Ochoco National Forest.**

Winter Range Area	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Winter Range
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Metolius Deer WR</b>	12,770	0	0	12,770	0	0	12,770
<b>General Forest WR</b>	29,273	1	53,349	3,733	665	78,225	82,623
<b>Winter Range</b>	3,463	0	32,909	1	1,665	34,706	36,372
<b>Antelope WR</b>	30,935	0	0	30,935	0	0	30,935
<b>Total WR Acres</b>	<b>76,441</b>	<b>1</b>	<b>86,258</b>	<b>47,439</b>	<b>2,330</b>	<b>112,931</b>	<b>162,700</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 81 shows approximately 76,441 acres of the winter range occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through the area, resulting in potential disturbance. Approximately 45,106 acres of habitat occur inside the road effect distance within those areas identified as closed (76,441 acres) resulting in the potential disturbance of 61% of the winter range on the Ochoco NF.

**Table 82. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Winter Range areas on the Ochoco National Forest for Existing Designated Routes.**

Winter Range Area	Total Acres of Winter Range	Acres of Winter Range within the Road Effect Distance/Percent of Total Habitat	Total Acres of Winter Range Disturbed/Percent of Total Habitat	Total Acres of Winter Range Undisturbed/Percent of Total Habitat
<b>Metolius Deer WR</b>	12,770	4,427 (35%)	4,427 (35%)	8,343 (65%)
<b>General Forest WR</b>	82,623	18,576 (22%)	71,926 (87%)	10,697 (13%)
<b>Winter Range</b>	36,372	7,390 (20%)	7,390 (20%)	28,982 (80%)
<b>Antelope WR</b>	30,935	14,713 (48%)	14,713 (48%)	16,222 (52%)
<b>Total Winter Range Acres</b>	<b>162,700</b>	<b>45,106 (28%)</b>	<b>98,456 (61%)</b>	<b>64,244 (39%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
*Direct and Indirect Impacts*

**Deschutes NF - MA-7**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. . In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 50% of the MA-7 area for the Deschutes remains in areas where disturbance is occurring. See Table 84 for more information.

**Table 83. Designated Route and Dispersed Camping Conditions within MA-7 Deer Habitat on the Deschutes National Forest for the Action Alternatives.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of MA-7 Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes MA-7</b>	206,901	377	0	151,536	29,258	26,485	207,278
<b>Total MA-7 Acres</b>	<b>206,901</b>	<b>377</b>	<b>0</b>	<b>151,536</b>	<b>29,258</b>	<b>26,485</b>	<b>207,278</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 84. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the MA-7 area on the Deschutes National Forest for the Action Alternatives.**

Forest	Total Acres of MA-7	Acres of MA-7 within the Road Effect Distance/Percent of Total Habitat	Total Acres of MA-7 Disturbed/Percent of Total Habitat	Total Acres of MA-7 Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	207,278	103,803 (50%)	104,180 (50%)	103,098 (50%)
<b>Total</b>	<b>207,278</b>	<b>103,803 (50%)</b>	<b>104,180 (50%)</b>	<b>103,098 (50%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Deschutes NF – Key Elk Habitat Areas**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. . In addition, motorized access for dispersed camping will be

limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 44% of the KEHAs for the Deschutes remain in areas where disturbance is occurring. See Table 86 for more information.

**Table 85. Designated Route and Dispersed Camping Conditions within Key Elk Habitat Areas on the Deschutes National Forest for the Action Alternatives.**

KEHA	Existing Designated Routes			Existing Dispersed Camping			Total Acres of KEHA Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Clover Meadow</b>	2,976	0	0	2,816	147	12	2,976
<b>Crane Prairie</b>	8,834	0	0	7,222	1,375	237	8,834
<b>Davis</b>	2,084	0	0	1,953	100	31	2,084
<b>Fall River</b>	6,758	0	0	4,604	2,145	10	6,758
<b>Fly</b>	637	0	0	424	213	0	637
<b>Hemlock</b>	2,511	0	0	2,082	429	0	2,511
<b>Kiwa Butte</b>	530	0	0	502	27	0	530
<b>Lower Metolius</b>	5,919	0	0	5,069	849	0	5,919
<b>Maklaks</b>	1,617	0	0	1,478	139	0	1,617
<b>Ryan Ranch</b>	20,448	0	0	15,754	3,492	1,202	20,448
<b>Tumalo Mtn.</b>	1,533	0	0	1,533	0	0	1,533
<b>Total KEHA Acres</b>	<b>53,846</b>	<b>0</b>	<b>0</b>	<b>43,437</b>	<b>8,916</b>	<b>1,492</b>	<b>53,846</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 86. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the MA-7 area on the Deschutes National Forest for the Action Alternatives.**

<b>Key Elk Habitat Area</b>	<b>Total Acres of KEHA</b>	<b>Acres of KEHA within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of KEHA Disturbed/Percent of Total Habitat</b>	<b>Total Acres of KEHA Undisturbed/Percent of Total Habitat</b>
<b>Clover Meadow</b>	2,976	341 (11%)	341 (11%)	2,635 (89%)
<b>Crane Prairie</b>	8,834	4,492 (51%)	4,492 (51%)	4,342 (49%)
<b>Davis</b>	2,084	916 (44%)	916 (44%)	1,168 (56%)
<b>Fall River</b>	6,758	3,005 (44%)	3,005 (44%)	3,753 (56%)
<b>Fly</b>	637	387 (61%)	387 (61%)	250 (39%)
<b>Hemlock</b>	2,511	871 (35%)	871 (35%)	1,640 (65%)
<b>Kiwa Butte</b>	530	68 (13%)	68 (13%)	462 (87%)
<b>Lower Metolius</b>	5,919	2,427 (41%)	2,427 (41%)	3,492 (59%)
<b>Maklaks</b>	1,617	258 (16%)	258 (16%)	1,359 (84%)
<b>Ryan Ranch</b>	20,448	10,812 (53%)	10,812 (53%)	9,636 (47%)
<b>Tumalo Mtn.</b>	1,533	0	0	1,533 (100%)
<b>Total KEHA Acres</b>	<b>53,846</b>	<b>23,578 (44%)</b>	<b>23,578 (44%)</b>	<b>30,270 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### **Ochoco NF – Winter Range**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 28% of the winter range areas for the Ochoco remain in areas where disturbance is occurring. See Table 88 for more information.

**Table 87. Designated Route and Dispersed Camping Conditions within Winter Range Areas on the Ochoco National Forest for the Action Alternatives.**

Winter Range Area	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Winter Range
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Metolius Deer WR	12,760	0	0	10,401	584	1,775	12,760
General Forest WR	82,620	0	0	73,006	651	8,963	82,620
Winter Range	36,370	0	0	32,486	1,625	2,259	36,370
Antelope WR	30,923	0	0	22,928	3,133	4,862	30,923
<b>Total WR Acres</b>	<b>162,673</b>	<b>0</b>	<b>0</b>	<b>138,821</b>	<b>5,993</b>	<b>17,859</b>	<b>162,673</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 88. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Winter Range areas on the Ochoco National Forest for the Action Alternatives.**

Winter Range Area	Total Acres of Winter Range	Acres of Winter Range within the Road Effect Distance/Percent of Total Habitat	Total Acres of Winter Range Disturbed/Percent of Total Habitat	Total Acres of Winter Range Undisturbed/Percent of Total Habitat
Metolius Deer WR	12,760	4,421 (35%)	4,421 (35%)	8,339 (65%)
General Forest WR	82,620	18,574 (22%)	18,574 (22%)	64,046 (78%)
Winter Range	36,370	7,387 (20%)	7,387 (20%)	28,983 (80%)
Antelope WR	30,923	14,704 (48%)	14,704 (48%)	16,219 (52%)
<b>Total Winter Range Acres</b>	<b>162,673</b>	<b>45,086 (28%)</b>	<b>45,086 (28%)</b>	<b>117,587 (72%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 89. Undisturbed Habitat Comparison for Big Game Allocations for the Deschutes and Ochoco National Forests.**

<b>Big Game Allocation</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>MA-7</b>				
<b>MA-7 – Deschutes NF</b>	12%	50%	NA	NA
<b>Key Elk Habitat Areas (KEHAs)</b>				
<b>Clover Meadow</b>	84%	89%	NA	NA
<b>Crane Prairie</b>	49%	49%	NA	NA
<b>Davis</b>	46%	56%	NA	NA
<b>Fall River</b>	46%	56%	NA	NA
<b>Fly</b>	20%	39%	NA	NA
<b>Hemlock</b>	57%	65%	NA	NA
<b>Kiwa Butte</b>	87%	87%	NA	NA
<b>Lower Metolius</b>	59%	59%	NA	NA
<b>Maklaks</b>	57%	84%	NA	NA
<b>Ryan Ranch</b>	8%	47%	NA	NA
<b>Tumalo Mtn.</b>	100%	100%	NA	NA
<b>Ochoco NF Winter Range Allocations</b>				
<b>Metolius Deer Winter Range</b>	NA	NA	65%	65%
<b>General Forest Winter Range</b>	NA	NA	13%	78%
<b>Winter Range</b>	NA	NA	80%	80%
<b>Antelope Winter Range</b>	NA	NA	52%	52%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for big game and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Motorized traffic will be limited to designated routes, road densities will remain unchanged, there will be no habitat altered or removed, and disturbance will be decreased.

**Birds of Conservation Concern**

In January 2001, President Clinton issued an executive order on migratory birds directing federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitats. Federal agencies were required within two years to develop a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service to conserve migratory birds including taking steps to restore and enhance planning processes whenever possible. To meet this goal in part the U.S. Fish

and Wildlife Service developed the Birds of Conservation Concern released in December 2002 (USFWS 2002) and an update to the original list was released in 2008 (USFWS 2008a).

The “Birds of Conservation Concern 2008” (BCC) identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973. Bird species considered for inclusion on lists in this report include non-game birds, gamebirds without hunting seasons, subsistence-hunted non-game species in Alaska, landbirds, shorebirds, waterbirds, and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species. While all of the bird species included in BCC are priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing. The goal is to conserve avian diversity in North America and includes preventing or removing the need for additional ESA bird listings by implementing proactive management and conservations actions (USFWS 2008a). The 2008 lists were derived from three major bird conservation plans: the Partners in Flight North American Landbird Conservation Plan, the United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. Conservation concerns stem from population declines, naturally or human-caused small ranges or population sizes, threats to habitat, or other factors.

Bird Conservation Regions (BCRs) were developed based on similar geographic parameters and are the basic units within which all bird conservation efforts should be planned and evaluated (USFWS 2008a). Two BCRs encompass the Travel Management Rule Project Area – BCR 9, Great Basin and BCR 10, Northern Rockies U.S. portion only. See Tables 90 and 91 for a list of the bird species of concern for the area, the preferred habitat for each species, and whether there is potential habitat for each species within the Travel Management Rule project area.

**Table 90. BCR 9 (Great Basin) BCC 2008 list.**

<b>Bird Species</b>	<b>Preferred Habitat</b>	<b>Habitat within the TMR Project Area (Y or N)</b>
Greater Sage Grouse (Columbia Basin DPS)	Sagebrush dominated Rangelands	Yes
Eared Grebe (non-breeding)	Open water intermixed with emergent vegetation	Yes
Bald Eagle	Lakeside with large trees	Yes
Ferruginous Hawk	Elevated Nest Sites in Open Country	Yes
Golden Eagle	Elevated Nest Sites in Open Country	Yes
Peregrine Falcon	Cliffs	Yes
Yellow Rail	Dense Marsh Habitat	Yes
Snowy Plover	Dry Sandy Beaches	No
Long-billed Curlew	Meadow/Marsh	Yes
Marbled Godwit	Marsh/Wet Meadows	No
Yellow-billed Cuckoo	Dense riparian/cottonwoods	No
Flammulated Owl	Ponderosa pine forests	Yes
Black Swift	Cliffs associated with waterfalls	No
Calliope Hummingbird	Open mountain meadows, open forests, meadow edges, and riparian areas	Yes
Lewis's Woodpecker	Ponderosa pine forests	Yes
Williamson's Sapsucker	Ponderosa pine forests	Yes
White-headed Woodpecker	Ponderosa pine forests	Yes
Loggerhead Shrike	Open country with scattered trees or shrubs	Yes
Pinyon Jay	Juniper, juniper-ponderosa pine transition, and ponderosa pine edges	Yes
Sage Thrasher	Sagebrush	Yes
Virginia's Warbler	Scrubby vegetation within arid montane woodlands	No
Green-tailed Towhee	Open ponderosa pine with dense brush	Yes
Brewer's Sparrow	Sagebrush clearings in coniferous forests/bitterbrush	Yes
Black-chinned Sparrow	Ceanothus and oak covered hillsides	No
Sage Sparrow	Unfragmented patches of sagebrush	Yes
Tricolored Blackbird	Cattails or Tules	Yes
Black Rosy Finch	Rock outcroppings and snowfields	No

**Table 91. BCR 10 (Northern Rockies U.S. Portion Only) BCC 2008 list.**

<b>BCR 10 Northern Rockies</b>		
<b>Bird Species</b>	<b>Preferred Habitat</b>	<b>Habitat within the TMR Project Area (Y or N)</b>
Bald Eagle	Lakeside with large trees	Yes
Swainson's Hawk	Open lands with scattered trees	Yes
Ferruginous Hawk	Elevated Nest Sites in Open Country	Yes
Peregrine Falcon	Cliffs	Yes
Upland Sandpiper	Upland fields	Yes
Long-billed Curlew	Meadow/Marsh	Yes
Yellow-billed Cuckoo	Dense riparian/cottonwoods	No
Flammulated Owl	Ponderosa pine forests	Yes
Black Swift	Cliffs associated with waterfalls	No
Calliope Hummingbird	Open mountain meadows, open forests, meadow edges, and riparian areas	Yes
Lewis' Woodpecker	Ponderosa pine forests	Yes
Williamson's Sapsucker	Ponderosa pine forests	Yes
White-headed Woodpecker	Ponderosa pine forests	Yes
Olive-sided Flycatcher	Mixed Conifer edges and openings created by fire	Yes
Willow Flycatcher	Willow and alder shrub patches	Yes
Loggerhead Shrike	Open country with scattered trees or shrubs	Yes
Sage Thrasher	Sagebrush	Yes
Brewer's Sparrow	Sagebrush clearings in coniferous forests/bitterbrush	Yes
Sage Sparrow	Unfragmented patches of sagebrush	Yes
McCown's Longspur	Dry shortgrass plains	No
Black Rosy Finch	Rock outcroppings and snowfields	No
Cassin's Finch	Open coniferous forests from subalpine to juniper woodlands	Yes

### **Landbird Strategic Plan**

The Forest Service has prepared a Landbird Strategic Plan (USDA 2000) to maintain, restore, and protect habitats necessary to sustain healthy migratory and resident bird populations to achieve biological objectives. The primary purpose of the strategic plan is to provide guidance for the Landbird Conservation Program and to focus efforts in a common direction. On a more local level, individuals from multiple agencies and organizations with the Oregon-Washington Chapter of Partners in Flight participated in developing publications for conserving landbirds in this region. A Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington was published in June 2000 (Altman 2000), A Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington was published in March 2000 (Altman and Holmes 2000), and A Conservation Strategy for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington was published in May 2000 (Altman 2000). These documents outline conservation measures, goals and objectives for specific habitat types found on the east-slope of the Cascades and the focal species associated with each habitat type. These documents provide recommendations for habitat management. The East-Slope Cascades Strategy covers the Deschutes National Forest and the forest is contained within the Central Oregon subprovince. The Columbia Basin Strategy

covers the Crooked River National Grassland and portions of the Ochoco National Forest and these areas are contained within the High Lava Plains subprovince indicated in the strategy. The Northern Rockies Strategy covers the remaining area of the Ochoco National Forest and this area is contained within the Blue Mountains subprovince. See Tables 92-98 for specific habitat types highlighted in these documents, the habitat features needing conservation focus and the focal bird species for each.

**A Conservation Strategy for Landbirds of the East-slope of the Cascade Mountains in Oregon and Washington**

**Table 92. Priority habitat features and associated focal species for the East-Slope Cascade Strategy.**

<b>Habitat</b>	<b>Habitat Feature</b>	<b>Focal Species for Central Oregon</b>
Ponderosa Pine	Large patches of old forest with large snags	White-headed woodpecker
	Large trees	Pygmy nuthatch
	Open understory with regenerating pines	Chipping sparrow
	Patches of burned old forest	Lewis' woodpecker
Mixed Conifer (Late-Successional)	Large trees	Brown creeper
	Large snags	Williamson's sapsucker
	Interspersion grassy openings and dense thickets	Flammulated owl
	Multi-layered/dense canopy	Hermit thrush
	Edges and openings created by wildfire	Olive-sided flycatcher
Lodgepole Pine	Old growth	Black-backed woodpecker
Whitebark Pine	Old growth	Clark's nutcracker
Meadows	Wet/dry	Sandhill Crane
Aspen	Large trees with regeneration	Red-naped sapsucker
Subalpine fir	Patchy presence	Blue Grouse

**A Conservation Strategy for Landbirds in the Columbia Plateau in Oregon and Washington**

**Table 93. Priority habitat features and associated focal species for the Columbia Plateau – shrub steppe habitats.**

Habitat	Habitat Feature	Focal Species for High Lava Plains
Steppe	Native bunchgrass cover	Grasshopper Sparrow
Steppe-Shrubland	Interspersion of tall shrubs and openings	Loggerhead Shrike
	Burrows	Burrowing Owl
	Deciduous trees and shrubs	Sharp-tailed Grouse
Sagebrush	Large areas of sagebrush with diverse understory of native grasses and forbs	Sage Grouse
	Large unfragmented patches	Sage Sparrow
	Sagebrush cover	Brewer's Sparrow
	Sagebrush height	Sage Thrasher
Shrublands	Ecotonal edges of herb, shrub, and tree habitats	Lark Sparrow
	Upland sparsely vegetated desert scrub	Black-throated Sparrow (BR and OW only)
Juniper-Steppe	Scattered mature juniper trees (savannah)	Ferruginous Hawk

**Table 94. Priority habitat features and associated focal species for the Columbia Plateau – riparian habitats.**

Habitat	Habitat Features	Focal Species for High Lava Plains
Woodland	Large snags (cottonwood)	Lewis' Woodpecker
	Large canopy trees	Bullock's Oriole
	Subcanopy foliage	Yellow Warbler
	Dense shrub layer	Yellow-breasted Chat
	Large structurally diverse patches	Yellow-billed Cuckoo
Shrub	Shrub density	Willow Flycatcher
	Shrub-herbaceous interspersion	Lazuli Bunting

**Table 95. Priority habitat features and associated focal species for the Columbia Plateau – unique habitats.**

Habitat	Habitat Features	Focal Species for High Lava Plains
Aspen	Large trees and snags with regeneration	Red-naped Sapsucker
Agricultural Fields	Mesic Conditions	Bobolink (GB and OW only)
Juniper Woodland	Mature juniper with regeneration	Gray Flycatcher
Cliffs and Rimrock	Undeveloped foraging areas	Prairie Falcon
Mountain Mahogany	Large diameter trees with regeneration	Virginia’s Warbler

**Conservation Strategy for the Northern Rocky Mountains**

**Table 96. Priority habitat features and associated focal species for the Rocky Mountains Strategy – dry forests.**

Habitat	Habitat Feature	Focal Species for the Blue Mountains
Dry Forests (ponderosa pine and ponderosa pine/Douglas-fir)	Large patches of old forest with large trees and snags	White-headed Woodpecker
	Old forest with interspersions of grassy openings and dense thickets	Flammulated Owl
	Open understory with regenerating pines	Chipping Sparrow
	Patches of burned old forest	Lewis’ Woodpecker
Mesic Mixed Conifer (Late-Successional)	Large snags	Vaux’s Swift
	Overstory canopy closure	Townsend’s Warbler
	Structurally diverse; multi-layered	Varied Thrush
	Dense shrub layer in forest openings or understory	MacGillivray’s Warbler
	Edges and openings created by wildfire	Olive-sided Flycatcher

**Table 97. Priority habitat features and associated focal species for the Rocky Mountains Strategy – Riparian woodland and shrub.**

Habitat	Habitat Features	Focal Species for the Blue Mountains
Riparian Woodland	Large snags	Lewis’ Woodpecker
	Canopy foliage and structure	Red-eyed Vireo
	Understory foliage and structure	Veery
Riparian Shrub	Willow/alder shrub patches	Willow Flycatcher

**Table 98. Priority habitat features and associated focal species for the Rocky Mountains Strategy – unique habitats.**

Habitat	Habitat Features	Focal Species for the Blue Mountains
Subalpine Forest		Hermit Thrush
Montane Meadows		Upland Sandpiper
Steppe Shrublands		Vesper Sparrow
Aspen		Red-naped Sapsucker
Alpine		Gray-crowned Rosy Finch

**Ponderosa Pine – Large Trees and Snags – Pygmy Nuthatch, Flammulated Owl, and Williamson’s Sapsucker**

*Existing Condition*

The pygmy nuthatch is a resident of ponderosa pine forests east of the Cascades but outside the breeding season, is found just outside the ponderosa pine zone. The flammulated owl is unique in the Pacific Northwest. It preys almost exclusively on insects and is a neotropical migrant. Williamson’s sapsuckers are summer residents east of the crest and are most often found in ponderosa pine during the breeding season (Marshall et al. 2003). The flammulated owl and Williamson’s sapsucker breed on the eastern slope of the Cascades and are found in mature to old growth forests with limited understories at mid to high elevations (Marshall et al. 2003). All species are closely associated with mature or old growth ponderosa pine forests but may be found in mixed conifer forests dominated by ponderosa pine. Flammulated owl habitat also includes dense patches of saplings or shrubs used for roosting. All species nest in snags or live trees with decay. Williamson’s sapsuckers are weak excavators and select for the soft and decayed wood for nest sites regardless of tree species (Marshall et al. 2003). Pygmy nuthatches excavate their own cavity while flammulated owls utilize pileated woodpecker or northern flicker holes. Nuthatches forage on the outer branches in the upper canopy on needle clusters, cones, and emerging shoots with some limited foraging on bark. (Marshall et al. 2003). The flammulated owl forages exclusively at night primarily for nocturnal arthropods (USDA 1994b). Little is known on the population status of the flammulated owl and no data are available for the pygmy nuthatch to indicate significant population declines (Marshall et al. 2003). Risks to these species include loss of mature ponderosa pine forests, fire suppression resulting in overstocked stands and reduced snag recruitment, salvage logging, and chemical use (Marshall et al. 2003). Williamson’s sapsuckers are highly adaptable and are able to withstand considerable disturbance. Populations seem to be fairly stable however, snag removal remains the primary threat for this species (Marshall et al. 2003).

***Pygmy Nuthatch***

Habitat for the pygmy nuthatch occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – ponderosa pine, Douglas-fir, and white fir where the average tree size is 15”dbh or greater. Approximately 199,012 acres of habitat currently exist across the Deschutes National Forest and approximately 61,563 acres of habitat occurs on the Ochoco National Forest for a total of 260,575 acres.

**Table 99. Existing Designated Route and Dispersed Camping Conditions within Pygmy Nuthatch Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Pygmy Nuthatch Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	115,470 (58%)	74,293 (37%)	9,249 (5%)	49,213 (25%)	123,549 (62%)	26,250 (13%)	199,012
<b>Ochoco</b>	27,373 (44%)	17,724 (29%)	16,466 (27%)	23,508 (38%)	21,758 (35%)	16,297 (26%)	61,563
<b>Total</b>	<b>142,843 (55%)</b>	<b>92,017 (35%)</b>	<b>25,715 (10%)</b>	<b>72,721 (28%)</b>	<b>145,307 (56%)</b>	<b>42,547 (16%)</b>	<b>260,575</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 99 shows approximately 115,470 acres of pygmy nuthatch habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 114,881 acres of habitat occur inside the road effect distance within those areas identified as closed (115,470 acres) resulting in the potential disturbance of 100% of the pygmy nuthatch habitat on the Deschutes NF.

Table 99 shows approximately 27,373 acres of pygmy nuthatch habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 14,639 acres of habitat occur inside the road effect distance within those areas identified as closed (27,373 acres) resulting in the potential disturbance of 79% of the pygmy nuthatch habitat on the Ochoco NF.

**Table 100. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pygmy Nuthatch on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Pygmy Nuthatch Habitat	Acres of Pygmy Nuthatch Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pygmy Nuthatch Habitat Disturbed/Percent of Total Habitat	Total Acres of Pygmy Nuthatch Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	199,012	114,881 (58%)	198,423 (100%)	589 (0%)
<b>Ochoco</b>	61,563	14,639 (24%)	48,829 (79%)	12,734 (21%)
<b>Total</b>	<b>260,575</b>	<b>129,520 (50%)</b>	<b>247,252 (95%)</b>	<b>13,323 (5%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

***Flammulated Owl***

Habitat for the flammulated owl occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – drier ponderosa pine associations, dry to moist Douglas-fir, dry white fir, and open Shasta red fir associations in mid to late seral stands with trees  $\geq 15''$  dbh. Approximately 99,892 acres of habitat currently exist across the Deschutes National Forest and approximately 44,146 acres of habitat occurs on the Ochoco National Forest for a total of 144,038 acres.

**Table 101. Existing Designated Route and Dispersed Camping Conditions within Flammulated Owl Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Flam Owl Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	55,391 (55%)	36,916 (37%)	7,585 (7%)	19,229 (19%)	61,653 (62%)	19,010 (19%)	99,892
<b>Ochoco</b>	18,042 (41%)	12,572 (28%)	13,532 (31%)	14,352 (33%)	16,116 (37%)	13,679 (31%)	44,146
<b>Total</b>	<b>73,433 (51%)</b>	<b>49,488 (34%)</b>	<b>21,117 (15%)</b>	<b>33,581 (23%)</b>	<b>77,769 (54%)</b>	<b>32,689 (23%)</b>	<b>144,038</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 101 shows approximately 55,391 acres of flammulated owl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 62,151 acres of habitat occur inside the road effect distance within those areas identified as closed (55,391 acres) resulting in the potential disturbance of 62% of the flammulated owl habitat on the Deschutes NF.

Table 101 shows approximately 18,042 acres of flammulated owl habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 11,749 acres of habitat occur inside the road effect distance within those areas identified as closed (18,042 acres) resulting in the potential disturbance of 86% of the flammulated owl habitat on the Ochoco NF.

**Table 102. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Flammulated Owl on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Flammulated Owl Habitat	Acres of Flammulated Owl Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Flammulated Owl Habitat Disturbed/Percent of Total Habitat	Total Acres of Flammulated Owl Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	99,892	62,151 (62%)	62,151 (62%)	37,741 (38%)
<b>Ochoco</b>	44,146	11,749 (27%)	37,853 (86%)	6,293 (14%)
<b>Total</b>	<b>144,038</b>	<b>73,900 (51%)</b>	<b>100,004 (69%)</b>	<b>44,034 (31%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

***Williamson’s Sapsucker***

Habitat for the Williamson’s sapsucker occurs sparingly throughout the Deschutes and Ochoco National Forests in the following plant associations – open ponderosa pine, open Douglas-fir, and open white fir where the average tree size is 15” dbh or greater. Approximately 39,738 acres of habitat currently exist

across the Deschutes National Forest and approximately 7,892 acres of habitat occurs on the Ochoco National Forest for a total of 47,630 acres.

**Table 103. Existing Designated Route and Dispersed Camping Conditions within Williamson’s Sapsucker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Will. Sap. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	21,642 (54%)	17,591 (44%)	505 (1%)	9,776 (25%)	27,864 (70%)	2,098 (5%)	39,738
<b>Ochoco</b>	1,860 (24%)	2,548 (32%)	3,485 (44%)	1,255 (16%)	3,252 (41%)	3,385 (43%)	7,892
<b>Total</b>	<b>23,502 (49%)</b>	<b>20,139 (42%)</b>	<b>3,990 (8%)</b>	<b>11,031 (23%)</b>	<b>31,116 (65%)</b>	<b>5,483 (12%)</b>	<b>47,630</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 103 shows approximately 21,642 acres of Williamson’s sapsucker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 24,981 acres of habitat occur inside the road effect distance within those areas identified as closed (21,642 acres) resulting in the potential disturbance of 63% of the Williamson’s sapsucker habitat on the Deschutes NF.

Table 103 shows approximately 1,860 acres of Williamson’s sapsucker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,653 acres of habitat occur inside the road effect distance within those areas identified as closed (1,860 acres) resulting in the potential disturbance of 34% of the Williamson’s sapsucker habitat on the Ochoco NF.

**Table 104. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Williamson’s Sapsucker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Williamson’s Sapsucker Habitat	Acres of Williamson’s Sapsucker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Williamson’s Sapsucker Habitat Disturbed/Percent of Total Habitat	Total Acres of Williamson’s Sapsucker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	39,738	24,981 (63%)	24,981 (63%)	14,757 (37%)
<b>Ochoco</b>	7,892	2,653 (34%)	2,653 (34%)	5,239 (66%)
<b>Total</b>	<b>47,630</b>	<b>27,634 (58%)</b>	<b>27,634 (58%)</b>	<b>19,996 (42%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

#### Pygmy Nuthatch

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 58% of the pygmy nuthatch habitat for the Deschutes and 24% of the pygmy nuthatch habitat for the Ochoco remains in areas where disturbance is occurring. See Table 106 for more information.

**Table 105. Designated Route and Dispersed Camping Conditions within Pygmy Nuthatch Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Pygmy Nuthatch Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	198,946 (100%)	54 (0%)	0	136,764 (69%)	54,419 (27%)	7,817 (4%)	199,000
<b>Ochoco</b>	61,651 (100%)	0	0	55,704 (90%)	4,473 (7%)	1,384 (2%)	61,561
<b>Total</b>	<b>260,507 (100%)</b>	<b>54 (0%)</b>	<b>0</b>	<b>192,468 (74%)</b>	<b>58,892 (23%)</b>	<b>9,201 (3%)</b>	<b>260,561</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 106. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pygmy Nuthatch on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Pygmy Nuthatch Habitat	Acres of Pygmy Nuthatch Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pygmy Nuthatch Habitat Disturbed/Percent of Total Habitat	Total Acres of Pygmy Nuthatch Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	199,000	114,881 (58%)	114,935 (58%)	84,065 (42%)
<b>Ochoco</b>	61,561	14,639 (24%)	14,639 (24%)	46,922 (76%)
<b>Total</b>	<b>260,561</b>	<b>129,520 (50%)</b>	<b>129,574 (50%)</b>	<b>130,987 (50%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Flammulated Owl**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 62% of the flammulated owl habitat for the Deschutes and 27% of the flammulated owl habitat for the Ochoco remains in areas where disturbance is occurring. See Table 108 for more information.

**Table 107. Designated Route and Dispersed Camping Conditions within Flammulated Owl Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Flam Owl Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	99,841 (100%)	45 (0%)	0	64,732 (65%)	28,875 (29%)	6,279 (6%)	99,886
<b>Ochoco</b>	44,144 (100%)	0	0	39,332 (89%)	3,494 (8%)	1,317 (3%)	44,144
<b>Total</b>	<b>143,985 (100%)</b>	<b>45 (0%)</b>	<b>0</b>	<b>104,064 (72%)</b>	<b>32,369 (22%)</b>	<b>7,596 (5%)</b>	<b>144,030</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 108. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Flammulated Owl on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Flammulated Owl Habitat	Acres of Flammulated Owl Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Flammulated Owl Habitat Disturbed/Percent of Total Habitat	Total Acres of Flammulated Owl Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	99,886	62,151 (62%)	62,151 (62%)	37,735 (38%)
<b>Ochoco</b>	44,144	11,749 (27%)	11,749 (27%)	32,395 (73%)
<b>Total</b>	<b>144,030</b>	<b>73,900 (51%)</b>	<b>73,900 (51%)</b>	<b>70,130 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Williamson's Sapsucker**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action

Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 63% of the Williamson's sapsucker habitat for the Deschutes and 34% of the Williamson's sapsucker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 110 for more information.

**Table 109. Designated Route and Dispersed Camping Conditions within Williamson's Sapsucker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Will. Sap. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	39,735 (100%)	0	0	25,409 (64%)	13,882 (35%)	444 (1%)	39,735
<b>Ochoco</b>	7,892 (100%)	0	0	6,783 (86%)	751 (10%)	358 (4%)	7,892
<b>Total</b>	<b>47,627</b> <b>(100%)</b>	<b>0</b>	<b>0</b>	<b>32,192</b> <b>(68%)</b>	<b>14,633</b> <b>(31%)</b>	<b>802</b> <b>(2%)</b>	<b>47,627</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 110. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Williamson's Sapsucker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Williamson's Sapsucker Habitat	Acres of Williamson's Sapsucker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Williamson's Sapsucker Habitat Disturbed/Percent of Total Habitat	Total Acres of Williamson's Sapsucker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	39,735	24,981 (63%)	24,981 (63%)	14,754 (37%)
<b>Ochoco</b>	7,892	2,653 (34%)	2,653 (34%)	5,239 (66%)
<b>Total</b>	<b>47,627</b>	<b>27,634</b> <b>(58%)</b>	<b>27,634</b> <b>(58%)</b>	<b>19,993</b> <b>(42%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Summary

**Table 111. Undisturbed Habitat Comparison for the Pygmy Nuthatch, Flammulated Owl, and Williamson’s Sapsucker**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Pygmy Nuthatch</b>	0%	42%	21%	76%
<b>Flammulated Owl</b>	38%	38%	14%	73%
<b>Williamson’s Sapsucker</b>	37%	37%	66%	66%

## Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the pygmy nuthatch, flammulated owl, and Williamson’s sapsucker and their habitats.

## Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

## Open Habitats/Open Understories with Regenerating Pines – Chipping Sparrow

### *Existing Condition*

The chipping sparrow is an uncommon to common summer resident preferring open habitats with a shrub or grass component. Chipping sparrows prefer open coniferous forests or stands of trees interspersed with grassy openings or low foliage (Marshall et al. 2003 pp. 538-540). In central Oregon, good numbers of chipping sparrows can be found in juniper, ponderosa pine, and lodgepole pine communities but are not present in sagebrush (Marshall et al. 2003 pp. 540-542). This sparrow breeds in scattered locations in the Cascades and throughout higher elevations of eastern Oregon. The diet of this sparrow is not well known. A study conducted for central Oregon (Eastman 1960 in Marshall et al. 2003) shows a preference for weed seeds. Declines in populations have been noted from Breeding Bird Survey (BBS) results (1966-2000) for the chipping sparrow showing a 3.9% decrease per year. Some reasons for this decline includes habitat changes due to fire suppression resulting in closed canopy habitat, cowbird parasitism, and competition with house sparrows and house finches.

Habitat for the chipping sparrow occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – juniper, lodgepole pine, ponderosa pine, Douglas-fir, white fir, western hemlock, silver fir, and mountain hemlock in open stands where the average tree size is 10”dbh or greater. Approximately 191,443 acres of habitat currently exist across the Deschutes National Forest and approximately 180,089 acres of habitat occurs on the Ochoco National Forest for a total of 371,532 acres.

**Table 112. Existing Designated Route and Dispersed Camping Conditions within Chipping Sparrow Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Chipping Sparrow Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	89,521 (47%)	95,710 (50%)	6,213 (3%)	32,243 (17%)	139,028 (73%)	20,172 (10%)	191,443
<b>Ochoco</b>	49,923 (28%)	52,127 (29%)	78,038 (43%)	32,467 (18%)	68,770 (38%)	78,852 (44%)	180,089
<b>Total</b>	<b>139,444 (37%)</b>	<b>147,837 (40%)</b>	<b>84,251 (23%)</b>	<b>64,710 (17%)</b>	<b>207,798 (56%)</b>	<b>99,024 (27%)</b>	<b>371,532</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 112 shows approximately 89,521 acres of chipping sparrow habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 111,483 acres of habitat occur inside the road effect distance within those areas identified as closed (89,521 acres) resulting in the potential disturbance of 58% of the chipping sparrow habitat on the Deschutes NF.

Table 112 shows approximately 49,923 acres of chipping sparrow habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 69,923 acres of habitat occur inside the road effect distance within those areas identified as closed (49,923 acres) resulting in the potential disturbance of 39% of the chipping sparrow habitat on the Ochoco NF.

**Table 113. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Chipping Sparrow on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Chipping Sparrow Habitat	Acres of Chipping Sparrow Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Chipping Sparrow Habitat Disturbed/Percent of Total Habitat	Total Acres of Chipping Sparrow Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	191,443	111,483 (58%)	111,483 (58%)	79,960 (42%)
<b>Ochoco</b>	180,089	69,923 (39%)	69,923 (39%)	110,166 (61%)
<b>Total</b>	<b>371,532</b>	<b>181,406 (49%)</b>	<b>181,406 (49%)</b>	<b>190,126 (51%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 58% of the chipping sparrow habitat for the Deschutes and 39% of the chipping sparrow habitat for the Ochoco remains in areas where disturbance is occurring. See Table 115 for more information.

**Table 114. Designated Route and Dispersed Camping Conditions within Chipping Sparrow Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Chipping Sparrow Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	191,307 (100%)	117 (0%)	0	126,456 (66%)	61,114 (32%)	3,854 (2%)	191,424
<b>Ochoco</b>	180,080 (100%)	0	1 (0%)	146,549 (81%)	23,413 (13%)	10,120 (6%)	180,082
<b>Total</b>	<b>371,387 (100%)</b>	<b>117 (0%)</b>	<b>1 (0%)</b>	<b>273,005 (73%)</b>	<b>84,527 (23%)</b>	<b>13,974 (4%)</b>	<b>371,506</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 115. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Chipping Sparrow on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Chipping Sparrow Habitat	Acres of Chipping Sparrow Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Chipping Sparrow Habitat Disturbed/Percent of Total Habitat	Total Acres of Chipping Sparrow Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	191,424	111,483 (58%)	111,483 (58%)	79,824 (42%)
<b>Ochoco</b>	180,082	69,923 (39%)	69,923 (39%)	110,159 (61%)
<b>Total</b>	<b>371,506</b>	<b>181,406 (49%)</b>	<b>181,406 (49%)</b>	<b>189,983 (51%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Summary

**Table 116. Undisturbed Habitat Comparison for the Chipping Sparrow**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Chipping Sparrow	42%	42%	61%	61%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the chipping sparrow and its habitat.

### Consistency

Implementation of the Travel Management Rule is consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

### Mixed Conifer, Edges and Openings Created by Wildfire – Olive-sided Flycatcher and Hairy Woodpecker

#### *Existing Condition*

The olive-sided flycatcher is a summer resident that breeds in low densities throughout coniferous forests of Oregon. The hairy woodpecker is a resident in forests throughout Oregon except for juniper. The olive-sided flycatcher, an aerial insectivore, prefers forest openings or edge habitats where forest meets meadows, harvest units, rivers, bogs, marshes etc. (Marshall et al. 2003). Similar to the flycatcher, the hairy woodpecker is found primarily in mixed conifer and ponderosa pine forests adjacent to deciduous stands but is most common in burns or areas infested with mtn. pine beetles (Marshall et al. 2003). There is some preference for older stands for the hairy woodpecker and where old trees are absent, they prefer thinned stands. Nesting success for the flycatcher was highest within forest burns where snags and scattered tall, live trees remain (Marshall et al. 2003 and Wisdom et al. 2000 p. 215). Common features of nesting habitat include tall prominent trees and snags used as foraging and singing perches. The flycatcher forages from high prominent perches at the tops of snags or from the uppermost branches of live trees and needs unobstructed air space to forage. It preys on flying insects and in particular, bees and wasps. (Marshall et al. 2003 pp. 374-375). The hairy woodpecker nests in dead trees with light to moderate decay and their diet consists of beetles, ants, spiders, and other insects (Marshall et al. 2003).

Population trends based on BBS data show highly significant declines with an Oregon statewide decline of 5.1% per year from 1966-1996 for the olive-sided flycatcher. Factors potentially contributing to population declines on breeding grounds include habitat loss through logging, alteration of habitat through management activities (e.g., clearcutting, fire suppression), and lack of food resources. (Marshall et al. 2003 p. 376). Wisdom et al. (2000 p. 218) also noted that where altered fire regimes result in fewer but larger fires, the juxtaposition of early and late seral habitats becomes less favorable. However, within the Columbia Basin our area (Southern Cascades) shows increases of >60% for the olive-sided flycatcher compared to other areas. BBS data (1966-2000) for Oregon show no significant decline for the hairy woodpecker (0.5% decline per year).

Habitat for the olive-sided flycatcher occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, subalpine fir, Shasta

red fir, western hemlock, mountain hemlock, and whitebark pine in open stands where the average tree size is 10”dbh or greater. Approximately 242,600 acres of habitat currently exist across the Deschutes National Forest and approximately 178,994 acres of habitat occurs on the Ochoco National Forest for a total of 421,594 acres. A specific habitat analysis was not conducted for the hairy woodpecker. Therefore, the olive-sided flycatcher habitat analysis will be used as a surrogate for hairy woodpecker habitat as they occupy similar plant associations.

**Table 117. Existing Designated Route and Dispersed Camping Conditions within Olive-sided Flycatcher Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Olive-sided Fly. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	133,116 (55%)	103,265 (43%)	6,219 (2%)	60,537 (25%)	161,631 (67%)	20,431 (8%)	242,600
<b>Ochoco</b>	47,265 (26%)	57,445 (32%)	74,284 (42%)	29,053 (16%)	74,753 (42%)	75,189 (42%)	178,994
<b>Total</b>	<b>180,381 (43%)</b>	<b>160,710 (38%)</b>	<b>80,503 (19%)</b>	<b>89,590 (21%)</b>	<b>236,384 (56%)</b>	<b>95,620 (23%)</b>	<b>421,594</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 117 shows approximately 133,116 acres of olive-sided flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 119,089 acres of habitat occur inside the road effect distance within those areas identified as closed (133,116 acres) resulting in the potential disturbance of 94% of the olive-sided flycatcher habitat on the Deschutes NF.

Table 117 shows approximately 47,265 acres of olive-sided flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 66,052 acres of habitat occur inside the road effect distance within those areas identified as closed (47,265 acres) resulting in the potential disturbance of 37% of the olive-sided flycatcher habitat on the Ochoco NF.

**Table 118. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Olive-sided Flycatcher on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat	Acres of Olive-sided Flycatcher Habitat/ Hairy Woodpecker within the Road Effect Distance/Percent of Total Habitat	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	242,600	119,089 (49%)	228,573 (94%)	14,027 (6%)
<b>Ochoco</b>	178,994	66,052 (37%)	66,052 (37%)	112,942 (63%)
<b>Total</b>	<b>421,594</b>	<b>185,141</b>	<b>294,625</b>	<b>126,969</b>

		(44%)	(70%)	(30%)
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Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 49% of the olive-sided flycatcher habitat for the Deschutes and 37% of the olive-sided flycatcher habitat for the Ochoco remains in areas where disturbance is occurring. See Table 120 for more information.

**Table 119. Designated Route and Dispersed Camping Conditions within Olive-sided Flycatcher Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Olive-sided Fly. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	242,463 (100%)	117 (0%)	0	173,648 (72%)	64,991 (27%)	3,941 (2%)	242,580
<b>Ochoco</b>	178,988 (100%)	0	0	144,852 (81%)	23,825 (13%)	10,311 (6%)	178,988
<b>Total</b>	<b>421,451 (100%)</b>	<b>117 (0%)</b>	<b>0</b>	<b>318,500 (76%)</b>	<b>88,816 (21%)</b>	<b>14,252 (3%)</b>	<b>421,568</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 120. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Olive-sided Flycatcher on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat	Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Olive-sided Flycatcher/ Hairy Woodpecker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	242,580	119,089 (49%)	119,206 (49%)	123,374 (51%)
<b>Ochoco</b>	178,988	66,052 (37%)	66,052 (37%)	112,936 (63%)
<b>Total</b>	<b>421,568</b>	<b>185,141 (44%)</b>	<b>185,708 (44%)</b>	<b>236,310 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 121. Undisturbed Habitat Comparison for the Olive-sided Flycatcher and Hairy Woodpecker**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Olive-sided Flycatcher and Hairy Woodpecker</b>	6%	51%	63%	63%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the olive-sided flycatcher and hairy woodpecker and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Mixed Conifer, Large Trees and Snags – Brown Creeper, Townsend’s Warbler, and Pileated Woodpecker**

*Existing Condition*

The Townsend’s warbler is a local summer resident while the brown creeper and pileated woodpecker both breed and winter in central Oregon. The Townsend’s warbler has been extending its range westward since 1940 and is now readily seen up to the Santiam Pass area. The brown creeper is the only North American bird that relies on both the trunk and bark of trees for nesting and foraging. The pileated woodpecker is limited altitudinally by habitat availability as the higher and lower elevations lack enough large trees for nesting, roosting and foraging. The brown creeper and Townsend’s warbler are found predominantly in coniferous forests but can be located in hardwood stands as well. Pileated woodpeckers occur primarily in dense mixed conifer forests in late seral stages and are rarely found in pure ponderosa pine stands. The warbler prefers a forest with a high canopy volume and stands with multiple layers of vegetation, including a well developed understory (Marshall et al. 2003). There are few, and very localized confirmed breeding records from northwest Jefferson, southwest Deschutes, and northern Crook counties for the Townsend’s warbler. However, they are probably more widespread in both the Cascades and Ochocos. The warbler has been observed regularly in breeding season at Trout Creek Swamp, upper Squaw Creek watershed, Jefferson Lake trail, and Ochoco Ranger Station (USDA 2004d). Brown creepers nest under loose, sloughing bark of large diameter snags with little to moderate decay. The mean diameter of nest trees range from 16” dbh to 42” dbh. In northeastern Oregon, creeper abundance was positively associated with the height of the canopy and density of trees. (Marshall et al. 2003 pp.453-456). Adams and Morrison (1993) found similar results with creepers being highly correlated with mature-aged stands with moderate overall stand density. Townsend’s warblers nest in grand or Douglas-fir trees primarily and are known to hybridize with the hermit warbler. Hybrids have been documented from Sisters to Hamner Butter in northwest Klamath County. Pileated woodpeckers need large diameter snags or live trees with decay for nesting and roosting sites, large diameter logs for foraging on ants and other arthropods, and dense canopy to provide cover. Population trends for the Townsend’s warbler have increased over the last century, especially in northeastern Oregon

which may be due in part to fire suppression (Marshall et al. 2003). Creepers seem to be fairly common but forest management practices, especially the loss of large diameter snags and live trees, may cause a threat to this species. BBS data (1966-1991) for the pileated woodpecker shows no significant change. Risks include activities that eliminate or reduce the number of snags, logs, and cover. In addition, conversion of fir stands to pure ponderosa pine reduces suitable habitat. (Marshall et al. 2003).

**Brown Creeper**

Habitat for the brown creeper occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, Douglas-fir, white fir, subalpine fir, Shasta red fir, western hemlock, silver fir, mountain hemlock, and whitebark pine where the average tree size is 15” dbh or greater. Approximately 309,918 acres of habitat currently exist across the Deschutes National Forest and approximately 71,110 acres of habitat occurs on the Ochoco National Forest for a total of 381,028 acres. A specific habitat analysis was not conducted for the Townsend’s warbler. The brown creeper habitat analysis will be used as a surrogate for Townsend’s warbler habitat as they occupy similar plant associations.

**Table 122. Existing Designated Route and Dispersed Camping Conditions within Brown Creeper Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Brown Creeper Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	216,682 (70%)	83,603 (27%)	9,633 (3%)	107,848 (35%)	173,159 (56%)	28,912 (9%)	309,918
<b>Ochoco</b>	31,554 (44%)	20,089 (28%)	19,466 (27%)	26,608 (37%)	25,061 (35%)	19,441 (27%)	71,110
<b>Total</b>	<b>248,236 (65%)</b>	<b>103,692 (27%)</b>	<b>29,099 (8%)</b>	<b>134,456 (35%)</b>	<b>198,220 (52%)</b>	<b>48,353 (13%)</b>	<b>381,028</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 122 shows approximately 216,682 acres of brown creeper habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 124,185 acres of habitat occur inside the road effect distance within those areas identified as closed (216,682 acres) resulting in the potential disturbance of 70% of the brown creeper habitat on the Deschutes NF.

Table 122 shows approximately 31,554 acres of brown creeper habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 16,931 acres of habitat occur inside the road effect distance within those areas identified as closed (31,554 acres) resulting in the potential disturbance of 79% of the brown creeper habitat on the Ochoco NF.

**Table 123. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Brown Creeper on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Brown Creeper/ Townsend's Warbler Habitat	Acres of Brown Creeper/ Townsend's Warbler Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Brown Creeper/ Townsend's Warbler Habitat Disturbed/Percent of Total Habitat	Total Acres of Brown Creeper/ Townsend's Warbler Habitat Undisturbed/Percent of Total Habitat
Deschutes	309,918	124,185 (40%)	217,421 (70%)	92,497 (30%)
Ochoco	71,110	16,931 (24%)	56,487 (79%)	14,623 (21%)
<b>Total</b>	<b>381,028</b>	<b>141,116 (37%)</b>	<b>273,908 (72%)</b>	<b>107,120 (28%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

***Pileated Woodpecker***

Habitat for the pileated woodpecker occurs throughout the higher elevations of the Deschutes National Forest and very sparingly on the Ochoco National Forest in the following plant associations – ponderosa pine, Douglas-fir, white fir, western hemlock, silver fir, and mountain hemlock, in dense stands where the average tree size is 15" dbh or greater. Approximately 89,768 acres of habitat currently exist across the Deschutes National Forest and approximately 468 acres of habitat occurs on the Ochoco National Forest for a total of 90,236 acres.

**Table 124. Existing Designated Route and Dispersed Camping Conditions within Pileated Woodpecker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Pileated Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	75,773 (84%)	13,898 (15%)	98 (<1%)	40,589 (45%)	46,208 (51%)	2,917 (3%)	89,768
Ochoco	289 (62%)	121 (26%)	59 (13%)	282 (60%)	130 (28%)	57 (12%)	468
<b>Total</b>	<b>76,062 (84%)</b>	<b>14,019 (15%)</b>	<b>157 (&lt;1%)</b>	<b>40,871 (45%)</b>	<b>46,338 (51%)</b>	<b>2,974 (3%)</b>	<b>90,236</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 124 shows approximately 75,773 acres of pileated woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,888 acres of habitat occur inside the road effect distance within those areas identified as closed (75,773 acres) resulting in the potential disturbance of 36% of the pileated woodpecker habitat on the Deschutes NF.

Table 124 shows approximately 289 acres of pileated woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 60 acres of habitat occur inside the road effect distance within those areas identified as closed (289 acres) resulting in the potential disturbance of 51% of the pileated woodpecker habitat on the Ochoco NF.

**Table 125. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pileated Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Pileated Woodpecker Habitat</b>	<b>Acres of Pileated Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Pileated Woodpecker Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Pileated Woodpecker Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	89,768	17,888 (20%)	31,883 (36%)	57,885 (64%)
<b>Ochoco</b>	468	60 (13%)	239 (51%)	229 (49%)
<b>Total</b>	<b>90,236</b>	<b>17,948 (20%)</b>	<b>32,122 (36%)</b>	<b>58,114 (64%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

##### ***Brown Creeper***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 40% of the brown creeper habitat for the Deschutes and 24% of the brown creeper habitat for the Ochoco remains in areas where disturbance is occurring. See Table 127 for more information.

**Table 126. Designated Route and Dispersed Camping Conditions within Brown Creeper Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Brown Creeper Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	309,830 (100%)	75 (0%)	0	240,675 (78%)	60,956 (20%)	8,275 (3%)	309,905
<b>Ochoco</b>	71,107 (100%)	0	0	64,319 (90%)	5,137 (7%)	1,651 (2%)	71,107
<b>Total</b>	<b>380,937 (100%)</b>	<b>75 (0%)</b>	<b>0</b>	<b>304,994 (80%)</b>	<b>66,093 (17%)</b>	<b>9,926 (3%)</b>	<b>381,012</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 127. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Brown Creeper on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Brown Creeper/ Townsend's Warbler Habitat	Acres of Brown Creeper/ Townsend's Warbler Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Brown Creeper/ Townsend's Warbler Habitat Disturbed/Percent of Total Habitat	Total Acres of Brown Creeper/ Townsend's Warbler Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	309,905	124,185 (40%)	124,260 (40%)	185,645 (60%)
<b>Ochoco</b>	71,107	16,931 (24%)	16,931 (24%)	54,176 (76%)
<b>Total</b>	<b>381,012</b>	<b>141,116 (37%)</b>	<b>141,191 (37%)</b>	<b>239,821 (63%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

***Pileated Woodpecker***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 20% of the pileated woodpecker habitat for the Deschutes and 13% of the pileated woodpecker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 129 for more information.

**Table 128. Designated Route and Dispersed Camping Conditions within Pileated Woodpecker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Pileated Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	89,768 (100%)	0	0	81,163 (90%)	8,271 (9%)	334 (0%)	89,768
<b>Ochoco</b>	468 (100%)	0	0	448 (96%)	14 (3%)	6 (1%)	468
<b>Total</b>	<b>90,236 (100%)</b>	<b>0</b>	<b>0</b>	<b>81,611 (90%)</b>	<b>8,285 (9%)</b>	<b>340 (0%)</b>	<b>90,236</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 129. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pileated Woodpecker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Pileated Woodpecker Habitat	Acres of Pileated Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pileated Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Pileated Woodpecker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	89,768	17,888 (20%)	17,888 (20%)	71,880 (80%)
<b>Ochoco</b>	468	60 (13%)	60 (13%)	408 (87%)
<b>Total</b>	<b>90,236</b>	<b>17,948 (20%)</b>	<b>17,948 (20%)</b>	<b>72,288 (80%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 130. Undisturbed Habitat Comparison for the Brown Creeper, Townsend’s Warbler, and Pileated Woodpecker**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 – Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 – Ochoco
<b>Brown Creeper</b>	30%	60%	21%	76%
<b>Townsend’s Warbler</b>	30%	60%	21%	76%
<b>Pileated Woodpecker</b>	64%	80%	29%	87%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the brown creeper, Townsend’s warbler and pileated woodpecker and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Mixed Conifer, Multi-layered/Dense Canopy – Hermit Thrush and Varied Thrush**

*Existing Condition*

The hermit thrush is an uncommon to common summer resident preferring mid to high elevation mature and old growth forests at mid to high elevations while the varied thrush is a yearlong resident that migrates latitudinally. The hermit thrush breeds in mature forests of all types especially those with a shaded understory of brush and small trees ranging from aspen groves to juniper woodlands to moderately open coniferous forests and the varied thrush is more confined to montane forests. Higher densities of varied thrushes have been reported in old-growth riparian stands relative to other mature and young riparian stands. Both species nest on the ground or use small trees in the understory. They are ground foragers of insects; however fruits and berries may also be consumed especially during migration and in winter. Populations seem to be stable at this time. Microsites selected for foraging tend to have little to no vegetation or litter. Population status east of the Cascade crest for the varied thrush is unknown but significant declines have occurred west of the crest. However, threats to the hermit thrush include the loss of mature forests and controlled burning of forest understories, especially spring burning. Hermit thrush responses have been known to decrease after fires (Sallabanks 1995). Threats to the varied thrush include habitat loss from fragmentation and loss of mature forest habitat. (Marshall et al. 2003 pp. 483-485 and 487-489).

Habitat for the hermit thrush occurs throughout the Deschutes National Forest with little habitat on the Fort Rock area and Ochoco National Forest in the following plant associations – lodgepole pine wet, Douglas-fir, white fir, western hemlock, silver fir, mountain hemlock, and whitebark pine in dense stands where the average tree size is 10”dbh or greater. Approximately 144,264 acres of habitat currently exist across the Deschutes National Forest and approximately 49,427 acres of habitat occurs on the Ochoco National Forest for a total of 193,691 acres. A specific habitat analysis was not conducted for the varied thrush. The hermit thrush habitat analysis will be used as a surrogate for varied thrush habitat as they occupy similar plant associations.

**Table 131. Existing Designated Route and Dispersed Camping Conditions within Hermit Thrush Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Hermit Thrush Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	118,210 (82%)	25,922 (18%)	133 (<1%)	63,880 (44%)	76,413 (53%)	3,972 (3%)	144,264
<b>Ochoco</b>	23,973 (49%)	13,444 (27%)	12,010 (24%)	20,968 (42%)	16,490 (33%)	11,970 (24%)	49,427
<b>Total</b>	<b>142,183 (73%)</b>	<b>39,366 (20%)</b>	<b>12,143 (6%)</b>	<b>84,848 (44%)</b>	<b>92,903 (48%)</b>	<b>15,942 (8%)</b>	<b>193,691</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 131 shows approximately 118,210 acres of hermit thrush habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 27,325 acres of habitat occur inside the road effect distance within those areas identified as closed (118,210 acres) resulting in the potential disturbance of 37% of the hermit thrush habitat on the Deschutes NF.

Table 131 shows approximately 23,973 acres of hermit thrush habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 10,324 acres of habitat occur inside the road effect distance within those areas identified as closed (23,973 acres) resulting in the potential disturbance of 72% of the hermit thrush habitat on the Ochoco NF.

**Table 132. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Hermit Thrush on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Hermit Thrush/Varied Thrush Habitat</b>	<b>Acres of Hermit Thrush/ Varied Thrush Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Hermit Thrush/ Varied Thrush Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Hermit Thrush/ Varied Thrush Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	144,264	27,325 (19%)	53,379 (37%)	90,885 (63%)
<b>Ochoco</b>	49,427	10,324 (21%)	35,778 (72%)	13,649 (28%)
<b>Total</b>	<b>193,691</b>	<b>37,649 (19%)</b>	<b>89,157 (46%)</b>	<b>104,534 (54%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 19% of the hermit thrush habitat for the Deschutes and 21% of the hermit thrush habitat for the Ochoco remains in areas where disturbance is occurring. See Table 134 for more information.

**Table 133. Designated Route and Dispersed Camping Conditions within Hermit Thrush Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Hermit Thrush Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	144,263 (100%)	0	0	131,098 (91%)	12,650 (9%)	515 (0%)	144,263
<b>Ochoco</b>	49,427 (100%)	0	0	45,358 (92%)	3,268 (7%)	801 (1%)	49,427
<b>Total</b>	<b>193,690 (100%)</b>	<b>0</b>	<b>0</b>	<b>176,456 (91%)</b>	<b>15,918 (8%)</b>	<b>1,316 (1%)</b>	<b>193,690</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 134. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Hermit Thrush on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Hermit Thrush/ Varied Thrush Habitat	Acres of Hermit Thrush Varied Thrush / Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Hermit Thrush/ Varied Thrush Habitat Disturbed/Percent of Total Habitat	Total Acres of Hermit Thrush/ Varied Thrush Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	144,263	27,325 (19%)	27,325 (19%)	116,938 (81%)
<b>Ochoco</b>	49,427	10,324 (21%)	10,324 (21%)	39,103 (79%)
<b>Total</b>	<b>193,690</b>	<b>37,649 (19%)</b>	<b>37,649 (19%)</b>	<b>156,041 (81%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 135. Undisturbed Habitat Comparison for the Hermit and Varied Thrush**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Hermit Thrush and Varied Thrush</b>	63%	81%	28%	79%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the hermit and varied thrushes and their habitats.

## Consistency

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

## Coniferous Forests – Hollow Trees – Vaux’s Swift

### *Existing Condition*

The Vaux’s swift is a fairly common transient and summer resident in much of the forested areas of Oregon. They prefer late seral coniferous forests and deciduous forests mixed with conifers. They are unusual in that they nest and roost in the hollows of large diameter trees but also use chimneys within towns and cities (Marshall et al. 2003). The majority of roosts are known from chimneys but this may be due to the detection ease compared to a forested environment. Nest trees found in northeastern Oregon averaged 27” dbh and 83 feet tall with an average diameter and depth of the inside hollow chamber of 11” dbh and 19 feet respectively (Marshall et al. 2003). They enter their nest trees through broken tops or holes in the trunks excavated by pileated woodpeckers. The summer presence of pairs in suitable habitat indicates probable breeding in the area. During the breeding season they forage exclusively in the air. Their diet includes flies, ants, bees, planthoppers, aphids, bark beetles, moths, mayflies, true bugs, and spiders with arthropods making up the majority (Marshall et al. 2003).

BBS data (1966-1999) for Oregon show a statistically significant increase of 3.7% per year but Sharp (1992) calculated an 8.9% per year decline during the 1980s using only routes on the National Forests. Threats include timber harvest of late seral coniferous forests reducing the number of potential nests and roosts, and conversion of stands dominated by grand/Douglas fir to early seral ponderosa pine which reduces the number of nests and roosts (Marshall et al. 2003).

Pileated woodpecker habitat analysis will be used as a surrogate for the Vaux’s swift as they occupy similar habitats. However, habitat for the Vaux’s swift will be over-estimated because large hollow snags are rare on the landscape. This analysis displays the potential habitat that may be used by Vaux’s swifts. Habitat for the pileated woodpecker occurs throughout the higher elevations of the Deschutes National Forest and very sparingly on the Ochoco National Forest in the following plant associations – ponderosa pine, Douglas-fir, white fir, western hemlock, silver fir, and mountain hemlock, in dense stands where the average tree size is 15” dbh or greater. Approximately 89,768 acres of habitat currently exist across the Deschutes National Forest and approximately 468 acres of habitat occurs on the Ochoco National Forest for a total of 90,236 acres.

**Table 136. Existing Designated Route and Dispersed Camping Conditions within Vaux’s Swift Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Vaux’s Swift Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	75,773 (84%)	13,898 (15%)	98 (<1%)	40,589 (45%)	46,208 (51%)	2,917 (3%)	89,768
<b>Ochoco</b>	289 (62%)	121 (26%)	59 (13%)	282 (60%)	130 (28%)	57 (12%)	468
<b>Total</b>	<b>76,062 (84%)</b>	<b>14,019 (15%)</b>	<b>157 (&lt;1%)</b>	<b>40,871 (45%)</b>	<b>46,338 (51%)</b>	<b>2,974 (3%)</b>	<b>90,236</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 136 shows approximately 75,773 acres of Vaux’s swift habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,888 acres of habitat occur inside the road effect distance within those areas identified as closed (75,773 acres) resulting in the potential disturbance of 36% of the Vaux’s swift habitat on the Deschutes NF.

Table 136 shows approximately 289 acres of Vaux’s swift habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 60 acres of habitat occur inside the road effect distance within those areas identified as closed (289 acres) resulting in the potential disturbance of 51% of the Vaux’s swift habitat on the Ochoco NF.

**Table 137. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Vaux’s Swift on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Vaux’s Swift Habitat</b>	<b>Acres of Vaux’s Swift Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Vaux’s Swift Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Vaux’s Swift Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	89,768	17,888 (20%)	31,883 (36%)	57,885 (64%)
<b>Ochoco</b>	468	60 (13%)	239 (51%)	229 (49%)
<b>Total</b>	<b>90,236</b>	<b>17,948 (20%)</b>	<b>32,122 (36%)</b>	<b>58,114 (64%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 20% of the Vaux’s swift habitat for the Deschutes and 13% of the Vaux’s swift habitat for the Ochoco remains in areas where disturbance is occurring. See Table 139 for more information.

**Table 138. Designated Route and Dispersed Camping Conditions within Vaux’s Swift Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Vaux’s Swift Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	89,768 (100%)	0	0	81,163 (90%)	8,271 (9%)	334 (0%)	89,768
<b>Ochoco</b>	468 (100%)	0	0	448 (96%)	14 (3%)	6 (1%)	468
<b>Total</b>	<b>90,236 (100%)</b>	<b>0</b>	<b>0</b>	<b>81,611 (90%)</b>	<b>8,285 (9%)</b>	<b>340 (0%)</b>	<b>90,236</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 139. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Vaux’s Swift on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Vaux’s Swift Habitat	Acres of Vaux’s Swift Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Vaux’s Swift Habitat Disturbed/Percent of Total Habitat	Total Acres of Vaux’s Swift Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	89,768	17,888 (20%)	17,888 (20%)	71,880 (80%)
<b>Ochoco</b>	468	60 (13%)	60 (13%)	408 (87%)
<b>Total</b>	<b>90,236</b>	<b>17,948 (20%)</b>	<b>17,948 (20%)</b>	<b>72,288 (80%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 140. Undisturbed Habitat Comparison for the Vaux’s Swift**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Vaux’s Swift</b>	64%	80%	29%	87%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the Vaux’s swift and its habitat.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

## Coniferous Forests – Edges – Northern Flicker

### *Existing Condition*

The northern flicker is a common resident throughout Oregon and is encountered in almost any terrestrial habitat. It is generally most abundant in open forests and forest edges adjacent to open country while they tend to avoid dense forest (Marshall et al. 2003). There is some evidence the flicker prefers older mature forests. Reinkensmeyer (2000 in Marshall et al. 2003) noted the preference for old growth versus mid-successional western juniper in central Oregon. Most nests in forested areas are found in older, open forests, along older forest edges, and in large diameter remnant snags (Marshall et al. 2003). They also tend to nest in trees with moderate to heavy decay. The flicker diet consists of ants, beetles, crickets, other insects, fruits, and seeds and they prefer to forage on the ground (Marshall et al. 2003). BBS data (1966-2000) for Oregon show a non-significant decrease of 0.6% per year decline. The flicker requires open space and may gain foraging habitat from human caused changes but the presence of decayed wood is still required.

Habitat for the northern flicker occurs throughout the Deschutes and Ochoco National Forests in minor amounts in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, ponderosa pine, Douglas-fir, white fir, western hemlock, and silver fir in open stands where the average tree size is 15”dbh or greater. Approximately 24,660 acres of habitat currently exist across the Deschutes National Forest and approximately 11,569 acres of habitat occurs on the Ochoco National Forest for a total of 36,229 acres.

**Table 141. Existing Designated Route and Dispersed Camping Conditions within Northern Flicker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Northern Flicker Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	12,079 (49%)	12,019 (49%)	562 (2%)	4,408 (18%)	18,395 (75%)	2,217 (9%)	24,660
<b>Ochoco</b>	2,746 (24%)	3,889 (34%)	4,934 (43%)	1,924 (17%)	4,834 (42%)	4,811 (41%)	11,569
<b>Total</b>	<b>14,825 (41%)</b>	<b>15,908 (44%)</b>	<b>5,496 (15%)</b>	<b>6,332 (17%)</b>	<b>23,229 (64%)</b>	<b>7,028 (19%)</b>	<b>36,229</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 141 shows approximately 12,079 acres of northern flicker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 14,490 acres of habitat occur inside the road effect distance within those areas identified as closed (12,079 acres) resulting in the potential disturbance of 59% of the northern flicker habitat on the Deschutes NF.

Table 141 shows approximately 2,746 acres of northern flicker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,896 acres of habitat occur inside the road effect distance within those areas identified as closed (2,746 acres) resulting in the potential disturbance of 34% of the northern flicker habitat on the Ochoco NF.

**Table 142. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Northern Flicker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Northern Flicker Habitat	Acres of Northern Flicker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Northern Flicker Habitat Disturbed/Percent of Total Habitat	Total Acres of Northern Flicker Habitat Undisturbed/Percent of Total Habitat
Deschutes	24,660	14,490 (59%)	14,490 (59%)	10,170 (41%)
Ochoco	11,569	3,896 (34%)	3,896 (34%)	7,673 (66%)
<b>Total</b>	<b>36,229</b>	<b>18,386 (51%)</b>	<b>18,386 (51%)</b>	<b>17,843 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 59% of the northern flicker habitat for the Deschutes and 34% of the northern flicker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 144 for more information.

**Table 143. Designated Route and Dispersed Camping Conditions within Northern Flicker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Northern Flicker Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	24,639 (100%)	20 (0%)	0	16,264 (66%)	7,838 (32%)	557 (2%)	24,659
Ochoco	11,568 (100%)	0	0	9,861 (85%)	1,175 (10%)	533 (5%)	11,568
<b>Total</b>	<b>36,207 (100%)</b>	<b>20 (0%)</b>	<b>0</b>	<b>26,125 (72%)</b>	<b>9,013 (25%)</b>	<b>1,090 (3%)</b>	<b>36,227</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 144. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Northern Flicker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Northern Flicker Habitat	Acres of Northern Flicker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Northern Flicker Habitat Disturbed/Percent of Total Habitat	Total Acres of Northern Flicker Habitat Undisturbed/Percent of Total Habitat
Deschutes	24,659	14,490 (59%)	14,420 (59%)	10,149 (41%)
Ochoco	11,568	3,896 (34%)	3,896 (34%)	7,672 (66%)
<b>Total</b>	<b>36,227</b>	<b>18,386 (51%)</b>	<b>18,316 (51%)</b>	<b>17,821 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 145. Undisturbed Habitat Comparison for the Northern Flicker**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Northern Flicker	41%	41%	66%	66%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the northern flicker and its habitat.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. There will be no habitat altered or removed and disturbance will be decreased.

**Open Mature Conifer Forests – Cassin’s Finch**

*Existing Condition*

The Cassin’s finch is a common to uncommon summer resident occurring from the Cascade summit eastward throughout all mountainous and forested regions of eastern Oregon. This finch breeds primarily in open mature coniferous forests of lodgepole and ponderosa pine, aspen, subalpine fir, grand fir, and juniper steppe or woodlands. It occupies burned forests as well. Cassin’s finches have been found to be more abundant in salvaged logged stands than unsalvaged stands and were positively associated with the number of trees >11.8” dbh and the amount of ground debris. They were also found to be more abundant in lodgepole pine stands infested with mountain pine beetle with high mortality than in healthy stands. In addition, they are more abundant in old-growth juniper stands with sparse shrub layers than mid-successional stands with intact shrub layers. In the grand fir zone, they are more abundant in managed forests than old growth. They prefer the open structure for nesting and it allows for ground foraging. Nests are usually placed high in the trees. Finch diets consist of buds, berries, fruits, seeds, and some insects. Foraging occurs primarily at the tops of trees or on the ground. BBS data (1966-1991) show no change in

the population for Oregon. Benefits to this species include forest management practices that open up dense stands of mature timber.

Northern flicker habitat analysis will be used as a surrogate for the Cassin’s finch as they occupy similar plant associations. Habitat for the northern flicker occurs throughout the Deschutes and Ochoco National Forests in minor amounts in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, ponderosa pine, Douglas-fir, white fir, western hemlock, and silver fir in open stands where the average tree size is 15”dbh or greater. Approximately 24,660 acres of habitat currently exist across the Deschutes National Forest and approximately 11,569 acres of habitat occurs on the Ochoco National Forest for a total of 36,229 acres.

**Table 146. Existing Designated Route and Dispersed Camping Conditions within Cassin’s Finch Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Cassin’s Finch Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	12,079 (49%)	12,019 (49%)	562 (2%)	4,408 (18%)	18,395 (75%)	2,217 (9%)	24,660
<b>Ochoco</b>	2,746 (24%)	3,889 (34%)	4,934 (43%)	1,924 (17%)	4,834 (42%)	4,811 (41%)	11,569
<b>Total</b>	<b>14,825 (41%)</b>	<b>15,908 (44%)</b>	<b>5,496 (15%)</b>	<b>6,332 (17%)</b>	<b>23,229 (64%)</b>	<b>7,028 (19%)</b>	<b>36,229</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 146 shows approximately 12,079 acres of Cassin’s finch habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 14,490 acres of habitat occur inside the road effect distance within those areas identified as closed (12,079 acres) resulting in the potential disturbance of 59% of the Cassin’s finch habitat on the Deschutes NF.

Table 146 shows approximately 2,746 acres of Cassin’s finch habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,896 acres of habitat occur inside the road effect distance within those areas identified as closed (2,746 acres) resulting in the potential disturbance of 34% of the Cassin’s finch habitat on the Ochoco NF.

**Table 147. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Cassin’s Finch on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Cassin’s Finch Habitat	Acres of Cassin’s Finch Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Cassin’s Finch Habitat Disturbed/Percent of Total Habitat	Total Acres of Cassin’s Finch Habitat Undisturbed/Percent of Total Habitat
Deschutes	24,660	14,490 (59%)	14,490 (59%)	10,170 (41%)
Ochoco	11,569	3,896 (34%)	3,896 (34%)	7,673 (66%)
<b>Total</b>	<b>36,229</b>	<b>18,386 (51%)</b>	<b>18,386 (51%)</b>	<b>17,843 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 59% of the Cassin’s finch habitat for the Deschutes and 34% of the Cassin’s finch habitat for the Ochoco remains in areas where disturbance is occurring. See Table 148 for more information.

**Table 148. Designated Route and Dispersed Camping Conditions within Cassin’s Finch Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Cassin’s Finch Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	24,639 (100%)	20 (0%)	0	16,264 (66%)	7,838 (32%)	557 (2%)	24,659
Ochoco	11,568 (100%)	0	0	9,861 (85%)	1,175 (10%)	533 (5%)	11,568
<b>Total</b>	<b>36,207 (100%)</b>	<b>20 (0%)</b>	<b>0</b>	<b>26,125 (72%)</b>	<b>9,013 (25%)</b>	<b>1,090 (3%)</b>	<b>36,227</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 149. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Cassin’s Finch on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Cassin’s Finch Habitat	Acres of Cassin’s Finch Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Cassin’s Finch Habitat Disturbed/Percent of Total Habitat	Total Acres of Cassin’s Finch Habitat Undisturbed/Percent of Total Habitat
Deschutes	24,659	14,490 (59%)	14,420 (59%)	10,149 (41%)
Ochoco	11,568	3,896 (34%)	3,896 (34%)	7,672 (66%)
<b>Total</b>	<b>36,227</b>	<b>18,386 (51%)</b>	<b>18,316 (51%)</b>	<b>17,821 (49%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 150. Undisturbed Habitat Comparison for the Cassin’s Finch**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Cassin’s Finch	41%	41%	66%	66%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the Cassin’s finch and its habitat.

**Lodgepole Pine Habitats/Recent Post-fire Habitats – Black-backed and Three-toed Woodpeckers**

*Existing Condition*

The black-backed woodpecker is a unique species. Altman (2000) identified it as a focal species for old-growth lodgepole pine. However, it is also highly associated with post-fire environments. Therefore, it will be discussed as it relates both to green lodgepole pine forests and post-fire environments regardless of plant association. The three-toed woodpecker has been identified as a “bark beetle specialist” found in high elevation forests near the Cascade crest (Marshall et al. 2003). It is also associated with post-fire environments. These two species are sympatric having overlapping ranges however, Goggans et al. (1989) found the three-toed woodpecker to occupy areas between 4500-5600’ elevation while black-backed woodpeckers occupied lower elevations. Where three-toed woodpeckers overlap with black-backed woodpeckers, three-toed woodpeckers forage higher on the trunks of trees than black-backed woodpeckers and on the limbs (Marshall et al. 2003).

**Lodgepole Pine Habitat**

Wisdom et al. (2000) describes source habitats for black-backed woodpeckers as a year round resident that occurs in various forest types. Across its range it is most abundant in recently burned forests, but in Oregon, bark-beetle killed forests are frequently occupied. Marshall et al. (2003 pp. 368-370) reports for the black-backed woodpecker the “center of abundance” in Oregon is the “lodgepole pine forest east of the Cascade crest between Bend and Klamath Falls”. Endemic levels of mountain pine beetles, common in lodgepole pine (10”+ dbh and 170 tpa), provide a constant food source for both species. In a study conducted on the

Deschutes National Forest, Goggans et al. (1989) suggested management for black-backed and three-toed woodpeckers is tied to the maintenance of decay and disease. They found these two species of woodpeckers used stands with a mean diameter of 8" dbh for nesting with a mean nest tree diameter of 11" dbh suggesting selection for single-storied mature/overmature stands. All nests in the study were in lodgepole pine stands and 93% of foraging took place in lodgepole pine forests. Goggans found mountain pine beetles had infested 81% of the trees used for foraging. Recent dead trees were used most often (68%) for foraging.

### **Post-fire Habitat**

Black-backed woodpeckers are highly associated with stand replacement fire while three-toed woodpeckers have been linked. Saab, Dudley and Thompson (2004) found black-backed woodpeckers rapidly colonize stand replacement burns within 1-2 years post-fire but are rare within 5 years which may be due to a decrease in prey of larval bark and wood boring beetles. NatureServe (2005) reports three-toed woodpecker populations increase 3-5 years post-fire. Several studies found that black-backed and three-toed woodpeckers are found primarily in unlogged sites or clumps of high density trees/snags for both nesting and foraging (Saab and Dudley 1998, Hejl and McFadzen 2000, Haggard and Gaines 2001, and Saab et al. 2002). These stands may provide greater foraging opportunities since these species feed primarily on bark and wood boring beetles (Saab et al. 2002, and Saab, Dudley and Thompson 2004). In addition, black-backed woodpeckers select for small diameter snags ( $12.7'' \pm 1.1''$  dbh) for nesting and nest in hard snags with little decay (Saab and Dudley 1998 and Saab et al. 2002). They also select nest sites with the highest densities of snags  $>9''$  dbh (Saab and Dudley 1998).

Wood boring insects that come in with fire differ from mountain bark-beetle outbreaks. Marshall et al. (2003) warns that burned forests and bark-beetle outbreaks should not be considered equivalent habitats. Wisdom contrasted nesting success for black-backed woodpeckers of 68.5 percent in bark beetle infested forests in Oregon with 100 percent success in burned forests of western Idaho and northwestern Wyoming. Squirrel predation accounted for nest losses in Oregon. In Idaho, post-fire recolonization of large burn areas by squirrels did not take place during the first 3 years after the fire. It should be noted however that black-backed and three-toed woodpecker population increases in fire areas last for 5 years (Saab and Dudley 1998), whereas large infestations of mountain bark-beetle in the lodgepole pine forests on the Deschutes National Forest last 10 years. In small-scale infestations of mountain bark-beetles in lodgepole pine or mixed conifer forests occur on a never ending cycle. Snag densities in this habitat type vary widely.

Habitat for the black-backed woodpecker occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, white fir, subalpine fir, Shasta red fir, western hemlock, silver fir, and whitebark pine in dense stands where the average tree size ranges from 5" dbh to 20" dbh or greater. Approximately 582,190 acres of habitat currently exist across the Deschutes National Forest and approximately 207,651 acres of habitat occurs on the Ochoco National Forest for a total of 789,841 acres.

**Table 151. Existing Designated Route and Dispersed Camping Conditions within Black-backed Woodpecker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Black backed Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	284,012 (49%)	282,838 (49%)	15,340 (2%)	85,231 (15%)	447,525 (77%)	49,434 (8%)	582,190
<b>Ochoco</b>	74,207 (36%)	73,100 (35%)	60,344 (29%)	56,223 (27%)	91,530 (44%)	59,899 (29%)	207,651
<b>Total</b>	<b>358,219 (45%)</b>	<b>355,938 (45%)</b>	<b>75,684 (10%)</b>	<b>141,454 (18%)</b>	<b>539,055 (68%)</b>	<b>109,333 (14%)</b>	<b>789,841</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 151 shows approximately 284,012 acres of black-backed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 279,682 acres of habitat occur inside the road effect distance within those areas identified as closed (284,012 acres) resulting in the potential disturbance of 99% of the black-backed woodpecker habitat on the Deschutes NF.

Table 151 shows approximately 74,207 acres of black-backed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 67,326 acres of habitat occur inside the road effect distance within those areas identified as closed (74,207 acres) resulting in the potential disturbance of 97% of the black-backed woodpecker habitat on the Ochoco NF.

**Table 152. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Black-backed Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Black-backed Woodpecker Habitat	Acres of Black-backed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Black-backed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Black-backed Woodpecker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	582,190	279,682 (48%)	577,857 (99%)	4,333 (1%)
<b>Ochoco</b>	207,651	67,326 (32%)	200,770 (97%)	6,881 (3%)
<b>Total</b>	<b>789,841</b>	<b>347,008 (44%)</b>	<b>778,627 (99%)</b>	<b>11,214 (1%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Three-toed Woodpecker**

Habitat for the three-toed woodpecker occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – lodgepole pine, ponderosa pine, white fir, Shasta red fir, silver fir, mountain hemlock, and whitebark pine in dense stands where the average tree size ranges from 5” dbh to 20”dbh.

Approximately 594,481 acres of habitat currently exist across the Deschutes National Forest and approximately 197,271 acres of habitat occurs on the Ochoco National Forest for a total of 791,752 acres.

**Table 153. Existing Designated Route and Dispersed Camping Conditions within Three-toed Woodpecker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Three toed Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	299,717 (50%)	281,679 (47%)	13,085 (2%)	99,415 (17%)	449,835 (76%)	45,232 (7%)	594,481
<b>Ochoco</b>	67,620 (34%)	71,320 (36%)	58,331 (30%)	50,369 (26%)	89,348 (45%)	57,554 (29%)	197,271
<b>Total</b>	<b>367,337 (46%)</b>	<b>352,999 (45%)</b>	<b>71,416 (9%)</b>	<b>149,784 (19%)</b>	<b>539,183 (68%)</b>	<b>102,786 (13%)</b>	<b>791,752</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 153 shows approximately 299,717 acres of three-toed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 278,703 acres of habitat occur inside the road effect distance within those areas identified as closed (299,717 acres) resulting in the potential disturbance of 96% of the three-toed woodpecker habitat on the Deschutes NF.

Table 153 shows approximately 67,620 acres of three-toed woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 65,497 acres of habitat occur inside the road effect distance within those areas identified as closed (67,620 acres) resulting in the potential disturbance of 99% of the three-toed woodpecker habitat on the Ochoco NF.

**Table 154. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Three-toed Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Three-toed Woodpecker Habitat	Acres of Three-toed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Three-toed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Three-toed Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	594,481	278,703 (47%)	573,467 (96%)	21,014 (4%)
Ochoco	197,271	65,497 (33%)	195,148 (99%)	2,123 (1%)
<b>Total</b>	<b>791,752</b>	<b>344,200 (43%)</b>	<b>768,615 (97%)</b>	<b>23,137 (3%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 48% of the three-toed woodpecker habitat for the Deschutes and 32% of the three-toed woodpecker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 156 for more information.

**Table 155. Designated Route and Dispersed Camping Conditions within Black-backed Woodpecker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Black backed Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
Deschutes	581,908 (100%)	238 (0%)	0	415,469 (71%)	156,296 (27%)	10,381 (2%)	582,145
Ochoco	207,648 (100%)	0	0	174,174 (84%)	25,718 (12%)	7,757 (4%)	207,648
<b>Total</b>	<b>789,556 (100%)</b>	<b>238 (0%)</b>	<b>0</b>	<b>589,643 (75%)</b>	<b>182,014 (23%)</b>	<b>18,138 (2%)</b>	<b>789,793</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 156. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Black-backed Woodpecker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Black-backed Woodpecker Habitat	Acres of Black-backed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Black-backed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Black-backed Woodpecker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	582,145	279,682 (48%)	279,919 (48%)	302,226 (52%)
<b>Ochoco</b>	207,648	67,326 (32%)	67,326 (32%)	140,322 (68%)
<b>Total</b>	<b>789,793</b>	<b>347,008 (44%)</b>	<b>347,245 (44%)</b>	<b>442,548 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 47% of the three-toed habitat for the Deschutes and 33% of the three-toed habitat for the Ochoco remains in areas where disturbance is occurring. See Table 158 for more information.

**Table 157. Designated Route and Dispersed Camping Conditions within Three-toed Woodpecker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Three toed Wood. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	594,213 (100%)	223 (0%)	0	427,090 (72%)	158,295 (27%)	9,052 (1%)	594,436
<b>Ochoco</b>	197,267 (100%)	0	0	164,439 (83%)	25,350 (13%)	7,478 (4%)	197,267
<b>Total</b>	<b>791,480 (100%)</b>	<b>223 (0%)</b>	<b>0</b>	<b>591,529 (75%)</b>	<b>183,645 (23%)</b>	<b>16,530 (2%)</b>	<b>791,703</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 158. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Three-toed Woodpecker on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Three-toed Woodpecker Habitat	Acres of Three-toed Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Three-toed Woodpecker Habitat Disturbed/Percent of Total Habitat	Total Acres of Three-toed Woodpecker Habitat Undisturbed/Percent of Total Habitat
Deschutes	594,436	278,703 (47%)	278,926 (47%)	315,510 (53%)
Ochoco	197,267	65,497 (33%)	65,497 (33%)	131,770 (67%)
<b>Total</b>	<b>791,703</b>	<b>344,200 (43%)</b>	<b>344,423 (44%)</b>	<b>447,280 (56%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 159. Undisturbed Habitat Comparison for the Black-backed and Three-toed Woodpeckers**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Black-backed Woodpecker	1%	52%	3%	68%
Three-toed Woodpecker	4%	53%	1%	67%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the black-backed and three-toed woodpeckers and their habitats.

**Consistency**

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Aspen – Red-naped Sapsucker and Downy Woodpecker**

*Existing Condition*

The red-naped sapsucker is a common summer resident and the downy woodpecker is a yearlong resident typically found in forested habitats, especially riparian areas with aspen and cottonwood east of the Cascade crest. The sapsucker regularly hybridizes with the red-breasted sapsucker primarily along the east slope. It can be found in ponderosa pine stands as well and occurs less frequently in mixed conifer forests. The downy woodpecker is most abundant in riparian areas with alder, cottonwood, aspen and willow. Most sapsucker nests are found in large diameter aspen trees with heart decay and with a mean diameter of

approximately 10". It also breeds in cottonwood trees and prefers more moderately decayed trees for nesting. The downy woodpecker primarily nests in dead trees and frequently visits burned areas. The sapsucker drills holes resulting in sap wells, which provides food for other birds, insects, and mammals. Diet for both species includes sap, cambium, soft parts beneath bark, insects found under bark, and berries. (Marshall et al. 2003 pp. 356-358 and 360-362).

BBS data (1966-2000) for Oregon show a non-significant population increase of 0.5% per year for the sapsucker and a non-significant population decrease of 0.4% per year for the downy woodpecker. Threats known to these species include long-term degradation of aspen and other riparian forest habitats from intensive livestock grazing, fire suppression, and the lack of hardwood regeneration (Marshall et al. 2003 p. 358). In the past 100 to 150 years, there has been a dramatic decline in aspen forests due to a change in fire intervals (Bartos and Shepperd 1999). The lack of fire has allowed late successional species (e.g. conifer species) to move into aspen stands and out-compete the aspen. Bartos and Shepperd (1999) stated that most aspen will eventually be replaced by other communities like conifers, sagebrush, and other tall shrubs without some type of disturbance.

Habitat for the red-naped sapsucker and downy woodpecker includes hardwoods, mesic shrubs, and alpine shrubs for the Deschutes NF. Habitat on the Ochoco includes alder/willow, aspen, and cottonwood areas. Suitable habitat specific to the red-naped sapsucker and downy woodpecker has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not all shrub areas will contain suitable habitat. In addition, potential habitat occurring within ponderosa pine forests is not accounted for relative to the red-naped sapsucker and potential habitat within fire areas is not accounted for relative to the downy woodpecker.

**Table 160. Existing Designated Route and Dispersed Camping Conditions within Red-naped Sapsucker and Downy Woodpecker Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	487	8	0	496
<b>Alpine Shrubs</b>	57	0	0	57
<b>Mesic Shrubs</b>	5,283	838	58	6,179
<b>Total</b>	<b>5,827</b>	<b>846</b>	<b>58</b>	<b>6,732</b>

**Table 161. Existing Designated Route and Dispersed Camping Conditions within Red-naped Sapsucker and Downy Woodpecker Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/Willow</b>	818	132	628	1,579
<b>Aspen</b>	339	722	101	1,162
<b>Cottonwood</b>	154	19	20	193
<b>Total</b>	<b>1,311</b>	<b>873</b>	<b>749</b>	<b>2,934</b>

**Table 162. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Red-naped Sapsucker and Downy Woodpecker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat</b>	<b>Acres of Red-naped Sapsucker and Downy Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	6,732	2,782 (41%)	3,687 (55%)	3,045 (45%)
<b>Ochoco</b>	2,934	1,858 (63%)	1,858 (63%)	1,076 (37%)
<b>Total</b>	<b>9,666</b>	<b>4,640 (48%)</b>	<b>5,545 (57%)</b>	<b>4,121 (43%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 161 shows approximately 5,827 acres of red-naped sapsucker and downy woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,782 acres of habitat occur inside the road effect distance within those areas identified as closed (5,827 acres) resulting in the potential disturbance of 55% of the red-naped sapsucker and downy woodpecker habitat on the Deschutes NF.

Table 161 shows approximately 1,311 acres of red-naped sapsucker and downy woodpecker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 1,858 acres of habitat occur inside the road effect distance within those areas identified as closed (1,311 acres) resulting in the potential disturbance of 63% of the red-naped sapsucker and downy woodpecker habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 41% of the red-naped sapsucker and downy woodpecker habitat for the Deschutes and 63% of the red-naped sapsucker and downy woodpecker habitat for the Ochoco remains in areas where disturbance is occurring. See Table 165 for more information.

**Table 163. Designated Route and Dispersed Camping Conditions within Red-naped Sapsucker and Downy Woodpecker Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	496	0	0	496
<b>Alpine Shrubs</b>	57	0	0	57
<b>Mesic Shrubs</b>	6,178	0	0	6,178
<b>Total</b>	<b>6,731</b>	<b>0</b>	<b>0</b>	<b>6,731</b>

**Table 164. Designated Route and Dispersed Camping Conditions within Red-naped Sapsucker and Downy Woodpecker Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/Willow</b>	1,578	0	0	1,578
<b>Aspen</b>	1,162	0	0	1,162
<b>Cottonwood</b>	194	0	0	194
<b>Total</b>	<b>2,934</b>	<b>0</b>	<b>0</b>	<b>2,934</b>

**Table 165. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Red-naped Sapsucker and Downy Woodpecker on the Deschutes and Ochoco National Forests for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat</b>	<b>Acres of Red-naped Sapsucker and Downy Woodpecker Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Red-naped Sapsucker and Downy Woodpecker Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	6,731	2,782 (41%)	2,782 (41%)	3,949 (59%)
<b>Ochoco</b>	2,934	1,856 (63%)	1,856 (63%)	1,078 (37%)
<b>Total</b>	<b>9,665</b>	<b>4,638 (48%)</b>	<b>4,638 (48%)</b>	<b>5,027 (52%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 166. Undisturbed Habitat Comparison for the Red-naped Sapsucker and Downy Woodpecker**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Red-naped Sapsucker and Downy Woodpecker</b>	45%	59%	37%	37%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the red-naped sapsucker and downy woodpecker and their habitats.

### Consistency

Implementation of the Travel Management Rule is consistent with the Standards and Guidelines for the Deschutes and Ochoco National Forest Land Resource Management Plans. Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains and Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

### Open Habitats – Calliope Hummingbird

#### *Existing Condition*

Calliope hummingbirds are the smallest breeding bird in North America and the smallest long-distance migrant in the world. They are rare to locally uncommon in the eastern Cascades. They occupy open mountain meadows, open forests, meadow edges, and riparian areas. This species breeds from timberline to lower forest margins but primarily occur at middle elevations. Their diet in Oregon is unknown but they have been seen taking nectar from various flowers especially tubular species. Breeding Bird Survey data indicate a significant population decline for Oregon of 10.9% per year. However, this species appears to be expanding their range west of the Cascades which may reduce the decline.

Habitat for the calliope hummingbird includes alpine meadows, meadows, wetland buffers, and Class 1-4 riparian areas on the Deschutes and alder/willow, aspen, cottonwood, meadow, wetlands, and Class 1-4 riparian areas on the Ochoco. Suitable habitat specific to the calliope hummingbird has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every potential habitat area will contain conditions suitable for nesting.

**Table 167. Existing Designated Route and Dispersed Camping Conditions within Calliope Hummingbird Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Alpine Meadow	3,701	29	0	3,730
Meadow	4,076	456	0	4,532
Wetland Buffer	5,929	7,440	248	13,617
Class 1	4,169	6,986	574	11,729
Class 2	4,094	7,017	325	11,436
Class 3	2,245	730	55	3,030
Class 4	8,211	6,494	561	15,266
<b>Total</b>	<b>32,425</b>	<b>29,152</b>	<b>1,763</b>	<b>63,340</b>

**Table 168. Existing Designated Route and Dispersed Camping Conditions within Calliope Hummingbird Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	818	132	628	1,579
<b>Aspen</b>	339	722	101	1,162
<b>Cottonwood</b>	154	19	20	193
<b>Meadow</b>	5,170	3,984	1,990	11,143
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Class 1</b>	3,659	3,836	2,095	9,590
<b>Class 2</b>	6,031	11,574	10,567	28,172
<b>Class 3</b>	2,684	5,498	4,393	12,575
<b>Class 4</b>	6,560	5,103	6,452	18,116
<b>Total</b>	<b>27,707</b>	<b>34,953</b>	<b>27,614</b>	<b>90,274</b>

**Table 169. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Calliope Hummingbird on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Calliope Hummingbird Habitat</b>	<b>Acres of Calliope Hummingbird Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Calliope Hummingbird Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Calliope Hummingbird Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	63,340	20,231 (32%)	51,146 (81%)	12,194 (19%)
<b>Ochoco</b>	90,274	38,891 (43%)	38,891 (43%)	51,383 (57%)
<b>Total</b>	<b>153,614</b>	<b>59,122 (38%)</b>	<b>90,037 (59%)</b>	<b>63,577 (41%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 167 shows approximately 32,425 acres of calliope hummingbird habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 20,231 acres of habitat occur inside the road effect distance within those areas identified as closed (32,425 acres) resulting in the potential disturbance of 81% of the calliope hummingbird habitat on the Deschutes NF.

Table 168 shows approximately 27,707 acres of calliope hummingbird habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 38,891 acres of habitat occur inside the road effect distance within those areas identified as closed (27,707 acres) resulting in the potential disturbance of 43% of the calliope hummingbird habitat on the Ochoco NF.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 48% of the calliope hummingbird habitat for the Deschutes and 43% of the calliope hummingbird habitat for the Ochoco remains in areas where disturbance is occurring. See Table 172 for more information.

**Table 170. Designated Route and Dispersed Camping Conditions within Calliope Hummingbird Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alpine Meadow</b>	3,732	0	0	3,732
<b>Meadow</b>	4,532	0	0	4,532
<b>Wetland Buffer</b>	11,788	1,778	50	13,616
<b>Class 1</b>	8,345	3,256	132	11,733
<b>Class 2</b>	9,994	1,437	8	11,439
<b>Class 3</b>	2,769	238	23	3,030
<b>Class 4</b>	12,045	3,119	103	15,267
<b>Total</b>	<b>53,205</b>	<b>9,828</b>	<b>316</b>	<b>63,349</b>

**Table 171. Designated Route and Dispersed Camping Conditions within Calliope Hummingbird Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	1,578	0	0	1,578
<b>Aspen</b>	1,162	0	0	1,162
<b>Cottonwood</b>	194	0	0	194
<b>Meadow</b>	11,141	0	0	11,141
<b>Wetland Buffer</b>	6,293	1,320	133	7,746
<b>Class 1</b>	7,135	2,096	364	9,595
<b>Class 2</b>	20,196	5,846	2,132	28,174
<b>Class 3</b>	9,502	2,104	974	12,580
<b>Class 4</b>	14,867	2,183	1,070	18,120
<b>Total</b>	<b>72,068</b>	<b>13,549</b>	<b>4,673</b>	<b>90,290</b>

**Table 172. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Calliope Hummingbird on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Total Acres of Calliope Hummingbird Habitat	Acres of Calliope Hummingbird Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Calliope Hummingbird Habitat Disturbed/Percent of Total Habitat	Total Acres of Calliope Hummingbird Habitat Undisturbed/Percent of Total Habitat
Deschutes	63,349	20,231 (32%)	30,375 (48%)	32,974 (52%)
Ochoco	90,290	38,891 (43%)	38,891 (43%)	51,383 (57%)
<b>Total</b>	<b>153,639</b>	<b>59,122 (38%)</b>	<b>69,266 (45%)</b>	<b>84,357 (55%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 173. Undisturbed Habitat Comparison for the Calliope Hummingbird**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
Calliope Hummingbird	21%	65%	55%	55%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the calliope hummingbird and its habitat.

**Meadows – Sandhill Crane**

*Existing Condition*

The sandhill crane is a rare resident associated with freshwater, high elevation meadow/marsh habitats surrounded by mixed conifer forests. The sandhill crane utilizes floating nests and forages in nearby wet meadows. The crane feeds on aquatic and terrestrial invertebrates as well as small vertebrates. Sandhill crane populations seem to be fairly stable in Deschutes County. However, conversion of wetlands and predation continue to be major threats to this species. (Marshall et al. 2003 pp. 198-200, 216-217).

Habitat for the sandhill crane includes alpine meadows, meadows, wetlands, and wetland buffers. Suitable habitat specific to the sandhill crane has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every meadow or wetland will contain conditions suitable for nesting.

**Table 174. Existing Designated Route and Dispersed Camping Conditions within Sandhill Crane Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alpine Meadow</b>	3,701	29	0	3,730
<b>Meadow</b>	4,076	456	0	4,532
<b>Wetland</b>	9,489	17,981	1,049	28,518
<b>Wetland Buffer</b>	5,929	7,440	248	13,617
<b>Total</b>	<b>23,195</b>	<b>25,906</b>	<b>1,297</b>	<b>50,397</b>

**Table 175. Existing Designated Route and Dispersed Camping Conditions within Sandhill Crane Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Meadow</b>	5,170	3,984	1,990	11,143
<b>Wetland</b>	2,426	5,282	1,397	9,105
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Total</b>	<b>9,888</b>	<b>13,351</b>	<b>4,755</b>	<b>27,993</b>

**Table 176. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sandhill Crane on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Sandhill Crane Habitat</b>	<b>Acres of Sandhill Crane Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Sandhill Crane Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Sandhill Crane Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	50,397	12,631 (25%)	39,833 (79%)	10,564 (21%)
<b>Ochoco</b>	27,993	12,691 (45%)	12,691 (45%)	15,302 (55%)
<b>Total</b>	<b>78,390</b>	<b>25,322 (32%)</b>	<b>52,524 (67%)</b>	<b>25,866 (33%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 174 shows approximately 23,195 acres of sandhill crane habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 12,631 acres of habitat occur inside the road effect distance within those areas identified as closed (23,195 acres) resulting in the potential disturbance of 79% of the sandhill crane habitat on the Deschutes NF.

Table 175 shows approximately 9,888 acres of sandhill crane habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 12,691 acres of habitat

occur inside the road effect distance within those areas identified as closed (9,888 acres) resulting in the potential disturbance of 45% of the sandhill crane habitat on the Ochoco NF.

**Environmental Consequences**

**Action Alternatives**

***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the sandhill crane habitat for the Deschutes and 45% of the sandhill crane habitat for the Ochoco remains in areas where disturbance is occurring. See Table 179 for more information.

**Table 177. Designated Route and Dispersed Camping Conditions within Sandhill Crane Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alpine Meadow</b>	3,732	0	0	3,732
<b>Meadow</b>	4,532	0	0	4,532
<b>Wetland</b>	25,301	3,109	107	28,517
<b>Wetland Buffer</b>	11,788	1,778	50	13,616
<b>Total</b>	<b>45,353</b>	<b>4,887</b>	<b>157</b>	<b>50,397</b>

**Table 178. Designated Route and Dispersed Camping Conditions within Sandhill Crane Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Meadow</b>	11,141	0	0	11,141
<b>Wetland</b>	6,712	2,238	155	9,105
<b>Wetland Buffer</b>	6,293	1,320	133	7,746
<b>Total</b>	<b>24,146</b>	<b>3,558</b>	<b>288</b>	<b>27,992</b>

**Table 179. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sandhill Crane on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Sandhill Crane Habitat	Acres of Sandhill Crane Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Sandhill Crane Habitat Disturbed/Percent of Total Habitat	Total Acres of Sandhill Crane Habitat Undisturbed/Percent of Total Habitat
Deschutes	50,397	12,627 (25%)	17,671 (35%)	32,726 (65%)
Ochoco	27,992	12,690 (45%)	12,691 (45%)	15,302 (55%)
<b>Total</b>	<b>78,389</b>	<b>25,317 (32%)</b>	<b>30,362 (39%)</b>	<b>48,028 (61%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 180. Undisturbed Habitat Comparison for the Sandhill Crane**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Sandhill Crane</b>	21%	65%	55%	55%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the sandhill crane and its habitat.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Juniper – Ponderosa Pine Transition – Pinyon Jay**

*Existing Habitat*

Pinyon jays are permanent uncommon to common residents in juniper and ponderosa pine woodlands of central Oregon. Oregon’s known breeding range is confined to the Metolius River drainage eastward along the southern Ochoco Mountains south through Bend and east of Newberry Crater to Silver Lake basin. There is no documented breeding outside of central Oregon in the last half century (Marshall et al. 2003). However, their range expands somewhat outside of the breeding season. The pinyon jay occurs in juniper, juniper ponderosa pine transition areas, and ponderosa pine edge forests. They breed in loose colonies and spend most of the year in nomadic flocks. They are ground feeders of nuts, seeds, young cones, juniper berries, grains, and insects and will take eggs and young birds as well.

BBS data (1966-1999) indicate an annual 3.5% decline per year throughout their range. Oregon’s population is small compared to the majority of their range (pinyon pine areas). Threats include the increased vulnerability of isolation from the core population, as well as increased populations of crows and

ravens due to human expansion which leads to an increased predation risk. Effects of juniper expansion and large scale juniper removal are unknown.

Gray flycatcher habitat analysis will be used as a surrogate for the pinyon jay as they occupy similar plant associations. Habitat for the gray flycatcher occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, and ponderosa pine in open stands where average tree size is seed/saps or greater. Habitat may be over-estimated for this analysis because the pinyon jay is not associated with lodgepole pine and not all habitats assessed will contain suitable habitat conditions.

**Table 181. Existing Designated Route and Dispersed Camping Conditions within Pinyon Jay Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	161,352 (44%)	194,218 (53%)	12,945 (3%)	34,076 (9%)	298,577 (81%)	35,862 (10%)	368,515
<b>Ochoco</b>	16,817 (25%)	14,132 (21%)	37,281 (55%)	8,467 (12%)	20,001 (29%)	39,762 (58%)	68,230
<b>Total</b>	<b>178,169 (41%)</b>	<b>208,350 (48%)</b>	<b>50,226 (11%)</b>	<b>42,543 (10%)</b>	<b>318,578 (73%)</b>	<b>75,624 (17%)</b>	<b>436,745</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 181 shows approximately 161,352 acres of pinyon jay habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 183,225 acres of habitat occur inside the road effect distance within those areas identified as closed (161,352 acres) resulting in the potential disturbance of 50% of the pinyon jay habitat on the Deschutes NF.

Table 181 shows approximately 16,817 acres of pinyon jay habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 26,110 acres of habitat occur inside the road effect distance within those areas identified as closed (16,817 acres) resulting in the potential disturbance of 38% of the pinyon jay habitat on the Ochoco NF.

**Table 182. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pinyon Jay on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Pinyon Jay Habitat	Acres of Pinyon Jay Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Pinyon Jay Habitat Disturbed/Percent of Total Habitat	Total Acres of Pinyon Jay Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	368,515	183,225 (50%)	183,225 (50%)	185,290 (50%)
<b>Ochoco</b>	68,230	26,110 (38%)	26,110 (38%)	42,120 (62%)
<b>Total</b>	<b>436,745</b>	<b>209,335 (48%)</b>	<b>209,335 (48%)</b>	<b>227,410 (52%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 50% of the pinyon jay habitat for the Deschutes and 38% of the pinyon jay habitat for the Ochoco remains in areas where disturbance is occurring. See Table 184 for more information.

**Table 183. Designated Route and Dispersed Camping Conditions within Pinyon Jay Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	368,253 (100%)	235 (0%)	0	256,352 (70%)	105,119 (28%)	7,017 (2%)	368,489
<b>Ochoco</b>	68,224 (100%)	0	1 (0%)	54,809 (80%)	8,654 (13%)	4,763 (7%)	68,225
<b>Total</b>	<b>436,477 (100%)</b>	<b>235 (0%)</b>	<b>1 (0%)</b>	<b>311,161 (71%)</b>	<b>113,773 (26%)</b>	<b>11,780 (3%)</b>	<b>436,714</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 184. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Pinyon Jay on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Gray Flycatcher Habitat	Acres of Gray Flycatcher Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Gray Flycatcher Habitat Disturbed/Percent of Total Habitat	Total Acres of Gray Flycatcher Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	368,489	183,225 (50%)	183,487 (50%)	185,264 (50%)
<b>Ochoco</b>	68,225	26,110 (38%)	26,110 (38%)	42,115 (62%)
<b>Total</b>	<b>436,714</b>	<b>209,335 (48%)</b>	<b>209,335 (48%)</b>	<b>227,379 (52%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 185. Undisturbed Habitat Comparison for the Pinyon Jay**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Pinyon Jay</b>	50%	50%	62%	62%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the pinyon jay and its habitat.

**Juniper Woodlands - Gray Flycatcher**

*Existing Condition*

Gray flycatchers are uncommon to common breeders east of the Cascades. They nest in open stands in arid woodlands and shrublands where there is exposed ground. Preferred shrub habitat includes big sagebrush, especially along dry washes, and bitterbrush. Woodland habitat includes mountain mahogany, old-growth and mid-succession juniper, and open ponderosa pine with sagebrush and bitterbrush understories. In southeastern Deschutes and northwestern Klamath counties, they nest in lodgepole pine stands with sage and bitterbrush understories. Nests are placed within 6 feet of the ground and they feed exclusively on insects (Marshall et al. 2003).

BBS data suggest a 5% annual increasing trend in Oregon (1966-1999). Eastern Oregon has some of the highest population densities (Crook County), however habitat is restricted and vulnerable to change. Juniper and sagebrush removal and seeding of crested wheatgrass eliminates habitat.

Habitat for the gray flycatcher occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, and ponderosa pine in open stands where average tree size is seed/saps or greater. Approximately 368,515 acres of habitat currently exist across the Deschutes National Forest and approximately 68,230 acres of habitat occurs on the Ochoco National Forest for a total of 436,745 acres.

**Table 186. Existing Designated Route and Dispersed Camping Conditions within Gray Flycatcher Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	161,352 (44%)	194,218 (53%)	12,945 (3%)	34,076 (9%)	298,577 (81%)	35,862 (10%)	368,515
<b>Ochoco</b>	16,817 (25%)	14,132 (21%)	37,281 (55%)	8,467 (12%)	20,001 (29%)	39,762 (58%)	68,230
<b>Total</b>	<b>178,169 (41%)</b>	<b>208,350 (48%)</b>	<b>50,226 (11%)</b>	<b>42,543 (10%)</b>	<b>318,578 (73%)</b>	<b>75,624 (17%)</b>	<b>436,745</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 186 shows approximately 161,352 acres of gray flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 183,225 acres of habitat occur inside the road effect distance within those areas identified as closed (161,352 acres) resulting in the potential disturbance of 50% of the gray flycatcher habitat on the Deschutes NF.

Table 186 shows approximately 16,817 acres of gray flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 26,110 acres of habitat occur inside the road effect distance within those areas identified as closed (16,817 acres) resulting in the potential disturbance of 38% of the gray flycatcher habitat on the Ochoco NF.

**Table 187. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Gray Flycatcher on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Gray Flycatcher Habitat</b>	<b>Acres of Gray Flycatcher Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Gray Flycatcher Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Gray Flycatcher Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	368,515	183,225 (50%)	183,225 (50%)	185,290 (50%)
<b>Ochoco</b>	68,230	26,110 (38%)	26,110 (38%)	42,120 (62%)
<b>Total</b>	<b>436,745</b>	<b>209,335 (48%)</b>	<b>209,335 (48%)</b>	<b>227,410 (52%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 50% of the gray flycatcher habitat for the Deschutes and 38% of the gray flycatcher habitat for the Ochoco remains in areas where disturbance is occurring. See Table 189 for more information.

**Table 188. Designated Route and Dispersed Camping Conditions within Gray Flycatcher Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	368,253 (100%)	235 (0%)	0	256,352 (70%)	105,119 (28%)	7,017 (2%)	368,489
<b>Ochoco</b>	68,224 (100%)	0	1 (0%)	54,809 (80%)	8,654 (13%)	4,763 (7%)	68,225
<b>Total</b>	<b>436,477 (100%)</b>	<b>235 (0%)</b>	<b>1 (0%)</b>	<b>311,161 (71%)</b>	<b>113,773 (26%)</b>	<b>11,780 (3%)</b>	<b>436,714</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 189. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Gray Flycatcher on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Gray Flycatcher Habitat	Acres of Gray Flycatcher Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Gray Flycatcher Habitat Disturbed/Percent of Total Habitat	Total Acres of Gray Flycatcher Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	368,489	183,225 (50%)	183,487 (50%)	185,264 (50%)
<b>Ochoco</b>	68,225	26,110 (38%)	26,110 (38%)	42,115 (62%)
<b>Total</b>	<b>436,714</b>	<b>209,335 (48%)</b>	<b>209,335 (48%)</b>	<b>227,379 (52%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 190. Undisturbed Habitat Comparison for the Gray Flycatcher**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Gray Flycatcher</b>	50%	50%	62%	62%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the gray flycatcher and its habitat.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

## Juniper Steppe – Ferruginous Hawk and Swainson’s hawk

### *Existing Condition*

Swainson’s and ferruginous hawks are uncommon to rare summer residents primarily, breeding mainly in habitat associated with grasslands, bunchgrass prairies, and sagebrush shrublands in eastern Oregon (Marshall et al. 2003). Ferruginous hawks are locally common in the Fort Rock basin but rare in central Oregon and this species inhabits the most open country of all buteos. Few ferruginous hawks remain in the Oregon breeding range during winter.

Swainson’s hawks nest in trees while ferruginous hawks nest commonly on short cliffs or on the ground. In addition, the ferruginous hawk may nest in cottonwoods, willows, or juniper, usually in single trees (Marshall et al. 2003). Both species hunt from perches such as low trees. Swainson’s hawks forage primarily on small mammals, typically ground squirrels, pocket gophers and voles while the ferruginous hawk forages primarily on ground squirrels, rabbits and hares. Both species also feed on insects.

The Swainson’s hawk used to be the most common buteo east of the Cascades. Declines in population started prior to the 1950’s. Reasons for declines are the loss of bunchgrass prairies to agricultural lands which results in the loss of prey and nesting habitat. In addition, grazing and the decrease in fire have led to the western juniper invasion. In contrast, no declines have been noted for the ferruginous hawk for the state as a whole. Much of the higher quality habitat has been converted to agricultural land and this species is susceptible to further conversion, intensive grazing, and other activities that reduce riparian forests. Ferruginous hawks are sensitive to human disturbance and readily abandon nests. Increases in recreation use could cause further declines. (Marshall et al. 2003).

Habitat for the ferruginous hawk occurs very sparingly on the Deschutes and Ochoco National Forests in the following plant associations in fringe habitats, natural openings, and fire areas – juniper steppe, juniper woodlands, and ponderosa pine in open stands dominated by grasses, forbs, or shrubs. Approximately 51,043 acres of habitat currently exist across the Deschutes National Forest and approximately 1,573 acres of habitat occurs on the Ochoco National Forest for a total of 52,616 acres. A specific habitat analysis was not conducted for the Swainson’s hawk. Therefore, the habitat analysis for the Ferruginous hawk will be used for the Swainson’s hawk as they occupy similar plant associations.

**Table 191. Existing Designated Route and Dispersed Camping Conditions within Ferruginous Hawk Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Ferrug. Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	31,665 (62%)	9,002 (18%)	10,376 (20%)	16,785 (33%)	16,864 (33%)	17,395 (34%)	51,043
<b>Ochoco</b>	417 (26%)	343 (22%)	813 (52%)	273 (17%)	485 (31%)	815 (52%)	1,573
<b>Total</b>	<b>32,082 (61%)</b>	<b>9,345 (18%)</b>	<b>11,189 (21%)</b>	<b>17,058 (32%)</b>	<b>17,349 (33%)</b>	<b>18,210 (35%)</b>	<b>52,616</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 191 shows approximately 31,665 acres of ferruginous hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 24,310 acres of habitat occur inside the road effect distance within those areas identified as closed (31,665 acres) resulting in the potential disturbance of 86% of the ferruginous hawk habitat on the Deschutes NF.

Table 191 shows approximately 417 acres of ferruginous hawk habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 634 acres of habitat occur inside the road effect distance within those areas identified as closed (417 acres) resulting in the potential disturbance of 40% of the ferruginous hawk habitat on the Ochoco NF.

**Table 192. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Ferruginous Hawk on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Ferruginous/Swainson’s Hawk Habitat</b>	<b>Acres of Ferruginous/Swainson’s Hawk Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Ferruginous/Swainson’s Hawk Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Ferruginous/Swainson’s Hawk Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	51,043	24,310 (48%)	43,688 (86%)	7,355 (14%)
<b>Ochoco</b>	1,573	634 (40%)	634 (40%)	939 (60%)
<b>Total</b>	<b>52,616</b>	<b>24,944 (47%)</b>	<b>44,322 (84%)</b>	<b>8,294 (16%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences**  
**Action Alternatives**  
*Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 48% of the ferruginous hawk habitat for the Deschutes and 40% of the ferruginous hawk for the Ochoco remains in areas where disturbance is occurring. See Table 194 for more information.

**Table 193. Designated Route and Dispersed Camping Conditions within Ferruginous Hawk Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Ferrug. Hawk Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	51,013 (100%)	22 (0%)	0	37,858 (74%)	7,425 (15%)	5,751 (11%)	51,035
<b>Ochoco</b>	1,571 (100%)	0	0	1,243 (79%)	189 (12%)	139 (9%)	1,571
<b>Total</b>	<b>52,584</b> <b>(100%)</b>	<b>22</b> <b>(0%)</b>	<b>0</b>	<b>39,101</b> <b>(74%)</b>	<b>7,614</b> <b>(14%)</b>	<b>5,890</b> <b>(11%)</b>	<b>52,606</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 194. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Ferruginous Hawk on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Ferruginous/Swainson's Hawk Habitat	Acres of Ferruginous/Swainson's Hawk Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Ferruginous Swainson's / Hawk Habitat Disturbed/Percent of Total Habitat	Total Acres of Ferruginous/Swainson's Hawk Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	51,035	24,316 (48%)	24,338 (48%)	26,697 (52%)
<b>Ochoco</b>	1,571	634 (40%)	634 (40%)	937 (60%)
<b>Total</b>	<b>52,606</b>	<b>24,950</b> <b>(47%)</b>	<b>24,972</b> <b>(47%)</b>	<b>27,634</b> <b>(53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 195. Undisturbed Habitat Comparison for the Ferruginous and Swainson's Hawks**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Ferruginous Hawk and Swainson's Hawk</b>	14%	52%	60%	60%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the ferruginous and Swainson's hawks and their habitats.

## Consistency

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

## Grassland – Long-billed Curlew

### *Existing Condition*

Long-billed curlew distribution in Oregon is located east of the Cascades in open grasslands. It commonly breeds in Crook County. (Marshall et al. 2003 pp. 224-226). They prefer nesting habitat that has short grass (less than 30 cm {11.8 in.} tall), bare ground, shade, a rich food source, and proximity to water (Montana F&W 2005). Long-billed curlews prefer short or mixed-prairie habitat with little topography. Nests are exposed shallow dimples in the ground. Long-billed curlew's diet consists of insects, insect larvae, berries, and earthworms. They can also feed upon smaller toads, snails, crayfish and crab, usually during migration (NatureServe 2008).

Population trends based on BBS data (1979-2000) suggest a stable or possibly increasing population. However, conflicting information has shown that agricultural development has altered some and aided in the loss of breeding habitat throughout their range leading Evanich (1992) to note significant declines (Marshall et al. 2003, NBII 2008). Wintering habitat areas are also of concern due to the effect on the population. Reasons for concern may include pesticides, other toxins, disturbance from off-road vehicles, and recreational use in the habitat (NBII 2008). However, activities like fire and grazing that maintain open short grass landscapes may be beneficial (Marshall et al. 2003).

Habitat for the long-billed curlew includes meadows on the Deschutes and grasslands and meadows on the Ochoco. Suitable habitat specific to the long-billed curlew has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not all meadows are dry meadows and not all grasslands contain habitat conditions suitable for this species.

**Table 196. Existing Designated Route and Dispersed Camping Conditions within Long-billed Curlew Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Meadow	4,076	456	0	4,532
<b>Total</b>	<b>4,076</b>	<b>456</b>	<b>0</b>	<b>4,532</b>

**Table 197. Existing Designated Route and Dispersed Camping Conditions within Long-billed Curlew Habitat on the Ochoco National Forest.**

Ochoco National Forest				
Riparian Type	Acres Closed	Acres Open	Acres Open Seasonally	Total
Grassland	5,474	2,997	3,957	12,428
Meadow	5,170	3,984	1,990	11,143
<b>Total</b>	<b>10,644</b>	<b>6,981</b>	<b>5,947</b>	<b>23,572</b>

**Table 198. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Long-billed Curlew on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Long-billed Curlew Habitat</b>	<b>Acres of Long-billed Curlew Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Long-billed Curlew Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Long-billed Curlew Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	4,532	828 (18%)	1,284 (28%)	3,248 (72%)
<b>Ochoco</b>	23,572	8,647 (37%)	21,575 (92%)	1,997 (8%)
<b>Total</b>	<b>28,104</b>	<b>9,475 (34%)</b>	<b>22,859 (81%)</b>	<b>5,245 (19%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 196 shows approximately 4,076 acres of long-billed curlew habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 828 acres of habitat occur inside the road effect distance within those areas identified as closed (4,076 acres) resulting in the potential disturbance of 28% of the long-billed curlew habitat on the Deschutes NF.

Table 197 shows approximately 10,644 acres of long-billed curlew habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 8,647 acres of habitat occur inside the road effect distance within those areas identified as closed (10,644 acres) resulting in the potential disturbance of 92% of the long-billed curlew habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
**Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 18% of the long-billed curlew habitat for the Deschutes and 37% of the long-billed curlew habitat for the Ochoco remains in areas where disturbance is occurring. See Table 201 for more information.

**Table 199. Designated Route and Dispersed Camping Conditions within Long-billed Curlew Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Meadow</b>	4,532	0	0	4,532
<b>Total</b>	<b>4,532</b>	<b>0</b>	<b>0</b>	<b>4,532</b>

**Table 200. Designated Route and Dispersed Camping Conditions within Long-billed Curlew Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Grassland</b>	12,428	0	0	12,428
<b>Meadow</b>	11,141	0	0	11,141
<b>Total</b>	<b>23,570</b>	<b>0</b>	<b>0</b>	<b>23,570</b>

**Table 201. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Long-billed Curlew on the Deschutes and Ochoco National Forests for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Long-billed Curlew Habitat</b>	<b>Acres of Long-billed Curlew Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Long-billed Curlew Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Long-billed Curlew Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	4,532	828 (18%)	828 (18%)	3,704 (82%)
<b>Ochoco</b>	23,570	8,645 (37%)	8,645 (37%)	14,925 (63%)
<b>Total</b>	<b>28,104</b>	<b>9,475 (34%)</b>	<b>9,475 (34%)</b>	<b>18,629 (66%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 202. Undisturbed Habitat Comparison for the Long-billed Curlew**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Long-billed Curlew</b>	72%	82%	8%	63%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the long-billed curlew and its habitat.

## Sagebrush – Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher

### Existing Condition

All three species are summer residents in Oregon. The Brewer’s and sage sparrows prefer open habitats with a shrub or grass component, while sage thrasher is a “sage obligate”. All three species preferred breeding habitat is big sagebrush but they will breed in other shrub cover including rabbitbrush, greasewood, and shadscale (Rottenberry et al. 1999 in Marshall et al. 2003). All nest in shrubs or on the ground and have diets that include insects, seeds, and berries. Declines in populations of 2.6% per year have been noted for the Brewer’s sparrow from Breeding Bird Survey (BBS) results while the other two species show no significant population changes. Threats to these species include habitat changes due to fire suppression, habitat loss from sagebrush removal from fires and livestock grazing, fragmentation, and invasion of exotic species (Marshall et al. 2003).

Habitat for the sage sparrow, Brewer’s sparrow, and sage thrasher includes sagebrush habitat mapped for sage grouse on the Deschutes and sage/scab habitat on the Ochoco. Suitable habitat specific to the sage sparrow, Brewer’s sparrow, and sage thrasher have not been mapped at this time as assessments are generally conducted at a project level.

**Table 203. Existing Designated Route and Dispersed Camping Conditions within Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage	9,425	0	695	10,120
<b>Total</b>	<b>9,425</b>	<b>0</b>	<b>695</b>	<b>10,120</b>

**Table 204. Existing Designated Route and Dispersed Camping Conditions within Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat on the Ochoco National Forest.**

Ochoco National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage/Scab	16,562	12,831	32,794	62,186
<b>Total</b>	<b>16,562</b>	<b>12,831</b>	<b>32,794</b>	<b>62,186</b>

**Table 205. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Sage &amp; Brewer’s Sparrow and Sage Thrasher Habitat</b>	<b>Acres of Sage &amp; Brewer’s Sparrow and Sage Thrasher Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Sage &amp; Brewer’s Sparrow and Sage Thrasher Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Sage &amp; Brewer’s Sparrow and Sage Thrasher Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	10,120	3,536 (35%)	4,231 (42%)	5,889 (58%)
<b>Ochoco</b>	62,186	17,752 (29%)	17,752 (29%)	44,434 (71%)
<b>Total</b>	<b>72,306</b>	<b>21,288 (29%)</b>	<b>21,983 (30%)</b>	<b>50,323 (70%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 203 shows approximately 9,425 acres of sage sparrow, Brewer’s sparrow, and sage thrasher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,536 acres of habitat occur inside the road effect distance within those areas identified as closed (9,425 acres) resulting in the potential disturbance of 42% of the sage sparrow, Brewer’s sparrow, and sage thrasher habitat on the Deschutes NF.

Table 204 shows approximately 16,562 acres of sage sparrow, Brewer’s sparrow, and sage thrasher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 17,752 acres of habitat occur inside the road effect distance within those areas identified as closed (16,562 acres) resulting in the potential disturbance of 29% of the sage sparrow, Brewer’s sparrow, and sage thrasher habitat on the Ochoco NF.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the sage sparrow, Brewer’s sparrow, and sage thrasher habitat for the Deschutes and 29% of the sage sparrow, Brewer’s sparrow, and sage thrasher habitat for the Ochoco remains in areas where disturbance is occurring. See Table 208 for more information.

**Table 206. Designated Route and Dispersed Camping Conditions within Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage</b>	10,060	0	0	10,060
<b>Total</b>	<b>10,060</b>	<b>0</b>	<b>0</b>	<b>10,060</b>

**Table 207. Designated Route and Dispersed Camping Conditions within Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage/Scab</b>	62,181	0	0	62,181
<b>Total</b>	<b>62,181</b>	<b>0</b>	<b>0</b>	<b>62,181</b>

**Table 208. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher on the Deschutes and Ochoco National Forests for Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat</b>	<b>Acres of Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	10,060	3,500 (35%)	3,500 (35%)	6,560 (65%)
<b>Ochoco</b>	62,181	17,749 (29%)	17,749 (29%)	44,432 (71%)
<b>Total</b>	<b>72,241</b>	<b>21,288 (29%)</b>	<b>21,288 (29%)</b>	<b>50,992 (71%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 209. Undisturbed Habitat Comparison for the Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher</b>	58%	65%	71%	71%

### **Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the sage sparrow, Brewer's sparrow, and sage thrasher and their habitats.

### **Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

## **Steppe-Shrubland – Loggerhead Shrike, Vesper Sparrow, and Burrowing Owl**

### *Existing Condition*

In central Oregon, the vesper sparrow and loggerhead shrike are uncommon to locally common summer residents, while the burrowing owl is a rare but regular resident in eastern Crook and Deschutes counties. The vesper sparrow and loggerhead shrike are uncommon spring and fall migrants and the shrike is also a rare winter resident primarily in the eastern half of the region.

Habitat associations for the vesper sparrow are strongest in the sagebrush-steppe, low-dwarf sagebrush, big sagebrush shrubland, northeast canyon grass and shrubland, and northeast modified grassland (USDA 2004d). Records of this species are concentrated in Jefferson, eastern Deschutes, and southern Crook counties (USDA 2004d). Nesting habitat requirements include elevated perches for singing and a grass-dominated understory for foraging and nesting (Marshall et al. 2003) and most nests are found on the ground. They feed on the ground primarily, hawking occasionally to catch insects. Their diet includes a mix of invertebrates and seeds.

The basic breeding habitat needs for the loggerhead shrike are perches for singing and hunting, open or grassy areas for hunting, and scattered shrubs or small trees for nesting (Marshall et al. 2003). Primary vegetation communities in Oregon breeding areas include big sagebrush, low sagebrush with scattered juniper, black greasewood, and cold desert shrub communities (Marshall et al. 2003). The highest concentration of confirmed breeding in central Oregon is in eastern Jefferson County on the Crooked River National Grassland (CRNG). Nests are usually well hidden below the crown of a bush or tree. They take most of their prey from the ground but will sometimes hawk for insects, similar to the vesper sparrow. They eat mostly grasshoppers and crickets, but also take a variety of other insects, small mammals, birds and reptiles. This species impales its prey on sharp objects or stuffs them in v-shaped crooks in trees.

The burrowing owl inhabits open, well-drained grasslands, steppes, deserts, prairies, and agricultural lands. The presence of a nest burrow seems to be a critical requirement for the owl (Haug et al. 1993). Many of the burrows found in Oregon were previously excavated by badgers, a predator of burrowing owl eggs and young. They will also use yellow-bellied marmot, coyote, and Columbia ground squirrel burrows, as well as artificial nest structures (Marshall et al. 2003). The burrowing owl hunts from a perch, forages on the ground, hovers, or flycatches. They feed primarily on small mammals and large arthropods. Sagebrush voles, Great Basin pocket mice, deer mice and pocket gophers are the dominant prey in central Oregon.

Population trends vary for each species. Trends for the vesper sparrow in Oregon based on BBS data indicate relatively stable long-term trends (1966-1996), but highly significant short-term declining trends (Marshall et al. 2003). Factors contributing to population declines may include conversion of native grasslands and shrub-steppe to agriculture. In addition, changes in farming practices has also been

implicated (Jones et al. 2002). Breeding populations of vesper sparrows in Great Basin sagebrush-steppe increased when grazing was deferred from spring to fall (Jones et al. 2002). This species is listed as a species of concern in the state of Oregon by the USFWS.

BBS data from Oregon for the loggerhead shrike show a significant 3.4% declining trend from 1966-1998 (Marshall et al. 2003). Reasons for the decline include changes in agricultural land use, winter mortality, in part due to biocide use, and loss and degradation of shrub-steppe habitat. They may be in competition for habitat with species that more tolerant of humans, such as the American kestrel and European starling (Yosef 1996).

Burrowing owls were historically found on the Crooked River National Grassland but have not been found there since 1992. The lack of any owls on the grassland is most likely correlated with a decrease in badgers, marmots, and ground squirrels. There is also a significant decline in the central Oregon populations near Bend, which may be due to incidental shooting and loss of habitat to rural land development. This species is listed as a species of special concern in Oregon by the USFWS.

Habitat for the loggerhead shrike occurs very sparingly on the Deschutes National Forest in the fringe areas near Sisters and outside of Bend and sparingly on the Ochoco National Forest primarily on the Paulina Ranger District in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, and ponderosa pine in open stands dominated by grasses, forbs, and shrubs with some seedling/saplings. Approximately 1,043 acres of habitat currently exist across the Deschutes National Forest and approximately 95,462 acres of habitat occurs on the Ochoco National Forest for a total of 96,505 acres. A specific habitat analysis was not conducted for the vesper sparrow or burrowing owl. Therefore, the loggerhead shrike habitat analysis will be used as a surrogate for the vesper sparrow and burrowing owl habitat as they occupy similar plant associations.

**Table 210. Existing Designated Route and Dispersed Camping Conditions within Loggerhead Shrike Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Logger. Shrike Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	224 (21%)	611 (59%)	208 (20%)	84 (8%)	749 (72%)	209 (20%)	1,043
<b>Ochoco</b>	82,654 (87%)	778 (1%)	12,030 (13%)	82,285 (86%)	1,601 (2%)	11,576 (12%)	95,462
<b>Total</b>	<b>82,878 (86%)</b>	<b>1,389 (1%)</b>	<b>12,238 (13%)</b>	<b>82,369 (85%)</b>	<b>2,350 (2%)</b>	<b>11,785 (12%)</b>	<b>96,505</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 210 shows approximately 224 acres of loggerhead shrike habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 323 acres of habitat occur inside the road effect distance within those areas identified as closed (224 acres) resulting in the potential disturbance of 31% of the loggerhead shrike habitat on the Deschutes NF.

Table 210 shows approximately 82,654 acres of loggerhead shrike habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still

open roads traversing through habitat, resulting in potential disturbance. Approximately 38,533 acres of habitat occur inside the road effect distance within those areas identified as closed (82,654 acres) resulting in the potential disturbance of 54% of the loggerhead shrike habitat on the Ochoco NF.

**Table 211. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Loggerhead Shrike on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Loggerhead Shrike/Vesper Sparrow/Burrowing Owl Habitat</b>	<b>Acres of Loggerhead Shrike/ Vesper Sparrow/Burrowing Owl Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Loggerhead Shrike/Vesper Sparrow/Burrowing Owl Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Loggerhead Shrike/Vesper Sparrow/Burrowing Owl Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	1,043	323 (31%)	323 (31%)	720 (69%)
<b>Ochoco</b>	95,462	38,533 (40%)	51,341 (54%)	44,121 (46%)
<b>Total</b>	<b>96,505</b>	<b>38,856 (40%)</b>	<b>51,664 (54%)</b>	<b>44,841 (46%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 31% of the loggerhead shrike habitat for the Deschutes and 40% of the loggerhead shrike for the Ochoco remains in areas where disturbance is occurring. See Table 213 for more information.

**Table 212. Designated Route and Dispersed Camping Conditions within Loggerhead Shrike Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Logger. Shrike Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	1,043 (100%)	0	0	968 (93%)	69 (7%)	6 (0%)	1,043
<b>Ochoco</b>	95,411 (100%)	0	16 (0%)	74,886 (86%)	14,668 (2%)	5,874 (12%)	95,428
<b>Total</b>	<b>96,454 (100%)</b>	<b>0</b>	<b>16 (0%)</b>	<b>75,854 (79%)</b>	<b>14,737 (15%)</b>	<b>5,880 (6%)</b>	<b>96,471</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 213. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Loggerhead Shrike on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Loggerhead Shrike/ Vesper Sparrow/ Burrowing Owl Habitat	Acres of Loggerhead Shrike/ Vesper Sparrow/ Burrowing Owl Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Loggerhead Shrike Vesper Sparrow/ Burrowing Owl / Habitat Disturbed/Percent of Total Habitat	Total Acres of Loggerhead Shrike Vesper Sparrow/ Burrowing Owl / Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	1,043	323 (31%)	323 (31%)	720 (69%)
<b>Ochoco</b>	95,428	38,533 (40%)	38,550 (40%)	56,878 (60%)
<b>Total</b>	<b>96,471</b>	<b>38,856 (40%)</b>	<b>38,873 (40%)</b>	<b>57,598 (60%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 214. Undisturbed Habitat Comparison for the Loggerhead Shrike, Vesper Sparrow, and Burrowing Owl**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Loggerhead Shrike/Vesper Sparrow/Burrowing Owl</b>	69%	69%	46%	60%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the loggerhead shrike, vesper sparrow, and burrowing owl and their habitats.

### Consistency

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

### Shrublands – Lark Sparrow

#### *Existing Condition*

The lark sparrow is a summer resident that prefers breeding in open ecotone habitats. They like areas that contain or are adjacent to scattered shrubs or trees (Marshall et al. 2003 p. 545-547). In eastern Oregon, they have an affinity for shrub-steppe, such as sagebrush that adjoins grasslands, cultivated land, and juniper woodlands. A balance between shrubs, grassland, and some bare ground is a requirement for this species (Marshall et al. 2003 p. 545-547). They prefer grazed over ungrazed habitats. Breeding has been confirmed between mid-June and early July primarily in northeast and central Jefferson County, with one additional confirmation in Crook County. They have also been observed during the summer in sagebrush flats, such as those at the base of Pine Mountain and Cline Buttes (USDA 2004d). They generally nest on or near the ground. This bird is considered a ground foraging omnivore. In the breeding season, they eat more insects than seeds (Marshall et al. 2003 p. 545-547).

Population trends based on BBS data show a significant 9.8% decline in Oregon from 1966-2000. Conversion of shrub/grassland to agricultural crops is detrimental to this species. Local population declines have been contributed to intense grasshopper control measures (Marshall et al. 2003 p. 545-547).

Habitat for the lark sparrow includes sagebrush habitat mapped for sage grouse on the Deschutes and sage/scab and grassland habitat on the Ochoco. Suitable habitat specific to the lark sparrow has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not all sage and grasslands contain habitat conditions suitable for this species.

**Table 215. Existing Designated Route and Dispersed Camping Conditions within Lark Sparrow Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage	9,425	0	695	10,120
<b>Total</b>	<b>9,425</b>	<b>0</b>	<b>695</b>	<b>10,120</b>

**Table 216. Existing Designated Route and Dispersed Camping Conditions within Lark Sparrow Habitat on the Ochoco National Forest.**

Ochoco National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Sage/Scab	16,562	12,831	32,794	62,186
Grassland	5,474	2,997	3,957	12,428
<b>Total</b>	<b>22,036</b>	<b>15,828</b>	<b>36,751</b>	<b>74,615</b>

**Table 217. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Lark Sparrow on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Lark Sparrow Habitat</b>	<b>Acres of Lark Sparrow Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Lark Sparrow Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Lark Sparrow Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	10,120	3,536 (35%)	4,231 (42%)	5,889 (58%)
<b>Ochoco</b>	74,615	21,144 (28%)	73,723 (99%)	892 (1%)
<b>Total</b>	<b>84,734</b>	<b>24,680 (29%)</b>	<b>77,954 (92%)</b>	<b>6,781 (8%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 215 shows approximately 9,425 acres of lark sparrow habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,536 acres of habitat occur inside the road effect distance within those areas identified as closed (9,425 acres) resulting in the potential disturbance of 42% of the lark sparrow habitat on the Deschutes NF.

Table 216 shows approximately 22,036 acres of lark sparrow habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 21,144 acres of habitat occur inside the road effect distance within those areas identified as closed (22,036 acres) resulting in the potential disturbance of 99% of the lark sparrow habitat on the Ochoco NF.

**Environmental Consequences**  
**Action Alternatives**  
*Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 35% of the lark sparrow habitat for the Deschutes and 28% of the lark sparrow for the Ochoco remains in areas where disturbance is occurring. See Table 220 for more information.

**Table 218. Designated Route and Dispersed Camping Conditions within Lark Sparrow Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage</b>	10,060	0	0	10,060
<b>Total</b>	<b>10,060</b>	<b>0</b>	<b>0</b>	<b>10,060</b>

**Table 219. Designated Route and Dispersed Camping Conditions within Sage Sparrow, Brewer’s Sparrow, and Sage Thrasher Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Sage/Scab</b>	62,181	0	0	62,181
<b>Grassland</b>	12,428	0	0	12,428
<b>Total</b>	<b>74,609</b>	<b>0</b>	<b>0</b>	<b>74,609</b>

**Table 220. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Lark Sparrow on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Lark Sparrow Habitat</b>	<b>Acres of Lark Sparrow Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Lark Sparrow Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Lark Sparrow Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	10,060	3,500 (35%)	3,500 (35%)	6,560 (65%)
<b>Ochoco</b>	74,609	21,140 (28%)	21,140 (28%)	53,469 (72%)
<b>Total</b>	<b>84,669</b>	<b>24,640 (29%)</b>	<b>24,640 (29%)</b>	<b>60,029 (71%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 221. Undisturbed Habitat Comparison for the Lark Sparrow**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Lark Sparrow</b>	58%	65%	1%	72%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the lark sparrow and its habitat.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

**High Density Shrublands – Green-tailed Towhee**

*Existing Condition*

The green-tailed towhee is a fairly common summer species east of the Cascades in central Oregon. This species prefers vigorous shrub stands and high shrub density. This species is known to occupy brushy slopes with intermittent trees, juniper and mountain mahogany stands, riparian areas in dry open country, and ponderosa pine-sagebrush associations. However, for central Oregon it was detected at higher densities in grasslands with 5% shrub cover than in shrub-steppe. It was also detected using juniper stands and ponderosa pine stands with a shrub understory as well (Marshall et al. 2003). Their diet consists primarily of insects and weed seeds but may also consume fruit. Trends are difficult to discern for this species. BBS data (1982-1991) for Oregon shows a marginally significant increase but for the overall population the data shows a slight (1.7% per year) decline (BBS data 1966-2000). Threats include fire suppression which may degrade habitat by reducing forest openings with brushy regrowth (Marshall et al. 2003).

Loggerhead shrike habitat analysis will be used as a surrogate for the green-tailed towhee as they occupy similar plant associations. Habitat for the loggerhead shrike occurs very sparingly on the Deschutes National Forest in the fringe areas near Sisters and outside of Bend and sparingly on the Ochoco National Forest primarily on the Paulina Ranger District in the following plant associations – juniper steppe, juniper woodlands, lodgepole pine, and ponderosa pine in open stands dominated by grasses, forbs, and shrubs with some seedling/saplings.

**Table 222. Existing Designated Route and Dispersed Camping Conditions within Green-tailed Towhee Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Green-tailed Towhee Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	224 (21%)	611 (59%)	208 (20%)	84 (8%)	749 (72%)	209 (20%)	1,043
<b>Ochoco</b>	82,654 (87%)	778 (1%)	12,030 (13%)	82,285 (86%)	1,601 (2%)	11,576 (12%)	95,462
<b>Total</b>	<b>82,878 (86%)</b>	<b>1,389 (1%)</b>	<b>12,238 (13%)</b>	<b>82,369 (85%)</b>	<b>2,350 (2%)</b>	<b>11,785 (12%)</b>	<b>96,505</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 222 shows approximately 224 acres of green-tailed towhee habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 323 acres of habitat occur inside the road effect distance within those areas identified as closed (224 acres) resulting in the potential disturbance of 31% of the green-tailed towhee habitat on the Deschutes NF.

Table 222 shows approximately 82,654 acres of green-tailed towhee habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 38,533 acres of habitat occur inside the road effect distance within those areas identified as closed (82,654 acres) resulting in the potential disturbance of 54% of the green-tailed towhee habitat on the Ochoco NF.

**Table 223. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Green-tailed Towhee on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Green-tailed Towhee Habitat</b>	<b>Acres of Green-tailed Towhee Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Green-tailed Towhee Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Green-tailed Towhee Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	1,043	323 (31%)	323 (31%)	720 (69%)
<b>Ochoco</b>	95,462	38,533 (40%)	51,341 (54%)	44,121 (46%)
<b>Total</b>	<b>96,505</b>	<b>38,856 (40%)</b>	<b>51,664 (54%)</b>	<b>44,841 (46%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Environmental Consequences  
Action Alternatives  
Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 31% of the green-tailed towhee habitat for the Deschutes and 40% of the green-tailed towhee for the Ochoco remains in areas where disturbance is occurring. See Table 225 for more information.

**Table 224. Designated Route and Dispersed Camping Conditions within Green-tailed Towhee Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Green-tailed Towhee Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	1,043 (100%)	0	0	968 (93%)	69 (7%)	6 (0%)	1,043
<b>Ochoco</b>	95,411 (100%)	0	16 (0%)	74,886 (86%)	14,668 (2%)	5,874 (12%)	95,428
<b>Total</b>	<b>96,454 (100%)</b>	<b>0</b>	<b>16 (0%)</b>	<b>75,854 (79%)</b>	<b>14,737 (15%)</b>	<b>5,880 (6%)</b>	<b>96,471</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 225. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Green-tailed Towhee on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Green-tailed Towhee Habitat	Acres of Green-tailed Towhee Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Green-tailed Towhee Habitat Disturbed/Percent of Total Habitat	Total Acres of Green-tailed Towhee Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	1,043	323 (31%)	323 (31%)	720 (69%)
<b>Ochoco</b>	95,428	38,533 (40%)	38,550 (40%)	56,878 (60%)
<b>Total</b>	<b>96,471</b>	<b>38,856 (40%)</b>	<b>38,873 (40%)</b>	<b>57,598 (60%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### Summary

**Table 226. Undisturbed Habitat Comparison for the Green-tailed Towhee**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Green-tailed Towhee</b>	69%	69%	46%	60%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the green-tailed towhee and its habitat.

## **Riparian Woodlands – Dense Shrub Layer – Veery, Yellow-breasted Chat and MacGillivray’s Warbler**

### *Existing Condition*

The veery is a melodious thrush that is an uncommon breeder in Oregon while the yellow-breasted chat, the largest wood warbler, is a rare spring migrant and locally rare summer resident primarily in central Jefferson and northern Deschutes counties while the MacGillivray’s warbler is a common summer resident. There is one known veery breeding site in the Ochoco Mountains which has been small and isolated for at least 30 years (Marshall et al. 2003 p. 480-481). Although not reported annually, yellow-breasted chats have bred along the Deschutes River near Lower Bridge and downstream to Lake Billy Chinook. There have also been records of singing birds in June from the Metolius River and the Deschutes River below Lake Billy Chinook. The most recent records for yellow-breasted chats are from Tumalo State Part in May and the Deschutes River above Steelhead Falls, as well as the Crooked River above Smith Rocks (USDA 2004d).

These species favor dense riparian shrubs (willow, alder, black hawthorn, vines, briars, small trees, and tall shrubs). Habitat is usually adjacent to evergreen forests for the veery and chat (Marshall et al. 2003) and the chat will also inhabit hedgerows, overgrown pastures, scrub country and early successional stages of forest regeneration. MacGillivray’s warblers breed in dense willow thickets near springs and stream bottoms. These species forage from the ground or in low shrubs and thickets for primarily insects but their diet also includes berries and fruit. Nests are typically built on or near the ground in dense thickets.

With so few records of breeding veerys in Oregon the numbers and trends of the veery are relatively unknown. Marshall et al. (2003) advise that the breeding colony in the Ochoco Mountains is sensitive to even moderate habitat loss, with the next closest breeding site being at least 75 miles away. Fragmentation of habitat is also a concern for the veery, making the species more susceptible to brown-headed cowbird parasitism.

Statewide BBS data (1980-1998) show an insignificant increase during breeding season for the yellow-breasted chat. The greatest threat to chat populations east of the Cascades is loss or modification of river riparian and floodplain habitat (Marshall et al. 2003 p. 529-530). The yellow-breasted chat is considered a species of concern for the state of Oregon by USFWS.

There is conflicting BBS trend data for the MacGillivray’s warbler between states and regions within Oregon. This species benefits from industrial forest practices in humid areas that remove overstory, road construction, and other disturbances that result in shrublands. Threats identified for this species east of the Cascades include loss of riparian habitat in drier parts of the its range, forest treatments that remove the understory, intensive grazing, wildfire, prescribed burning, and herbicide treatments (Marshall et al. 2003 p. 522-524).

Habitat for the MacGillivray’s warbler occurs throughout the Deschutes and Ochoco National Forests in the following plant associations – ponderosa pine, Douglas-fir, white fir, western hemlock, silver fir, and mountain hemlock, in dense stands where the average tree size is 15” dbh or greater. Approximately 341,749 acres of habitat currently exist across the Deschutes National Forest and approximately 220,267 acres of habitat occurs on the Ochoco National Forest for a total of 562,016 acres. A specific habitat analysis was not conducted for the veery or the yellow-breasted chat. Therefore, the MacGillivray’s warbler habitat analysis will be used as a surrogate for the veery and yellow-breasted chat habitat as they utilize similar plant associations.

**Table 227. Existing Designated Route and Dispersed Camping Conditions within MacGillivray’s Warbler Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of MacGil. Warbler Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	204,696 (60%)	133,843 (39%)	3,211 (1%)	102,368 (30%)	228,017 (67%)	11,365 (3%)	341,749
<b>Ochoco</b>	55,852 (25%)	79,923 (36%)	84,491 (38%)	33,830 (15%)	100,875 (46%)	85,561 (39%)	220,267
<b>Total</b>	<b>260,548 (46%)</b>	<b>213,766 (38%)</b>	<b>87,702 (16%)</b>	<b>136,198 (24%)</b>	<b>328,892 (59%)</b>	<b>96,926 (17%)</b>	<b>562,016</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 227 shows approximately 204,696 acres of MacGillivray’s warbler habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 153,457 acres of habitat occur inside the road effect distance within those areas identified as closed (204,696 acres) resulting in the potential disturbance of 85% of the MacGillivray’s warbler habitat on the Deschutes NF.

Table 227 shows approximately 55,852 acres of MacGillivray’s warbler habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 83,332 acres of habitat occur inside the road effect distance within those areas identified as closed (55,852 acres) resulting in the potential disturbance of 38% of the MacGillivray’s warbler habitat on the Ochoco NF.

**Table 228. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for MacGillivray’s Warbler on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of MacGillivray’s Warbler/Veery/Townsend’s Warbler Habitat	Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat Disturbed/Percent of Total Habitat	Total Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	341,749	153,457 (45%)	290,510 (85%)	51,239 (15%)
<b>Ochoco</b>	220,267	83,332 (38%)	83,332 (38%)	136,935 (62%)
<b>Total</b>	<b>562,016</b>	<b>236,789 (42%)</b>	<b>373,842 (67%)</b>	<b>188,174 (33%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### *Direct and Indirect Impacts*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 45% of the MacGillivray's warbler habitat for the Deschutes and 38% of the MacGillivray's warbler for the Ochoco remains in areas where disturbance is occurring. See Table 230 for more information.

**Table 229. Designated Route and Dispersed Camping Conditions within MacGillivray's Warbler Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives .**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of MacGil. Warbler Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	341,728 (100%)	0	0	254,305 (74%)	84,969 (25%)	2,453 (1%)	341,728
<b>Ochoco</b>	220,259 (100%)	0	0	176,740 (80%)	31,541 (14%)	11,978 (5%)	220,259
<b>Total</b>	<b>561,987 (100%)</b>	<b>0</b>	<b>0</b>	<b>431,045 (77%)</b>	<b>116,510 (21%)</b>	<b>14,431 (3%)</b>	<b>561,987</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 230. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for MacGillivray’s Warbler on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat	Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat Disturbed/Percent of Total Habitat	Total Acres of MacGillivray’s Warbler/ Veery/ Townsend’s Warbler Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	341,728	153,471 (45%)	153,471 (45%)	188,257 (55%)
<b>Ochoco</b>	220,259	83,332 (38%)	83,332 (38%)	136,927 (62%)
<b>Total</b>	<b>561,987</b>	<b>236,803</b> <b>(42%)</b>	<b>236,803</b> <b>(42%)</b>	<b>325,184</b> <b>(58%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 231. Undisturbed Habitat Comparison for the MacGillivray’s Warbler, Veery, and Yellow-breasted Chat**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>MacGillivray’s Warbler, Veery, and Yellow-breasted Chat</b>	15%	55%	62%	62%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the MacGillivray’s warbler, veery, and yellow-breasted chat and their habitats.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Riparian Woodlands – Bullock’s Oriole, Yellow Warbler, Red-eyed Vireo**

*Existing Condition*

The Bullock’s oriole and yellow warbler are common migrants. The status of the red-eyed vireo is not well known in Oregon but has been reported during the breeding season in Jefferson and Deschutes counties (Lava Lake). Breeding records for the Bullock’s oriole are concentrated in central and eastern Jefferson County but they have been recorded in northern Deschutes and central Crook counties as well (USDA 2004d). All three species’ preferred nesting habitat includes riparian woodlands and thickets, particularly

those dominated by willow, cottonwood, and other deciduous trees along with some understory (Marshall et al. 2003). The yellow warbler and red-eyed vireo nest lower in bushes, saplings, or trees in the fork of branches while the oriole usually attaches a pendant nest to the tip of a long drooping branch typically 25-30' above the ground (USDA 2004d). All three species primarily eat insects but they may also feed on caterpillars, spiders, fruit, and seeds. BBS data (1966-2000) for the yellow warbler show consistent declines averaging 1.7% per year. BBS data (1966-1999) for the red-eyed vireo also shows a decline of 9.1% per year but this was calculated from only 9 of 90 Oregon routes, so caution should be taken with this data. BBS trends for the Bullock's oriole are not statistically significant for Oregon (Sauer et al. 2001 in Marshall et al. 2003). Threats include habitat destruction, especially by grazing, loss of riparian habitat, brown-headed cowbird brood parasitism, and pesticide use. It should also be noted that the oriole statewide distribution is more than 90% on private lands (Kagan et al. 1999).

Habitat for the Bullock's oriole, yellow warbler, and red-eyed vireo includes hardwoods, wetland buffers, and Class 1-4 riparian areas on the Deschutes and alder/willow, aspen, cottonwood, wetland, and Class 1-4 riparian areas on the Ochoco. Suitable habitat specific to the Bullock's oriole, yellow warbler, and red-eyed vireo has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every potential habitat area will contain conditions suitable for nesting.

**Table 232. Existing Designated Route and Dispersed Camping Conditions within Bullock's Oriole, Yellow Warbler, and Red-eyed Vireo on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	487	8	0	496
<b>Wetland Buffer</b>	5,929	7,440	248	13,617
<b>Class 1</b>	4,169	6,986	574	11,729
<b>Class 2</b>	4,094	7,017	325	11,436
<b>Class 3</b>	2,245	730	55	3,030
<b>Class 4</b>	8,211	6,494	561	15,266
<b>Total</b>	<b>25,135</b>	<b>28,675</b>	<b>1,763</b>	<b>55,573</b>

**Table 233. Existing Designated Route and Dispersed Camping Conditions within Bullock's Oriole, Yellow Warbler, and Red-eyed Vireo Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	818	132	628	1,579
<b>Aspen</b>	339	722	101	1,162
<b>Cottonwood</b>	154	19	20	193
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Class 1</b>	3,659	3,836	2,095	9,590
<b>Class 2</b>	6,031	11,574	10,567	28,172
<b>Class 3</b>	2,684	5,498	4,393	12,575
<b>Class 4</b>	6,560	5,103	6,452	18,116
<b>Total</b>	<b>22,537</b>	<b>30,969</b>	<b>25,624</b>	<b>79,132</b>

**Table 234. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Bullock’s Oriole, Yellow Warbler, and Red-eyed Vireo on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat</b>	<b>Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	55,573	19,313 (35%)	49,751 (90%)	5,822 (10%)
<b>Ochoco</b>	79,132	33,636 (43%)	33,636 (43%)	45,496 (57%)
<b>Total</b>	<b>134,705</b>	<b>52,949 (39%)</b>	<b>83,387 (62%)</b>	<b>51,318 (38%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 232 shows approximately 25,135 acres of Bullock’s oriole, yellow warbler, and red-eyed vireo habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 19,313 acres of habitat occur inside the road effect distance within those areas identified as closed (25,135 acres) resulting in the potential disturbance of 90% of the Bullock’s oriole, yellow warbler, and red-eyed vireo habitat on the Deschutes NF.

Table 233 shows approximately 22,537 acres of Bullock’s oriole, yellow warbler, and red-eyed vireo habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 33,636 acres of habitat occur inside the road effect distance within those areas identified as closed (22,537 acres) resulting in the potential disturbance of 43% of the Bullock’s oriole, yellow warbler, and red-eyed vireo habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 53% of the Bullock’s oriole, yellow warbler, and red-eyed vireo habitat for the Deschutes and 43% of the Bullock’s oriole, yellow warbler, and red-eyed vireo habitat for the Ochoco remain in areas where disturbance is occurring. See Table 237 for more information.

**Table 235. Designated Route and Dispersed Camping Conditions within Bullock’s Oriole, Yellow Warbler, and Red-eyed Vireo on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	496	0	0	496
<b>Wetland Buffer</b>	11,788	1,778	50	13,616
<b>Class 1</b>	8,345	3,256	132	11,733
<b>Class 2</b>	9,994	1,437	8	11,439
<b>Class 3</b>	2,769	238	23	3,030
<b>Class 4</b>	12,045	3,119	103	15,267
<b>Total</b>	<b>45,437</b>	<b>9,828</b>	<b>316</b>	<b>55,581</b>

**Table 236. Designated Route and Dispersed Camping Conditions within Bullock’s Oriole, Yellow Warbler, and Red-eyed Vireo Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	1,578	0	0	1,578
<b>Aspen</b>	1,162	0	0	1,162
<b>Cottonwood</b>	194	0	0	194
<b>Wetland Buffer</b>	6,293	1,320	133	7,746
<b>Class 1</b>	7,135	2,096	364	9,595
<b>Class 2</b>	20,196	5,846	2,132	28,174
<b>Class 3</b>	9,502	2,104	974	12,580
<b>Class 4</b>	14,867	2,183	1,070	18,120
<b>Total</b>	<b>60,927</b>	<b>13,549</b>	<b>4,673</b>	<b>79,149</b>

**Table 237. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Bullock’s Oriole, Yellow Warbler, and Red-eyed Vireo on the Deschutes and Ochoco National Forests for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat</b>	<b>Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Bullocks Oriole, Yellow Warbler, and Red-eyed Vireo Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	55,581	19,311 (35%)	29,455 (53%)	26,126 (47%)
<b>Ochoco</b>	79,149	33,628 (43%)	33,636 (43%)	45,496 (57%)
<b>Total</b>	<b>134,730</b>	<b>52,939 (39%)</b>	<b>63,091 (47%)</b>	<b>71,622 (53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Summary

**Table 238. Undisturbed Habitat Comparison for the Bullock’s Oriole, Yellow Warbler, and Red-eyed Vireo**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Bullock’s Oriole, Yellow Warbler, Red-eyed Vireo</b>	10%	47%	57%	57%

### Cumulative Effects

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the Bullock’s oriole, yellow warbler, and red-eyed vireo and their habitats.

### Consistency

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

### Shrub Habitat – Lazuli Bunting and Willow Flycatcher

#### *Existing Condition*

Both the Lazuli bunting and willow flycatcher are summer residents in Oregon. They are generally associated with shrub dominated habitats with an abundance of shrubs, low trees, and herbaceous vegetation (USDA 2004d). The strongest nesting habitat associations for the Lazuli bunting are Jeffrey pine forests, aspen groves, white oak forests, manzanita dominated shrublands, grasslands with white fir and ponderosa pine interspersed, edges of recently cutover or burned forests, and streamside wetlands and shrublands (USDA 2004d). The willow flycatcher is associated with riparian willow thickets with dense shrubs and/or tall herbaceous plants with scattered openings of shorter herbaceous plants (Marshall et al. 2003). The Lazuli bunting forages by gleaning insects from the foliage of trees and shrubs, flycatches, and ground forages for seeds. The willow flycatcher is an aerial insectivore, feeding primarily on the wing (Marshall et al. 2003).

Long-term BBS trends in Oregon for the Lazuli bunting are considered generally stable with a 1.3% per year decline while the willow flycatcher is experiencing population declines of 3.6% per year. Conservation concerns include the loss and degradation of the quality of riparian shrubs from altered hydrologic regimes, brush removal, disturbance and loss of habitat from overgrazing, and brown-headed cowbird parasitism (Marshall et al. 2003).

Habitat for the Lazuli bunting and willow flycatcher includes hardwoods, alpine shrubs, mesic shrubs, wetland buffers, and Class 1-4 riparian areas on the Deschutes and alder/willow, aspen, cottonwood, wetland, and Class 1-4 riparian areas on the Ochoco. Suitable habitat specific to the Lazuli bunting and willow flycatcher has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every potential habitat area will contain conditions suitable for nesting.

**Table 239. Existing Designated Route and Dispersed Camping Conditions within Lazuli Bunting and Willow Flycatcher on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	487	8	0	496
<b>Alpine Shrubs</b>	57	0	0	57
<b>Mesic Shrubs</b>	5,283	838	58	6,179
<b>Wetland Buffer</b>	5,929	7,440	248	13,617
<b>Class 1</b>	4,169	6,986	574	11,729
<b>Class 2</b>	4,094	7,017	325	11,436
<b>Class 3</b>	2,245	730	55	3,030
<b>Class 4</b>	8,211	6,494	561	15,266
<b>Total</b>	<b>30,475</b>	<b>29,513</b>	<b>1,821</b>	<b>61,809</b>

**Table 240. Existing Designated Route and Dispersed Camping Conditions within Lazuli Bunting and Willow Flycatcher Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	818	132	628	1,579
<b>Aspen</b>	339	722	101	1,162
<b>Cottonwood</b>	154	19	20	193
<b>Wetland Buffer</b>	2,292	4,085	1,368	7,745
<b>Class 1</b>	3,659	3,836	2,095	9,590
<b>Class 2</b>	6,031	11,574	10,567	28,172
<b>Class 3</b>	2,684	5,498	4,393	12,575
<b>Class 4</b>	6,560	5,103	6,452	18,116
<b>Total</b>	<b>22,537</b>	<b>30,969</b>	<b>25,624</b>	<b>79,132</b>

**Table 241. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Lazuli Bunting and Willow Flycatcher on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat</b>	<b>Acres of Lazuli Bunting and Willow Flycatcher Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	61,809	21,835 (35%)	53,169 (82%)	8,640 (14%)
<b>Ochoco</b>	79,132	33,636 (43%)	33,636 (43%)	45,496 (57%)
<b>Total</b>	<b>140,941</b>	<b>55,471 (39%)</b>	<b>86,805 (62%)</b>	<b>54,136 (38%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding. Table 239 shows approximately 30,475 acres of Lazuli bunting and willow flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 21,835 acres of habitat occur inside the road effect distance within those areas identified as closed (30,475 acres) resulting in the potential disturbance of 82% of the Lazuli bunting and willow flycatcher habitat on the Deschutes NF.

Table 240 shows approximately 22,537 acres of Lazuli bunting and willow flycatcher habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 33,636 acres of habitat occur inside the road effect distance within those areas identified as closed (22,537 acres) resulting in the potential disturbance of 43% of the Lazuli bunting and willow flycatcher habitat on the Ochoco NF.

**Environmental Consequences**

**Action Alternatives**

***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300’ of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 52% of the Lazuli bunting and willow flycatcher habitat for the Deschutes and 43% of the Lazuli bunting and willow flycatcher habitat for the Ochoco remain in areas where disturbance is occurring. See Table 244 for more information.

**Table 242. Existing Designated Route and Dispersed Camping Conditions within Lazuli Bunting and Willow Flycatcher on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Hardwoods</b>	496	0	0	496
<b>Alpine Shrubs</b>	57	0	0	57
<b>Mesic Shrubs</b>	6,178	0	0	6,178
<b>Wetland Buffer</b>	11,788	1,778	50	13,616
<b>Class 1</b>	8,345	3,256	132	11,733
<b>Class 2</b>	9,994	1,437	8	11,439
<b>Class 3</b>	2,769	238	23	3,030
<b>Class 4</b>	12,045	3,119	103	15,267
<b>Total</b>	<b>51,672</b>	<b>9,828</b>	<b>316</b>	<b>61,816</b>

**Table 243. Designated Route and Dispersed Camping Conditions within Lazuli Bunting and Willow Flycatcher Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Alder/ Willow</b>	1,578	0	0	1,578
<b>Aspen</b>	1,162	0	0	1,162
<b>Cottonwood</b>	194	0	0	194
<b>Wetland Buffer</b>	6,293	1,320	133	7,746
<b>Class 1</b>	7,135	2,096	364	9,595
<b>Class 2</b>	20,196	5,846	2,132	28,174
<b>Class 3</b>	9,502	2,104	974	12,580
<b>Class 4</b>	14,867	2,183	1,070	18,120
<b>Total</b>	<b>60,927</b>	<b>13,549</b>	<b>4,673</b>	<b>79,149</b>

**Table 244. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Lazuli Bunting and Willow Flycatcher on the Deschutes and Ochoco National Forests for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat</b>	<b>Acres of Lazuli Bunting and Willow Flycatcher Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Lazuli Bunting and Willow Flycatcher Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	61,816	21,829 (35%)	31,973 (52%)	29,843 (48%)
<b>Ochoco</b>	79,149	33,636 (43%)	33,636 (43%)	45,513 (57%)
<b>Total</b>	<b>140,965</b>	<b>55,821 (39%)</b>	<b>65,609 (47%)</b>	<b>75,356 (53%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 245. Undisturbed Habitat Comparison for the Lazuli Bunting and Willow Flycatcher**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Lazuli Bunting and Willow Flycatcher</b>	14%	48%	57%	57%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the lazuli bunting and willow flycatcher and their habitats.

## Consistency

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau and Conservation Strategy for the Northern Rocky Mountains. There will be no habitat altered or removed and disturbance will be decreased.

## Cliff and Rimrock associated with Grasslands – Prairie Falcon

### *Existing Condition*

In Oregon, prairie falcons breed primarily east of the Cascade Mountains. Breeding habitat is a combination of rimrock and other outcrops adjacent to open country. Grasslands are preferred habitat but they are found in less productive sagebrush habitats as well (Marshall et al. 2003). Habitat includes cliffs and outcrops that provide essential overhead cover for nesting. Eyrie selected cliffs range in height from 10-460 feet tall (DeLong and Steenhof 2004). A study conducted by Denton (1976) found they can use cliffs less than 100 feet tall including nests found at ground level. Nests are natural depressions found in the rimrock and outcrops or old nests of other avian species (Marshall et al. 2003).

Ground squirrels and other herbivorous rodents are the falcon's principal food source. In the absence of ground squirrels, the prairie falcon keys on western meadowlarks, horned larks and northern flickers for needed fat-rich calories (Steenhof 1998). A principal requirement for foraging is low and sparse vegetation (Marshall et al. 2003).

Population trends for the prairie falcon in Oregon appear to be stable (Marshall et al. 2003). However, raptors are susceptible to changes in their environment. Agricultural chemicals may adversely affect this species reproductive rate (Johnsgard 1990). In addition, agricultural development of grasslands may contribute to loss of habitat (Johnsgard 1990).

Habitat for the prairie falcon includes rock. Suitable habitat specific to the prairie falcon has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because most rock mapped does not equate to cliff habitat suitable for the prairie falcon to nest on or are adjacent to open grassland habitat.

**Table 246. Existing Designated Route and Dispersed Camping Conditions within Prairie Falcon Habitat on the Deschutes National Forest.**

Deschutes National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Rock	12,326	114	178	12,618
<b>Total</b>	<b>12,326</b>	<b>114</b>	<b>178</b>	<b>12,618</b>

**Table 247. Existing Designated Route and Dispersed Camping Conditions within Prairie Falcon Habitat on the Ochoco National Forest.**

Ochoco National Forest				
Special Habitat	Acres Closed	Acres Open	Acres Open Seasonally	Total
Rock	1,502	378	110	1,990
<b>Total</b>	<b>1,502</b>	<b>378</b>	<b>110</b>	<b>1,990</b>

**Table 248. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Prairie Falcon on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Prairie Falcon Habitat</b>	<b>Acres of Prairie Falcon Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Prairie Falcon Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Prairie Falcon Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	12,618	583 (5%)	875 (7%)	11,743 (93%)
<b>Ochoco</b>	1,990	392 (20%)	880 (44%)	1,110 (74%)
<b>Total</b>	<b>14,608</b>	<b>975 (7%)</b>	<b>1,755 (12%)</b>	<b>12,853 (88%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 246 shows approximately 12,326 acres of prairie falcon habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 583 acres of habitat occur inside the road effect distance within those areas identified as closed (12,326 acres) resulting in the potential disturbance of 7% of the prairie falcon habitat on the Deschutes NF.

Table 247 shows approximately 1,502 acres of prairie falcon habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 392 acres of habitat occur inside the road effect distance within those areas identified as closed (1,502 acres) resulting in the potential disturbance of 44% of the prairie falcon habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### **Direct and Indirect Impacts**

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 5% of the prairie falcon habitat for the Deschutes and 20% of the prairie falcon habitat for the Ochoco remains in areas where disturbance is occurring. See Table 251 for more information.

**Table 249. Designated Route and Dispersed Camping Conditions within Prairie Falcon Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	12,605	19	0	12,624
<b>Total</b>	<b>12,605</b>	<b>19</b>	<b>0</b>	<b>12,624</b>

**Table 250. Designated Route and Dispersed Camping Conditions within Prairie Falcon Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Special Habitat</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Rock</b>	1,987	0	0	1,987
<b>Total</b>	<b>1,987</b>	<b>0</b>	<b>0</b>	<b>1,987</b>

**Table 251. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Prairie Falcon on the Deschutes and Ochoco National Forests for Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Prairie Falcon Habitat</b>	<b>Acres of Prairie Falcon Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Prairie Falcon Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Prairie Falcon Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	12,624	583 (5%)	602 (5%)	12,022 (95%)
<b>Ochoco</b>	1,987	392 (20%)	392 (20%)	1,595 (80%)
<b>Total</b>	<b>14,611</b>	<b>975 (7%)</b>	<b>994 (7%)</b>	<b>13,617 (93%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 252. Undisturbed Habitat Comparison for the Prairie Falcon**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Prairie Falcon</b>	93%	95%	74%	80%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the prairie falcon and its habitat.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the Columbia Plateau. There will be no habitat altered or removed and disturbance will be decreased.

### **Subalpine Fir – Blue Grouse and Clark’s Nutcracker**

#### *Existing Condition*

The blue grouse is the largest grouse in Oregon and a short distant migrant throughout coniferous forests. It uses a wide variety of habitats in the spring and summer including forests, forest edges, shrublands, openings, and riparian habitats with dense cover. The Clark’s nutcracker is an uncommon resident along the crest of the Cascades usually occurring above 4,000 feet and lower east of the crest. Nesting for the blue grouse occurs on the ground and habitat is highly variable with most successful nests associated with downed logs. Clark’s nutcracker breeds in open coniferous subalpine forests of pine, spruce, fir, and Douglas-fir and less often in ponderosa pine and juniper (Marshall et al. 2003). The blue grouse feeds on insects, berries, and seeds of a variety of forbs and shrubs. (Marshall et al. 2003 pp.181-183). Wisdom et al. (2000 Vol. 2, p. 248) notes source habitats include a mix of early seral habitats, especially sites with high shrub densities and mature forested habitats. The diet of the Clark’s nutcracker consists of ripe and unripe seeds of whitebark and ponderosa pines, Douglas-fir, and Shasta red fir but also includes spiders, insects, small mammals, carrion and even garbage (Marshall et al. 2003). Trends for summering habitat for the blue grouse were found to be neutral overall for the Columbia Basin while the Southern Cascades shows increases of  $\geq 20\%$  (Wisdom et al. 2000 Vol. 1, pp 44-46). Risks associated with the Clark’s nutcracker include white pine blister rust and the decimation of habitat (Marshall et al. 2003).

Wintering habitat differs for the blue grouse. Wisdom et al. (2000 Vol. 2, p. 177) states that source habitat for blue grouse wintering habitat includes old forest structure containing Douglas-fir, ponderosa pine, western larch, and mixed conifer. Marshall et al. (2003) also includes true fir and subalpine fir habitats as well. Pelgren (1996) found that blue grouse selected for open park-like stands of mature Douglas-fir and ponderosa pine rather than dense forests. Winter diets consist primarily of conifer needles, stems, and buds (Pelgren 1996). Trends for wintering habitat show an overall decline for the Columbia Basin. The Southern Cascades shows the same trends with greater than 20% but less than 60% decline in winter habitat (Wisdom et al. 2000 Vol. 1, pp 44-46). Clark’s nutcrackers move to lower elevations in winter (Marshall et al. 2003).

#### ***Blue Grouse***

Habitat for the blue grouse occurs throughout the higher elevations on the Deschutes National Forest and occurs in minor amounts on the Ochoco National Forest primarily in the northern section of the forest in the following plant associations – lodgepole pine, Douglas-fir, white fir, subalpine fir, Shasta red fir, western hemlock, silver fir, mountain hemlock, and whitebark pine in open stands where the stand ranges from the grass/forb/shrub stage to poles (tree size ranges from 1” dbh to 10”dbh). Approximately 93,289 acres of habitat currently exist across the Deschutes National Forest and approximately 6,602 acres of habitat occurs on the Ochoco National Forest for a total of 99,891 acres.

**Table 253. Existing Designated Route and Dispersed Camping Conditions within Blue Grouse Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Blue Grouse Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	74,388 (80%)	18,670 (20%)	231 (<1%)	56,054 (60%)	35,378 (38%)	1,858 (2%)	93,289
<b>Ochoco</b>	8,104 (96%)	12 (0%)	314 (4%)	3,655 (43%)	4,771 (57%)	5 (0%)	8,431
<b>Total</b>	<b>82,492 (81%)</b>	<b>18,682 (19%)</b>	<b>545 (0%)</b>	<b>59,709 (59%)</b>	<b>40,149 (39%)</b>	<b>1,863 (2%)</b>	<b>101,720</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 253 shows approximately 74,388 acres of blue grouse habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 40,420 acres of habitat occur inside the road effect distance within those areas identified as closed (74,388 acres) resulting in the potential disturbance of 64% of the blue grouse habitat on the Deschutes NF.

Table 253 shows approximately 8,104 acres of blue grouse habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,241 acres of habitat occur inside the road effect distance within those areas identified as closed (8,104 acres) resulting in the potential disturbance of 30% of the blue grouse habitat on the Ochoco NF.

**Table 254. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Blue Grouse on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Blue Grouse Habitat	Acres of Blue Grouse Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Blue Grouse Habitat Disturbed/Percent of Total Habitat	Total Acres of Blue Grouse Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	93,289	40,420 (43%)	59,321 (64%)	33,968 (36%)
<b>Ochoco</b>	8,431	2,241 (27%)	2,568 (30%)	5,863 (70%)
<b>Total</b>	<b>101,720</b>	<b>42,661 (42%)</b>	<b>61,889 (61%)</b>	<b>39,831 (39%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Clark’s Nutcracker**

Habitat for the Clark’s nutcracker occurs on the Deschutes National Forest in the higher elevations in the following plant associations – silver fir, mountain hemlock, and whitebark pine in high elevation stands

where the average tree size is 15”dbh or greater. There is no habitat on the Ochoco National Forest. Approximately 92,588 acres of habitat currently exist across the Deschutes National Forest.

**Table 255. Existing Designated Route and Dispersed Camping Conditions within Clark’s Nutcracker Habitat on the Deschutes and Ochoco National Forests.**

Forest	Existing Designated Routes			Existing Dispersed Camping			Total Acres of Clark’s Nut. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	89,298 (96%)	3,287 (4%)	3 (0%)	53,592 (58%)	38,228 (41%)	768 (1%)	92,588
<b>Ochoco</b>	0	0	0	0	0	0	0
<b>Total</b>	<b>89,298 (96%)</b>	<b>3,287 (4%)</b>	<b>3 (0%)</b>	<b>53,592 (58%)</b>	<b>38,228 (41%)</b>	<b>768 (1%)</b>	<b>92,588</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 255 shows approximately 89,298 acres of Clark’s nutcracker habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 2,825 acres of habitat occur inside the road effect distance within those areas identified as closed (89,298 acres) resulting in the potential disturbance of 7% of the Clark’s nutcracker habitat on the Deschutes NF. There is no habitat on the Ochoco NF.

**Table 256. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Clark’s Nutcracker on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

Forest	Total Acres of Clark’s Nutcracker Habitat	Acres of Clark’s Nutcracker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Clark’s Nutcracker Habitat Disturbed/Percent of Total Habitat	Total Acres of Clark’s Nutcracker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	92,588	2,825 (3%)	6,115 (7%)	86,473 (93%)
<b>Ochoco</b>	0	0	0	0
<b>Total</b>	<b>92,588</b>	<b>2,825 (3%)</b>	<b>6,115 (7%)</b>	<b>86,473 (93%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

## Environmental Consequences

### Action Alternatives

#### Direct and Indirect Impacts

#### Blue Grouse

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action

Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 43% of the blue grouse habitat for the Deschutes and 27% of the blue grouse for the Ochoco remains in areas where disturbance is occurring. See Table 258 for more information.

**Table 257. Designated Route and Dispersed Camping Conditions within Blue Grouse Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Blue Grouse Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	93,288 (100%)	0	0	72,498 (78%)	20,445 (22%)	345 (0%)	93,289
<b>Ochoco</b>	8,418 (100%)	0	0	7,105 (84%)	1,211 (14%)	102 (1%)	8,418
<b>Total</b>	<b>101,706 (100%)</b>	<b>0</b>	<b>0</b>	<b>79,603 (78%)</b>	<b>21,656 (21%)</b>	<b>447 (0%)</b>	<b>101,707</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 258. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Blue Grouse on the Deschutes and Ochoco National Forests for Action Alternatives.**

Forest	Total Acres of Blue Grouse Habitat	Acres of Blue Grouse Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Blue Grouse Habitat Disturbed/Percent of Total Habitat	Total Acres of Blue Grouse Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	93,289	40,422 (43%)	40,422 (43%)	52,866 (57%)
<b>Ochoco</b>	8,418	2,241 (27%)	2,241 (27%)	6,177 (73%)
<b>Total</b>	<b>101,707</b>	<b>42,663 (42%)</b>	<b>42,663 (42%)</b>	<b>59,043 (58%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

### *Clark's Nutcracker*

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the

disturbance potential. Therefore, only 3% of the Clark’s nutcracker habitat for the Deschutes remains in areas where disturbance is occurring. See Table 260 for more information.

**Table 259. Designated Route and Dispersed Camping Conditions within Clark’s Nutcracker Habitat on the Deschutes and Ochoco National Forests for the Action Alternatives.**

Forest	Action Alternatives Designated Routes			Action Alternatives Dispersed Camping			Total Acres of Clark’s Nut. Habitat
	Acres Closed	Acres Open	Acres Open Seasonally	Acres Closed	Acres Open	Acres Open Seasonally	
<b>Deschutes</b>	92,588 (100%)	0	0	90,122 (97%)	2,461 (3%)	5 (0%)	92,588
<b>Ochoco</b>	0	0	0	0	0	0	0
<b>Total</b>	<b>92,588 (100%)</b>	<b>0</b>	<b>0</b>	<b>91,122 (97%)</b>	<b>2,461 (3%)</b>	<b>5 (0%)</b>	<b>92,588</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Table 260. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for Clark’s Nutcracker on the Deschutes and Ochoco National Forests for Action Alternatives Designated Routes.**

Forest	Total Acres of Clark’s Nutcracker Habitat	Acres of Clark’s Nutcracker Habitat within the Road Effect Distance/Percent of Total Habitat	Total Acres of Clark’s Nutcracker Habitat Disturbed/Percent of Total Habitat	Total Acres of Clark’s Nutcracker Habitat Undisturbed/Percent of Total Habitat
<b>Deschutes</b>	92,588	2,825 (3%)	2,825 (3%)	89,763 (97%)
<b>Ochoco</b>	0	0	0	0
<b>Total</b>	<b>92,588</b>	<b>2,825 (3%)</b>	<b>2,825 (3%)</b>	<b>89,763 (97%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 261. Undisturbed Habitat Comparison for the Blue Grouse and Clark’s Nutcracker**

Species	Alternative 1 – Deschutes	Alternatives 2& 3 - Deschutes	Alternative 1 – Ochoco	Alternatives 2& 3 - Ochoco
<b>Blue Grouse</b>	36%	57%	70%	73%
<b>Clark’s Nutcracker</b>	93%	97%	-	-

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the blue grouse and Clark’s nutcracker and their habitats.

**Consistency**

Implementation of the Travel Management Rule is also consistent with the biological objectives outlined in the Conservation Strategy for the East-slope Cascades Mountains. There will be no habitat altered or removed and disturbance will be decreased.

**Freshwater Lakes – Eared Grebe**

*Existing Condition*

The eared grebe is uncommon in the Cascades while breeding occurs primarily east of the Cascades. There is known breeding at Davis Lake in Klamath County and Rabbit Valley Reservoir in Crook County (Marshall et al. 2003). This species is able to utilize hypersaline lakes. The grebe nests near the shore on small freshwater lakes and reservoirs where open water is intermixed with emergent vegetation such as hardstem bulrush and cattails. Nests are found in water 1-4 feet deep on vegetation mats often in colonial groups. The eared grebe feeds on invertebrates and insects. Grebe sitings are very rare in the winter near the Bend area but greater numbers occur in milder climates such as Gutierrez Ranch in Crook County (Marshall et al. 2003). The eared grebe population seems to be doing well. Threats to the species include annual changes in water levels for these colony nesters which may change nesting locations from year to year. In addition, they are negatively impacted by fishing, boating, and other disturbances; rising and receding water levels; and waves from high winds (Marshall et al. 2003).

Habitat for the eared grebe on the Deschutes and Ochoco NF's includes lakes. Lakes include the water body and associated buffer. Suitable habitat specific to the eared grebe has not been mapped at this time as assessments are generally conducted at a project level. Habitat will be over-estimated for this analysis because not every lake or pond mapped provides suitable habitat. This query also includes the entire water body, rather than just the areas where open water is intermixed with emergent vegetation required for nesting by this species.

**Table 262. Existing Designated Route and Dispersed Camping Conditions within Eared Grebe Habitat on the Deschutes National Forest.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Lake</b>	10,412	6,703	991	18,106
<b>Total</b>	<b>10,412</b>	<b>6,703</b>	<b>991</b>	<b>18,106</b>

**Table 263. Existing Designated Route and Dispersed Camping Conditions within Eared Grebe Habitat on the Ochoco National Forest.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Lake</b>	147	120	179	447
<b>Total</b>	<b>147</b>	<b>120</b>	<b>179</b>	<b>447</b>

**Table 264. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Eared Grebe on the Deschutes and Ochoco National Forests for Existing Designated Routes.**

<b>Forest</b>	<b>Total Acres of Eared Grebe Habitat</b>	<b>Acres of Eared Grebe Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Eared Grebe Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Eared Grebe Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	18,106	3,439 (19%)	11,133 (61%)	6,973 (39%)
<b>Ochoco</b>	447	214 (48%)	214 (48%)	233 (52%)
<b>Total</b>	<b>18,553</b>	<b>3,653 (20%)</b>	<b>11,347 (61%)</b>	<b>7,206 (39%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

Table 262 shows approximately 10,412 acres of eared grebe habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 3,439 acres of habitat occur inside the road effect distance within those areas identified as closed (10,412 acres) resulting in the potential disturbance of 61% of the eared grebe habitat on the Deschutes NF.

Table 263 shows approximately 147 acres of eared grebe habitat occurring within areas closed to travel off designated routes. Although these areas are closed to travel off designated routes, there are still open roads traversing through habitat, resulting in potential disturbance. Approximately 214 acres of habitat occur inside the road effect distance within those areas identified as closed (147 acres) resulting in the potential disturbance of 48% of the eared grebe habitat on the Ochoco NF.

## **Environmental Consequences**

### **Action Alternatives**

#### ***Direct and Indirect Impacts***

Implementation of the Action Alternatives will close both forests to travel off designated routes. Therefore, effects to habitat will be greatly reduced due to no cross country travel and the decrease in acres where motorized access for dispersed camping is allowed. Except for those areas allowed open under the Action Alternatives (e.g. mineral sources and pits), travel through existing habitat will only occur on designated routes and during the allowed season of use. In addition, motorized access for dispersed camping will be limited to existing, defined, or designated sites in riparian areas and require a 30 foot set-back for both alternatives or within 300' of a designated route outside special provision areas which will decrease the disturbance potential. Therefore, only 25% of the eared grebe habitat for the Deschutes and 48% of the eared grebe habitat for the Ochoco remains in areas where disturbance is occurring. See Table 267 for more information.

**Table 265. Designated Route and Dispersed Camping Conditions within Eared Grebe Habitat on the Deschutes National Forest for the Action Alternatives.**

<b>Deschutes National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Lake Buffer</b>	17,059	862	192	18,113
<b>Total</b>	<b>17,059</b>	<b>862</b>	<b>192</b>	<b>18,113</b>

**Table 266. Designated Route and Dispersed Camping Conditions within Eared Grebe Habitat on the Ochoco National Forest for the Action Alternatives.**

<b>Ochoco National Forest</b>				
<b>Riparian Type</b>	<b>Acres Closed</b>	<b>Acres Open</b>	<b>Acres Open Seasonally</b>	<b>Total</b>
<b>Lake Buffer</b>	343	64	40	447
<b>Total</b>	<b>343</b>	<b>64</b>	<b>40</b>	<b>447</b>

**Table 267. Acres within the Road Effect Distance and Acres of Disturbed and Undisturbed Habitat for the Eared Grebe on the Deschutes and Ochoco National Forests for the Action Alternatives.**

<b>Forest</b>	<b>Total Acres of Eared Grebe Habitat</b>	<b>Acres of Eared Grebe Habitat within the Road Effect Distance/Percent of Total Habitat</b>	<b>Total Acres of Eared Grebe Habitat Disturbed/Percent of Total Habitat</b>	<b>Total Acres of Eared Grebe Habitat Undisturbed/Percent of Total Habitat</b>
<b>Deschutes</b>	18,113	3,439 (19%)	4,493 (25%)	13,620 (75%)
<b>Ochoco</b>	447	214 (48%)	214 (48%)	233 (52%)
<b>Total</b>	<b>18,560</b>	<b>3,653 (20%)</b>	<b>4,707 (25%)</b>	<b>13,853 (75%)</b>

Percentages show percentage of total suitable habitat. Small differences in numbers are due to rounding.

**Summary**

**Table 268. Undisturbed Habitat Comparison for the Eared Grebe**

<b>Species</b>	<b>Alternative 1 – Deschutes</b>	<b>Alternatives 2&amp; 3 - Deschutes</b>	<b>Alternative 1 – Ochoco</b>	<b>Alternatives 2&amp; 3 - Ochoco</b>
<b>Eared Grebe</b>	39%	75%	52%	52%

**Cumulative Effects**

Implementation of action alternatives for the Travel Management Rule will not result in any direct or indirect adverse impacts and therefore, will not result in any cumulative impacts for the eared grebe and its habitat.

**B-7 Range**

The following tables represent an allotment status breakdown by Forest and District.

**Table B-7.1.1 - Allotment status breakdown by Forest and District**

DISTRICT	STATUS	#	ALLOTMENT NAME
<b>DESCHUTES NATIONAL FOREST</b>			
Bend/Fort Rock Ranger District	ACTIVE	1	CINDER CONE
		2	GEBHARDT WELL
		3	PINE MOUNTAIN
		4	QUARTZ MOUNTAIN
		5	SAND SPRINGS
	CLOSED	1	ABBOT
		2	CRATER BUTTES
		3	RYAN RANCH
		4	SPARKS LAKE
		5	TETHEROW MEADOW
	VACANT	1	BESSIE
		2	BIG HOLE
		3	CABIN LAKE
		4	GEBHARDT FLAT
		5	HOLE IN THE GROUND
6		SAND FLAT	
7		SPRING BUTTE	
8		SUGAR PINE	
Crescent Ranger District	CLOSED	1	BIG MARSH
		2	LITTLE DESCHUTES
		3	LITTLE DESCHUTES ON-OFF
	VACANT	1	CRESCENT BUTTE
		2	CRESCENT CREEK
		3	DAVIS LAKE
		4	FREMONT SIDING
		5	GILCHRIST
		6	MOWICH
Sisters Ranger District	ACTIVE	1	INDIAN FORD
	CLOSED	1	GLAZE MEADOW
	VACANT	1	CACHE MOUNTAIN
		2	FUELBREAKS
		3	GARRISON BUTTE
		4	HOLZMAN
		5	WHYCHUS CREEK

DISTRICT	STATUS	#	ALLOTMENT NAME
<b>OCHOCO NATIONAL FOREST</b>			
Crooked River Natl Grassland	ACTIVE	1	BLANCHARD
		2	BOYCE
		3	COTTER POND
		4	CYRUS
		5	DEVINE
		6	EAST WINTER
		7	FOX/DUMP
		8	GORGE
		9	GRIZZLY
		10	HAYSTACK
		11	HOLMES-WILLIAMS
		12	JUNIPER BUTTE
		13	KENNEDY
		14	LONE PINE
		15	NORTH
		16	ROUND BUTTE
		17	RUSH
		18	STEER-ALEXANDER
		19	STEER-BOYCE
		20	WEANING
	CLOSED	1	CLEVINGER
		2	GOLDMINE/FALLS
		3	LOWER DESERT
		4	PENNINSULA
		5	WHYCHUS CREEK
	VACANT	1	CANADIAN BENCH
Lookout Mountain Ranger District	ACTIVE	1	ANTLER
		2	BADGER
		3	BEAR CREEK
		4	BIG SUMMIT
		5	BIG TABLE
		6	BRUSH CREEK
		7	BURN
		8	CANYON CREEK
		9	COX
		10	CRYSTAL SPRINGS
		11	DOUBLE CABIN
		12	EAST MAURY
		13	ELKHORN
		14	FOX CANYON
		15	GRAY PRAIRIE
		16	INDIAN CREEK
		17	KLOOTCHMAN
		18	LEWIS ROCK
		19	LOST HORSE

DISTRICT	STATUS	#	ALLOTMENT NAME
		20	LYTLE CREEK
		21	MARKS CREEK
		22	MILL CREEK
		23	NORTH FORK
		24	OLD DRY CREEK
		25	ORTMAN
		26	PISGAH
		27	PRAIRIE PARCELS
		28	PRINGLE
		29	RESERVOIR
		30	SHERWOOD
		31	SHOTGUN
		32	SNOWSHOE
		33	TROUT CREEK
		34	WEST MAURY
		35	WILDCAT
			CLOSED
VACANT	1		ALLEN CREEK
	2	BARESIDE	
	3	CRAIG	
	4	SLAYTON	
Paulina Ranger District	ACTIVE	1	BUCK PASTURE
		2	DEEP CREEK
		3	DERR
		4	DRY CORNER
		5	HAPPY
		6	HEISLER
		7	LITTLE SUMMIT
		8	ROBA
		9	SUNFLOWER
		10	WIND CREEK
		11	WOLF CREEK
		CLOSED	1
	VACANT	1	ROCK CREEK

**Table B-7.1.2 – Deschutes National Forest motorized Affected Environment access off designated routes (acres) by allotment status, ranger district, and allotment name.**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access Off Designated Routes	Existing - Closed to OHV Access	Existing - Closed to OHV Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes Allowed Seasonally	Grand Total	
Active	BEND/FORT ROCK	CINDER CONE		4,799		31,122	10,215	218	46,353	
		GEBHARDT WELL					4,080	13,323	17,403	
		PINE MOUNTAIN		2,336		13,232	24	560	16,152	
		QUARTZ MOUNTAIN				29,991		3,679	33,670	
		SAND SPRINGS		1,084		48,906		4,951	54,940	
BEND/FORT ROCK Total			8,219		123,251	14,318	22,731	168,519		
SISTERS		INDIAN FORD				102		102		
SISTERS Total						102		102		
Active Total				8,219		123,353	14,318	22,731	168,622	
Closed	BEND/FORT ROCK	ABBOT		370					370	
		CRATER BUTTES				27	25,840	556	26,423	
		RYAN RANCH		69					69	
		SPARKS LAKE	16	18		196			230	
		TETHEROW MEADOW		5		227			232	
	BEND/FORT ROCK Total			16	462		450	25,840	556	27,324
CRESCENT	BIG MARSH		5			10,580	1,554		12,139	
		LITTLE DESCHUTES	6,647			12,296	12,653		31,596	
CRESCENT Total		LITTLE DESCHUTES ON-OFF				8	42		50	
SISTERS		GLAZE MEADOW		33		1,090			1,123	
SISTERS Total				33		1,090			1,123	
Closed Total			6,667	495		24,424	40,088	556	72,231	
Vacant	BEND/FORT ROCK	BESSIE		3,435		8,453	12,573		24,461	
		BIG HOLE	1,152			146	12,900		14,197	
		CABIN LAKE				9,719	14,481	1,999	26,199	
		GEBHARDT FLAT						3,082	3,082	
		HOLE IN THE GROUND					6,539	13,843	20,381	
		SAND FLAT	2,612			364	25,967		28,942	
		SPRING BUTTE	4,044			651	688		5,383	
		SUGAR PINE			0		22,243		22,243	
	BEND/FORT ROCK Total			7,808	3,435	0	19,331	95,390	18,924	144,889
	CRESCENT	BIG HOLE	CRESCENT BUTTE				2,143	2	898	2,159
CRESCENT CREEK				885		959	34,754		36,597	
DAVIS LAKE				9,339		359	621		10,319	
FREMONT SIDING						11,511	146	4,482	16,139	
GILCHRIST				2,841			12,197		15,038	
MOWICH						6,569	10,910		17,479	
CRESCENT Total		SPRING BUTTE				1	1,879		1,880	
SISTERS	CACHE MOUNTAIN	FUELBREAKS	0	6,098		23,896	538	1,533	32,065	
		GARRISON BUTTE	183	22,972		35,928	15,297		74,379	
		HOLZMAN		753		15,485	0		16,238	
		WHYCHUS CREEK		79					79	
		SISTERS Total			8,215	654		10,970	4,479	
Vacant Total			16,206	47,056	0	127,152	178,371	25,838	394,624	
Grand Total			22,873	55,770	0	274,930	232,778	49,126	635,476	

**Table B-7.1.3 – Ochoco National Forest and Crooked River National Grassland Affected Environment motorized access off designated routes (acres) by allotment status, ranger district, and allotment name.**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access Off Designated Routes	Existing - Closed to OHV Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes Allowed Seasonally	Grand Total	
Active	CR GRASSLAND	BLANCHARD		7,682				7,682	
		BOYCE		5,653				5,653	
		CYRUS	929	8,379			20	9,328	
		DEVINE		85				85	
		EAST WINTER		1,255				1,255	
		FOX	85	6,130				6,216	
		GOLDMINE/FALLS	21	699				719	
		GORGE	137	1,046				1,183	
		GRIZZLY	17	9,162				9,179	
		HAYSTACK	3,036	2,028				5,064	
		HOMES-WILLIAMS	145	2,518				2,663	
		JUNIPER BUTTE	1,905	1,118				3,023	
		KENNEDY		719				719	
		LONE PINE	222	9,002				9,224	
		NORTH	38	10,268				10,306	
		ROUND BUTTE		2,452				2,452	
		RUSH	87	6,412				6,499	
		STEER		2,296				2,296	
		WEANING	23	214				237	
	CR GRASSLAND Total			6,643	77,118			20	83,781
		LOOKOUT MTN	ANTLER			282	379		662
			BADGER	1,059	4,223	2,433	22,176	4	29,895
			BEAR CREEK	438	2	1,823	9,119	6,018	17,400
			BIG SUMMIT	615		6,482	17,358	2	24,457
			BIG TABLE					793	793
			BRUSH CREEK	332	6,205	232	3,760		10,529
			BURN			329		2,846	3,175
			COX					41	41
			CRYSTAL SPRINGS		13	1,048	5,329	801	7,192
	DEEP CREEK				0		0	0	
	DOUBLE CABIN			411	1,917	5,881	3,176	11,385	
	EAST MAURY		348		76	6,085	2,892	9,401	
	ELKHORN		5,403	1,304	1,011	7,303		15,020	
	FOX CANYON		825		7,445	4,737		13,008	
	GRAY PRAIRIE		514	722	31	9,852		11,119	
	HAPPY		10	3	3	94	6	115	
	INDIAN CREEK						525	525	
	KLOOTCHMAN		567		1,367	12,016	1,348	15,298	
	LEWIS ROCK						39	39	
	LOST HORSE			6,764		1	6,765		
	LYTLE CREEK					39	39		
	MARKS CREEK	425	4	1,882	6,444	1,786	10,541		
	MILL CREEK	24,059	1,051	2,392	16,382	10,911	54,795		
	NORTH FORK			6,504	18		6,522		
	OLD DRY CREEK					228	228		
	ORTMAN					562	844		
	PISGAH	266	2,519	308	1,987		5,079		
	PRAIRIE PARCELS				432		432		
	PRINGLE		1,308	4,954	821		7,084		
	RESERVOIR	396	9,594	3,720	16,031	4,433	34,175		
	ROBA	78		276			355		
	SHERWOOD	803		3,430	8,282	3,426	15,941		
	SHOTGUN	280	25	635	7,577	976	9,494		
	SNOWSHOE	175	45	699	1,766	26	2,710		
	TROUT CREEK	4,375	29	932	15,249	5,779	26,364		

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access Off Designated Routes	Existing - Closed to OHV Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes	Existing - Open to Motorized Access Off Designated Routes Allowed Seasonally	Grand Total
		WILDCAT	3,896	14	3,821	7,856	3,209	18,796
		LOOKOUT MTN Total	44,863	27,471	60,797	188,060	49,026	370,217
	PAULINA	BADGER			6		42	47
		BIG SUMMIT	1		177		116	294
		BUCK PASTURE					451	451
		DEEP CREEK	264	144	373		16,796	17,577
		DERR	406	21	820		11,227	12,474
		DRY CORNER	642				3,345	3,987
		HAPPY	653	17	589		17,252	18,510
		HEISLER	280	19	3		8,841	9,142
		LITTLE SUMMIT	179	29	547		14,949	15,704
		RAGER HORSE PASTURE		257	1		8	266
		ROBA	252	52	995		16,613	17,913
		SUNFLOWER	818	126	356		26,264	27,565
		WIND CREEK	1,518	374	826		15,916	18,633
		WOLF CREEK	819	228	1,945		38,606	41,599
		PAULINA Total	5,833	1,266	6,638		170,425	184,162
Active Total			57,340	105,854	67,435	188,060	219,470	638,160
Closed	CR GRASSLAND	CLEVANGER	66	572				639
		LOWER DESERT	159	10,050				10,208
		PENNINSULA		1,655				1,655
		WHYCHUS CREEK		5,193				5,193
		CR GRASSLAND Total	225	17,470				17,695
		LOOKOUT MTN	LOOKOUT	311	2,306		4	
		LOOKOUT MTN Total	311	2,306		4		2,621
	PAULINA	BEARSKULL/COTTONWOOD	25,902	100	1,285	27	15,902	43,215
		PAULINA Total	25,902	100	1,285	27	15,902	43,215
Closed Total			26,438	19,876	1,285	31	15,902	63,531
Vacant	CR GRASSLAND	CANADIAN BENCH		648				648
		CR GRASSLAND Total		648				648
	LOOKOUT MTN	ALLEN CREEK					272	272
		CRAIG					112	112
		SLAYTON					159	159
		LOOKOUT MTN Total					542	542
	PAULINA	ROCK CREEK	1,165	420	339	4	4,725	6,652
		PAULINA Total	1,165	420	339	4	4,725	6,652
Vacant Total			1,165	1,069	339	4	5,267	7,843
(blank)	CR GRASSLAND		19	461				480
		CR GRASSLAND Total	19	461				480
	LOOKOUT MTN		26	2	81	285	96	489
		LOOKOUT MTN Total	26	2	81	285	96	489
(blank) Total			45	463	81	285	96	968
Grand Total			84,988	127,261	69,139	188,379	240,735	710,502

**Table B-7.1.4 – Deschutes National Forest Affected Environment motorized access for dispersed camping (acres) by allotment status, ranger district, and allotment name.**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping - Designated Sites Only	Existing - Open to Motorized Access For Dispersed Camping Seasonally	Grand Total	
Active	BEND/FORT ROCK	CINDER CONE		16,879	29,474			46,353	
		GEBHARDT WELL			4,080		13,323	17,403	
		PINE MOUNTAIN		14,879		1,273		16,152	
		QUARTZ MOUNTAIN			3,679		29,991	33,670	
		SAND SPRINGS		13,634	6,157		35,150	54,940	
BEND/FORT ROCK Total				45,392	44,663		78,464	168,519	
Active Total				45,392	44,663		78,464	168,519	
Closed	BEND/FORT ROCK	ABBOT				370		370	
		CRATER BUTTES			25,867		556	26,423	
		RYAN RANCH		69				69	
		SPARKS LAKE	16	18	196			230	
		TETHEROW MEADOW			213	5	14	232	
	BEND/FORT ROCK Total			16	87	26,277	375	570	27,324
	CRESCENT	BIG MARSH		5		12,134			12,139
		LITTLE DESCHUTES		6,647		24,949			31,596
LITTLE DESCHUTES ON-OFF					50			50	
CRESCENT Total			6,652		37,133			43,784	
SISTERS	GLAZE MEADOW			33	1,090			1,123	
SISTERS Total				33	1,090			1,123	
Closed Total			6,667	120	64,499	375	570	72,231	
Vacant	BEND/FORT ROCK	BESSIE		11,887	12,574			24,461	
		BIG HOLE	1,152		13,045			14,197	
		CABIN LAKE			17,827		8,371	26,199	
		GEBHARDT FLAT			19		3,063	3,082	
		HOLE IN THE GROUND			7,130		13,251	20,381	
		SAND FLAT	2,612		26,330			28,942	
		SPRING BUTTE	4,044		1,338			5,383	
		SUGAR PINE			22,243			22,243	
	BEND/FORT ROCK Total			7,808	11,887	100,507		24,686	144,889
	CRESCENT	BIG HOLE				2,159			2,159
		CRESCENT BUTTE				583		2,460	3,043
		CRESCENT CREEK		885	35,712			36,597	
		DAVIS LAKE		9,339	621		359	10,319	
		FREMONT SIDING			1,584		14,556	16,139	
		GILCHRIST		2,841	12,197			15,038	
MOWICH				17,479			17,479		
SPRING BUTTE			1,880			1,880			
CRESCENT Total				13,065	72,216		17,374	102,656	
SISTERS	CACHE MOUNTAIN		0	11,902	16,383		3,780	32,065	
	FUELBREAKS		183	53,450	20,152	476	118	74,379	
	GARRISON BUTTE			753	15,485			16,238	
	HOLZMAN			3		76		79	
	INDIAN FORD				102			102	
WHYCHUS CREEK		8,215	1,137	14,964		1	24,318		
SISTERS Total			8,398	67,245	67,087	552	3,900	147,182	
Vacant Total			16,206	92,198	239,810	552	45,960	394,726	
Grand Total			22,873	137,710	348,972	926	124,994	635,476	

**Table B-7.1.5 – Ochoco National Forest and Crooked River National Grassland Affected Environment motorized access for dispersed camping (acres) by allotment status, ranger district, and allotment name.**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping Seasonally	Grand Total	
Active	CR GRASSLAND	BLANCHARD		7,682			7,682	
		BOYCE		5,653			5,653	
		CYRUS	929	8,399			9,328	
		DEVINE		85			85	
		EAST WINTER		1,255			1,255	
		FOX	85	6,130			6,216	
		GORGE	137	1,046			1,183	
		GRIZZLY	17	9,162			9,179	
		HAYSTACK	3,036	2,028			5,064	
		HOMES-WILLIAMS	145	2,518			2,663	
		JUNIPER BUTTE	1,905	1,118			3,023	
		KENNEDY		719			719	
		LONE PINE	222	9,002			9,224	
		NORTH	38	10,268			10,306	
		ROUND BUTTE		2,452			2,452	
	RUSH	87	6,412			6,499		
	STEER		2,296			2,296		
	WEANING	23	214			237		
	CR GRASSLAND Total			6,623	76,439			83,061
	LOOKOUT MTN	ANTLER				662		662
		BADGER	1,059	4,223	24,613			29,895
		BEAR CREEK	438	2	10,773	6,187		17,400
		BIG SUMMIT	615		19,699	4,143		24,457
		BIG TABLE				793		793
		BRUSH CREEK	332	6,205	3,992			10,529
		BURN			329	2,846		3,175
		COX				41		41
		CRYSTAL SPRINGS		13	6,377	801		7,192
		DEEP CREEK			0			0
		DOUBLE CABIN		411	7,798	3,176		11,385
		EAST MAURY	348		6,161	2,892		9,401
		ELKHORN	5,403	1,304	8,314			15,020
		FOX CANYON	825		5,590	6,592		13,008
		GRAY PRAIRIE	514	722	9,861	22		11,119
		HAPPY	10	3	102			115
		INDIAN CREEK			525			525
		KLOOTCHMAN	567		13,383	1,348		15,298
		LEWIS ROCK			39			39
		LOST HORSE			1	6,764		6,765
		LYTLE CREEK				39		39
		MARKS CREEK	425	4	8,326	1,786		10,541
		MILL CREEK	24,059	1,051	18,774	10,911		54,795
		NORTH FORK			18	6,504		6,522
OLD DRY CREEK					228		228	
ORTMAN				562	282		844	
PISGAH		266	2,519	2,295			5,079	
PRAIRIE PARCELS				432			432	
PRINGLE		1,308	821	4,954		7,084		
RESERVOIR	396	9,594	19,752	4,433		34,175		
ROBA	78		273	3		355		
SHERWOOD	803		11,631	3,507		15,941		
SHOTGUN	280	25	8,128	1,060		9,494		
SNOWSHOE	175	45	2,464	26		2,710		
TROUT CREEK	4,375	29	16,181	5,779		26,364		
WILDCAT	3,896	14	10,195	4,692		18,796		
LOOKOUT MTN Total			44,863	27,471	218,068	79,814	370,217	
PAULINA	BADGER				6	42	47	
	BIG SUMMIT	1		184	109		294	
	BUCK PASTURE				451		451	

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Existing - Closed to Motorized Access	Existing - Closed to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping	Existing - Open to Motorized Access For Dispersed Camping Seasonally	Grand Total
		DEEP CREEK	264	144	1,857	15,312	17,577
		DERR	406	21	2,157	9,890	12,474
		DRY CORNER	642		276	3,069	3,987
		HAPPY	653	17	2,076	15,765	18,510
		HEISLER	280	19	413	8,431	9,142
		LITTLE SUMMIT	179	29	2,122	13,374	15,704
		RAGER HORSE PASTURE		257	2	7	266
		ROBA	252	52	2,586	15,022	17,913
		SUNFLOWER	818	126	2,129	24,491	27,565
		WIND CREEK	1,518	374	2,199	14,542	18,633
		WOLF CREEK	819	228	5,409	35,143	41,599
		PAULINA Total	5,833	1,266	21,415	155,648	184,162
Active Total			57,319	105,175	239,483	235,463	637,440
Closed	CR GRASSLAND	CLEVINGER	66	572			639
		GOLDMINE/FALLS	21	699			719
		LOWER DESERT	159	10,050			10,208
		PENNINSULA		1,655			1,655
		WHYCHUS CREEK		5,193			5,193
		CR GRASSLAND Total	246	18,168			18,414
		LOOKOUT MTN	LOOKOUT	311	2,306	4	2,621
		LOOKOUT MTN Total		311	2,306	4	2,621
	PAULINA	BEARSKULL/COTTONWOOD	25,902	100	3,668	13,545	43,215
	PAULINA Total		25,902	100	3,668	13,545	43,215
Closed Total			26,459	20,575	3,672	13,545	64,251
Vacant	CR GRASSLAND	CANADIAN BENCH		648			648
		CR GRASSLAND Total		648			648
	LOOKOUT MTN	ALLEN CREEK				272	272
		CRAIG				112	112
		SLAYTON				159	159
		LOOKOUT MTN Total				542	542
	PAULINA	ROCK CREEK	1,165	420	1,046	4,022	6,652
	PAULINA Total		1,165	420	1,046	4,022	6,652
Vacant Total			1,165	1,069	1,046	4,564	7,843
(blank)	CR GRASSLAND		19	461			480
		CR GRASSLAND Total	19	461			480
	LOOKOUT MTN		26	2	365	96	489
		LOOKOUT MTN Total	26	2	365	96	489
	(blank)	(blank)					
		(blank) Total					
(blank) Total			45	463	365	96	968
Grand Total			84,988	127,281	244,566	253,667	710,502

The tables below present acreage open and closed to motorized travel off designated routes by allotment and allotment status.

**Table B-7.1.6 - Deschutes National Forest motorized access off designated routes (acres) by Allotment Status, Ranger District and Allotment under Alternatives 2 and 3**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access Off Designated Routes	Continued Existing - Closed to OHV Access	Continued Existing - Closed to OHV Access Off Designated Routes	Continued Existing - Open to Motorized Access Off Designated Routes	Proposed - Closed to Motorized Access Off Designated Routes	Grand Total	
Active	BEND/FORT ROCK	CINDER CONE		4,798		25,594	353	15,608	46,353	
		GEBHARDT WELL						17,401	17,401	
		PINE MOUNTAIN		2,337		13,100	24	692	16,151	
		QUARTZ MOUNTAIN				22,851		10,814	33,666	
	SAND SPRINGS		1,083		35,053		18,729	54,866		
	BEND/FORT ROCK Total			8,218		96,599	377	63,244	168,437	
	SISTERS	INDIAN FORD				82		21	102	
	SISTERS Total					82		21	102	
Active Total				8,218		96,680	377	63,265	168,540	
Closed	BEND/FORT ROCK	ABBOT		370					370	
		CRATER BUTTES						26,423	26,423	
		RYAN RANCH		69					69	
		SPARKS LAKE	16	18		133		63	230	
	TETHEROW MEADOW		5		207		20	231		
		BEND/FORT ROCK Total		16	462		340		26,506	27,324
	CRESCENT	BIG MARSH	5			10,029		2,103	12,138	
	LITTLE DESCHUTES	6,647			11,064		13,887	31,598		
	LITTLE DESCHUTES ON-OFF				8		42	50		
	CRESCENT Total		6,652			21,101		16,032	43,785	
	SISTERS	GLAZE MEADOW		33		1,061		28	1,123	
	SISTERS Total			33		1,061		28	1,123	
Closed Total			6,667	495		22,503		42,567	72,232	
Vacant	BEND/FORT ROCK	BESSIE		3,433		8,453		12,573	24,459	
		BIG HOLE	1,152					13,041	14,193	
		CABIN LAKE				6,369		19,829	26,198	
		GEBHARDT FLAT						3,081	3,081	
		HOLE IN THE GROUND						20,376	20,376	
		SAND FLAT	2,612					26,328	28,940	
	SPRING BUTTE	4,045					1,336	5,381		
	SUGAR PINE			0			22,243	22,243		
		BEND/FORT ROCK Total		7,808	3,433	0	14,821		118,808	144,870
	CRESCENT	BIG HOLE						2,158	2,158	
	CRESCENT BUTTE				1,964		1,078	3,042		
	CRESCENT CREEK		885		596		35,105	36,587		
	DAVIS LAKE		9,339		261		720	10,320		
	FREMONT SIDING				11,267		4,872	16,139		
	GILCHRIST		2,841				12,189	15,031		
	MOWICH				5,417		12,057	17,474		
	SPRING BUTTE						1,882	1,882		
	CRESCENT Total			13,066		19,506		70,061	102,633	
	SISTERS	CACHE MOUNTAIN	0	6,100		16,258		9,693	32,051	
		FUELBREAKS	183	22,974		31,929		19,284	74,370	
		GARRISON BUTTE		753		12,207		3,272	16,232	
		HOLZMAN		79					79	
		WHYCHUS CREEK	8,216	654		5,392		10,051	24,313	
	SISTERS Total		8,399	30,561		65,786		42,299	147,045	
Vacant Total			16,208	47,059	0	100,114		231,169	394,549	
Grand Total			22,875	55,772	0	219,296	377	337,000	635,321	

**Table B-7.1.7 - Ochoco National Forest and Crooked River National Grassland motorized access off designated routes (acres) by Allotment Status, Ranger District and Allotment under Alternatives 2 and 3**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access Off Designated Routes	Continued Existing - Closed to OHV Access Off Designated Routes	Continued Existing - Open to Motorized Access Off Designated Routes Allowed Seasonally	Proposed - Closed to Motorized Access Off Designated Routes	Grand Total	
ACTIVE	CR GRASSLAND	BLANCHARD		7,681				7,681	
		BOYCE		5,652				5,652	
		CYRUS	930	8,374		20		9,325	
		DEVINE		85				85	
		EAST WINTER		1,254				1,254	
		FOX	85	6,128				6,214	
		GORGE	137	1,045				1,182	
		GRIZZLY	17	9,158				9,175	
		HAYSTACK	3,036	2,027				5,063	
		HOMES-WILLIAMS	145	2,518				2,663	
		JUNIPER BUTTE	1,905	1,117				3,022	
		KENNEDY		718				718	
		LONE PINE	222	9,001				9,223	
		NORTH	38	10,260				10,299	
		ROUND BUTTE		2,451				2,451	
		RUSH	87	6,411				6,498	
	STEER		2,293				2,293		
	WEANING	23	214				237		
	CR GRASSLAND Total			6,626	76,387		20		83,033
	LOOKOUT MTN		ANTLER			209		453	662
			BADGER	1,060	4,223	1,051		23,559	29,893
			BEAR CREEK	439	2	1,107		15,853	17,400
			BIG SUMMIT	615		4,893		18,947	24,456
			BIG TABLE					793	793
			BRUSH CREEK	332	6,205	108		3,883	10,528
			BURN			321		2,853	3,174
			COX					41	41
			CRYSTAL SPRINGS		13	558		6,620	7,191
			DEEP CREEK					0	0
			DOUBLE CABIN		412	874		10,098	11,384
			EAST MAURY	348		38		9,015	9,400
			ELKHORN	5,404	1,304	399		7,913	15,020
			FOX CANYON	826		6,302		5,880	13,008
GRAY PRAIRIE			514	722	21		9,861	11,118	
HAPPY			10	3	3		100	115	
INDIAN CREEK							525	525	
KLOOTCHMAN			568		523		14,207	15,298	
LEWIS ROCK							39	39	
LOST HORSE						5,913	852	6,765	
LYTLE CREEK							39	39	
MARKS CREEK			425	4	1,574		8,538	10,541	
MILL CREEK			14,401	1,051	620		38,721	54,793	
NORTH FORK						5,901	621	6,522	
OLD DRY CREEK							228	228	
ORTMAN							844	844	
PISGAH			266	2,519	115		2,179	5,079	
PRAIRIE PARCELS					432	432			
PRINGLE		1,308	4,264		1,511	7,083			
RESERVOIR	396	9,597	1,575		22,607	34,174			
ROBA	78		251		25	355			
SHERWOOD	803		2,911		12,226	15,940			
SHOTGUN	280	25	262		8,926	9,493			
SNOWSHOE	175	45	617		1,872	2,710			
TROUT CREEK	580	30	119		25,636	26,345			
WILDCAT	3,897	14	3,102		11,782	18,795			
LOOKOUT MTN Total			31,416	27,476	43,631		267,679	370,203	
PAULINA	BADGER				6		42	48	

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access Off Designated Routes	Continued Existing - Closed to OHV Access Off Designated Routes	Continued Existing - Open to Motorized Access Off Designated Routes Allowed Seasonally	Proposed - Closed to Motorized Access Off Designated Routes	Grand Total
		BIG SUMMIT	1		145		148	294
		BUCK PASTURE					450	450
		DEEP CREEK	264	144	347		16,822	17,577
		DERR	406	21	684		11,362	12,474
		DRY CORNER	642				3,345	3,987
		HAPPY	653	17	519		17,322	18,510
		HEISLER	280	19			8,843	9,141
		LITTLE SUMMIT	179	29	496		15,000	15,704
		RAGER HORSE PASTURE		257	2		7	266
		ROBA	252	52	889		16,718	17,912
		SUNFLOWER	819	126	332		26,285	27,561
		WIND CREEK	1,518	374	853		15,888	18,632
		WOLF CREEK	819	228	1,995		38,556	41,598
		PAULINA Total	5,834	1,267	6,266		170,788	184,155
ACTIVE Total			43,876	105,131	49,897	20	438,468	637,391
CLOSED	CR GRASSLAND	CLEVANGER	66	572				639
		GOLDMINE/FALLS	21	698				719
		LOWER DESERT	159	10,039				10,198
		PENNINSULA		1,652				1,652
		WHYCHUS CREEK		5,193				5,193
	CR GRASSLAND Total		246	18,155				18,401
	LOOKOUT MTN	LOOKOUT	311	2,306			4	2,622
LOOKOUT MTN Total		311	2,306			4	2,622	
PAULINA	BEARSKULL/COTTONWOOD	25,904	100	1,159		16,052	43,215	
PAULINA Total		25,904	100	1,159		16,052	43,215	
CLOSED Total			26,461	20,561	1,159		16,056	64,237
VACANT	CR GRASSLAND	CANADIAN BENCH		648				648
	CR GRASSLAND Total			648				648
	LOOKOUT MTN	ALLEN CREEK					272	272
		CRAIG					112	112
		SLAYTON					159	159
	LOOKOUT MTN Total						542	542
PAULINA	ROCK CREEK	1,165	421	305		4,761	6,651	
PAULINA Total		1,165	421	305		4,761	6,651	
VACANT Total			1,165	1,069	305		5,302	7,841
(blank)	CR GRASSLAND		19	460				479
	CR GRASSLAND Total		19	460				479
	LOOKOUT MTN		26	2	38		423	488
	LOOKOUT MTN Total		26	2	38		423	488
(blank) Total			45	462	38		423	967
Grand Total			71,546	127,223	51,398	20	460,249	710,437

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**Table B-7.1.8 - Deschutes National Forest motorized access for dispersed camping (acres) by Allotment Status, Ranger District and Allotment under Alternative 2**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping - Designated Sites Only	Continued Existing - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Closed to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Riparian	Grand Total
Active	BEND/FORT ROCK	CINDER CONE		11,891	7,746			21,511	2,825	1,973			408		46,353
		PINE MOUNTAIN		13,351	713				443	952			692		16,151
		QUARTZ MOUNTAIN				3,681	7,133	22,851							33,666
		SAND SPRINGS		10,203	3,490		8,736	24,917	74	884	4,639		1,923		54,866
	BEND/FORT ROCK Total			35,445	15,630		15,870	69,279	3,342	3,809	4,639		3,023		151,037
	SISTERS	INDIAN FORD			3		82							18	102
	SISTERS Total				3		82							18	102
Active Total				35,445	15,633		15,870	69,361	3,342	3,809	4,639		3,023	18	151,139
Closed	BEND/FORT ROCK	ABBOT				370									370
		CRATER BUTTES			11,173		303	14,596			38		313		26,423
		RYAN RANCH		69											69
		SPARKS LAKE	16	18				196							230
		TETHEROW MEADOW			8	5		208			0		6	4	231
	BEND/FORT ROCK Total			16	87	11,181	375	303	15,001		38	0	319	4	27,324
	CRESCENT	BIG MARSH		5	657			11,149						327	12,138
	LITTLE DESCHUTES		6,647	3,539			20,125						1,286	31,598	
	LITTLE DESCHUTES ON-OFF						50							50	
CRESCENT Total			6,652	4,196			31,324						1,614	43,785	
	SISTERS	GLAZE MEADOW		33			1,061					8	20	1,123	
	SISTERS Total			33			1,061					8	20	1,123	
Closed Total				6,667	120	15,377	375	303	47,386		38	0	327	1,638	72,232
Vacant	BEND/FORT ROCK	BESSIE		9,191	3,283			9,290	2,694					24,459	
		BIG HOLE		1,152	2,588			5,431				5,022		14,193	
		CABIN LAKE			7,258		2,968	15,972						26,198	
		GEBHARDT FLAT			19		1,126	1,913		23				3,081	
		HOLE IN THE GROUND			224		2,161	11,571		3,471		2,950		20,376	
		SAND FLAT		2,612	10,604			15,692						32	28,940
		SPRING BUTTE		4,045	732			309					264	31	5,381
		SUGAR PINE			8,560			13,683							22,243
	BEND/FORT ROCK Total			7,808	9,191	33,268	6,255	73,861	2,694		3,494		8,235	63	144,870
	CRESCENT	BIG HOLE						1,577				582			2,158
		CRESCENT BUTTE			399		505	2,135						3	3,042
		CRESCENT CREEK			885	7,673		26,898						1,131	36,587
		DAVIS LAKE		9,339	60		97	805			1			18	10,320
	FREMONT SIDING			1,270		3,262	11,600						7	16,139	
	GILCHRIST			2,841	3,931		8,241						17	15,031	
	MOWICH			3,525			13,421					5	524	17,474	

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping - Designated Sites Only	Continued Existing - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Closed to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Riparian	Grand Total
		SPRING BUTTE		45			1,834							3	1,882
		CRESCENT Total		13,066	16,903		3,864	66,511			1	586	1,702		102,633
	SISTERS	CACHE MOUNTAIN	0	7,177	5,755		1,629	12,228	4,108		47	543	563		32,051
		FUELBREAKS	183	36,953	7,208	478	24	10,817	12,686			28	5,993		74,370
		GARRISON BUTTE		265	3,050			12,228	488				200		16,232
		HOLZMAN		3		76								79	
		WHYCHUS CREEK	8,216	452	6,377		1	7,042	654			247	1,323		24,313
		SISTERS Total	8,399	44,851	22,390	554	1,655	42,316	17,936		47	818	8,079		147,045
	Vacant Total		16,208	67,108	72,561	554	11,773	182,688	20,630	3,494	48	9,640	9,845		394,549
(blank)	BEND/FORT ROCK	GEBHARDT WELL			1,588		4,371	11,442							17,401
		BEND/FORT ROCK Total			1,588		4,371	11,442							17,401
	(blank)	(blank)													
	(blank) Total														
	(blank) Total				1,588		4,371	11,442							17,401
	Grand Total		22,875	102,673	105,159	928	32,318	310,877	23,972	3,809	8,171	48	12,989	11,500	635,321

**Table B-7.1.9 - Ochoco National Forest and Crooked River National Grassland motorized access for dispersed camping (acres) by Allotment Status, Ranger District and Allotment under Alternative 2**

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Closed to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Riparian	Grand Total	
Active	CR GRASSLAND	BLANCHARD		5,697			649	969		110	79	178	7,681	
		BOYCE		4,416			408	486		92	80	169	5,652	
		CYRUS	930	6,766			1,090	36		31	14	457	9,325	
		DEVINE		85									85	85
		EAST WINTER		1,084					80		14	66	10	1,254
		FOX	85	3,622			1,501	341		100	182		382	6,214
		GORGE	137	524			463						58	1,182
		GRIZZLY	17	6,730			79	974		433	650		291	9,175
		HAYSTACK	3,036	1,557			456						15	5,063
		HOMES-WILLIAMS	145	2,448					35		35			2,663
		JUNIPER BUTTE	1,905	938				167					12	3,022
		KENNEDY		712				4					2	718
		LONE PINE	222	7,441				480	69		67	502	442	9,223
		NORTH	38	6,339				855				1,673	1,394	10,299
		ROUND BUTTE		1,600				692					160	2,451
		RUSH	87	4,809				443	674		327	52	107	6,498
	STEER		1,780				391	37		20		65	2,293	
	WEANING	23	143					37		6	26	2	237	
	CR GRASSLAND Total			6,626	56,690			7,678	3,738	1,234	3,325	3,743		83,033
		LOOKOUT MTN				48		521					94	662
		BADGER		1,060	4,223	3,026	7	19,330					2,247	29,893
		BEAR CREEK		439	2	2,376	452	12,675		378	338	740		17,400
		BIG SUMMIT		615		3,760	540	16,747		138	8	2,647		24,456
		BIG TABLE						793						793
		BRUSH CREEK		332	6,205	742		2,854			101	293		10,528
		BURN					482	2,641		44		7		3,174
		COX						41						41
		CRYSTAL SPRINGS			13	699	64	5,638		221		555		7,191
		DEEP CREEK										0		0
	DOUBLE CABIN			412	1,405	129	8,774		105		559		11,384	
	EAST MAURY		348		1,305	85	7,251		96		315		9,400	
	ELKHORN		5,404	1,304	1,124		6,035			384	770		15,020	
	FOX CANYON		826		892	372	10,028		448		442		13,008	
	GRAY PRAIRIE		514	722	2,247	1	6,508		1		1,125		11,118	
	HAPPY		10	3	5	0	98						115	
	INDIAN CREEK						525						525	
	KLOOTCHMAN		568		2,494	105	11,099		63		969		15,298	
	LEWIS ROCK				5		34						39	

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Closed to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Riparian	Grand Total
		LOST HORSE				624	5,914			227		0	6,765
		LYTLE CREEK					39						39
		MARKS CREEK	425	4	642	277	8,354		145		1	693	10,541
		MILL CREEK	14,401	1,051	1,565	406	35,026		366		468	1,509	54,793
		NORTH FORK				366	5,918		238				6,522
		OLD DRY CREEK					228						228
		ORTMAN			27		817						844
		PISGAH	266	2,519	666		1,251					377	5,079
		PRAIRIE PARCELS			3		389					39	432
		PRINGLE		1,308	300	385	4,721		304			64	7,083
		RESERVOIR	396	9,597	3,538	560	17,295		261		106	2,422	34,174
		ROBA	78		20	0	251					5	355
		SHERWOOD	803		2,089	187	11,914		259			688	15,940
		SHOTGUN	280	25	2,296	13	6,219		4			656	9,493
		SNOWSHOE	175	45	98	14	2,270				40	69	2,710
		TROUT CREEK	580	30	1,978	541	21,494		398		453	890	26,364
		WILDCAT	3,897	14	1,277	182	12,123		192		188	922	18,795
		LOOKOUT MTN Total	31,416	27,476	34,628	5,794	245,817		3,887		2,087	19,098	370,203
	PAULINA	BADGER				20	28			0			48
		BIG SUMMIT	1			39	240					14	294
		BUCK PASTURE				140	311						450
		DEEP CREEK	264	144	248	866	14,820		221		191	822	17,577
		DERR	406	21	834	1,326	8,962		326			600	12,474
		DRY CORNER	642		229	37	3,012		21			46	3,987
		HAPPY	653	17	1,023	1,356	14,523		504			435	18,510
		HEISLER	280	19	246	649	7,536		245			167	9,141
		LITTLE SUMMIT	179	29	445	373	14,400		155			122	15,704
		RAGER HORSE PASTURE		257		1	8						266
		ROBA	252	52	114	104	14,157	890	617		1,290	437	17,912
		SUNFLOWER	819	126	1,165	2,478	21,696		716			561	27,561
		WIND CREEK	1,518	374	901	744	14,508		215		23	349	18,632
		WOLF CREEK	819	228	2,242	1,504	34,294		1,331		86	1,093	41,598
		PAULINA Total	5,834	1,267	7,445	9,635	148,496	890	4,351		1,591	4,646	184,155
Active Total			43,876	85,434	42,073	15,429	394,313	7,678	4,628	9,473	7,002	27,487	637,391
Closed													
	CR GRASSLAND	CLEVENGER	66	536					11	25			639
		GOLDMINE/FALLS	21	665					10	14		9	719
		LOWER DESERT	159	8,003					1,305	129		496	10,198
		PENNINSULA		940								712	1,652
		WHYCHUS CREEK		4,745					277	132		30	5,193
		CR GRASSLAND Total	246	14,890					1,603	300		1,247	18,401
	LOOKOUT MTN	LOOKOUT	311	2,306	1		0						3
		LOOKOUT MTN Total	311	2,306	1		0						3
	PAULINA	BEARSKULL/COTTONWOOD	25,904	100	1,712	628	14,043			173		292	364

STATUS	DISTRICT_NAME	ALLOTMENT_NAME	Continued Existing - Closed to Motorized Access	Continued Existing - Closed to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping	Continued Existing - Open to Motorized Access For Dispersed Camping Seasonally	Proposed - Closed to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping Seasonally With Special Provisions - Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Non-Riparian	Proposed - Open to Motorized Access For Dispersed Camping With Special Provisions - Riparian	Grand Total
	PAULINA Total		25,904	100	1,712	628	14,043			173	292	364	43,215
Closed Total			26,461	17,296	1,712	628	14,043	1,603	473	1,538	483	64,237	
Vacant	CR GRASSLAND	CANADIAN BENCH		520				75	8	45			648
	CR GRASSLAND Total			520				75	8	45			648
	LOOKOUT MTN	ALLEN CREEK CRAIG SLAYTON				9	224			39			272
							112						112
							159						159
	LOOKOUT MTN Total					9	494			39			
PAULINA	ROCK CREEK		1,165	421	632	593	3,622		133			87	6,651
PAULINA Total			1,165	421	632	593	3,622		133			87	6,651
Vacant Total			1,165	941	632	601	4,116	75	179	45		87	7,841
(blank)	CR GRASSLAND		19	297				24	9	5	53	72	479
	CR GRASSLAND Total		19	297				24	9	5	53	72	479
	LOOKOUT MTN		26	2	33		390			0		38	488
	LOOKOUT MTN Total		26	2	33		390			0		38	488
	(blank)	(blank)											
(blank) Total			45	299	33		390	24	9	5	53	110	967
Grand Total			71,546	103,969	44,450	16,658	412,862	7,702	6,315	10,130	8,638	28,167	710,437

## B-8 Socio-Economic

### B-8.1 Deschutes National Forest TMECA Economic Contribution Report

#### B-8.1.1

#### Deschutes NF TMECA Economic Contribution Report

### Employment and Labor Income Effects by Activity Type ( NVUM Estimates ) Non-Motorized, Motorized, Nature Related, All Other

**Table A. Employment and Labor Income Effects by Activity Type**

		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total
<b>Non-Motorized</b>											
Backpacking	Local Day	-	-	-	-	-	-	-	-	-	-
	Local OVN	5	1	1	2	7	117,382	38,016	35,118	73,135	187,775
	Local	5	1	1	2	7	117,382	38,016	35,118	73,135	187,775
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	6	1	1	2	8	145,051	38,996	36,608	75,604	222,404
	NonLocal	6	1	1	2	8	145,051	38,996	36,608	75,604	222,404
	NP	-	-	-	-	-	-	-	-	-	-
Hiking / Walking	Local Day	21	4	4	9	30	509,224	144,649	134,754	279,403	790,070
	Local OVN	8	2	2	3	11	186,975	55,660	51,528	107,187	293,142
	Local	29	6	6	12	41	696,199	200,308	186,282	386,591	1,083,212
	NonLocal Day	5	1	1	2	7	125,411	29,562	28,207	57,769	187,254
	NonLocal OVN	67	14	14	27	94	1,604,095	456,403	424,630	881,033	2,489,316
	NonLocal	72	15	15	29	101	1,729,506	485,965	452,837	938,802	2,676,570
	NP	-	-	-	-	-	-	-	-	-	-
Horseback Riding	Local Day	1	0	0	0	1	14,509	4,121	3,840	7,961	22,511
	Local OVN	0	0	0	0	0	5,327	1,586	1,468	3,054	8,352
	Local	1	0	0	0	1	19,837	5,707	5,308	11,015	30,864
	NonLocal Day	0	0	0	0	0	3,573	842	804	1,646	5,335
	NonLocal OVN	2	0	0	1	3	45,705	13,004	12,099	25,103	70,927
	NonLocal	2	0	0	1	3	49,278	13,846	12,903	26,749	76,263
	NP	-	-	-	-	-	-	-	-	-	-
Bicycling	Local Day	5	1	1	2	7	113,733	32,307	30,097	62,404	176,459
	Local OVN	2	0	0	1	2	41,760	12,431	11,509	23,940	65,472
	Local	7	1	1	3	9	155,493	44,738	41,605	86,343	241,931
	NonLocal Day	1	0	0	0	2	28,010	6,603	6,300	12,903	41,822
	NonLocal OVN	15	3	3	6	21	358,268	101,936	94,839	196,775	555,978
	NonLocal	16	3	3	7	23	386,278	108,538	101,139	209,677	597,800
	NP	-	-	-	-	-	-	-	-	-	-
Cross-country Skiing	Local Day	5	1	1	2	8	125,884	36,434	33,808	70,242	196,082
	Local OVN	3	1	1	1	4	63,071	18,521	17,125	35,646	98,562
	Local	8	2	2	3	12	188,955	54,956	50,933	105,888	294,643
	NonLocal Day	1	0	0	1	2	30,081	8,706	8,079	16,785	46,855
	NonLocal OVN	29	6	6	12	41	669,245	196,525	181,708	378,233	1,045,823
	NonLocal	30	6	6	12	42	699,326	205,231	189,787	395,018	1,092,678
	NP	-	-	-	-	-	-	-	-	-	-
Other Non- motorized	Local Day	1	0	0	1	2	30,890	8,775	8,174	16,949	47,927
	Local OVN	0	0	0	0	1	11,342	3,376	3,126	6,502	17,783
	Local	2	0	0	1	3	42,233	12,151	11,300	23,451	65,710
	NonLocal Day	0	0	0	0	0	7,608	1,793	1,711	3,504	11,359
	NonLocal OVN	4	1	1	2	6	97,307	27,686	25,759	53,445	151,006
	NonLocal	4	1	1	2	6	104,915	29,480	27,470	56,949	162,365
	NP	-	-	-	-	-	-	-	-	-	-
		<b>Employment Effects (full and part time jobs)</b>					<b>Labor Income (2008 dollars)</b>				

Motorized		Direct	Indirect	Induced	Total		Direct	Indirect	Induced	Total	
					Secondary					Secondary	
OHV Use	Local Day	3	1	1	1	4	60,062	17,576	16,332	33,908	93,818
	Local OVN	2	0	0	1	3	46,859	14,625	13,527	28,152	74,290
	Local	5	1	1	2	6	106,921	32,201	29,860	62,061	168,108
	NonLocal Day	1	0	0	0	1	20,607	6,030	5,604	11,634	32,188
	NonLocal OVN	4	1	1	2	6	102,648	32,036	29,631	61,668	162,736
	NonLocal	5	1	1	2	7	123,255	38,067	35,235	73,302	194,924
	NP	-	-	-	-	-	-	-	-	-	-
Driving for Pleasure	Local Day	1	0	0	0	2	25,602	7,122	6,670	13,793	39,545
	Local OVN	0	0	0	0	0	4,950	1,425	1,325	2,750	7,701
	Local	1	0	0	1	2	30,551	8,548	7,996	16,543	47,246
	NonLocal Day	0	0	0	0	0	3	1	1	2	5
	NonLocal OVN	1	0	0	0	1	20,945	6,031	5,607	11,638	32,587
	NonLocal	1	0	0	0	1	20,948	6,032	5,608	11,640	32,592
	NP	-	-	-	-	-	-	-	-	-	-
Snowmobiling	Local Day	4	1	1	1	5	86,080	24,909	23,152	48,061	134,127
	Local OVN	3	1	0	1	4	57,626	16,873	15,602	32,474	89,989
	Local	6	1	1	2	9	143,707	41,782	38,753	80,535	224,116
	NonLocal Day	1	0	0	0	1	18,845	5,225	4,853	10,078	29,083
	NonLocal OVN	5	1	1	2	7	107,576	31,497	29,124	60,621	167,990
	NonLocal	6	1	1	2	8	126,421	36,722	33,977	70,699	197,073
	NP	-	-	-	-	-	-	-	-	-	-
Other Motorized Activity	Local Day	-	-	-	-	-	-	-	-	-	-
	Local OVN	-	-	-	-	-	-	-	-	-	-
	Local	-	-	-	-	-	-	-	-	-	-
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	-	-	-	-	-	-	-	-	-	-
	NonLocal	-	-	-	-	-	-	-	-	-	-
	NP	-	-	-	-	-	-	-	-	-	-

Nature Related		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total
Fishing	Local Day	39	8	8	16	55	911,937	270,502	251,415	521,917	1,428,810
	Local OVN	20	5	4	9	29	490,370	156,074	144,086	300,160	781,113
	Local	59	13	12	25	84	1,402,307	426,576	395,501	822,077	2,209,923
	NonLocal Day	9	2	2	4	13	223,175	64,840	60,210	125,050	347,988
	NonLocal OVN	101	23	21	43	144	2,401,108	740,461	683,203	1,423,664	3,795,493
	NonLocal	111	25	23	47	158	2,624,283	805,301	743,413	1,548,715	4,143,481
	NP	-	-	-	-	-	-	-	-	-	-
Hunting	Local Day	3	1	1	1	4	64,536	20,390	18,975	39,365	102,648
	Local OVN	3	1	1	1	5	80,812	26,071	24,137	50,207	129,169
	Local	6	1	1	3	9	145,348	46,461	43,112	89,573	231,817
	NonLocal Day	0	0	0	0	1	8,208	2,593	2,413	5,007	13,055
	NonLocal OVN	5	1	1	2	7	118,523	35,995	33,377	69,371	186,702
	NonLocal	5	1	1	2	8	126,731	38,588	35,790	74,378	199,758
	NP	-	-	-	-	-	-	-	-	-	-

Nature Related		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
Nature Related	Local Day	16	3	3	6	22	386,262	106,110	99,293	205,403	595,000
	Local OVN	16	3	3	6	23	363,594	109,080	100,976	210,055	571,004
	Local	32	7	6	13	45	749,856	215,190	200,269	415,459	1,166,003
	NonLocal Day	9	2	2	3	12	188,742	51,325	48,361	99,686	290,059
	NonLocal OVN	92	19	18	38	130	2,187,282	627,040	581,891	1,208,931	3,399,859
	NonLocal	101	21	20	41	142	2,376,024	678,365	630,252	1,308,617	3,689,919
	NP	-	-	-	-	-	-	-	-	-	-

All Other		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total
Primitive Camping	Local Day	-	-	-	-	-	-	-	-	-	-
	Local OVN	2	0	0	1	2	41,429	13,418	12,395	25,812	66,274
	Local	2	0	0	1	2	41,429	13,418	12,395	25,812	66,274
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	2	0	0	1	3	51,194	13,763	12,921	26,684	78,496
	NonLocal	2	0	0	1	3	51,194	13,763	12,921	26,684	78,496
	NP	-	-	-	-	-	-	-	-	-	-
All Other	Local Day	109	25	24	49	158	2,932,126	775,813	726,479	1,502,292	4,481,000
	Local OVN	123	29	31	60	182	3,733,195	914,574	869,400	1,783,974	5,615,013
	Local	231	54	55	109	340	6,665,321	1,690,387	1,595,879	3,286,266	10,096,014
	NonLocal Day	32	7	7	13	46	824,191	205,223	194,108	399,331	1,243,950
	NonLocal OVN	309	65	73	138	447	9,004,444	2,068,860	1,980,795	4,049,655	13,376,901
	NonLocal	341	72	80	151	492	9,828,635	2,274,083	2,174,903	4,448,985	14,620,851
	NP	-	-	-	-	-	-	-	-	-	-

B-8.1.2

Deschutes NF TMECA Economic Contribution Report

**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )  
Non-Motorized, Motorized, Nature Related, All Other, stuff**

**Table B. Percent of Total Employment and Labor Income Effects by Activity Type**

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>Non-Motorized</b>					
Backpacking	Local	0.4%	0.5%	0.4%	0.5%
	NonLocal	0.5%	0.5%	0.5%	0.5%
Hiking / Walking	Local	2.7%	2.5%	2.4%	2.6%
	NonLocal	6.6%	6.1%	6.0%	6.4%
Horseback Riding	Local	0.1%	0.1%	0.1%	0.1%
	NonLocal	0.2%	0.2%	0.2%	0.2%
Bicycling	Local	0.6%	0.6%	0.5%	0.6%
	NonLocal	1.5%	1.4%	1.3%	1.4%
Cross-country Skiing	Local	0.7%	0.7%	0.7%	0.7%
	NonLocal	2.8%	2.6%	2.4%	2.7%
Other Non-motorized	Local	0.2%	0.2%	0.1%	0.2%
	NonLocal	0.4%	0.4%	0.4%	0.4%
Total Non-Motorized 1/		16.6%	15.6%	15.0%	16.2%

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>Motorized</b>					
OHV Use	Local	0.4%	0.4%	0.4%	0.4%
	NonLocal	0.5%	0.5%	0.4%	0.5%
Driving for Pleasure	Local	0.1%	0.1%	0.1%	0.1%
	NonLocal	0.1%	0.1%	0.1%	0.1%
Snowmobiling	Local	0.6%	0.5%	0.5%	0.5%
	NonLocal	0.5%	0.5%	0.4%	0.5%
Other Motorized Activity	Local	0.0%	0.0%	0.0%	0.0%
	NonLocal	0.0%	0.0%	0.0%	0.0%
Total Motorized 1/		2.2%	2.0%	1.9%	2.1%

Employment Effects (full and part time jobs)	Labor Income (2008 dollars)
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<b>Nature Related</b>		Direct	Total Secondary	Direct	Total Secondary
Fishing	Local	5.4%	5.3%	4.9%	5.6%
	NonLocal	10.1%	9.9%	9.1%	10.5%
Hunting	Local	0.6%	0.6%	0.5%	0.6%
	NonLocal	0.5%	0.5%	0.4%	0.5%
Nature Related	Local	2.9%	2.7%	2.6%	2.8%
	NonLocal	9.2%	8.5%	8.2%	8.9%
Total Nature Related 1/		28.7%	27.5%	25.7%	28.9%

		<b>Employment Effects (full and part time jobs)</b>		<b>Labor Income (2008 dollars)</b>	
<b>All Other</b>		Direct	Total Secondary	Direct	Total Secondary
All Other	Local	12.9%	13.9%	14.0%	13.6%
	NonLocal	19.1%	19.4%	20.8%	18.5%
Total All Other 1/		32.0%	33.3%	34.8%	32.1%

		<b>Employment Effects (full and part time jobs)</b>		<b>Labor Income (2008 dollars)</b>	
<b>stuff</b>		Direct	Total Secondary	Direct	Total Secondary
Downhill Skiing	Local	8.0%	8.6%	8.8%	8.4%
	NonLocal	11.7%	11.9%	12.8%	11.3%
Developed Camping	Local	0.4%	0.4%	0.4%	0.4%
	NonLocal	0.6%	0.6%	0.6%	0.6%
Total stuff 1/		20.6%	21.6%	22.6%	20.7%
<b>Grand Total: All Categories</b>		<b>1,096</b>	<b>477</b>	<b>28,897,385</b>	<b>14,750,569</b>

1/ Percent calculations for Totals included Non-Primary, NP.

B-8.1.3

Deschutes NF TMECA Economic Contribution Report  
**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )**  
**Non-Motorized, Motorized, Nature Related, All Other**

**Table C. Percent of Total Area Employment and Total Area Labor Income Effects**

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
		Percent of Total Employment	Percent of Total Labor Income
<b>Non-Motorized</b>			
All Non-Motorized	Local	0.050%	0.036%
	NonLocal	0.125%	0.091%
Total Non-Motorized 1/		0.175%	0.127%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
		Percent of Total Employment	Percent of Total Labor Income
<b>Motorized</b>			
All Motorized	Local	0.012%	0.008%
	NonLocal	0.011%	0.008%
Total Motorized 1/		0.023%	0.016%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
		Percent of Total Employment	Percent of Total Labor Income
<b>Nature Related</b>			
Fishing	Local	0.057%	0.042%
	NonLocal	0.108%	0.078%
Hunting	Local	0.006%	0.004%
	NonLocal	0.005%	0.004%
Nature Related	Local	0.031%	0.022%
	NonLocal	0.097%	0.070%
Total Nature Related 1/		0.304%	0.219%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
		Percent of Total Employment	Percent of Total Labor Income
<b>All Other</b>			
All Other	Local	0.234%	0.191%
	NonLocal	0.338%	0.277%
Total All Other 1/		0.572%	0.468%
<b>Study Area Total</b>		<b>146,578</b>	<b>5,308,898,000</b>

1/ Percent calculations for Totals included Non-Primary, NP.

B-8.1.4

Deschutes NF TMECA Economic Contribution Report

**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )  
Non-Motorized, Motorized, Nature Related, All Other**

**Table D. Estimated Employment and Labor Income Effects for All Current Recreation Use Reported by NVUM**

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Non-Motorized</b>							
Non-Motorized	Local	51	21	73	1,220,099	686,423	1,904,134
	NonLocal	130	53	183	3,114,353	1,702,800	4,828,080
	Total Non-Motorized	182	74	256	4,334,452	2,389,223	6,732,214

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Motorized</b>							
Motorized	Local	12	5	17	281,179	159,139	439,470
	NonLocal	12	5	17	270,624	155,641	424,589
	Total Motorized	24	10	34	551,804	314,780	864,059

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Nature Related</b>							
Fishing	Local	59	25	84	1,402,307	822,077	2,209,923
	NonLocal	111	47	158	2,624,283	1,548,715	4,143,481
Hunting	Local	6	3	9	145,348	89,573	231,817
	NonLocal	5	2	8	126,731	74,378	199,758
Nature Related	Local	32	13	45	749,856	415,459	1,166,003
	NonLocal	101	41	142	2,376,024	1,308,617	3,689,919
	Total Nature Related	314	131	445	7,424,550	4,258,818	11,640,901

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>All Other</b>							
All Other	Local	233	110	343	6,706,750	3,312,078	10,162,287
	NonLocal	343	152	495	9,879,829	4,475,669	14,699,347
	Total All Other 1/	576	262	838	16,586,579	7,787,747	24,861,634
<b>Grand Total: All Categories</b>		<b>1,096</b>	<b>477</b>	<b>1,573</b>	<b>28,897,385</b>	<b>14,750,569</b>	<b>44,098,808</b>

1/ Percent calculations for Totals included Non-Primary, NP.

B-8.2 Ochoco National Forest TMECA Economic Contribution Report

B-8.2.1

**Ochoco NF TMECA Economic Contribution Report**  
**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )**  
**Non-Motorized, Motorized, Nature Related, All Other**

**Table A. Employment and Labor Income Effects by Activity Type**

		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total
<b>Non-Motorized</b>											
Backpacking	Local Day	-	-	-	-	-	-	-	-	-	-
	Local OVN	1	0	0	0	2	30,314	5,714	5,133	10,847	40,485
	Local	1	0	0	0	2	30,314	5,714	5,133	10,847	40,485
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	1	0	0	0	2	33,860	5,880	5,320	11,200	44,655
	NonLocal	1	0	0	0	2	33,860	5,880	5,320	11,200	44,655
	NP	-	-	-	-	-	-	-	-	-	-
Hiking / Walking	Local Day	1	0	0	0	1	24,067	4,578	4,045	8,622	32,189
	Local OVN	0	0	0	0	0	7,609	1,526	1,338	2,864	10,266
	Local	2	0	0	0	2	31,676	6,103	5,383	11,486	42,455
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	2	0	0	0	3	45,832	8,089	7,320	15,409	60,581
	NonLocal	2	0	0	0	3	45,832	8,089	7,320	15,409	60,581
	NP	-	-	-	-	-	-	-	-	-	-
Horseback Riding	Local Day	5	1	1	1	6	106,906	20,335	17,967	38,302	142,985
	Local OVN	2	0	0	0	2	33,801	6,777	5,944	12,720	45,603
	Local	7	1	1	2	8	140,707	27,112	23,910	51,022	188,588
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	9	1	1	2	11	203,589	35,931	32,515	68,446	269,104
	NonLocal	9	1	1	2	11	203,589	35,931	32,515	68,446	269,104
	NP	-	-	-	-	-	-	-	-	-	-
Bicycling	Local Day	1	0	0	0	1	12,474	2,373	2,096	4,469	16,683
	Local OVN	0	0	0	0	0	3,944	791	693	1,484	5,321
	Local	1	0	0	0	1	16,417	3,163	2,790	5,953	22,004
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	1	0	0	0	1	23,754	4,192	3,794	7,986	31,399
	NonLocal	1	0	0	0	1	23,754	4,192	3,794	7,986	31,399
	NP	-	-	-	-	-	-	-	-	-	-
Cross-country Skiing	Local Day	0	0	0	0	0	1,961	378	334	712	2,628
	Local OVN	0	0	0	0	0	756	142	127	268	1,008
	Local	0	0	0	0	0	2,717	519	461	980	3,636
	NonLocal Day	0	0	0	0	0	428	82	73	155	573
	NonLocal OVN	0	0	0	0	0	8,018	1,502	1,344	2,845	10,696
	NonLocal	0	0	0	0	0	8,445	1,584	1,417	3,000	11,269
	NP	-	-	-	-	-	-	-	-	-	-
Other Non-motorized	Local Day	0	0	0	0	0	954	181	160	342	1,276
	Local OVN	0	0	0	0	0	302	60	53	113	407
	Local	0	0	0	0	0	1,255	242	213	455	1,683
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	0	0	0	0	0	1,817	321	290	611	2,401
	NonLocal	0	0	0	0	0	1,817	321	290	611	2,401
	NP	-	-	-	-	-	-	-	-	-	-

		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)					
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total	
<b>Motorized</b>	OHV Use	Local Day	-	-	-	-	-	-	-	-	-	
		Local OVN	-	-	-	-	-	-	-	-	-	
		Local	-	-	-	-	-	-	-	-	-	
		NonLocal Day	-	-	-	-	-	-	-	-	-	
		NonLocal OVN	-	-	-	-	-	-	-	-	-	
		NonLocal	-	-	-	-	-	-	-	-	-	
	NP	-	-	-	-	-	-	-	-	-	-	
	Driving for Pleasure	Local Day	0	0	0	0	1	8,822	1,585	1,434	3,019	11,691
		Local OVN	0	0	0	0	0	1,246	229	207	436	1,657
		Local	0	0	0	0	1	10,068	1,813	1,641	3,454	13,348
NonLocal Day		0	0	0	0	0	916	165	149	313	1,214	
NonLocal OVN		0	0	0	0	0	5,272	968	875	1,843	7,010	
NonLocal		0	0	0	0	0	6,188	1,132	1,024	2,156	8,224	
NP	-	-	-	-	-	-	-	-	-	-	-	
Snowmobiling	Local Day	1	0	0	0	1	11,194	2,046	1,826	3,872	14,880	
	Local OVN	-	-	-	-	-	-	-	-	-	-	
	Local	1	0	0	0	1	11,194	2,046	1,826	3,872	14,880	
	NonLocal Day	0	0	0	0	0	2,136	405	357	761	2,855	
	NonLocal OVN	0	0	0	0	1	10,011	1,935	1,726	3,661	13,419	
	NonLocal	1	0	0	0	1	12,146	2,339	2,083	4,422	16,274	
NP	-	-	-	-	-	-	-	-	-	-	-	
Other Motorized Activity	Local Day	-	-	-	-	-	-	-	-	-	-	
	Local OVN	-	-	-	-	-	-	-	-	-	-	
	Local	-	-	-	-	-	-	-	-	-	-	
	NonLocal Day	-	-	-	-	-	-	-	-	-	-	
	NonLocal OVN	-	-	-	-	-	-	-	-	-	-	
	NonLocal	-	-	-	-	-	-	-	-	-	-	
NP	-	-	-	-	-	-	-	-	-	-	-	

		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)					
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total	
<b>Nature Related</b>	Fishing	Local Day	4	0	0	1	5	71,478	13,373	11,920	25,292	95,352
		Local OVN	2	0	0	0	2	33,934	6,395	5,723	12,118	45,321
		Local	5	1	1	1	6	105,412	19,768	17,642	37,410	140,673
		NonLocal Day	1	0	0	0	1	13,641	2,587	2,298	4,885	18,235
		NonLocal OVN	5	1	1	1	6	105,698	20,370	18,226	38,595	141,645
		NonLocal	5	1	1	1	7	119,339	22,956	20,524	43,480	159,880
	NP	-	-	-	-	-	-	-	-	-	-	-
	Hunting	Local Day	10	1	1	2	12	199,476	36,184	32,518	68,702	264,870
		Local OVN	13	2	1	3	16	275,944	50,148	45,465	95,613	366,444
		Local	22	3	2	5	27	475,420	86,332	77,983	164,315	631,314
NonLocal Day		2	0	0	0	2	30,637	5,288	4,830	10,118	40,387	
NonLocal OVN		15	2	2	4	19	326,386	60,479	54,468	114,947	434,675	
NonLocal		17	2	2	4	21	357,023	65,767	59,298	125,065	475,063	
NP	-	-	-	-	-	-	-	-	-	-	-	
Nature Related	Local Day	5	1	1	1	7	111,382	20,817	18,529	39,346	148,569	
	Local OVN	1	0	0	0	1	11,373	2,114	1,880	3,995	15,155	
	Local	6	1	1	1	7	122,756	22,931	20,409	43,341	163,725	
	NonLocal Day	2	0	0	0	2	30,578	5,311	4,855	10,166	40,322	
	NonLocal OVN	12	2	1	3	15	274,750	50,114	45,049	95,163	365,019	
	NonLocal	14	2	2	3	17	305,328	55,424	49,905	105,329	405,340	
NP	-	-	-	-	-	-	-	-	-	-	-	

		Employment Effects (full and part time jobs)					Labor Income (2008 dollars)				
		Direct	Indirect	Induced	Total Secondary	Total	Direct	Indirect	Induced	Total Secondary	Total
<b>All Other</b> Primitive Camping	Local Day	-	-	-	-	-	-	-	-	-	-
	Local OVN	7	1	1	2	9	157,912	29,767	26,736	56,503	210,893
	Local	7	1	1	2	9	157,912	29,767	26,736	56,503	210,893
	NonLocal Day	-	-	-	-	-	-	-	-	-	-
	NonLocal OVN	8	1	1	2	10	176,381	30,631	27,713	58,344	232,617
	NonLocal	8	1	1	2	10	176,381	30,631	27,713	58,344	232,617
	NP	-	-	-	-	-	-	-	-	-	-
All Other	Local Day	11	1	1	3	13	279,293	41,149	37,479	78,628	360,008
	Local OVN	10	1	1	3	13	301,198	41,463	38,335	79,798	384,903
	Local	21	3	3	5	26	580,491	82,612	75,814	158,426	744,910
	NonLocal Day	2	0	0	1	3	50,817	8,026	7,352	15,378	66,118
	NonLocal OVN	20	2	3	5	25	578,771	78,836	73,152	151,988	738,602
	NonLocal	22	3	3	6	28	629,588	86,862	80,504	167,365	804,720
	NP	-	-	-	-	-	-	-	-	-	-

B-8.2.2

Ochoco NF TMECA Economic Contribution Report

**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )  
Non-Motorized, Motorized, Nature Related, All Other, stuff**

**Table B. Percent of Total Employment and Labor Income Effects by Activity Type**

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>Non-Motorized</b>					
Backpacking	Local	0.9%	0.9%	0.8%	0.9%
	NonLocal	1.0%	0.9%	0.9%	1.0%
Hiking / Walking	Local	1.0%	1.0%	0.9%	1.0%
	NonLocal	1.4%	1.3%	1.3%	1.3%
Horseback Riding	Local	4.3%	4.3%	3.9%	4.4%
	NonLocal	6.0%	5.8%	5.6%	5.9%
Bicycling	Local	0.5%	0.5%	0.5%	0.5%
	NonLocal	0.7%	0.7%	0.7%	0.7%
Cross-country Skiing	Local	0.1%	0.1%	0.1%	0.1%
	NonLocal	0.3%	0.2%	0.2%	0.3%
Other Non-motorized	Local	0.0%	0.0%	0.0%	0.0%
	NonLocal	0.1%	0.1%	0.1%	0.1%
Total Non-Motorized 1/		16.2%	15.8%	15.0%	16.1%

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>Motorized</b>					
OHV Use	Local	0.0%	0.0%	0.0%	0.0%
	NonLocal	0.0%	0.0%	0.0%	0.0%
Driving for Pleasure	Local	0.3%	0.3%	0.3%	0.3%
	NonLocal	0.2%	0.2%	0.2%	0.2%
Snowmobiling	Local	0.4%	0.3%	0.3%	0.3%
	NonLocal	0.4%	0.4%	0.3%	0.4%
Other Motorized Activity	Local	0.0%	0.0%	0.0%	0.0%
	NonLocal	0.0%	0.0%	0.0%	0.0%
Total Motorized 1/		1.2%	1.2%	1.1%	1.2%

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>Nature Related</b>					
Fishing	Local	3.4%	3.2%	2.9%	3.2%
	NonLocal	3.5%	3.6%	3.3%	3.7%
Hunting	Local	14.4%	13.6%	13.2%	14.2%
	NonLocal	10.9%	10.3%	9.9%	10.8%
Nature Related	Local	3.8%	3.7%	3.4%	3.7%
	NonLocal	9.0%	8.8%	8.5%	9.1%
Total Nature Related 1/		45.1%	43.1%	41.1%	44.7%

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>All Other</b>					
All Other	Local	13.3%	14.0%	14.6%	13.6%
	NonLocal	14.2%	14.9%	16.0%	14.2%
Total All Other 1/		27.4%	28.9%	30.6%	27.8%

		Employment Effects (full and part time jobs)		Labor Income (2008 dollars)	
		Direct	Total Secondary	Direct	Total Secondary
<b>stuff</b>					
Downhill Skiing	Local	0.0%	0.0%	0.0%	0.0%
	NonLocal	0.0%	0.0%	0.0%	0.0%
Developed Camping	Local	4.9%	5.3%	5.8%	4.9%
	NonLocal	5.2%	5.6%	6.3%	5.2%
Total stuff 1/		10.1%	11.0%	12.1%	10.2%
Grand Total: All Categories		155	37	3,609,630	1,160,879

1/ Percent calculations for Totals included Non-Primary, NP.

Ochoco NF TMECA Economic Contribution Report

**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )  
Non-Motorized, Motorized, Nature Related, All Other**

**Table C. Percent of Total Area Employment and Total Area Labor Income Effects**

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
<b>Non-Motorized</b>		Percent of Total Employment	Percent of Total Labor Income
All Non-Motorized	Local	0.073%	0.044%
	NonLocal	0.098%	0.061%
Total Non-Motorized 1/		0.171%	0.105%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
<b>Motorized</b>		Percent of Total Employment	Percent of Total Labor Income
All Motorized	Local	0.007%	0.004%
	NonLocal	0.006%	0.004%
Total Motorized 1/		0.013%	0.008%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
<b>Nature Related</b>		Percent of Total Employment	Percent of Total Labor Income
Fishing	Local	0.036%	0.021%
	NonLocal	0.037%	0.023%
Hunting	Local	0.151%	0.092%
	NonLocal	0.115%	0.069%
Nature Related	Local	0.040%	0.024%
	NonLocal	0.095%	0.059%
Total Nature Related 1/		0.474%	0.289%

		<b>Employment Effects (full and part time jobs)</b>	<b>Labor Income (2008 dollars)</b>
<b>All Other</b>		Percent of Total Employment	Percent of Total Labor Income
All Other	Local	0.195%	0.140%
	NonLocal	0.208%	0.152%
Total All Other 1/		0.403%	0.291%
Study Area Total		18,153	684,609,000

1/ Percent calculations for Totals included Non-Primary, NP.

Ochoco NF TMECA Economic Contribution Report

**Employment and Labor Income Effects by Activity Type ( NVUM Estimates )  
Non-Motorized, Motorized, Nature Related, All Other**

**Table D. Estimated Employment and Labor Income Effects for All Current Recreation Use Reported by NVUM**

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Non-Motorized</b>							
Non-Motorized	Local	11	3	13	223,087	80,743	298,851
	NonLocal	14	3	18	317,298	106,653	419,409
Total Non-Motorized		25	6	31	540,385	187,396	718,259

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Motorized</b>							
Motorized	Local	1	0	1	21,262	7,326	28,228
	NonLocal	1	0	1	18,334	6,578	24,498
Total Motorized		2	0	2	39,596	13,904	52,727

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>Nature Related</b>							
Fishing	Local	5	1	6	105,412	37,410	140,673
	NonLocal	5	1	7	119,339	43,480	159,880
Hunting	Local	22	5	27	475,420	164,315	631,314
	NonLocal	17	4	21	357,023	125,065	475,063
Nature Related	Local	6	1	7	122,756	43,341	163,725
	NonLocal	14	3	17	305,328	105,329	405,340
Total Nature Related		70	16	86	1,485,278	518,941	1,975,995

		Employment Effects (full and part time jobs)			Labor Income (2008 dollars)		
		Direct	Total Secondary	Total	Direct	Total Secondary	Total
<b>All Other</b>							
All Other	Local	28	7	35	738,402	214,928	955,803
	NonLocal	30	8	38	805,969	225,710	1,037,337
Total All Other 1/		58	15	73	1,544,372	440,638	1,993,139
Grand Total: All Categories		155	37	193	3,609,630	1,160,879	4,740,120

1/ Percent calculations for Totals included Non-Primary, NP.

## ***B-9 Recreation***

### **Recreation Niche**

The recreation niche is a description, or characterization, of the distinct role each forest plays in providing outdoor recreation opportunities, experiences and benefits. The niche allows managers to focus management efforts on what is unique and valuable about the Forest.

The niche is, in part, determined by public expectations (demand) and by the ecological capabilities of the land. In 2005-2006, the two Forests developed a recreation niche statement. Public participants in this process described and mapped their preferred recreation activities and where they recreate. This "sense of place" map product was translated into a narrative about the relative importance of the Forest for various recreation opportunities, experiences and benefits and used to develop the recreation niche statement.

### **Deschutes National Forest**

For the Deschutes, the wide variety of visitor preferences and uses were grouped into three spatial categories (settings): The Alpine Summit is the crest of the Cascade Range volcanoes that are the scenic backdrop of snowcapped peaks for Central Oregon visible from local communities. Many lakes nestled in alpine forests and meadows, accessed primarily by trails, afford solitude in a predominantly wilderness setting. The Recreation Hubs are the heart of Central Oregon recreation opportunities and gateways to the Alpine Summit and High Desert. It is characterized by volcanic mountains and buttes, caldera lakes, and rushing clear rivers cutting through the high desert terrain of majestic ponderosa pine. The High Desert is a land of dry pine forest, open space and big sky. Major highways are dotted with small rural communities, and ranches with traditional family ties.

**Marketing Statement: FUN in the SUN!**

“The hub of incredible opportunities in diverse settings within close proximity to one another, facilitating four season day-use recreation opportunities, characterizes the Deschutes National Forest.”

### **Settings, Special Places, and Values**

The gem of Central Oregon is the Deschutes National Forest. Its many facets comprise three primary settings, Alpine Summit, Hub, and High Desert. Day use activities are supported by a range of lodging from rustic camping to five star resorts. Given the projected growth, strong interdependence and community relationships, partnerships will continue to grow and play a larger part in providing the developed infrastructure supporting the day use activities.

### **Opportunities and Activities**

Visitors are drawn to the forest because of the spectacular diverse settings that provide four seasons of recreation opportunities, from high mountain climbing to desert trail riding and from skiing to snowmobiling. A variety of activities can be had in a day (there is no way you can do it all!).

The Alpine Summit offers good access to day use and overnight activities such as hiking, backpacking, climbing and fishing.

The Recreation Hubs are Central Oregon communities where quality of life depends greatly on the forest. Hub community economies are enhanced by nature based eco-tourism, community festivals, and events that attract local, national and even international visitors. The mountains provide hiking, mountain biking, lake-side camping and fishing in the summer. In the winter, skiing, snow shoeing, and snowmobiling are primary. Both the Deschutes and Metolius rivers provide blue-ribbon fishing and the Deschutes thrills visitors with white-water boating. All of these are within easy access of the Recreation Hub communities resulting in year-round high use.

The High Desert, in contrast to the other two settings, provides a place “to get away”. Generally, low-use predominates with easily accessible activities including rock hounding, hunting, and a well managed designated OHV area.

This niche setting is the most compatible with designated OHV routes (US Department of Agriculture 2005)

Recreation opportunities on the Deschutes and Ochoco National Forests are a local and regional resource. The diversity of Cascade and Blue mountain settings, defined by terrain, scenic beauty, and types of access available offer outstanding recreation opportunities to uses of these National Forest lands. The diverse types of recreation that occur include hunting, fishing, hiking, dispersed and developed camping, picnicking, horseback riding, mountain bike riding, ATV and motorcycle riding, jeep and 4WD touring, rafting, skiing, among many others.

## **Ochoco National Forest**

For the Ochoco, the wide variety of visitor preferences and uses were grouped into two spatial categories (settings): The Backyard – Located closest to the more populated communities, nearby neighbors and families have easy access to the Forest and Grassland, giving them the opportunity to spend an hour or spend the day. The Back 40 - Adjacent to working ranches and located further from larger population centers, it offers a remote experience and allows for self-discovery & finding your own special place on a variety of roads and trails from highway to hiking.

### **Marketing Phrase: At the Edge of Solitude**

Emphasis: Away from large populations the Ochoco National Forest, with its homesteaded grassland and stately ponderosa pines has quietly escaped intense recreation use; and for generations provided quality of life to nearby communities. As growing populations nestle along its boundary, the Ochoco’s contribution to the rich tapestry of recreation opportunities in Central Oregon will be local history, the chance for self discovery and remoteness, with rustic facilities and multi-seasonal access on roads and trails.

## **Settings, Special Places, and Values:**

**Forest-wide** - Large expanses of majestic open Ponderosa pine stands, lush meadows, stunning displays of wildflowers, and oceans of grasses greet neighbors from near and far to the Forest and Grassland and provides excellent habitat for wildlife. Mountain Ranges, faulted valley and basins formed through time by volcanic activity have left some of the oldest rocks in Oregon in the Ochoco National Forest and a heyday for collectors. Remnants of this active volcanic history are scattered throughout the Forest. Stargazing on the forest is amazing due to distance from population centers. Destination nodes of special places dot the forest and include, in part, geologic wonders like Steins Pillar & Thunder Egg mines, the refreshing waters of Walton Lake, Rimrock Springs & Haystack Reservoir, desert canyons and 7,000' peaks.

## **Activities/Opportunities/Experiences:**

**Forest-wide** – The Forest offers close-in and remote self-discovery. Roads and trails provide opportunities for scenic driving, hiking, biking, horseback riding, and OHV use. Designated OHV routes & areas on the forest are part of a system of motorized-use providers in Central Oregon. Rustic camping provides opportunities for that “get away from it all” experience. Hunting across the forest includes big game, turkey and upland birds. A variety of information helps visitors experience & discover the rich mining, homesteading, and grazing history. Strong ties and partnerships with growing communities and other agencies are a key to providing relevant and quality recreation on the Ochoco NF.

**Backyard** – Day use and camping are easily accessed by short drives from local communities. This setting offers social interaction and sharing the landscape, as well as places and times for solitude. Great snow when available supports cross-country skiing and snowmobiling. Homesteading and CCC history is emphasized on the CRNG while remnants of a rich mining history can be seen throughout the rest of the setting. Mill Creek Wilderness provides a wilderness experience close to home.

**Back 40** – Open pine, water & its accompanying shade attract those seeking a remote, dispersed camping experience. Developed sites, offer few if any amenities and are designed to protect the resource. Remnants of a rich logging history or a week-end stay at the Cold Springs Guard Station is a step back to the earlier days of the Forest. The Bridge Creek Wilderness with no maintained trails encourages use of wilderness skills. Black Canyon boasts a trail descending along a rushing mountain stream into a narrow cliff-walled gorge.

## *B-10 Transportation*

**Table (X): Roads where Dispersed Camping Prohibited (Deschutes NF)**

Road	BMP	EMP	Length	Road	BMP	EMP	Length
1028500	2.80	4.96	2.16	4100280	0.00	3.03	3.03
1217000	2.50	3.50	1.00	4100400	0.00	2.30	2.30
1400000	2.60	13.22	10.62	4100410	0.00	1.10	1.10
1419000	2.75	3.05	0.30	4100750	0.00	0.47	0.47
1419900	0.00	2.30	2.30	4120100	0.00	2.00	2.00
1499000	0.00	7.50	7.50	4120100	2.00	3.73	1.73
1600000	14.94	16.48	1.54	4200000	18.90	24.75	5.85
1600900	0.00	0.65	0.65	4200000	24.75	28.07	3.32
1800000	1.82	9.17	7.35	4200210	0.00	1.02	1.02
1800018	0.00	1.23	1.23	4200211	0.00	0.30	0.30
1800019	0.00	1.34	1.34	4200212	0.00	0.40	0.40
1800020	0.00	1.52	1.52	4205490	0.00	0.20	0.20
1800028	0.00	0.34	0.34	4205495	0.00	0.10	0.10
1800050	0.00	0.95	0.95	4220600	1.00	1.95	0.95
1800063	0.00	1.70	1.70	4220600	1.95	2.15	0.20
1815000	0.00	2.56	2.56	4220600	2.15	2.35	0.20
1815200	0.00	2.42	2.42	4220600	2.35	2.45	0.10
1815600	0.00	1.17	1.17	4220670	0.00	1.20	1.20
1815645	0.00	0.53	0.53	4260000	3.28	7.72	4.44
1815800	0.00	0.49	0.49	4330900	0.00	4.20	4.20
1815900	0.00	1.31	1.31	4600000	61.10	63.88	2.78
1819000	0.00	1.10	1.10	4601000	10.20	14.80	4.60
1819150	0.00	1.00	1.00	4601430	0.00	1.10	1.10
1819220	0.00	0.53	0.53	4602250	0.00	1.00	1.00
1819500	0.00	0.57	0.57	4603000	0.00	2.60	2.60
1819600	0.00	0.25	0.25	4630000	0.24	1.50	1.26
1850750	0.00	1.78	1.78	4630000	1.50	3.20	1.70
2000300	0.00	1.40	1.40	4631000	0.00	1.06	1.06
2000340	0.00	0.30	0.30	4635000	0.00	1.74	1.74
2066000	2.60	3.29	0.69	4635110	0.00	0.40	0.40
2070000	0.00	2.50	2.50	4636000	0.00	1.10	1.10
2100060	0.00	0.71	0.71	4636000	1.10	7.10	6.00
2100070	0.00	1.10	1.10	5810000	0.00	1.88	1.88
2100500	0.00	4.02	4.02	5810000	1.88	2.30	0.42
2100700	0.00	1.20	1.20	5810101	0.00	0.40	0.40
2200012	2.20	2.58	0.38	5810200	0.00	0.50	0.50
2300550	0.00	1.48	1.48	5810200	0.00	0.50	0.50
3130200	0.00	1.17	1.17	6000000	2.26	8.11	5.85
3130220	0.00	2.08	2.08	6000000	8.11	11.82	3.71
4000970	0.00	1.03	1.03	6000280	0.00	1.30	1.30
4100000	0.00	7.11	7.11	6005000	0.15	2.00	1.85
4100000	7.11	11.33	4.22	9702000	0.05	3.95	3.90

Road	BMP	EMP	Length
9702015	0.00	2.16	2.16
9702017	0.00	1.00	1.00
9702600	0.00	1.31	1.31
9702600	1.31	2.01	0.70
9702640	0.00	0.66	0.66
9702645	0.00	0.68	0.68
9702655	0.00	0.60	0.60

Road	BMP	EMP	Length
9702660	0.00	1.70	1.70
9710000	0.88	8.25	7.37
9710000	8.25	8.38	0.13
9720000	0.71	8.79	8.08
9720000	8.79	10.74	1.95
9720950	0.00	0.75	0.75
9735000	9.26	13.06	3.80

**Table (X): Roads where Dispersed Camping Prohibited (Ochoco NF)**

Road	BMP	EMP	Length
1200000	0.00	13.60	13.60
2600907	0.00	0.10	0.10
3800300	0.00	2.82	2.82
4200000	35.50	43.50	8.00
4254000	0.00	4.30	4.30
4270000	0.00	8.90	8.90
4272000	0.00	4.20	4.20
4274000	0.00	4.80	4.80
5340060	0.00	1.60	1.60
5340081	0.00	0.73	0.73
5800000	9.50	13.70	4.20
5800000	14.14	21.69	7.55
5800200	1.00	4.70	3.70
5800561	0.00	0.10	0.10
5800800	0.00	0.20	0.20
5810000	0.00	8.60	8.60
5810000	0.00	8.60	8.60
5870000	0.00	4.60	4.60
5870300	0.00	2.00	2.00
5870700	0.00	3.53	3.53
6300089	0.00	0.40	0.40
7960010	0.00	2.10	2.10
7960011	0.00	0.40	0.40

**Table (X): Roads with Dispersed Camping Special Provisions (Deschutes NF)**

Road	BMP	EMP	Length
1500000	0.00	1.20	1.20
1500000	1.20	1.80	0.60
2017000	11.85	12.51	0.66
2017165	0.00	0.27	0.27
2017900	0.00	0.91	0.91
2070011	0.00	0.20	0.20
2160380	1.50	1.90	0.40
2200000	32.53	41.20	8.67
2200011	0.00	4.92	4.92
2200750	0.00	1.25	1.25
2200780	0.00	2.75	2.75
2200781	0.00	0.32	0.32
2200800	0.00	3.03	3.03
2200820	0.00	0.57	0.57
2200830	0.00	1.10	1.10
2200840	0.42	1.33	0.91
2200850	0.00	2.08	2.08
2200860	0.00	1.40	1.40
2200862	0.00	0.30	0.30
2200865	0.00	1.63	1.63
2200869	0.00	0.34	0.34
2200890	0.00	1.15	1.15
2200895	0.00	0.48	0.48
2200900	0.00	2.05	2.05
2200940	0.00	1.33	1.33
2200970	0.00	0.45	0.45
2200980	0.00	2.05	2.05
2200984	0.00	0.38	0.38
2200985	0.00	0.30	0.30
2220000	6.29	8.41	2.12
2220000	9.36	9.51	0.15
2220000	11.79	12.81	1.02
2220017	0.00	1.25	1.25

Road	BMP	EMP	Length
2220600	0.00	2.24	2.24
2300000	6.87	23.49	16.62
2300011	0.00	0.70	0.70
2300120	0.00	1.14	1.14
2300200	0.00	1.00	1.00
2300205	0.00	0.20	0.20
2300210	0.00	0.38	0.38
2300212	0.00	0.17	0.17
2300270	0.00	0.38	0.38
2300300	0.00	3.79	3.79
2300308	0.00	0.28	0.28
2300310	0.00	0.50	0.50
2300320	1.84	1.93	0.09
2300323	0.00	0.89	0.89
2300335	0.00	0.55	0.55
2300340	0.00	0.56	0.56
2300365	0.00	0.41	0.41
2300370	0.00	1.10	1.10
2300400	0.00	1.56	1.56
2300410	0.00	1.33	1.33
2300450	0.00	0.66	0.66
2300451	0.00	0.30	0.30
2310000	0.00	6.69	6.69
2310030	0.00	1.89	1.89
2310100	0.00	0.20	0.20
2310240	0.00	0.20	0.20
2310250	0.00	0.40	0.40
2310500	0.00	2.08	2.08
2310500	2.08	4.79	2.71
2310580	0.00	1.60	1.60
2310600	0.00	3.22	3.22
2310600	3.22	5.00	1.78
2312000	0.00	3.59	3.59

Road	BMP	EMP	Length
2312011	0.00	2.16	2.16
2312100	0.00	2.56	2.56
2312160	0.00	1.20	1.20
2312190	0.00	1.89	1.89
2312200	0.00	0.49	0.49
2312220	0.00	0.60	0.60
2312222	0.00	0.28	0.28
2312255	0.00	0.50	0.50
2312257	0.00	0.47	0.47
2312257	0.47	0.85	0.38
2312400	0.00	2.70	2.70
2312400	2.70	3.37	0.67
2312420	0.00	1.08	1.08
2312422	0.00	0.27	0.27
2312440	0.00	1.36	1.36
2312442	0.28	0.60	0.32
2312460	0.00	0.91	0.91
2312460	1.21	2.03	0.82
2312520	0.00	1.46	1.46
2312570	0.00	1.36	1.36
2312590	0.00	0.38	0.38
2312600	0.00	1.60	1.60
2312625	0.00	0.27	0.27
2312790	0.00	0.30	0.30
2312800	0.00	1.89	1.89
2312820	0.00	1.00	1.00
2312900	0.30	1.63	1.33
2312930	0.00	0.10	0.10
2312940	0.00	0.64	0.64
2312950	0.00	0.37	0.37
2312952	0.00	0.20	0.20
2312960	0.00	0.26	0.26
2313000	0.00	1.14	1.14
2313000	1.14	3.50	2.36

Road	BMP	EMP	Length
2313700	0.00	1.52	1.52
2313720	0.00	0.70	0.70
2313750	0.00	0.11	0.11
2316970	0.00	2.27	2.27
2400000	0.08	0.46	0.38
2400000	0.78	2.00	1.22
2400000	2.00	15.82	13.82
2400017	0.00	2.58	2.58
2400050	0.00	1.89	1.89
2400056	0.00	0.19	0.19
2400120	0.55	1.99	1.44
2400127	0.00	0.29	0.29
2400128	0.00	0.36	0.36
2400129	0.00	0.10	0.10
2400129	0.10	0.39	0.29
2400130	0.00	0.81	0.81
2400132	0.00	0.44	0.44
2400200	0.00	1.12	1.12
2400205	0.00	0.30	0.30
2400220	0.00	0.66	0.66
2400230	0.00	1.14	1.14
2400240	0.00	0.23	0.23
2400255	0.00	0.64	0.64
2400256	0.00	0.30	0.30
2400260	0.00	0.80	0.80
2400290	0.00	0.66	0.66
2400300	0.00	4.17	4.17
2400310	0.00	0.95	0.95
2400320	0.00	0.76	0.76
2400340	0.00	1.29	1.29
2400350	0.00	0.45	0.45
2400360	0.00	0.68	0.68
2400380	0.00	0.47	0.47
2400382	0.00	0.05	0.05

Road	BMP	EMP	Length
2400390	0.00	0.90	0.90
2400400	0.00	3.16	3.16
2400430	0.00	0.80	0.80
2400435	0.00	0.68	0.68
2400470	0.00	0.38	0.38
2400475	0.00	0.38	0.38
2415000	0.00	2.50	2.50
2415920	0.00	2.30	2.30
2415924	0.00	0.50	0.50
2420000	0.00	4.57	4.57
2420480	0.00	1.00	1.00
2420480	1.00	1.25	0.25
2420482	0.00	0.19	0.19
2420600	0.00	1.26	1.26
2420600	1.26	1.70	0.44
2420630	0.00	0.60	0.60
2420650	0.00	0.68	0.68
2420670	0.00	0.19	0.19
2420670	0.19	0.70	0.51
2420910	0.00	0.55	0.55
2424000	0.00	6.44	6.44
2424017	0.00	2.72	2.72
2424100	0.00	0.25	0.25
2424170	0.00	1.00	1.00
2424200	0.00	3.03	3.03
2424230	0.00	0.57	0.57
2424280	0.00	0.40	0.40
2424300	0.00	3.05	3.05
2424320	0.00	1.89	1.89
2424325	0.00	1.70	1.70
2424327	0.00	0.50	0.50
2424400	0.00	0.85	0.85
2424500	0.00	0.40	0.40
2424600	0.00	1.52	1.52

Road	BMP	EMP	Length
2424650	0.00	0.93	0.93
2424660	0.00	0.94	0.94
2424700	0.00	1.10	1.10
2424750	0.00	0.49	0.49
2424800	0.00	1.46	1.46
2424800	1.46	2.14	0.68
2424810	0.00	0.68	0.68
2424840	0.00	1.06	1.06
2424890	0.00	0.74	0.74
2424900	0.00	2.02	2.02
2424940	0.00	0.96	0.96
2424950	0.00	0.93	0.93
2424970	0.00	0.91	0.91
2424990	0.00	1.97	1.97
2424993	0.00	0.19	0.19
2424996	0.00	0.76	0.76
2428100	0.00	1.89	1.89
2428390	0.00	0.61	0.61
2428500	0.00	3.79	3.79
2428540	0.00	0.57	0.57
2428550	0.00	0.75	0.75
2428570	0.00	0.75	0.75
2428575	0.00	0.38	0.38
2430017	0.00	0.13	0.13
2451467	0.76	1.31	0.55
2451468	0.00	0.27	0.27
2451469	0.30	0.81	0.51
2451510	0.00	0.40	0.40
2451600	0.00	0.53	0.53
2451601	0.00	0.10	0.10
2451700	0.00	0.20	0.20
2451800	0.00	1.14	1.14
2500000	0.72	4.75	4.03
2510000	0.00	1.56	1.56

Road	BMP	EMP	Length
2510000	1.56	13.76	12.20
2510400	0.00	2.52	2.52
2510410	0.00	0.47	0.47
2510590	0.00	0.66	0.66
2510650	0.00	3.41	3.41
2510687	0.00	0.28	0.28
2510690	0.00	0.44	0.44
2510691	0.00	0.19	0.19
2510695	0.00	0.22	0.22
2521000	0.00	0.75	0.75
2521900	0.00	1.61	1.61
2521910	0.00	1.23	1.23
2521914	0.00	0.13	0.13
2521930	0.00	0.91	0.91
2521933	0.00	0.23	0.23
2521940	0.00	0.95	0.95
2521950	0.00	0.40	0.40
2521990	0.00	0.45	0.45
2521993	0.00	0.44	0.44
2524000	0.00	0.50	0.50
2524900	0.00	4.39	4.39
2524901	0.00	0.27	0.27
2524910	0.00	3.60	3.60
2524930	0.00	2.37	2.37
2524990	0.00	0.28	0.28
3100400	0.00	0.57	0.57
3100400	0.76	3.60	2.84
3100460	0.00	0.50	0.50
3100480	0.00	0.25	0.25
3100490	0.00	0.55	0.55
3100580	0.00	1.19	1.19
3115000	0.00	2.50	2.50
3115520	0.00	0.70	0.70
3117000	0.00	4.40	4.40

Road	BMP	EMP	Length
3117000	4.40	5.80	1.40
3117100	0.00	1.33	1.33
3117200	0.00	3.11	3.11
3117210	0.00	0.65	0.65
3117230	0.00	0.91	0.91
3117233	0.00	0.52	0.52
3117235	0.00	0.42	0.42
3117240	0.00	0.95	0.95
3117245	0.00	1.70	1.70
3117250	0.00	1.06	1.06
3117255	0.00	0.19	0.19
3117270	0.00	0.20	0.20
3117300	0.00	0.80	0.80
3117320	0.00	0.21	0.21
3117350	0.00	1.15	1.15
3117380	0.00	0.07	0.07
3117400	0.20	1.53	1.33
3117453	0.00	0.27	0.27
3117470	0.00	0.75	0.75
3117480	0.00	0.60	0.60
3117485	0.00	0.20	0.20
3117490	0.00	0.90	0.90
3117600	0.40	1.10	0.70
3117700	0.00	2.40	2.40
3117710	0.00	0.91	0.91
3117730	0.00	1.19	1.19
3117732	0.00	0.27	0.27
3117750	0.00	1.70	1.70
3117770	0.00	0.18	0.18
3117900	0.00	1.10	1.10
3117930	0.00	0.10	0.10
3118000	0.00	1.85	1.85
3118000	1.85	3.37	1.52
3118017	0.00	0.03	0.03

Road	BMP	EMP	Length
3118017	0.03	1.55	1.52
3118100	0.00	0.81	0.81
3118100	0.81	2.20	1.39
3118200	0.00	1.40	1.40
3118230	0.00	0.70	0.70
3118300	0.00	0.53	0.53
3118300	0.53	1.00	0.47
3118310	0.00	0.50	0.50
3118390	0.00	0.41	0.41
3118400	0.00	0.47	0.47
3118500	0.00	0.56	0.56
3118500	0.56	1.14	0.58
3118510	0.00	0.20	0.20
3118600	0.00	0.90	0.90
3118700	0.00	0.89	0.89
3118700	0.89	1.89	1.00
3118720	0.00	0.47	0.47
3118750	0.00	0.57	0.57
3118800	0.00	1.70	1.70
3118830	0.00	0.43	0.43
3118840	0.00	0.80	0.80
3118844	0.00	0.13	0.13
3118846	0.00	0.11	0.11
3118850	0.00	1.04	1.04
3118850	1.04	1.76	0.72
3118900	0.00	1.30	1.30
3118950	0.00	1.13	1.13
3118950	1.13	1.70	0.57
3125000	0.00	3.00	3.00
3125017	0.00	1.80	1.80
3125050	0.00	1.14	1.14
3125100	0.00	1.89	1.89
3125130	0.00	0.40	0.40
3125200	0.00	1.17	1.17

Road	BMP	EMP	Length
3125220	0.00	0.98	0.98
3145200	0.00	1.30	1.30
3145270	0.00	0.30	0.30
3145400	0.00	2.69	2.69
4040000	0.00	11.50	11.50
4040500	0.00	1.08	1.08
4040530	0.00	1.90	1.90
4040535	0.00	0.42	0.42
4040537	0.00	0.10	0.10
4040550	0.00	1.40	1.40
4100200	0.00	1.47	1.47
4100225	0.00	0.55	0.55
4120815	0.00	0.33	0.33
4200280	0.00	1.20	1.20
4200284	0.00	1.10	1.10
4240000	0.00	5.40	5.40
4240350	0.00	1.10	1.10
4240352	0.00	0.20	0.20
4240400	0.00	1.50	1.50
4240400	1.50	1.80	0.30
4240490	0.00	0.14	0.14
4240500	0.00	0.06	0.06
4240530	0.00	0.15	0.15
4240550	0.00	1.00	1.00
4245000	0.00	4.60	4.60
4245100	0.00	0.90	0.90
4245120	0.00	0.10	0.10
4245130	0.00	0.20	0.20
4245200	0.00	1.43	1.43
4245210	0.00	0.20	0.20
4245220	0.00	0.60	0.60
4245222	0.00	0.38	0.38
4245300	0.00	1.20	1.20
4245320	0.00	1.80	1.80

Road	BMP	EMP	Length
4245322	0.00	0.11	0.11
4245350	0.00	0.80	0.80
4245380	0.00	0.30	0.30
4245400	0.00	1.86	1.86
4245500	0.00	1.66	1.66
4245530	0.00	0.20	0.20
4245540	0.00	0.20	0.20
4245550	0.00	0.90	0.90
4245555	0.00	0.10	0.10
4245560	0.00	0.30	0.30
4245570	0.00	0.50	0.50
4245580	0.00	0.90	0.90
4245600	0.00	2.20	2.20
4245630	0.00	0.80	0.80
4245635	0.00	0.20	0.20
4245700	0.00	1.30	1.30
4245720	0.00	0.80	0.80
4245725	0.00	0.40	0.40
4245800	0.00	1.00	1.00
4245900	0.00	0.50	0.50
4260000	7.72	9.97	2.25
4260070	0.90	1.80	0.90
4260125	0.00	0.50	0.50
4260600	0.00	1.52	1.52
4260630	0.00	1.40	1.40
4260860	0.00	1.52	1.52
4280120	0.00	1.60	1.60
4280121	0.00	0.10	0.10
4280122	0.00	0.20	0.20
4280123	0.00	0.10	0.10
4280124	0.00	0.20	0.20
4280730	0.00	1.37	1.37
4300700	0.00	1.70	1.70
4300702	0.00	0.20	0.20

Road	BMP	EMP	Length
4300720	0.00	0.40	0.40
4300740	0.00	1.20	1.20
4300760	0.00	0.50	0.50
4300780	0.00	0.50	0.50
4300820	0.00	0.25	0.25
4300824	0.00	0.40	0.40
4300826	0.00	0.80	0.80
4320080	0.00	1.30	1.30
4320100	0.00	0.80	0.80
4330200	0.00	1.80	1.80
4330500	0.00	1.90	1.90
4350000	0.00	2.10	2.10
4350100	0.00	0.26	0.26
4350200	0.00	1.22	1.22
4350200	1.22	1.84	0.62
4360000	0.00	2.80	2.80
4360000	2.80	3.71	0.91
4360540	0.00	0.20	0.20
4360945	0.00	0.30	0.30
4360950	0.00	1.27	1.27
4360960	0.00	0.70	0.70
4360970	0.00	1.50	1.50
4370100	0.00	1.46	1.46
4380120	0.00	0.30	0.30
4400000	7.16	9.91	2.75
4400000	9.91	16.61	6.70
4400020	0.00	1.40	1.40
4400200	0.00	0.76	0.76
4400950	0.00	1.30	1.30
4400960	0.00	1.21	1.21
4400975	0.00	0.60	0.60
4400980	0.00	1.40	1.40
4400985	0.00	0.30	0.30
4400990	0.00	0.20	0.20

Road	BMP	EMP	Length
4410000	0.00	4.60	4.60
4410050	0.00	0.16	0.16
4410060	0.00	0.12	0.12
4410070	0.00	0.13	0.13
4410100	0.00	0.30	0.30
4410150	0.00	0.70	0.70
4410200	0.00	0.30	0.30
4410300	0.00	2.00	2.00
4410400	0.00	0.94	0.94
4410450	0.00	1.40	1.40
4410510	0.00	0.20	0.20
4410600	0.00	1.10	1.10
4410630	0.00	0.30	0.30
4410635	0.00	0.10	0.10
4410650	0.00	0.40	0.40
4410652	0.00	0.10	0.10
4420000	1.70	2.43	0.73
4420500	0.00	0.90	0.90
4420900	0.00	0.78	0.78
4420900	0.78	1.77	0.99
4420920	0.00	0.30	0.30

Road	BMP	EMP	Length
4420930	0.00	0.20	0.20
4600370	0.61	10.54	9.93
4600377	0.00	0.40	0.40
4600378	0.00	0.60	0.60
4600380	0.00	1.17	1.17
4600698	0.33	0.80	0.47
4600805	0.00	0.40	0.40
4600810	0.00	0.10	0.10
4630000	0.24	1.50	1.26
4636000	0.00	1.10	1.10
4636000	1.10	7.10	6.00
4636000	7.10	7.49	0.39
4665000	0.00	1.80	1.80
4665300	0.00	0.30	0.30
4665300	0.30	2.60	2.30
6010000	0.00	8.10	8.10
9775000	15.51	16.00	0.49
9775000	17.00	18.50	1.50
9775975	0.00	0.40	0.40
9775987	0.00	1.00	1.00
9775995	0.00	0.40	0.40

**Table (X): Dispersed Camping Special Provisions (Ochoco NF)**

Road	BMP	EMP	Length
2230000	2.20	7.00	4.80
2230151	0.00	0.10	0.10
2600220	0.00	1.40	1.40
2600551	0.00	0.10	0.10
2600700	0.00	2.00	2.00
2600805	0.00	1.20	1.20
2600820	0.00	0.26	0.26
2600825	0.00	0.20	0.20
2600828	0.00	0.17	0.17
2600830	0.00	0.80	0.80
2600845	0.00	0.10	0.10
2600850	0.00	1.05	1.05
2600850	1.05	2.86	1.81
2600852	0.00	0.70	0.70
2600855	0.00	2.30	2.30
2600857	0.00	0.20	0.20
2600860	0.00	0.10	0.10
2600875	0.00	0.18	0.18
2600880	0.00	1.80	1.80
2600881	0.00	0.30	0.30
2600885	0.00	1.00	1.00
2600886	0.00	0.70	0.70
2600887	0.00	0.65	0.65
2600888	0.00	0.20	0.20
2600889	0.00	0.70	0.70
2600890	0.00	1.40	1.40
2600893	0.00	0.70	0.70
2600896	0.00	0.20	0.20
2600901	0.00	1.60	1.60
2600903	0.00	0.20	0.20
2600905	0.00	1.20	1.20
2600906	0.00	0.90	0.90

Road	BMP	EMP	Length
2630000	10.30	26.60	16.30
2630450	0.00	6.50	6.50
2690060	0.00	1.30	1.30
2690080	0.00	0.70	0.70
2690090	0.00	0.10	0.10
2690120	0.00	1.10	1.10
2690130	0.00	1.70	1.70
2690140	0.00	0.60	0.60
2690141	0.00	0.32	0.32
2690150	0.00	2.70	2.70
2690151	0.00	0.20	0.20
2690153	0.00	0.70	0.70
2690154	0.00	0.50	0.50
2690155	0.00	0.20	0.20
2690156	0.00	0.80	0.80
2690157	0.00	0.50	0.50
2690160	0.00	1.90	1.90
2690170	0.00	0.10	0.10
2700000	20.60	24.20	3.60
2700000	24.20	26.00	1.80
2700000	26.00	32.00	6.00
2700000	32.00	37.47	5.47
2700650	0.00	2.50	2.50
2705000	0.00	4.70	4.70
2705013	0.00	0.10	0.10
2710000	0.00	5.70	5.70
2710000	5.70	5.90	0.20
2710000	5.90	6.10	0.20
2710030	0.00	0.20	0.20
3300000	0.00	11.40	11.40
3300103	0.00	0.20	0.20
3300220	0.00	0.10	0.10

Road	BMP	EMP	Length
3350209	0.00	0.82	0.82
3350350	0.00	1.30	1.30
3800000	3.50	11.00	7.50
3800220	0.00	0.07	0.07
4200000	0.00	19.30	19.30
4200000	26.10	35.50	9.40
4200350	0.00	4.80	4.80
4200650	0.00	4.90	4.90
4200652	0.00	2.10	2.10
4200656	0.00	1.30	1.30
4200657	0.00	0.20	0.20
4200658	0.00	0.30	0.30
4200660	0.00	1.00	1.00
4200662	0.00	0.20	0.20
4200690	0.00	0.10	0.10
4200700	0.00	2.20	2.20
4200730	0.00	0.30	0.30
4200750	0.00	0.80	0.80
4200750	0.80	2.80	2.00
4200751	0.00	0.10	0.10
4200754	0.00	0.50	0.50
4200757	0.00	0.60	0.60
4260000	0.00	7.39	7.39
4260000	7.39	9.23	1.84
4260000	9.23	9.60	0.37
4260000	10.00	11.50	1.50
4260000	11.82	13.07	1.24
4260150	0.00	0.30	0.30
4260200	0.00	0.50	0.50
4260200	0.50	2.18	1.68
4260230	0.00	0.47	0.47
4260285	0.00	0.90	0.90
4260286	0.00	0.20	0.20
4260300	0.00	2.10	2.10

Road	BMP	EMP	Length
4260350	0.00	1.80	1.80
4260500	0.00	1.80	1.80
4280000	0.00	4.60	4.60
4280060	0.00	0.30	0.30
5100050	0.00	0.20	0.20
5100060	0.00	0.15	0.15
5100070	0.00	0.56	0.56
5100101	0.36	1.43	1.07
5100103	0.00	0.27	0.27
5100104	0.00	2.32	2.32
5100105	0.00	0.34	0.34
5100120	0.00	0.64	0.64
5100230	0.00	0.16	0.16
5100260	0.00	0.85	0.85
5100270	0.00	0.15	0.15
5100280	0.00	0.29	0.29
5100290	0.00	1.39	1.39
5100291	0.00	0.76	0.76
5100320	0.00	0.15	0.15
5100330	0.00	0.92	0.92
5110060	0.00	1.72	1.72
5130130	0.00	1.80	1.80
5160050	0.00	1.60	1.60
5160053	0.00	0.60	0.60
5160054	0.00	1.00	1.00
5160055	0.00	0.10	0.10
5160057	0.00	0.10	0.10
5160080	0.00	1.30	1.30
5160081	0.00	0.40	0.40
5160082	0.00	0.20	0.20
5160085	0.00	0.20	0.20
5160086	0.00	0.14	0.14
5200085	0.00	1.30	1.30
5200170	0.00	2.00	2.00

Road	BMP	EMP	Length
5200172	0.00	0.50	0.50
5300200	0.00	0.20	0.20
5300210	0.00	1.20	1.20
5300240	0.00	1.70	1.70
5300241	0.00	0.60	0.60
5300242	0.00	0.60	0.60
5300250	0.00	1.20	1.20
5300260	0.00	1.40	1.40
5300520	0.00	1.70	1.70
5300521	0.00	1.80	1.80
5310040	0.00	0.30	0.30
5310060	0.00	0.80	0.80
5310090	0.00	1.10	1.10
5310120	0.00	0.40	0.40
5310150	0.00	0.30	0.30
5310151	0.00	0.10	0.10
5310160	0.00	0.10	0.10
5310161	0.00	0.20	0.20
5310162	0.00	0.10	0.10
5310165	0.00	0.70	0.70
5310170	0.00	0.30	0.30
5320045	0.00	0.20	0.20
5320050	0.00	0.50	0.50
5320051	0.00	0.30	0.30
5330040	0.00	0.30	0.30
5330060	0.00	0.10	0.10
5330080	0.00	0.90	0.90
5330081	0.00	0.10	0.10
5340060	0.00	0.92	0.92
5340080	0.00	0.40	0.40
5340081	0.00	0.73	0.73
5340085	0.00	1.30	1.30
5340086	0.00	0.30	0.30
5340090	0.00	1.10	1.10

Road	BMP	EMP	Length
5400100	0.00	3.10	3.10
5400101	0.00	0.30	0.30
5400110	0.00	0.60	0.60
5400111	0.00	2.40	2.40
5400130	0.00	1.10	1.10
5400150	0.00	1.30	1.30
5400170	0.00	2.60	2.60
5400171	0.00	0.10	0.10
5400190	0.00	1.50	1.50
5500080	0.00	0.70	0.70
5500120	0.00	0.60	0.60
5540020	0.00	3.27	3.27
5700502	0.00	0.30	0.30
5750190	0.00	1.30	1.30
5760010	0.00	0.10	0.10
5760020	0.00	0.80	0.80
5800000	0.00	6.20	6.20
5810000	8.60	11.90	3.30
5840000	6.80	12.30	5.50
5840000	12.30	12.52	0.22
5920180	0.00	1.80	1.80
5920181	0.00	2.50	2.50
5920182	0.00	1.30	1.30
5920183	0.00	1.00	1.00
5920184	0.00	0.10	0.10
5920185	0.00	0.50	0.50
5920186	0.00	2.10	2.10
5920187	0.00	0.30	0.30
6200020	0.00	0.10	0.10
6200040	0.00	1.80	1.80
6200041	0.00	0.50	0.50
6200042	0.00	0.10	0.10
6200060	0.00	2.50	2.50
6200063	0.00	0.60	0.60

Road	BMP	EMP	Length
6200064	0.00	1.30	1.30
6200068	0.00	0.70	0.70
6200069	0.00	0.30	0.30
6200072	0.00	0.30	0.30
6200080	0.00	0.20	0.20
6200100	0.00	0.50	0.50
6200120	0.00	0.39	0.39
6200160	0.00	0.53	0.53
6200180	0.00	2.70	2.70
6200181	0.00	0.23	0.23
6200182	0.00	0.10	0.10
6200204	0.00	0.15	0.15
6300089	0.00	0.40	0.40
6300340	0.00	0.10	0.10
6300380	0.00	0.20	0.20
6300480	0.00	0.70	0.70
6300542	0.00	3.90	3.90
6300545	0.00	0.40	0.40
6300560	0.00	0.10	0.10
6300620	0.00	0.30	0.30
6300700	0.00	1.39	1.39
6300702	0.00	0.20	0.20
6300703	0.00	0.20	0.20
6330040	0.00	0.50	0.50
6330100	0.00	0.50	0.50
6340010	0.00	0.10	0.10
6340040	0.00	0.60	0.60
6350030	0.00	0.10	0.10
6355100	0.55	2.30	1.75
6355102	0.00	0.70	0.70
6355150	0.00	0.10	0.10
6355200	0.00	0.95	0.95
6370040	0.10	0.90	0.80
6400040	0.00	1.50	1.50

Road	BMP	EMP	Length
6500180	0.00	0.20	0.20
6510040	0.00	1.60	1.60
6510120	0.00	0.80	0.80
6510160	0.00	0.80	0.80
7850070	0.00	0.55	0.55
7850070	0.55	1.07	0.52
7850071	0.00	0.10	0.10
7850072	0.00	0.30	0.30
8900200	0.00	0.40	0.40
8900240	0.00	0.70	0.70
8900300	0.00	0.30	0.30
8900320	0.00	0.40	0.40
8900321	0.00	0.80	0.80
8900340	0.00	2.00	2.00
8900342	0.00	0.20	0.20
8900343	0.00	0.20	0.20
8900345	0.00	0.30	0.30
8910060	0.00	1.90	1.90
8910061	0.00	0.20	0.20
8910063	0.00	1.20	1.20
8910065	0.00	0.40	0.40
8910066	0.00	0.60	0.60
9600040	0.00	1.10	1.10
9600041	0.00	0.40	0.40
9600042	0.00	0.10	0.10
9600060	0.00	0.40	0.40
9600080	0.00	0.70	0.70
9600100	0.00	2.90	2.90
9600180	0.00	0.20	0.20
9600240	0.00	1.70	1.70
9600242	0.00	0.20	0.20
9600260	0.00	1.20	1.20
9600261	0.00	0.10	0.10
9610020	0.00	1.40	1.40

Road	BMP	EMP	Length
9610021	0.00	0.20	0.20
9610140	0.00	2.80	2.80
9610141	0.00	0.10	0.10
9610150	0.00	1.20	1.20

## Appendix C- Forest Plan Consistency

### *C-1 Fisheries*

For the Deschutes and Ochoco National Forests and the Crooked River National Grassland (CRNG), fisheries habitat guidance for this project is mainly directed by the Northwest Forest Plan (1994) on the Deschutes, the Inland Native Fish Strategy (INFISH 1995) on the Deschutes, Ochoco and CRNG, and the Interim Strategies for Managing Anadromous Fish Producing Watersheds (PACFISH 1995) on the Ochoco NF. The following paragraphs discuss the guidance within those documents for protecting fisheries resources.

#### 1. Northwest Forest Plan (1994)

This plan outlines how Federal Lands within the range of the Northern Spotted Owl will be managed. The Aquatic Conservation Strategy (ACS) objectives more specifically outline how to manage for healthy watersheds. There are nine ACS objectives which will be addressed in this report under the effects of the action alternatives. The ACS strives to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian dependent species and resources and restore currently degraded habitats. ACS Objectives that are affected by this project include those that deal with vegetation species diversity and sediment/erosion.

#### 2. INFISH (1995)

Riparian Management Goals, as established by INFISH (pages A-1 and A-2 of the Decision Notice and Finding of No Significant Impact 1995), are to maintain or restore:

- water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed; instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- natural timing and variability of the water table elevation in meadows and wetlands;
- diversity and productivity of native and desired non-native plant communities in riparian zones;
- riparian vegetation, to:
  - a. provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
  - b. provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
  - c. help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
- riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved with the specific geo-climatic region; and habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Riparian Management Objectives (RMOs) (page A-4 by INFISH), have been established to provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. The interim RMOs provide the target toward which manager's aim as they conduct resource management activities across the landscape. It is not expected that the objectives would be met instantaneously, but rather would be achieved over time. RMOs may be refined to better reflect conditions that are attainable

in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. RMO parameters that are applicable to fisheries and this project include water temperature and bank stability. RMOs are in Table 1.

### **Aquatic Conservation Strategy for the Deschutes NF**

The Aquatic Conservation Strategy (NWFP 1994) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. As part of the ACS there are standards and guidelines that require that projects that are implemented on National Forest lands within the Northwest Forest Plan areas (the Deschutes NF for this project) “do not retard or prevent attainment of Aquatic Conservation Strategy objectives”. In order to make this finding the analysis must include a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed and how the proposed project maintains or moves the project toward the natural range of variability.

The current condition portion of this document outlines the important aspects of vegetative, soils, hydrology, and fisheries resources and large areas of concern/impacts that are a result of either motorized access for dispersed camping or motorized access off of designated routes. The following section outlines a generalized description of the natural range of variability for important physical and biological components across both forests. The descriptions are generally taken from work done on the Ochoco National Forest in the Trout Creek Watershed Analysis (1995) and the Mill Creek Watershed Analysis (1996-1997). They have been generalized to describe conditions across the two forests based on Rosgen stream type (1994). While this description includes the physical description of stream types it is assumed for this analysis that reach conditions in the stream and floodplain are largely independent of motorized access for dispersed camping or motorized access off of designated routes because most all of this motorized access is limited to terraces above the stream channel and that actions that influence channel morphology are larger in scale or scope than the access for a particular dispersed site.

This analysis will be used to describe expected vegetative conditions adjacent to the stream that could be impacted by this access. Most all dispersed sites (>99%) across both forests are located on inactive fluvial landforms adjacent to streams. These surfaces are those that have in the past been active surfaces, either as active floodplains or as active channels. For these purposes they are defined as those surfaces outside the 15 year floodplain and are referred to here as terraces. Vegetation on these surfaces is predominately conifer or mixed conifer with a grass and brush understory.

Active channel surfaces (floodplain, channel, etc) are currently more likely to be at vegetation potential in stable systems. Degraded systems may have similar vegetation types but amount/volume may be compromised compared to historic. Vegetation on these surfaces in most cases maintains channel form and function and is independent of motorized access to dispersed sites and motorized access off of designated routes.

## *C-2 Geology*

### **Forest Plan Desired Condition**

The desired condition for the geologic health is to reduce soil erosion and improve water quality and riparian habitat. Landforming processes will continue at a natural pace. The identification of mass wasting events such as landslides, the current level of landslide activity and the characteristics of the underlying geologic formations benefits water quality, water quantity, and fish habitat by focusing on the sources for potential sediment.

Although central Oregon is no longer affected by the past moist climate, which contributed to the generation of the landslide features shaping the mountains today, there is the potential to reactivate the dormant landslides. When the toeslopes of the deep seated landslides abut live streams, they are prone to active erosion. Through time, the landslide debris has reached equilibrium on the hill slopes. As the stream erodes the toeslopes, the natural balance is upset. Accelerated erosion can occur, causing a decrease in water quality as additional sediment is introduced into the system. The goal is to not increase the pace of mass wasting events beyond the natural background rate.

The Ochoco and Deschutes National Forests and Crooked River National Grassland have a goal to provide for and facilitate the exploration, development, and production of mineral and energy resources in coordination with other resource objectives, environmental considerations, and mining and leasing laws. Exploration and development of locatable and leasable minerals will be allowed within the analysis area (USFS Ochoco NF and Crooked River National Grassland Land and Resource Management Plan 1989 and USFS Deschutes NF Land and Resource Management Plan 1990). The actual amount of exploration and development is expected to remain at the existing levels for the next decade. The extraction of salable minerals will be limited to existing quarries or new locations that have approved operating plans. Based on current needs, the extraction is not expected to increase in the next 10 years. Rockhounding use is expected to increase as local tourism increases.

Mineral material sources have the ability to meet a variety of needs. The aggregate used on the forest road system, recreation trails, in campgrounds, for fish structures and as landscape rock is non-renewable. Although the use of aggregate is not expected to increase, long term management of the resource is recommended. Planned and implemented reclamation will lead toward bringing land back to vegetative potential. Proper use of aggregate on the transportation network (trails, roads) will lead toward a reduction of sediment introduction into the stream system by hardening roadbeds and directing overland flow across the network to disperse on vegetated ground.

### **Minerals**

Access for mining activities would be coordinated with mining claimants/geothermal operations as needed. Mining Reference – 36 CFR 228A and 228C, Ochoco NF 1989 Forest Plan S&G Pg. 4-171, Deschutes NF 1990 Forest Plan S&G Pg. 4-68 to 4-69, Pg. 4-77 to 4-83.

### **Seeps and Springs in dormant landslide terrain**

Seeps and springs would be managed using Class III and IV RHCAs as specified in INFISH and PACFISH. This includes springs and seeps within dormant landslide terrain. Ochoco NF S&G Mass Wasting Pg 4-196-197.

## *C-3 Hydrology*

### **Analysis Guidance:**

Management of this project, as it relates to hydrologic and riparian function, is directed by the Northwest Forest Plan (1994), Ochoco Land and Resource Management Plan (LRMP 1989), Deschutes Land and Resource Management Plan (LRMP 1990), the Inland Native Fish Strategy (INFISH 1995), the Interim Strategies for Managing Anadromous Fish Producing Watersheds (PACFISH 1995), several Wild and Scenic Management Plans, the Clean Water Act (1972) and Executive Orders 11988, 11990, and 12088. Additional scientific guidance and background information is available within various Watershed Assessments and the General Water Quality Best Management Practices (1988). The following paragraphs discuss the guidance within those documents for protecting water resources.

### *3. Northwest Forest Plan (1994)*

This plan outlines how Federal Lands within the range of the Northern Spotted Owl will be managed. The Aquatic Conservation Strategy (ACS) objectives more specifically outline how to manage for healthy watersheds. There are nine ACS objectives which will be addressed in fisheries report under the effects of the action alternatives.

Standards and Guidelines that are applicable to this project include the following.

- RM-2 – Monitor the impacts of dispersed or developed recreation in Riparian Reserves. When Riparian Management Objectives are not being met, reduce impacts through education, use limits, more intensive maintenance, facility modification, and/or closures. For example, harassment of fish during spawning or low water can be reduced by closing access roads or campgrounds during critical periods, or education of users.

### *4. Ochoco Land and Resource Management Plan (1989)*

Water goals, as established by the LRMP are to maintain or improve water quality, quantity, and timing of run-off, comply with the objectives of the Clean Water Act and Oregon State water quality standards, and to provide water of consistently high quality to users and dependent resources (page 4-35). A long-term Forest objective is to maintain or improve all riparian areas to “excellent condition,” in order to maintain or improve water resources. The desired condition outlined in the LRMP (page 4-36, 4-74 and 4-75) states the following:

- In ten years, watersheds that are in good condition should remain so, while those presently not in good condition should be given first priority to improve watershed and riparian areas. Although the ten year time period has elapsed since the Forest Plan, efforts are still directed towards improving watershed condition.
- In fifty years, it is expected that 90 to 95 percent of the riparian areas on the Forest will be in “excellent condition.”
- In general, riparian areas should exhibit a low, but apparent level of management. Vegetation may or may not appear manipulated, depending on the condition of the stream. Within the limits of ecological potential, a shady, brushy condition with a canopy of alder, willow, aspen, or other deciduous vegetation will exist. Where coniferous evergreens are a natural component of the ecosystem, a variety of size classes will exist to perpetuate the supply of shade and woody debris over time. Sites unable to support a canopy of deciduous or evergreen species will be characterized by vigorous stands of forbs, grasses, and grass-like riparian species.

Standards and guidelines (LRMP pages 4-199, 4-236 through 4-242) include the following;

- Select, design, implement, monitor, evaluate, and adjust Best Management Practices based on site-specific conditions to protect water quality and beneficial uses.
- Minimize the impacts to floodplains and wetlands.
- For stream temperature, maintain compliance or improvement towards compliance with the State Temperature Standard and the Clean Water Act.
- For turbidity, stream channel cutbanks should not exceed an average of 20% for any given stream drainage and allow for no more than a 10 percent cumulative increase in natural stream turbidity.
- Shade should be more than 80%, or 100% of potential if 80% is not attainable. Where site potential and topographic factors permit, manage riparian areas to provide the shade necessary to meet stream temperature goals.
- Retain at least 80% of the potential ground cover in grass forb riparian communities and at least 80% of the potential tree or shrub cover.
- Avoid management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment which seriously and adversely affect water conditions or fish habitat.

5. *Deschutes Land and Resource Management Plan (1990)*

Aquatic goals, as established by the LRMP are to manage riparian areas to maintain or enhance riparian dependent resources such as water quality, fish habitat, wildlife, and vegetation that owe their existence to riparian areas (page 4-61).

Summarized Standards and Guidelines that are applicable to this project (LRMP pages 4-61, 4-62, 4-65, 4-69, and 4-70) include the following;

- Manage water temperatures to support benefiting resources. Evaluate the effect of proposed projects on water temperature and make adjustments where impacts to benefiting resources are predicted.
- Meet or exceed water quality standards for the State of Oregon in accordance with the Clean Water Act, through application of Best Management Practices (BMPs).
- Evaluate cumulative effects of proposed projects on water quality, runoff, stream channel conditions and adopt measures to avoid adverse effects to these resources.
- Manage woody debris and riparian vegetation to maintain or enhance stream channel and bank structure.
- Native streamside vegetation and lakeside deciduous and conifer vegetation will be maintained or established which will enhance riparian resources. Where this vegetation has been altered, every effort will be made to reestablish riparian vegetation that will benefit riparian dependent resources.

6. *INFISH (1995)*

Riparian Management Goals, as established by INFISH (pages A-1 and A-2 of the Decision Notice and Finding of No Significant Impact 1995), are to maintain or restore:

- water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;

- instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- natural timing and variability of the water table elevation in meadows and wetlands;
- diversity and productivity of native and desired non-native plant communities in riparian zones;
- riparian vegetation, to:
  - a. provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
  - b. provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
  - c. help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
- riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved with the specific geo-climatic region; and
- habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Riparian Management Objectives (RMOs) (page A-4 by INFISH), have been established to provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. The interim RMOs provide the target toward which managers aim as they conduct resource management activities across the landscape. It is not expected that the objectives would be met instantaneously, but rather would be achieved over time. RMOs may be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. RMO parameters that are applicable to hydrology and this project include water temperature and bank stability. RMOs are in Table 2.

**Table JS3. Riparian Management Objectives (INFISH, 1995).**

Habitat Feature	Interim Objectives
Pool Frequency	Varies by channel width (See below)
Water Temperatures	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period.) Maximum water temperatures below 59° F within adult holding habitat and below 48° F within spawning and rearing habitats.
Large Woody Debris (forested systems)	East of Cascade Crest in Oregon, Washington, Idaho, Nevada, and western Montana: >20 pieces/mile; >12” diameter; >35’ length.
Bank Stability (non-forested systems)	>80 percent stable.
Lower Bank Angle (non-forested systems)	>75 per cent of banks with <90° angle (i.e., undercut).

Habitat Feature	Interim Objectives								
Width/Depth Ratio	<10, mean wetted width divided by mean depth								

Wetted width (feet)	10	20	25	50	75	100	125	150	200
Pools per mile	96	56	47	26	23	18	14	12	9

Standards and guidelines that pertain to water and herbicides by INFISH are as follows;

- RM-2 Adjust dispersed and developed recreation practices that retard or prevent attainment of Riparian Management Objectives or that adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting Riparian Management Objectives and avoiding adverse effects on inland fish, eliminate the practice or occupancy.

5. *PACFISH (1995)*

Guidance within this document is very similar to the INFISH strategy, yet applies to Sub Basins with anadromous fish. The RMO's and the above Standard and Guideline are the same as in INFISH with the exception of temperature. The interim objective for the PACFISH temperature RMO is: No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 64° F within migration and rearing habitats and below 60° F within spawning habitats.

6. *The Clean Water Act (1972) and Sections 319 and 303(d)*

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of all waters to protect the Beneficial Uses as documented according to criteria by the Oregon Department of Environmental Quality (ODEQ). A beneficial use is a resource or activity that would be directly affected by a change in water quality or quantity. Beneficial uses are defined on a basin scale in the Oregon Administrative Rules for water quality and cover large areas of land.

Under Section 319 of the 1987 CWA Amendments, states are required to determine those waters that will not meet the goals of the CWA, determine those non-point source activities that are contributing pollution, and develop a process on how to reduce such pollution to the "maximum extent practicable." Section 303(d) of the CWA requires that a list be developed of all impaired or threatened waters within each state. The ODEQ is responsible for compiling the 303(d) list, assessing data, and submitting the 303(d) list to the Environmental Protection Agency (EPA) for federal approval.

7. *Executive Orders*

The following Executive Orders pertain to this project;

- Executive Order 12088 requires Federal compliance with pollution control standards (i.e. the Clean Water Act).
- Executive Order 11988 requires agencies to avoid adverse impacts associated with the occupancy and modification of floodplains.
- Executive Order 11990 requires agencies to avoid adverse impacts associated with the destruction or modification of wetlands.

## C-4 Invasives

**Table 10. Other rare or uncommon plant species that are documented to occur on the Deschutes National Forest within the Northwest Forest Plan area.**

Scientific Name	Lifeform	District (No. of Sites)
<i>Chaenotheca subroscida</i>	Lichen	Crescent (1)
<i>Choiromyces alveolatus</i>	Fungus	Sisters (1)
<i>Clavariadelphus truncates</i>	Fungus	Bend/Ft. Rock (1) Crescent (1)
<i>Cyripedium montanum</i>	Vascular Plant	Sisters (8)
<i>Elaphomyces anthracinus</i>	Fungus	Sisters (1)
<i>Elaphomyces subviscidus</i>	Fungus	Bend/Ft. Rock (1)
<i>Gastroboletus ruber</i>	Fungus	Sisters (1)
<i>Gautieria magnicellaris</i>	Fungus	Sisters (1)
<i>Gymnomyces abietis</i>	Fungus	Bend/Ft. Rock (1); Sisters (2)
<i>Hydnotrya inordinata</i>	Fungus	Bend/Ft. Rock (1)
<i>Leptogium teretiusculum</i>	Lichen	Sisters (1)
<i>Polyozellus multiplex</i>	Fungus	Bend/Ft. Rock (3)
<i>Ramaria coulterae</i>	Fungus	Sisters (2)
<i>Ramaria rubripermanens</i>	Fungus	Crescent (1)
<i>Rhizopogon atroviolaceus</i>	Fungus	Bend/Ft. Rock (1); Crescent (1)
<i>Rhizopogon evadens</i> var. <i>subalpinus</i>	Fungus	Bend/Ft. Rock (1); Sisters (1)

### 1.1.1 Management Direction

#### National

The Federal Noxious Weed Act of 1974, as amended (7 U.S.C 2801 et seq.) requires cooperation with State, local, and other Federal agencies in the application and enforcement of all laws and regulations relating to management and control of noxious weeds (a summary of this act can be viewed at: <http://ipl.unm.edu/cwl/fedbook/fedweed.html>). This Act directs the Secretary of Agriculture to develop and coordinate a management program for control of undesirable plants which are noxious, harmful, injurious, poisonous, or toxic on Federal lands under the agency's jurisdiction, to establish and adequately fund the program, to complete and implement cooperative agreements and/or memorandums, and to establish

Integrated Weed Management to control or contain species identified and targeted under cooperative agreements and/or memorandums.

Executive Order 13112 (1999) directs all federal agencies to prevent introduction of invasive species, provide for their control, and to minimize economic, ecological, and human health impacts that invasive species cause.

U.S. Forest Service Manual 2080 directs the Forest Service to use an integrated weed management approach to control and contain the spread of noxious weeds on National Forest System (NFS) lands and from NFS lands to adjacent lands (USDA Forest Service 1995a).

In 1998, the U.S. Forest Service developed a noxious weed strategy for noxious weeds and nonnative plants that provides short- and long-term emphasis and action items in five areas of Integrated Weed Management: Prevention and Education; Control; Inventory, Mapping, and Monitoring; Research; and Administration and Planning (USDA Forest Service 1998a).

The Forest Service Guide to Noxious Weed Prevention Practices provides management guidance in the form of goals along with prevention practices (USDA Forest Service 2001). Forest Service policy identifies prevention of the introduction and establishment of noxious weed infestations as an agency objective. This Guide provides a comprehensive directory of weed prevention practices for use in Forest Service planning and wild land resource management activities and operations.

In October 2004, the Chief of the Forest Service released a National Strategy and Implementation Plan for Invasive Plant Species Management – part of the President’s Healthy Forest Initiative. It focuses on four key elements: preventing invasive species before they arrive; finding new infestations before they spread and become established; containing and reducing existing infestations; and rehabilitating and restoring native habitats and ecosystems. Because prevention and control truly require coordination on a landscape level, a cornerstone of the Plan is cooperating with the public and private organizations through partnerships (see [www.fs.fed.us/foresthealth/publications/Invasive\\_Species](http://www.fs.fed.us/foresthealth/publications/Invasive_Species)).

## **Regional**

Invasive plant management direction for National Forests in Oregon and Washington (which includes the Deschutes and Ochoco National Forests and Crooked River National Grassland) is provided by the *Pacific Northwest Region Invasive Plant Program – Preventing and Managing Invasive Plants* Record of Decision (USDA Forest Service 2005). This Record of Decision amended Forest Land and Resource Management Plans, adding 19 Standards for prevention and management of invasive plants. Of these 19 Standards, two particularly apply to the Travel Management proposed action (**Table 1**): 1) Standard #1 requires that prevention be addressed along with project assessments and analysis; and 2) Standard #7 requires that use of active material source sites be free of invasive plants before use and transport; even though this project does not deal with use and transport, there is the issue of motorized recreation within material source sites spreading invasive plants.

**Table 1. Two Invasive Plant Regional Standards that particularly apply to the Travel Management proposed action.**

Standard #	Text of Standard
1	Prevention of invasive plant introduction, establishment and spread will be addressed in watershed analysis; roads analysis; fire and fuels management plans, Burned Area Emergency Recovery Plans; emergency wildland fire situation analysis; wildland fire implementation plans; grazing allotment management plans, recreation management plans, vegetation management plans, and other land management assessments.
7	Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport. Treat or require treatment of infested sources before any use of pit material. Use only gravel, fill, sand, and rock that is judged to be weed free by District or Forest weed specialists.

In order to be compatible with this direction and ensure we meet the intent of Regional Standard #7, **the following mitigation would be required under Alternatives 2 and 3:**

Material Source Sites with known invasive plants will be temporarily closed for motorized recreation or dispersed camping until the invasive plants are treated. In the future, if invasive plant sites are found in material source sites that are designated as open for motorized use, then these areas will be temporarily closed until invasive plants are sufficiently treated. Invasive plant specialists will determine when the temporary closures may be lifted.

## *C-5 Fire*

### **FOREST PLAN DIRECTION**

This action is consistent with all applicable standards, guidelines, and management prescriptions for fire and fuels management, and helps move the administrative units towards more desirable conditions (USDA 1990, USDA 1989).

#### **Standard and Guidelines**

##### **Deschutes NF**

pp 4-73

“FF-1 Prevention of human caused wildfires will focus on areas of high use and high risk. Identified areas of high use and high risk are:

- Recreation use along major travelways and bodies of water during the summer period.....
- Large numbers of deer hunters during the fall.....”

##### **Ochoco NF**

p D-11

“Use existing transportation and topographic features as much as possible for planned fuel breaks”

##### **Crooked River NG**

p 4-68

“Use existing transportation and topographic features as much as possible for planned fuel breaks”

#### **Management Area Specifics**

##### **Deschutes NF**

pp 4 -119, 4-162, 4-181

M8-24, M18-33, M22-31. “In Ponderosa pine stands (except for reproduction stands) emphasis should be placed on burning out from existing roads and natural barriers rather than constructing new firelines.”

pp 4-151

M15-16. “In Ponderosa pine forests, when existing conditions favor low intensity fires, containment suppression tactics are appropriate. This may include burning out from existing barriers and scratch lines.”

## **Ochoco NF**

p D-19

- MA-D4, MA-D13, MA-D14. “Construct and maintain no fuelbreaks.”
- MA-D2, MA-D3, MA-D5, MA-D6, A-D7, MA-D11, MA-D1. “Use fuel breaks only where they do not conflict with management area emphasis.”

## **Crooked River NG**

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- MA-G3. “Maintain fuel breaks only where risk analysis shows them to be economically feasible.”
- MA-G5, MA-G9. “Construct and maintain no fuel breaks.”
- MA-G2 “Maintain fuel breaks only where they do not conflict with wildlife goals”

## *C-6 Wildlife*

### **Management Indicator Species and Other Species of Concern**

The Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA 1990), the Ochoco National Forest LRMP (USDA 1989a), and the Crooked River National Grassland LRMP (USDA 1989b) identified a group of wildlife species as management indicator species (MIS). These species were selected because they represent other species with similar habitat requirements. Management indicator species can be used to assess the impacts of management activities for a wide range of wildlife species with similar habitat needs (FSM 2620.5). Those management indicator species selected for the Deschutes National Forest include the bald eagle, northern spotted owl, golden eagle, red-tail hawk, osprey, northern goshawk, Cooper's hawk, sharp-shinned hawk, great gray owl, great blue heron, woodpeckers (cavity nesters), peregrine falcon, California wolverine, elk, mule deer, American marten, Townsend's big-eared bat, and waterfowl. Management indicator species selected for the Ochoco National Forest include the northern flicker, pileated woodpecker, and primary cavity excavators while the Crooked River National Grassland selected only the northern flicker. All but the following have been covered in previous sections (TES section) and will be discussed below: northern goshawk, Cooper's hawk, sharp-shinned hawk, great gray owl, great blue heron, golden eagle, waterfowl, red-tail hawk, osprey, northern flicker, pileated woodpecker, bats, American marten, elk, mule deer, and antelope (pronghorn).

In addition to the above mentioned MIS species there have been a number of wildlife species deemed species in which analysis is required (i.e. antelope) or "species of concern" either through the Northwest Forest Plan (e.g. bats; pg C-43) or through other directives (e.g., landbirds, see Birds of Conservation Concern section).

**Table 1. Management Indicator Species Summary for the Deschutes and Ochoco National Forests and Crooked River Grassland (covered in this section).**

Species	Habitat	Deschutes or Ochoco	Presence in Project Area
Northern Goshawk ( <i>Accipiter gentiles</i> )	Mature and old-growth forests; especially high canopy closure and large trees	Deschutes	Yes
Coopers Hawk ( <i>Accipiter cooperi</i> )	Similar to goshawk, can also use mature forests with high canopy closure/tree density	Deschutes	Yes
Sharp-shinned Hawk ( <i>Accipiter striatus</i> )	Similar to goshawk in addition to young, dense, even-aged stands	Deschutes	Yes
Great Gray Owl ( <i>Strix nebulosa</i> )	Mature and old growth forests associated with openings and meadows	Deschutes	Yes
Great Blue Heron ( <i>Ardea herodias</i> )	Riparian edge habitats including lakes, streams, marshes and estuaries	Deschutes	Yes
Golden Eagle ( <i>Aquila chrysaetos</i> )	Large open areas with cliffs and rock outcrops	Deschutes	Yes
Waterfowl*	Lakes, ponds, streams	Deschutes	Yes
Red-tailed Hawk ( <i>Buteo jamaicensis</i> )	Large snags, open country interspersed with forests	Deschutes	Yes
Osprey ( <i>Pandion haliaetus</i> )	Large snags associated with fish bearing water bodies	Deschutes	Yes
Neotropical Migrants*	Various habitats		Yes
Bats*	Forested areas, riparian	Deschutes	Yes
Northern Flicker ( <i>Colaptes auratus</i> )	Open woodlands	Ochoco	Yes
Pileated Woodpecker ( <i>Dryocopus pileatus</i> )	Dense, mature forests with large snags and logs	Ochoco	Yes
American Marten ( <i>Martes americana</i> )	Mixed Conifer or High Elevation late successional forests with abundant down woody material	Deschutes	Yes
Elk ( <i>Cervus elephas</i> )	Mixed habitats	Deschutes	Yes
Mule Deer ( <i>Odocoileus hemionus</i> )	Mixed habitats	Deschutes	Yes
Snags and Down Wood Associated Species and Habitat* or Primary Cavity Excavators	Snags and down woody material	Deschutes and Ochoco	Yes

\* - See Appendix 1 for a listing of species and scientific names for these categories.

## ***C-7 Recreation***

### **Forest Plan Direction – Deschutes National Forest**

*(Deschutes National Forest Land and Resource Management Plan, 1989, as amended)*

#### Dispersed Recreation (MA-12)

Goal: To provide a range of quality recreation opportunities in an undeveloped forest environment.

General Theme and Objectives: This Management Area will provide an environmental setting producing the kinds of recreation experiences that are in large undeveloped areas. It will provide a feeling of vastness and remoteness and will have no irreversible evidence of humans. It will be in a predominantly unmodified or natural state. The environmental setting will often include a wide diversification of vegetation, terrain, and visible landform.

It will be managed to provide limited social contact and interaction among visitors. Primitive facilities such as shelters and small camps, signing, and a transportation system for visitor access and use may be established. Management will provide recreation opportunities that occur in a primitive environment, but restrictions will be less than in Wilderness areas. Motorized activities could be permitted in some areas. Low standard roads and trails could be utilized for motorized activities.

#### Trail System Management

Goal: To maintain the existing trail system and provide additions or modifications to the system which will meet the increasing and changing demands in dispersed recreation. To the extent possible this system will provide trails of all difficulty levels, trails in visually appealing settings, and trails for those modes of travel appropriate for the Forest in both summer and/or winter.

#### Off-Highway Vehicles (OHVs) Standards & Guidelines

TR-19: In areas of the Forest where there are extensive motor vehicle closures a better public service will be provided by designating trails or areas where ohvs can operate legally. Each District will identify such opportunities as appropriate.

TR-20: The Forest will work with the State All-Terrain-Vehicle (ATV) committee on the planning and construction of Off-Highway-Vehicle trails and facilities.

TR-21: In addition to winter use of OHV's, the Forest will provide additional opportunities for summer use of OHV's and other OHV's such as motorcycles. Part of the Forest road system that is not maintained for public use and that is not involved in logging operations may be opened for this use. Closures will be coordinated with ODFW.

TR-22: All trails will be periodically reviewed for nationally recognized status.

Intensive Recreation MA-11	Off-highway vehicles will normally not be encouraged in this Management Area, especially in areas where recreation use is concentrated-M11-40 pp 4-138	4-138
Dispersed Recreation MA-12	Use of motorized vehicles will be restricted to designated roads and designated trails. The Pacific Crest Trail is closed to motorized use-M12-6 pp 4-140	4-140
General Forest MA-8	Off-highway vehicle use is allowed. Closures and restrictions will be established where off road vehicle use will threaten or damage other resource values, such as plantations, soils, and wildlife-M8-4 pp4-117	4-117

**Forest Plan Direction – Ochoco NF and Crooked River National Grassland** (*Ochoco National Forest and Crooked River National Grassland Land and Resource Management Plan, 1991, as amended*)

The overriding goal of the Ochoco Forest Plan for Recreation is to provide for a variety of recreation experiences across all areas of the Ochoco NF, in a manner consistent with other resource objectives and environmental constraints.

Dispersed Recreation: Provide for a wide variety of recreational opportunities.

General Forest MA-D1; Semiprimitive Motorized MA-D10	Develop a variety of ATV routes for a variety of terrain and experience levels. No motorized use of trails except on designated routes.	1089; 1092
Developed Recreation MA-D11	No motorized use of trails except on designated routes.	1092
General Forest MA-D1	Motorized use of trails encouraged on designated routes. Off-trail use will be discouraged.	1093
Recreation MA-F14	Motorized use restricted to designated routes	9
General Forest MA-F22	Motorized use encouraged on designated routes and areas and restricted to designated routes only in riparian areas. Motorized use restricted to designated routes on sensitive soils including highly erodible slopes over 30% during wet weather from Dec 1 to May 1. Motorized use on scablands restricted to designated routes and existing two-track non-system roads.	9
Lookout Mtn. Recreation Area MA-F11	Several existing roads into the Management Area will remain open for motorized travel to dispersed campsites and mining campsites.	150

## *C-8 Heritage*

### **Forest Plan Standard and Guidelines**

The Ochoco National Forest and Crooked River National Grassland Land and Resource Management Plans (LRMP) were implemented in 1989, and the Deschutes National Forest LRMP (Forest Plan) was implemented a year later in 1980. All three LRMPs address cultural (heritage) resources, including both their desired future conditions, and their standards and guidelines for forest and grassland management.

For the Ochoco National Forest and the Crooked River National Grassland, the Cultural Resource Standards and Guidelines pertinent to travel management can be summarized as follows:

- Conduct cultural resource inventories in advance of all ground disturbing actions (such as proposed OHV trails), and evaluate cultural resources located during inventory to determine their eligibility to the National Register of Historic Places (NRHP);
- Develop management plans and S. 106 agreements in cooperation with the Oregon SHPO, ACHP, Indian tribes, and other interested parties to facilitate cultural resource treatment and future management;
- Prepare S. 106 Determinations of Effect for all proposed projects and submit to Oregon SHPO for review and consultation, document S106 actions and consultation through the NEPA process, and mitigate adverse effects to cultural resources through project design, modification and/or scientific data recovery, and preservation;
- Burial Sites will be protected and if inadvertent discovery is made during project implementation or public use, consultation will occur with the tribe or other ethnic group ascribed as having cultural patrimony, project planning shall consider burial location in planning decisions;
- Access to sites, use and possession of sacred objects, and the enactment of ceremonies and traditional rites, as well as related activities, such as the gathering and processing of traditional foods and plants shall be protected (AIRFA);
- The Ceded Land Treaty Rights of the Confederated Tribes of the Warm Springs Reservation of Oregon, under the 1855 Treaty with the Tribes of Middle Oregon shall be honored;
- Significant cultural resource sites, districts, and thematic classes will be nominated to the NRHP, and protected and preserved for the public; and
- Selected cultural resources will be interpreted and enhanced for the education and enjoyment of the public.

The Cultural Resource Standards and Guidelines pertinent to travel management for the Deschutes National Forest can be summarized as follows:

- CR-1 A cultural resource inventory program will be conducted on both a Forest-wide and project specific level, and inventories will be conducted according to a plan and research design agreed to by the Forest Service and Oregon SHPO;
- CR-2 Cultural resources located during inventory will be evaluated to determine their eligibility for listing in the NRHP;
- CR-3 In concert with inventories and site evaluations, the Forest will develop thematic nomination and management plans for various classes of historic and prehistoric sites and properties;

- CR-4 Project level inventories will be documented in environmental assessments (NEPA) and cultural resources in conflict with proposed actions will be evaluated, projects modified or redesigned, and/or mitigation procedures will be developed, including scientific data recovery;
- CR-5 Consultation under S106 and NEPA will be coordinated with Oregon SHPO, the Advisory Council on Historic Preservation, Indian tribes, and other interested parties, such as the Deschutes County Landmarks Commission;
- CR-6 Management of Native American cultural resources will be coordinated with the appropriate Indian tribe, including notification of proposed actions that might have effects on such resources;
- CR-7 Cultural Resources may be developed for educational, scientific, or recreational purposes to the extent that integrity can be maintained
- CR-8 The treatment of human burials shall follow federal and state laws, policies and procedures, and will be protected, and if inadvertent discovery is made during project implementation or public use, consultation will occur with the tribe or other ethnic group ascribed as having cultural patrimony, project planning shall consider burial location in planning decisions;
- CR-9 The Forest will consult with Indian tribes and individuals to assure the protection of contemporary religious, sacred, and traditional use of public lands, access to sites, use and possession of sacred objects and the enactment of ceremonies and traditional rites, as well as related activities, such as the gathering and processing of traditional foods and plants (AIRFA);
- CR-10 AIRFA does not convey exclusive tribal or religious use, thus the Forest must consider other existing or potential uses; and
- CR-11 Forest management will recognize and treat accordingly the nonrenewable, generally fragile nature of cultural resources.

## *C-9 Soils*

As a result, Deschutes and Ochoco LRMP Forest Plan Standard and Guidelines for the soil resource relevant to this project (Deschutes SL-1, SL-3 and SL-5; Ochoco p 4-195, 196, 197) would be met under either action alternative.

### **Management Direction**

The Deschutes Land and Resource Management Plan (Deschutes LRMP) includes Forest-wide standards and guidelines that direct land management activities to promote the maintenance or enhancement of soil productivity. Forest Standards and Guidelines applicable to this project include:

- 1) Leaving a minimum of 80 percent of an activity area in a condition of acceptable productivity potential following the implementation of proposed activities (Forest Plan Standard and Guidelines SL-1 and SL-3; p. 4-70);
- 2) Regulating the use of mechanical equipment in sensitive soil areas. Operations will be restricted to existing trails and roads whenever feasible (SL-5).

The Ochoco Land and Resource Management Plan (Ochoco LRMP) includes Forest-wide standards and guidelines to minimize compaction, displacement, erosion and mass wasting of the soil resource by proposed activities. These are summarized on p 4-195, 196, 197 and 198 of the Ochoco LRMP.

## ***C-10 Transportation***

### **C-10.1 Forest Plan Guidance**

*(Ochoco National Forest and Crooked River National Grassland Land and Resource Management Plan - 1991)*

**Goal:** The overriding goal of the Ochoco Forest Plan for management of the transportation system is to plan, design, operate, and maintain a safe and economical transportation system providing efficient access for the movement of people and materials involved in the use and protection of National Forest lands.

**Desired Future Condition:** The principal access roads will be readily identifiable; they will have paved or gravel surfaces and will be suitable for passenger car use. Signs will assist the traveler in finding their destination. The other roads will appear rough or primitive. Some roads will be closed with gates or signs.

**Resource Objectives:** Transportation systems will be planned to support resource activities in the management areas and to serve multiple resource needs rather than individual project proposals. Manage traffic as needed to control access due to structural limitations of the road, safety, or to meet resource objectives, such as (ORV) travel management needs. Traffic safety will exist for all roads on the transportation system. Safety of traffic using Forest roads will be ensured through restrictions. The full range of traffic management strategies will be used including prohibiting traffic to unrestricted use by all vehicle types. Use signs to inform the public of the reason for restrictions to the transportation system. During commercial hauling activities, public access will generally be discouraged or prohibited on single user local access roads. All system roads would be maintained to at least the basic custodial care required to maintain drainage, protect road investment, and minimize damage to adjacent land and resources. Basic road maintenance would occur at intervals approximately every 5 years, higher levels may be chosen to reflect greater use or for resource protection.

**Standards and Guidelines:** Specific direction concerning construction, reconstruction, operational management and environmental protection requirements for the Forest road system are described in the Forest-wide Standards and Guidelines section (pages 4-224 through 4-227), as well as in the Management Area Prescriptions section (pages 4-228 through 4-235) in the Ochoco National Forest Land and Resource Management Plan; and in the Grassland-wide Standards and Guidelines section (pages 4-108 through 4-111), as well as in the Management Area Prescriptions section (pages 4-111 through 4-118) in the Crooked River National Grassland Land and Resource Management Plan. Additional standards and guidelines affecting road management are found in the Northwest Forest Plan, and the PacFish and Infish documents.

### **Forest Plan Direction - Deschutes National Forest**

*(Deschutes National Forest Land and Resource Management Plan – 1990)*

**Goal:** The overriding goal of the Deschutes Land and Resource Management Plan for management of the transportation system is to plan, design, operate, and maintain a safe and economical transportation system providing efficient access for the movement of people and materials involved in the use and protection of National Forest lands.

**Desired Future Condition:** Access to and within the Forest is well balanced between travel needs and the environment. The planned increase or decrease in recreation activities are coordinated with road and trail construction, reconstruction, and management. Roads and trails are maintained in safe conditions consistent with the expected user; the signing is accurate and informative.

Roads to most recreation sites are paved or gravel surfaced in a condition suitable for passenger cars. Many of these roads are also constructed with adequate alignment, grades, and structural capacity to safely allow the hauling of commercial products. The quality of scenic views has been maintained through timber management and road maintenance operations. The Cascade Lakes Highway continues to be maintained and improved to the standards of a National Scenic Byway.

Some of the road system has been closed for the protection of wildlife habitat or to reduce erosion; however, the majority of the mileage remains open for ongoing resource management activities or for general public access such as hunting, fishing, pleasure driving, and fuel wood gathering. These lower standard roads are available for use by the more experienced drivers. Maps, signing and primitive conditions at the beginning of the roads managed for high clearance vehicles give traveler's advice on what to expect. Unexpected road conditions are adequately signed.

Resource Objectives: The development, maintenance, and management of the Forest development road system will be responsive to resource management objectives. Many road-related activities will occur in support of the timber management program, with additional activities undertaken to facilitate recreational use, forest administration, and resource protection.

Standards and Guidelines: Specific direction concerning construction, reconstruction, operational management and environmental protection requirements for the Forest road system are described in the Forest-wide Standards and Guidelines section (pages 72-73), as well as throughout the Management Area Prescriptions section in Chapter 4 of the Deschutes National Forest Land and Resource Management Plan. Additional standards and guidelines affecting road management are found in the Northwest Forest Plan, and the PacFish and Infish documents.

## C-10.2 Manual and Handbook Direction

### **Direction for Travel Analysis**

#### **Background**

On January 12, 2001 the Department of Agriculture published its final rule and policy regarding the national forest transportation system. This *Roads Policy* was intended to ensure that the National Forest Road System meets current and future land and resource management objectives; provides for public uses of National Forest System lands; allows for economical and efficient management; and minimizes and begins to reverse adverse ecological impacts associated with the current transportation system. The policy required that a forest-wide roads analysis be completed on all administrative units in the Forest Service by 1/12/2003.

The Roads Policy required the use of a science-based road analysis process to identify needs, issues, and opportunities related to the road system, and to document the information and analyses used to help identify the optimum road system needed for safe and efficient travel for the administration, utilization, and protection of National Forest System lands. The document *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System (USDA Forest Service, 1999, Misc. Report FS-643)* was developed and published in 1999 to provide guidance and direction in conducting the analysis.

The Ochoco and Deschutes National Forests completed the Forest-Wide Roads Analysis in January 2003, as required by the Roads Policy. This analysis was focused on broad-scale issues such as determining the

minimum set of roads needed to provide public access for low-clearance passenger cars compared to roads that only need to be maintained for high-clearance vehicle use. Due to the broad-scale nature of the analysis only the main roads on the forests were analyzed. These consisted of all the arterial and collector roads on the forests as well as any local roads that are maintained for low-clearance passenger car use.

Roads analysis below the forest scale was not automatically required, but could be undertaken at finer scales (watershed or project level) to support site-specific transportation decisions. The Roads Policy required that any decisions resulting in a change in public access or that may result in adverse effects on soil and water resources, ecological processes or biological communities, must be informed by a roads analysis. The Responsible Official had the discretion to determine whether there is sufficient information in the Forest-Wide Roads Analysis to inform a given decision or whether additional information was needed through a finer scale analysis.

One of the requirements in the Roads Policy was to determine the minimum road system necessary for safe and efficient travel for administration, utilization, and protection of National Forest System lands. One element in determining the minimum road system is to identify unneeded roads. Since it was not practical to analyze all the local roads that are not maintained for low-clearance passenger car use (maintenance level 1 & 2) during the Forest-Wide Roads Analysis, many project level roads analysis have been conducted since 2003 in order to determine this “minimum” road system.

For each project area on a Ranger District that may involve road management activities such as road construction, reconstruction, or changes in public access, a project-level roads analysis is conducted by the local interdisciplinary team. During the project-level roads analysis, each road in a watershed or planning area is evaluated by the team to determine if it is needed or not. If it is determined that it is not needed, a recommendation is made whether to decommission it or to convert it to another use such as a trail. If it is determined that a road is needed, another recommendation is made as to whether it needs to be open year around, open seasonally, or closed between project uses (maintenance level 1). In addition, other recommendations are made, depending on the type of use expected and resource concerns identified, as to any type of improvement work that may be needed for the road such as improved surfacing or drainage features. This list of recommendations is documented for use in making proposed action proposals for any NEPA analyses within the project area, and for use by the Responsible Official when making decisions involving road related activities. These recommendations are also used by ID teams when looking for opportunities to reduce open road densities to reflect Forest Plan Standards and Guidelines in areas of high road densities.

### **Current Policy**

*(FSM 7712 – Travel Analysis, January 8, 2009)*

In 2005, the U.S. Forest Service issued national regulations to allow motorized use only on designated routes and in designated areas on all national forests. These regulations, called “Travel Management: Designated Motorized Access for National Forests and Grasslands” directed the National Forests and Grasslands to publish a Motor Vehicle Use Map (MVUM) that would show where and under what conditions designated motorized access would be allowed for all motor vehicles.

The 2005 Travel Management Rule has incorporated much of direction from the 2001 Roads Policy, but has changed terminology to reflect the analysis of trails as well as roads. For example, the roads analysis process is now called the travel analysis process. A Travel Analysis is required to inform decisions related to travel management activities such as adding or removing roads or trails from the transportation system, constructing roads or trails, and decommissioning roads or trails. A Travel Analysis is also required for

designation of roads, trails, and areas for motor vehicle use for any project issuing a proposed action after January 8, 2009.

As mentioned above, the Ochoco and Deschutes National Forests have been working toward identifying the minimum road system necessary for safe and efficient travel for the administration, utilization, and protection of the National Forests for several years now through the use of project scale roads and travel analyses. Many of the recommendations of these analyses have been incorporated into NEPA decisions and the resulting road closures and decommissioning projects have been implemented on the ground. However, some of the decisions to close roads have not yet had projects funded to implement them on the ground, but they will be implemented by prohibition through completion of this travel planning process and publication of the MVUM map. Still others are somewhere in the process of the analyses and do not yet have NEPA decisions.

#### C-10.3 Direction for Motorized Mixed Use Analysis

### **National Policy**

*(FSM 7715.77– Motorized Mixed Use of NFS Roads)*

Forest Service Manual 7710 - Travel Planning, (January 2009) contains a chapter under 7715 that describes the national requirements for conducting Engineering Analyses for certain forest service roads when authorizing motorized mixed use where it would otherwise be prohibited by state law. Chapter 7715.77 of this policy is as follows:

#### **7715.77 – Motorized Mixed Use of NFS Roads**

1. Motorized mixed use occurs when an NFS road is designated for use by both highway-legal and non-highway-legal motor vehicles (FSM 7705).
2. Operators of highway-legal motor vehicles are subject to state traffic law, including requirements for operator licensing.
3. Off-highway vehicles that are licensed, certified, or registered under a state recreation fee or green sticker program are not highway-legal motor vehicles because they are not licensed or certified under state law for general operation on all public roads in the state.
4. Where the responsible official proposes to depart from state traffic law or change current travel management direction by authorizing motorized mixed use where it would otherwise be prohibited, that decision must be advised by documented engineering analysis conducted by a qualified engineer.
5. Decisions on motorized mixed use, like other travel management decisions, are the responsibility of the responsible official. The role of the qualified engineer is to analyze information on the road and road use and to recommend mitigation of safety risks.
6. Motorized mixed use on roads designed, maintained, and operated for high-clearance vehicles may be appropriate where the objectives of minimizing use conflicts and promoting public safety can be met.
7. It may be necessary to designate short segments of roads open to public travel (roads at Operational Maintenance Levels 3, 4, and 5) for motorized mixed use to provide a connection to or between routes designated for other motor vehicle uses. Consider mitigation of safety risks when allowing motorized mixed use on roads open to public travel, such as signs, speed controls, user

education, modifications to road geometry, regulating the timing of commercial hauling, and other safety measures.

8. Use discretion in allowing motorized mixed use on roads open to public travel. For roads with high concentrations of use, maintaining separate networks for different uses may reduce use conflicts and enhance public safety and the recreational experience.

9. Refer to FSH 7709.55, chapter 30, for direction on documentation of engineering analysis.

10. At times, it may be appropriate to allow over-snow vehicles on roads designated for use by highway-legal motor vehicles only, such as when these roads are closed to highway-legal motor vehicles by a gate or accumulations of snow. In these cases, use seasonal restrictions to preclude simultaneous use of highway-legal motor vehicles and over-snow vehicles. A qualified engineer should exercise engineering judgment to determine if and to what extent an engineering analysis is needed to advise decisions to allow over-snow vehicles on roads designated for use by highway-legal motor vehicles only (FSH 7709.55, ch. 30).

## **Regional Policy**

By Regional Forester Letter, “Procedures for Engineering Analysis of Motorized Mixed Use”, dated August 10, 2006, the Forest Supervisors in Region 6 were directed as follows:

The enclosed letter from the Washington Office expands on and supplements the Chief’s interim guidance, as a result of a recent Regional Engineers’ meeting to discuss designation of National Forest System (NFS) roads for motorized mixed use under the travel management rule.

The following supplements this guidance for Region 6.

### **When Engineering Analysis is Required:**

Even when State law allows motorized mixed use, you must follow the guidance in EM-7700-30 to determine if allowing motorized mixed use on NFS roads is consistent with management objectives, and makes a reasonable accommodation for the public’s safety.

Decisions on motorized mixed use are the responsibility of the line officer. The designated engineer analyzes the information on the road and road use, including crash probability and severity, and presents that information, along with any mitigation that could potentially lower the risks to the responsible official.

State laws in Oregon and Washington require no minimum age to operate some classes of OHVs. Because of the potential risks, an engineering analysis (EM-7700-30) must be conducted on all roads being considered for mixed use regardless of maintenance level. The level of the analysis should be appropriate for the roads being analyzed. For example, similar roads at a maintenance and operational level that justifies an abbreviated analysis may be combined utilizing Exhibit 1 Documentation for Engineering Judgment of Motorized Mixed Use on National Forest System Roads as described in EM-7700-30.

Roads currently open to mixed use that have a documented mixed use analysis do not need to be revisited. Engineering analysis is required for roads which have been open to mixed use and no documented engineering analysis has been completed.

## **Designation of Qualified Engineers**

The process for designating a qualified engineer to perform mixed use analysis is as follows.

1. The Forest Engineer or Engineering Staff Officer will submit the following information to the Regional Director of Engineering for each person being proposed for designation.
  - a. Knowledge and understanding of FSH 7709.55, Chapter 30. (EM-7700-30, Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads, is the appropriate reference until Chapter 30 is issued as a final directive.)
  - b. Knowledge and understanding of Forest Service regulations concerning use of motor vehicles on NFS roads, including 36 CFR part 212.
  - c. Knowledge and understanding of applicable Federal, state, and local laws and regulations concerning use of motor vehicles on public roads within the state.
  - d. Experience in transportation management, including planning, road design, operation, and maintenance.
  - e. Knowledge of operational characteristics of the vehicles being considered.
  - f. Specialized training in transportation management, traffic engineering, or road safety related courses, such as training on the Manual on Uniform Traffic Control Devices, accident investigation training, road safety audit training, or other training related to motorized mixed use.
2. Based on the review of the information provided the Regional Director of Engineering will identify the designated qualified engineers.
3. The designation of qualified engineers for motorized mixed use analysis is an ongoing process and names along with pertinent data should be submitted as needed.

## **Existing Forest Policy**

From the discussion in the following section on Oregon State Law, it is evident that interpretation of the statutes is not clear-cut when determining which roads are open to the public for OHV use, and under which conditions, according to state law.

The existing policy on the Ochoco and Deschutes National Forests and the Crooked River National Grassland, has been to allow OHV use on all maintenance level 2 roads (high clearance vehicle roads) and prohibit OHV use on all maintenance level 3, 4, & 5 roads, which are the roads maintained for passenger car traffic, and thus consistent with ORS 821.055. This policy has been described to the public on the forest visitor maps, OHV area maps, and other recreation information sources. The only exceptions to the current policy are in places where OHV use on roads is specifically prohibited in areas such as the Newberry National Volcanic Monument, and the OHV specialized trail areas.

Other than occasional law enforcement officer contacts, no specific information or education has been shared with the public regarding the use of OHVs on paved or two-lane gravel roads, because in the past, these roads fell entirely within the maintenance level 3, 4, and 5 category, (i.e., not available for OHV use). However, in recent years, with the decline in maintenance budgets, the forests have lowered maintenance levels on many roads such that there are now several two-lane gravel roads and possibly even some paved roads in the maintenance level 2 category. With the new Regional Policy regarding the need to perform an Engineering Analysis on ALL roads before allowing motorized mixed use on the MVUM, these “high-use” level 2 roads will be examined for suitability for having both highway-legal and non-highway-legal vehicles on them in the future.

#### C-10.4 Oregon State Law

##### Related to the use OHVs on Forest Service Roads

Chapter 821 of the Oregon Vehicle Code describes the rules and requirements for Off-Road Vehicles, Snowmobiles, and All-Terrain Vehicles in Oregon.

The following are interpretations of the statutes that apply to Forest Service Roads:

- **Paved Roads.** ORS 821.190 says that a person commits the offense of unlawful operation of an off-road vehicle on a highway if the person operates that vehicle on or across the paved portion, the shoulder, inside bank or slope of any highway, on or across the median of any divided highway, or on or across any portion of a highway right-of-way under construction. However, ORS 821.200 allows for off-road vehicles to cross a paved highway if certain conditions are met regarding the crossing conditions, or allows operation on the road if the highway is posted open to permit all-terrain vehicle use.
- **Two-Lane Gravel Roads.** ORS 821.020 says that off-road vehicles may be used in the State of Oregon on any roads, other than two-lane gravel roads, that are open to the public, as long as they are not posted as closed to off-road use. ORS 821.020 also says that off-road vehicles may be used on any local, two-lane gravel road that is open to the public and that is designated by the road authority with jurisdiction over the road as open to off-road vehicles.
- **Other Roads.** ORS 821.055 says that notwithstanding ORS 821.020, or any law requiring that vehicles be equipped in specified ways in order to operate on highways, Class I, Class II, and Class III all-terrain vehicles may operate on any highway in this state that is open to the public and is not maintained for passenger car traffic.

Below are the full text Oregon Revised Statutes, referred to above, that are applicable to use of OHVs on Forest Service roads:

**ORS 821.010 Exemptions from equipment requirements for off-road vehicles.** (1) Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland or other natural terrain is exempt from the sections governing vehicle equipment described in this section if the vehicle: (a) Is operated in an area described under ORS 821.020; and (b) Complies with the equipment requirements under ORS 821.040.

**ORS 821.020 Applicability of off-road vehicle exemption from general equipment requirements.** (1) This section establishes the areas where the exemption from equipment requirements for off-road vehicles described under ORS 821.010 is applicable. The exemption applies to any land, road or place within the State of Oregon that meets the description in subsection (2) of this section and that is not posted as closed to off-road use. (2) The exemption applies to each of the following lands, roads and places: (a) Lands that are open to the public. (b) Roads, other than two-lane gravel roads, that are open to the public. (c) Paved parking lots adjacent to or on designated off-road vehicle areas, trails and routes that are open to the public. (d) Any local two-lane gravel road that is open to the public and that is designated by the road authority with jurisdiction over the road as open to off-road vehicles that are described in ORS 821.010.

**ORS 821.040 Operation of off-road vehicle without required equipment; penalty.** (1) A person commits the offense of operation of an off-road vehicle without required equipment if the person is operating a vehicle described in ORS 821.010 in an area described in ORS 821.020 and the vehicle is not equipped in compliance with all of the following: (a) The vehicle must be equipped with a muffler that meets the standards for noise emissions established under ORS 821.030. (b) The vehicle must be equipped with brakes that meet the requirements established under ORS 821.030. (c) The vehicle must be equipped with a windshield wiper if the vehicle is equipped with a windshield. (d) When the vehicle is operated on sand, the vehicle must be equipped with a flag that meets the requirements established under ORS 821.030. (e) The vehicle must be equipped with any safety equipment required under ORS 821.030. (f) At any time from one-half hour after sunset to one-half hour after sunrise, the vehicle must be equipped with and display headlights and taillights. (2) Motorcycles and mopeds are not required by this section to be equipped with windshield wipers. (3) The offense described in this section, operation of off-road vehicle without required equipment, is a Class C traffic violation.

**ORS 821.055 Operation of all-terrain vehicles on certain highways.** Notwithstanding ORS 821.020, or any law requiring that vehicles be equipped in specified ways in order to operate on highways, Class I, Class II and Class III all-terrain vehicles may operate on any highway in this state that is open to the public and is not maintained for passenger car traffic.

**ORS 821.190 Unlawful operation of snowmobile or all-terrain vehicle on highway or railroad; civil liability; penalty.** (1) A person commits the offense of unlawful operation of an off-road vehicle on a highway or railroad if the person operates a vehicle described in subsection (2) of this section in any of the following described areas: (a) On or across the paved portion, the shoulder, inside bank or slope of any highway, on or across the median of any divided highway or on or across any portion of a highway right of way under construction. (b) On or across a railroad right of way. (2) This section applies to: (a) Snowmobiles. (b) Class I all-terrain vehicles. (c) Class II all-terrain vehicles that are not properly equipped for operation on a highway. (d) Class III all-terrain vehicles. (3) Exemptions from this section are established under ORS 821.200. (4) In addition to penalties provided by this section, the operator or owner of a snowmobile, Class I, Class II or Class III all-terrain vehicle may be liable as provided under ORS 821.310. (5) The offense described in this section, unlawful operation of an off-road vehicle on a highway or railroad, is a Class B traffic violation.

**ORS 821.200 Exemptions from general prohibition on operating on highway or railroad.** This section establishes exemptions from the limitations placed on the use of snowmobiles and all-terrain vehicles under ORS 821.190. The prohibitions and penalties under ORS 821.190 do not apply when a snowmobile or all-terrain vehicle that qualifies for the exemption from equipment requirements under ORS 821.010 is being operated as described under any of the following: (1) A person may lawfully cross a highway or railroad right of way while operating a snowmobile or all-terrain vehicle if the person complies with all of the following: (a) The crossing must be made at an angle of approximately 90 degrees to the direction of the highway or railroad right of way. (b) The crossing must be made at a place where no obstruction prevents a quick and safe crossing. (c) The vehicle must be brought to a complete stop before entering the highway or railroad right of way. (d) The operator of the vehicle must yield the right of way to vehicles using the highway or equipment using the railroad tracks. (e) The crossing of a railroad right of way must be made at an established public railroad crossing. (f) The crossing of a highway must be made at a place that is more than 100 feet from any highway intersection. (g) If the operator of a snowmobile is under 12 years of age, a person who is 18 years of age or older must accompany the operator either as a passenger or as the operator of another snowmobile that is in proximity to the younger operator. (2) A snowmobile or all-terrain vehicle may be lawfully operated upon a highway under any of the following circumstances: (a) Where the highway is completely covered with snow or ice and has been closed to motor vehicle traffic during winter months. (b) For purposes of loading or unloading when such operation is performed with safety and without causing a hazard to vehicular traffic approaching from either direction on the highway. (c) Where the highway is posted to permit snowmobiles or all-terrain vehicles. (d) In an emergency during the period of time when and at locations where snow upon the highway renders travel by automobile impractical. (e) When traveling along a designated snowmobile or all-terrain vehicle trail. (3) It shall be lawful to operate a snowmobile or all-terrain vehicle upon a railroad right of way under any of the following circumstances: (a) Where the right of way is posted to permit the operation. (b) In an emergency. (c) When the snowmobile or all-terrain vehicle is operated by an officer or employee or authorized contractor or ag

**C-11 Forest Plan Amendments**

**Ochoco National Forest, Forest Plan Changes**

<b>Ochoco LRMP MANAGEMENT AREA</b>	<b>LRMP STANDARDS AND GUIDELINES</b>	<b>PAGE #</b>	<b>Remove/retain existing language<sup>4</sup></b>	<b>Rational</b>
MA-F6, Old Growth; MA-F11, Lookout Mountain Rx B	Motorized Use Restricted to Designated Routes Except Snowmobiles Over Snow(Dec1 –May1) No motorized use of trails	ROD-26 LMRP 4-232, 4-234	Eliminate language regarding designated routes, maintain snowmobile use language	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas as shown on MVUM
MA-F7, Summit Trail	Motorized Use Restricted to Designated Routes Except Snowmobiles Over Snow	ROD-26 LMRP 4-235	Eliminate language regarding designated routes, maintain snowmobile use language	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas as shown on MVUM
MA-F8, Rock/Cottonwood Creek; F8, Rock Cotton Unroaded; MA-F11, Lookout Mountain RX A	Motorized Use Prohibited Except Snowmobiles Over Snow(Dec1 –May1) No motorized use of trails	ROD-26 LMRP 4-231,4-234	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
MA- F12, Eagle Roosting Areas	Motorized Use Restricted to Designated Routes and Non-highway vehicles prohibited from Dec. 1 to May 1. Close to camping from 12/1 -4/1 except within 300 feet of designated roads	ROD-26 LMRP 4-232, 4-234,4-186	Eliminate restriction to designated routes, camping maintain prohibited use period.	Restriction to designated routes and camping replaced by Travel Access Project Decision/TM rule
MA-F13, Developed Recreation	Motorized Use restricted to designated routes. off-road use restricted to designated trails	ROD-26 LMRP 4-232, 4-233-234	Eliminate restriction to designated routes, maintain prohibited use	Restriction to designated routes replaced by Travel Access Project Decision/TM rule
MA- \$14, Dispersed Recreation	Motorized use restricted to designated routes“... and limits use of motorized	TrailsROD-9	Eliminate all Language	Travel Access Project Decision/TM rule restricts all motorized use (over snow

Ochoco LRMP MANAGEMENT AREA	LRMP STANDARDS AND GUIDELINES	PAGE #	Remove/retain existing language <sup>4</sup>	Rational
	vehicles, including OHVs, in dispersed campsites to entry and exit			vehicles excepted) to designated routes and areas shown on MVUM
MA- 15, Riparian/RHC As	se Restricted to Designated	ROD-26; LMRP 4-232, 4-234,235	Eliminate restriction to designated routes	Restriction to designated routes replaced by Travel Access Project Decision/TM rule
Bandit Springs MA-F16	Motorized use, including OHVs restricted to designated routes year round. Motorized access for dispersed camping not allowed	TrailsROD-2,5,9	Eliminate restriction to designated routes, retain prohibition of motorized dispersed camping	Travel Access Project Decision/TM rule prohibits motorized access off designated routes
MA- F17, Steins Pillar	Motorized Use Restricted to Designated Routes Except Over Snow on Designated Routes	ROD-26 LMRP 4-231,4-235	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
MA- F18, Hammer ; MA-F20, Big Game Winter Range, MA-F21, General Forest Winter RANGE	Motorized Use Restricted to Designated Routes Except Over Snow prohibited from 12/1 – 4/1. Close area to camping from December 1 to May 1 except within 300 ft of designated access roads	ROD-26 LMRP 4-231,4-235, 4-186	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
MA –F19, Deep Creek Recreation Area	Motorized Use Restricted to Designated Routes Except Snowmobiles	ROD-26 LMRP 4-231,4-235	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
General Forest MA-F22	Motorized use encouraged on designated routes and areas and restricted to designated routes only in riparian areas. Motorized use restricted to designated routes on sensitive soils including highly erodible slopes over 30% during wet weather from Dec 1 to May 1. Motorized use on scablands restricted to designated routes and existing two-track non-system roads.	TrailsROD-9	Eliminate all language	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
MA- F23 &	All Motorized Use Restricted	ROD-26 LMRP	Eliminate	Restriction to designated routes

Ochoco LRMP MANAGEMENT AREA	LRMP STANDARDS AND GUIDELINES	PAGE #	Remove/retain existing language <sup>4</sup>	Rational
F24, North Fork Crooked River	to Designated Routes	4-232, 4-234,235	restriction to designated routes	replaced by Travel Access Project Decision/TM rule
MA- F25 & F26, Visual Corridors	Motorized Use Restricted to Designated Routes Except Over Snow on Designated Routes	ROD-26 LMRP 4-231,4-235	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on mvum
MA-F27Round Mountain	Motorized Use Restricted to Designated Routes. No motorized use of trails, except snowmobiles on designated routes	ROD-26 LMRP 4-231,4-235	Eliminate language related to non-winter use	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
MA-F28, Facilities	Motorized Use Restricted to Designated Routes.	ROD-26 LMRP 4-231,4-235	Eliminate all language	Travel Access Project Decision/TM rule restricts all motorized use (over snow vehicles excepted) to designated routes and areas shown on MVUM
<b>Crooked River National Grassland Amendments</b>				
MA-G1, Antelope Winter range; MA-G 2, Metolius Deer Winter Range MA-G11, Haystack Reservoir; MA-G 13, Lake Billy Chinook View Area	Motorized Use Restricted to Designated Routes. No OHV Use from Nov. 15 – March 31. OHV Use Restricted to Designated Routes April 1 – Nov. 14	ROD-27 LRMP(part2) 4-102,4-114	Eliminate restriction to no OHV uses during 11/15 – 3/31. Retain open language.	Travel Access Project Decision/TM rule restricts all motorized use to designated routes and areas shown on MVUM. Travel Access Project Decision/TM rule has language that allows for motorized access for dispersed camping under general and special provisions along some routes designated.
MA-G 3, General Forage; MA-G14, Dispersed Recreation	Motorized Use Restricted to Designated Routes. Allow No Cross Country Travel	ROD-27 LMRP 4-114 Trails ROD-4	Eliminate restriction to designated routes. Retain prohibition on cross country; amend Grassland Plan to allow for dispersed camping per Travel Access Project Decision/TM rule	Restriction to designated routes replaced by Travel Access Project Decision/TM rule. Travel Access Project Decision/TM rule has language that allows for motorized access for dispersed camping under general and special provisions along some routes designated.

Ochoco LRMP MANAGEMENT AREA	LRMP STANDARDS AND GUIDELINES	PAGE #	Remove/retain existing language <sup>4</sup>	Rational
MA- G5, Juniper Old Growth, MA-G6, Crooked River, MA-G7, Deschutes River; MA-G8, Squaw creek	Motorized Use Restricted to Designated Routes. ORVs prohibited	ROD-27 LRMP(part2) 4-101	Eliminate restriction to designated routes. Retain ORV prohibition	Language Replaced by Travel Access Project Decision/TM rule
MA- G9, Riparian/RHC As	All Motorized Use Restricted to Designated Routes.	ROD-27; LRMP(part2) 4-102	Eliminate all language	Language Replaced by Travel Access Project Decision/TM rule
MA-G16, Utility Corridors	Motor use restriction varies based on underlying MA designation		????????	
<b>Forest and Grassland –wide Changes</b>				
Trail EIS ROD	“... and limits use of motorized vehicles in dispersed campsites to entry and exit of the campsite”	Pg 2	Eliminate	Language Replaced by Travel Access Project Decision/TM rule
Trail EIS ROD	“.. Alternative D also allows... Use of OHV’s in dispersed campsites limited to entry and exit on designated routes”	Pg 4	Eliminate	Language Replaced by Travel Access Project Decision/TM rule
Trail EIS ROD	General Forest... would remain open to motorized access off designated routes, except...	Pg 4	Eliminate	Language Replaced by Travel Access Project Decision/TM rule
Trail EIS ROD	OHV use in dispersed sites will be restricted to entry and exit of the campsite.. all other dispersed sites in area	Pg 5	Eliminate	Language Replaced by Travel Access Project Decision/TM rule
Trail EIS ROD	2) Motorize use restricted to designated routes	Pg 7	Eliminate	Language Replaced by Travel Access Project Decision/TM rule
Trail EIS ROD	4) Motorize use encouraged on ...	Pg 7	Eliminate	Language Replaced by Travel Access Project Decision/TM rule