SPECIES AND HABITAT: WILDLIFE

Characterization

Species of Consideration: Table WL-1 lists the species of consideration in the North Fork Coquille Watershed and their relative abundance and distribution. "Species of consideration" refers to the group of species within the analysis area, which may receive special management and includes species with Special Status according to Federal, Bureau, and State lists. Discussions on wildlife species associated with late-successional habitat may be found in the FEMAT (1993), the FSEIS on Managing of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (USDA; USDI 1994), and the Coos Bay District FSEIS for the RMP (USDI 1994). Information on wildlife species associated with other habitat types within the Watershed is found in Brown *et al.* (1985).

There have been few species-specific wildlife inventories for wildlife in the Watershed other than surveys for listed Threatened/Endangered Species (northern spotted owl, marbled murrelet, bald eagle). Some areas have been surveyed for species designated as Survey and Manage species, but these surveys have only been done for specific projects.

There are 216 wildlife species known or suspected to occur in the North Fork Coquille Watershed (WL Appendix-D: Vertebrate Wildlife Species List for the North Fork Coquille Watershed). This includes 14 amphibians, 14 reptiles, 132 birds and 56 mammals. Thirty of the 216 vertebrate species and 3 mollusk species are Special Status Species, including species that have status under the Northwest Forest Plan (USDA; USDI 1994) as Survey and Manage, Protection Buffer Species, or bat species.

Wildlife species in the Watershed use a variety of habitat types. These include rivers, streams, ponds, wetlands, riparian forest, meadow, shrub communities, talus, conifer forest, hardwood forest and mixed conifer-hardwood forest. Most of the Watershed is privately owned (Table Intro-1) and is primarily industrial forest land. Only about 37% (36,861 acres)of the North Fork Coquille Watershed is in Federal ownership (Table Intro-1). Approximately 42% (15,657 acres)of the BLM land in the Watershed is in LSR #261 and this is where most of the late-successional forest habitat occurs.

Current Conditions

Table WL-1 lists the habitat characteristics by species, and how these are distributed. Key habitat characteristics for this analysis area include riparian areas, snags, coarse down wood, and late-successional forest. Table WL-1 includes ratings of the current habitat condition and trend for the species of consideration. Map Wild-1: Timber Age Classes - Wildlife Emphasis shows BLM stands in the Watershed.

Table WL-1: Species of Consideration for the North Fork Coquille Watershed.

Species						Habitat Characteristics									Current Conditions		
						Special Habitats				Seral Stages							
Common/Latin Name	**Presence[1]**	**Status Federal[2]**	**Status State[3]**	**Relative Abundance**	**Distribution[4]**	**Cliff(C) Talus (T)**	**Snags/ CWM**	**Riparian/ Wetland**	**Hardwood Forest**	**Early**	**Mid**	**Late**	**Mature**	**Old-Growth**	**Habitat Distribution**	**Habitat Condition[5]**	**Habitat Trend[6]**
AMPHIBIANS - Aquatic																	
Southern Torrent Salamander *Rhyacotriton variegatus*	K	J2 BT	SSC	Rare	L		CWM	X							Cold Streams Aquatic	F	I
Tailed Frog *Ascaphus truei*	K	J2 BA	SSV	Rare	W		CWM	X			X	X	X	X	Cold Streams Aquatic	F	I
Red-Legged Frog *Rana aurora*	K	BS	SSU	Uncommon	W			X	X						Riparian Patchy	F	I
Foothill Yellow-legged Frog *Rana boylii*	S	BS	SSV	Uncommon	W			X							Riparian Patchy	F	I
-Terrestrial																	
Clouded Salamander *Aneides ferreus*	S	BT	SSU	Rare	W		CWM		X	X	X	X			CWM Patchy	P	I
Reptiles																	
Northwestern Pond Turtle *Clemmys marmorata*	S	BS	SSC	Rare	L			X							Patchy	P	S
BIRDS																	
Northern Spotted Owl *Strix occidentalis caurina*	K	FT	ST	Rare	W		S						X	X	OG Patchy	F	S
Marbled Murrelet *Brachyramphus marmoratus marmoratus*	K	FT	ST	Rare	W									X	OG Patchy	F	S
Bald Eagle *Haliaeetus leucocephalus*	K	FT	ST	Uncommon	W		S	X						X	Nest Tree Patchy	F	S
American Peregrine Falcon *Falco peregrinus anatum*	S	BS	SE	Rare	W	C		X	X						Cliff Patchy	F	S
Northern Goshawk *Accipiter gentilis*	S	BS	SSC	Rare	W								X	X	OG Patchy	P	S
Merlin *Falco columbarius*	S	BA		Rare	W		S	X		X					Edges Widespread	F	S
Western bluebird *Sialia mexicana*	S	BA		Uncommon	W		S		X	X					Edges Widespread	F	S
Pileated Woodpecker *Dryocopus pileatus*	K	BA	SSV	Uncommon	W		S	X						X	Snag/OG Patchy	F	I
Northern Saw-whet Owl *Aegolius acadicus*	K	BA	SSV	Uncommon	W		S		X	X	X	X	X	X	Edges Widespread	F	S
Northern Pygmy-Owl *Glaucidium gnoma*	K	BT	SSU	Uncommon	W		S						X	X	Snags Patchy	F	I

						Special Habitats			Seral Stages							
Common/Latin Name	Presence[1]	Status Federal[2]	Status State[3]	Relative Abundance	Distribution[4]	Cliff(C) Talus (T)	Snags/ CWM	Riparian/ Wetland	Hardwood Forest	Early	Mid	Late	Mature	Old-Growth	Habitat Distribution	Habitat Condition[5]	Habitat Trend[6]
MAMMALS																	
Big Brown Bat *Eptesicus fuscus*	S			Common	W	Cave C	S	X	X	X				X	Widespread	P	I
Silver-Haired Bat *Lasionycteris noctivagans*	S	J2, S/M BT	SSU	Common	W		S		X		X	X	X	X	Patchy	P	I
Hoary Bat *Lasiurus cinereus*	S	J2		Uncommon	W			X	X	X	X		X	X	Patchy	P	I
California Myotis *Myotis californicus*	S			Common	W	Cave C	S	X	X	X	X	X	X	X	Widespread	P	I
Long-Eared Myotis *Myotis evotis*	S	J2, S/M BT	SSU	Common	W		S	X	X			X	X	X	Patchy	P	I
Little Brown Myotis *Myotis lucifugus*	S			Common	W	Cave	S	X	X	X	X		X	X	Widespread	P	I
Fringed Myotis *Myotis thysanodes*	S	J2, S/M BS	SSV	Rare	W	Cave C	S	X	X	X	X	X	X	X	Patchy	P	I
Long-Legged Myotis *Myotis volans*	S	J2 S/M BT	SSU	Common	W	Cave C	S	X	X		X	X		X	Patchy	P	I
Yuma Myotis *Myotis yumanensis*	S	BT	SSU	Common	W	Cave C	S	X	X	X			X	X	Widespread	P	I
Pacific Western Big-Eared Bat *Corynorhinus townsendii*	S	PB BS	SSC	Rare	W	Cave		X	X	X	X	X	X	X	Patchy	P	D
American Marten *Martes americana*	S	J2 BA	SSV	Rare	W		S CWM						X	X	Patchy	P	I
Fisher *Martes pennanti*	S	J2 BS	SSC	Rare	W	T	S CWM						X	X	Patchy	P	I
Red Tree Vole *Arborimus longicaudus*	S	J2 S/M		Uncommon	L							X	X	X	Patchy	G	I
White-footed Vole *Arborimus albipes*	S	BS	SSU	Rare	L		CWM	X					X		Patchy	U	U
MOLLUSKS																	
Oregon Megomphix Megomphix hemphilli	K	J2 S/M		Rare	L		CWM	X	X			X	X	X	Patchy	U	I
Blue-gray Tail-dropper *Prophysaon coeruleum*	K	J2 S/M		Rare	L		CWM	X	X			X	X	X	Patchy	U	I
Papillose Tail-dropper *Prophysaon dubium*	K	J2 S/M		Rare	L	T	CWM	X	X			X	X	X	Patchy	U	I

[1] Presence in the analysis area: S - Suspected, but has not been documented. K - Known (most sightings documented in Resource Area files).
[2] Status Federal: FE - Federally Endangered. FT - Federally Threatened. FC - Federal Candidate. BS - Bureau Sensitive. BT - Bureau Tracking. BA - Bureau Assessment. S/M - Survey and Manage. PB - Protection Buffer.
[3] Status State: SE - State Endangered. ST - State Threatened. SSC - State Sensitive- Critical. SSV - State Sensitive/Vulnerable. SSP - State Sensitive/Peripheral or Naturally Rare. SSU - State Sensitive/Undetermined.
[4] Distribution: L - Local. W - Wide.
[5] Habitat Condition: G - Good. F - Fair. P - Poor. U - Unknown.
[6] Habitat Trend: I - Increasing. S - Stable. D - Decreasing. U - Unknown.

Sources: Brown *et al.* (1985), Coos Bay District PRMP (1994), FEMAT (1993), Holthausen *et al.* (1994), Maser *et al.* (1981), Marshall *et al.* (1996), Thomas *et al.* (1993). Distribution, Relative Abundance, and Trend rating for some of the species were from Thomas *et al.* (1993) and Holthausen *et al.* (1994).

Species of Consideration:

Aquatic amphibians: This group includes the southern torrent salamander, tailed frog, foothill yellow-legged frog, and red-legged frog. These species are associated predominantly with aquatic and riparian habitats. Southern torrent salamanders are found in cool rocky streams and seeps associated with conifer or alder forests (Csuti *et al.* 1997). Tailed frogs require cold, fast-flowing permanent streams in forested areas. These species are dependent on continuous access to cold water and therefore are very sensitive to timber harvest or other ground disturbing activities that may raise water temperature or increase sedimentation. Foothill yellow-legged frogs are generally found in permanent slow-flowing streams with rocky bottoms and stream-side vegetation (Csuti *et al.* 1997). Red-legged frogs occur in marshes, ponds, and streams with little or no flow, and are often found in dense stands of hardwoods with heavy ground cover (Marshall *et al.* 1996). Southern torrent salamanders and red-legged frogs have been found in the Watershed. The habitat condition for aquatic amphibians is rated as fair on Federal land due to the widths of pre-existing riparian buffers. The trend on Federal land is increasing, due to the Riparian Reserve widths of the Northwest Forest Plan. Restoration activities including the installation of fish-passage culverts that also allow for amphibian movements through them are also a factor in the increasing trend. For the frogs, the habitat trend is increasing but population numbers are declining due to unexplained factors (Marshall *et al.* 1996 and Csuti *et al.* 1997).

Clouded salamander: Clouded salamanders are found in upland habitats in association with down logs. Due to past timber harvest practices and salvage, the habitat condition is poor for the clouded salamander. Coarse woody debris levels on Federal land will increase under the Forest Plan, resulting in an increasing trend for the clouded salamander. The trend could change to stable or decreasing if salvage on Federal land decreases log levels below the minimum standards set in the Record of Decision/ Standard and Guidelines (USDA; USDI 1995, pg. C-40) for Matrix, or if salvage in the Riparian Reserve or LSR decreases log levels below those recommended in the LSR Assessment (USDI; USDA 1998).

Northern spotted owl: There are 17 known northern spotted owl sites within the North Fork Coquille Watershed on BLM land (WL Appendix-A: Northern Spotted Owl Habitat). Other spotted owl sites are present on private lands within the Watershed.

There are about 10,626 acres of suitable spotted owl nesting/foraging habitat, based on acres of stands 80-years old and older, on BLM land within the North Fork Coquille Watershed (Vegetation section this document). Most of the suitable habitat occurs in the LSR part of the Watershed (Table NSO-4 in WL Appendix-A: Northern Spotted Owl Habitat). The U.S. Fish and Wildlife Services has designated 16,220 acres of BLM land in the Watershed as critical habitat for the spotted owl. These acres are in Critical Habitat Unit OR60 (USDI 1992). The South Coast-Northern Klamath Late-Successional Reserve Assessment (USDI; USDA 1998) contains an analysis of the conditions in LSR# 261 for the spotted owls. WL Appendix-A: Northern Spotted Owl Habitat, includes an analysis of all suitable spotted owl habitat in the Watershed. That analysis used 1993 LANSAT satellite imagery, which was reclassed based on crown closure, and average stand dbh. The results of that analysis are displayed in WL Apdx Map 1: Norther Spotted Owl Habitat Based on Reclassed Landsat Data.

Approximately 29% of BLM lands in the Watershed (10,832 acres) currently support stands that are 40-79 years old (Table Veg-3). This age class provides spotted owl dispersal habitat. The percent of BLM land supporting 40 to 79-year old stands will increase through time resulting in an improving trend for dispersal habitat. The 15,274 acres of young stands (0-39 years of age) in the LSR will reach dispersal function within 40 years. During this 40-year period, stands on 3,974 acres of GFMA lands (current age 20-59 years) could reach 60-years of age and could potentially be harvested. There may also be some harvest activities in the Connectivity blocks, but it would be on a small scale.

Private lands in this analysis area may provide roosting, foraging, and dispersal habitat for the owl. Dispersal habitat is important because the potential for local extinction increases if the species becomes isolated. Weyerhaeuser is the major private land owner in the South Fork Coos Watershed, which is the watershed next to the north and east sides of the analysis area. According to Weyerhaeuser's Habitat Conservation Plan, 40% of the Millicoma Tree Farm will provide roosting and foraging habitat for the owl by the year 2044, and will continue to provide suitable habitat at least through the end of their 50-year plan (Beak Consultants Inc. 1994). The Millicoma Tree Farm will provide dispersal habitat between the Federal Late-Successional Reserves, and to the Elliot State Forest. Under current plans, Weyerhaeuser will be managing for a general landscape condition of suitable dispersal habitat, rather than for distinct corridors.

Marbled murrelet: Seven occupied marbled murrelet sites have been found on BLM GFMA lands. Murrelets probably occupy additional sites in the LSR. However, those locations are not known because survey efforts have been directed at GFMA lands. Other occupied murrelet sites are present in the Watershed on private lands.

BLM lands support 9,540 acres of suitable marbled murrelet habitat in the North Fork Coquille Watershed. Approximately 71% (6,739 acres) of this habitat is in the LSR part of the Watershed. The U.S. Fish and Wildlife Service has designated 16,220 acres of BLM land in the Watershed as critical habitat for the marbled murrelet. These critical habitat acres are in Critical Habitat Unit OR-06-B (USFWS 1997). Federal lands designated as critical habitat, in the Watershed, are the same as the LSR acres. The South Coast-Northern Klamath Late-Successional Reserve Assessment (USDI; USDA 1998) describes the current habitat conditions for the marbled murrelet in the LSR part of the Watershed.

Bald eagle: There are no known bald eagle nest sites in the North Fork Coquille Watershed (Isaacs; Anthony 1997), however bald eagles are known to use the area. Bald eagles probably nested historically along all the larger river reaches in the Watershed (Isaacs; Anthony 1997). It appears that bald eagles are expanding back into their historic nesting range and this trend should continue within the Watershed.

Eagles typically nest in the largest, and most dominant Douglas-fir trees within a conifer stand. They build their nests in the upper 20 feet of trees. Live canopies usually cover the nests. Nests are usually within 0.5 miles of open water and have an unobstructed view of water. In an Oregon study, Isaacs and coauthors (1983) reported 85% of the bald eagle nests were within 1 mile of major bodies of water. Snags and trees with exposed lateral limbs are important for perching. The Bald Eagle Recovery Plan (USFWS 1986) discusses bald eagle abundance, distribution, and habitat characteristics.

The habitat condition for bald eagles is fair as most of the timbered stands within the species's nesting range have been harvested. BLM manages little land within a half mile of those reaches of the North Fork Coquille River with open water. However, those parcels contain suitable nesting habitat. Due to the Bald Eagle Recovery Plan, the trend is stable on Federal land. The trend may increase in the Watershed if additional suitable bald eagle habitat is secured through habitat enhancement projects or land acquisitions.

American peregrine falcon: The North Fork Coquille Watershed contains no known American peregrine falcons eyries. However, the Watershed contains some suitable habitat for the species. Peregrine falcons nest on sheer cliffs ranging in height from 75 to 2,000 feet. Peregrines prefer sites overlooking open areas associated with water, where water birds are common. Eyries are located at 40-80% of total cliff height on sheer faces and are usually inaccessible to mammalian predators. Most eyrie cliffs in Oregon are 0.25 to 0.50 miles from riparian, lacustrine, or marine habitat, although distances up to one mile have been reported elsewhere. Peregrines will defend an area from 100 yards to one mile from nest sites

depending on the associated features. A home range can be from 25 to 100 square miles. Population density is most likely limited by nest sites. The American peregrine falcon was de-listed under the Endangered Species Act on August 25, 1999. Following de-listing a species is designated as a Bureau Sensitive species and will be re-evaluated at the end of a five-year monitoring period.

Northern goshawk: Northern goshawks may be present in the eastern portion of the Watershed. Surveys for northern goshawks are not required for lands within the range of the northern spotted owl. However, surveys are recommended, and have been conducted on suitable habitat in areas suspected to contain goshawks. District biologists select areas to survey based on habitat and nearby known locations. Northern goshawks are a Federal Species of Concern, and have an Oregon State Status of Sensitive. The analysis area contains suitable nesting habitat, and Roseburg District-BLM has found goshawk nests in the Coast Range. This species prefers large patches of late-successional forests with large trees and considerable canopy closure (Csuti *et al.* 1997).

Pileated woodpecker: Pileated woodpeckers require late-successional forest habitat that contain hard snags greater than 25" dbh (Brown *et al.* 1985). Plieated woodpeckers feed primarily on carpenter ants, but will opportunistically feed on other arthropods (Bull *et al.* 1992). This bird is designated as a management indicator species for mature and old-growth forest on national forests in Oregon (Marshall *et al.* 1996) and will be used as a representative of the snag-dependent species for the Watershed. The trend for pileated woodpcker will improve as a result of designation of LSR #261 and Riparian Reserves, and retention of snags and wildlife trees in the Matrix. Snag habitat in general is addressed in the Snag subsection below.

A host of secondary cavity nesting species use pileated woodpecker nest cavities, including the *northern pygmy owl*, which is listed as sensitive due to their dependence upon woodpeckers to create secondary nesting cavities (Marshall *et al.* 1996). We have little information on the ecology of this owl beyond the species dependence on cavities created by primary excavators. Additional studies are needed to gain better insight into habitat management for the pygmy owl.

Bats: The ten bat species that could occur in the Watershed are associated with a variety of habitat structures. Bats roost in buildings, bridges, rock crevices, tree cavities or foliage, and loose tree bark. Old growth forests provide higher quality roost sites than younger forests (Christy; West 1993). Foraging areas include the forest and forest openings, riparian areas, and open water. Rock bluffs, hollow trees and snags, and deeply fissured or loose bark may offer roosting crevices for bats. The thick bark of older trees, and bark and cavities in snags provide high quality habitat. Bat species listed as Federal Species of Concern, which could occur in the Watershed area, include the Yuma myotis, long-legged myotis, fringed myotis, long-eared myotis, and Pacific western big-eared bat (Csuti *et al.* 1997).

No caves, mines, or abandoned wooden bridges or buildings that could be providing bat habitat have been identified in the Watershed. If such sites are found, they would receive additional protection ROD/S&G (USDA; USDI 1994, pg. C-43). Species that would benefit under this protection, and that could occur in the area are fringed myotis, silver-haired bat, long-eared myotis, long-legged myotis, pallid bat and Pacific western big-eared bat. The Pacific western big-eared bat's habitat condition is in decline mainly due to human harassment and destruction to caves and other structures used for roosting, hibernaculum, and nursery sites.

A survey of BLM-controlled bridges, in the Coos Bay District, found 8 bridges in the Watershed that showed signs of night roosting by bats, but only one bridge is known to be used as a day roost, and none of the bridges are known to be used as nursery roosts or hibernaculums (Keeley 1998). Bats require warm roosts and are very sensitive to small changes in temperature. Bats prefer temperatures in nursery

to be between 80° F and 100° F. Consequently, a bridge's suitability as a day roost, nursery roost or hibernaculum is influenced by exposure to the warming affect of sunlight (Tuttle; Hensley 1993). The locations of the bridges most suitable for bat habitat improvement are in the recommendations section.

The hoary bat only uses large, live trees for roosting. Therefore, the trend for hoary bat, like the pileated woodpecker, is linked to the tend for snag habitat. The trend for the hoary bat will improve as a result of designation of LSR #261 and Riparian Reserves, and retention of snags and wildlife trees in the Matrix. Snag habitat in general is addressed in the Snag subsection below.

American marten and fisher: The clumps of late-successional forest in the Watershed are providing suitable habitat for the American marten and possibly the fisher. A probable fisher sighting has been documented in the Watershed by a reliable observer. Martens are typically associated with large, contiguous blocks of late-successional forest habitat that contain riparian areas and abundant down logs and snags (Buskirk *et al.* 1994). The snags and down wood in these late-successional stands would provide the structure required by the marten. The limiting factor is the amount of contiguous suitable habitat within a home range for these two species. The marten's normal home range is a square mile, though they may range as far as 15 miles. The fisher's normal home range is 10 square miles.

Fragmentation of late-successional forests, the loss of large downed wood, and human disturbance all contribute to the poor habitat condition for the marten and fisher. The trend is upward, as over time, management in LSR #261 may provide a large enough block of suitable habitat to support these species.

Red tree vole: Red tree voles are arboreal rodents that occur in patchy distributions primarily in late-successional forests (Huff *et al.* 1992). Red tree voles are most commonly found in Douglas-fir stands, though they are occasionally found in grand fir, Sitka spruce, and western hemlock. They have been found in all Douglas-fir forest age classes, but tend to be more abundant in mature and old-growth forests (BLM Instruction Memorandum No. OR-97-009 dated Nov. 4, 1996). Ongoing surveys throughout the range of the red tree vole will provide additional information on red tree vole distribution and habitat requirements. Regional surveys are currently in progress in various age classes of forests. Preliminary data indicate that the Coos Bay District may be an area of higher numbers of red tree voles than other areas and may be near the center of the red tree vole range. Although current data indicates that red tree voles are also found in younger stands, larger numbers of nests are found in late-successional stands (Brian Biswell, pers. comm.). Red tree voles are present in the Watershed, and more sites are likely to be documented through surveys conducted before habitat-disturbing activities. There are about 18,246 acres of BLM lands within the Watershed with Douglas fir stands $\geq$ 40 years old, which is generally considered suitable habitat for this species, although other habitat features may be required, such as larger, remnant trees. Approximately 52% (9,572 acres) of this habitat occurs in the GFMA portion, and 41% (7,519 acres) within the LSR part of the Watershed. The remaining percentage (1,155 acres) is in connectivity blocks and within the Cherry Creek Research Natural Area.

White-footed vole: The white-footed voles inhabit riparian areas, particularly along small streams with an alder forest component (Maser *et al.* 1981). White-footed voles are susceptible to habitat loss and fragmentation. More specific information is lacking on the species habitat requirements (Marshall *et al.* 1996), and so the habitat condition and trend are unknown. One action that will reduce the species habitat is removal of hardwoods from historically hardwood-dominated riparian areas.

Mollusks: Surveys for three species of terrestrial mollusks in the Watershed formerly were required before ground-disturbing activities. The species are the Oregon Megomphix, blue-grey tail-dropper, and papillose tail-dropper. As a result of recent amendments to the survey and manage guidelines, surveys for these mollusks are no longer required. However, the amended survey and manage guidelines do

require managing known Oregon Megomphix sites (USDA; USDI 2001).

Suitable habitat for Oregon Megomphix includes moist conifer or conifer/hardwood (bigleaf maple) mixed forests up to 3,000 feet in elevation. A key habitat component is leaf litter under large bigleaf maples, near down logs, or beneath sword ferns. Habitat for both tail-dropper species includes conifer forests, typically with a hardwood component. The key habitat components for these species are conifer and hardwood logs, ground litter and mosses, and leaf litter under shrubs. The papillose tail-dropper is also associated with talus slopes.

Species of Local Concern:

Del Norte salamander: Del Norte salamanders are found primarily in forested (mixed conifer-hardwood) talus habitat. Suitable sites contain deep cobble-sized talus with interstitial spaces sufficient to allow them to retreat far below the surface rock to escape temperature extremes and drying. In forested areas, they can be found in surface duff or under rocks and sloughed bark. They also may be found where deep talus is abundant although canopy cover is lacking. Part of the Watershed is within a 25 mile-radius of the northernmost known Del Norte salamander location, and therefore was subject to predisturbance surveys under the old survey protocol. As a result of recent amendments to the survey and manage guidelines, surveys for the Del Norte salamander are no longer required before ground disturbing activities (USDA; USDI 20001).

Birds: Approximately 68 species of neotropical migratory birds are suspected to occur in the analysis area (WL Appendix-D: Vertebrate Wildlife Species List for the North Fork Coquille Watershed). These species are highly correlated with riparian and forested habitats. It is believed that populations of the neotropical migratory birds are experiencing a decline throughout North America. The decline in bird species that are closely associated with late-successional forests may be caused by habitat loss, competition for habitat components, and increased predation. Though they are not specifically addressed in this document, neotropical migratory birds should be considered when forming management recommendations.

No Cooper's hawk nest sites are known to be on BLM land in the analysis area. The ROD/RMP requires a 15-acre management area around known nests (USDI 1995, pg. 29). This species is associated with a coniferous forest but can be found in mixed and deciduous stands.

Band-tailed pigeons use a variety of forest habitats and feed primarily on berries and nuts. They occur in low numbers and seem to have experienced a general population decline from the mid-1960s to the late 1980s (Jarvis; Passmore 1992). Declines throughout their range may be due to reduced forage and nesting habitat, and increased pressure from agricultural interests and hunting on their winter ranges. No formal surveys for this species have been conducted.

Beavers: Beavers are commonly found in areas with relatively constant water levels that have an adequate flow for damming. Beaver dams store water, stabilize stream flow, and elevate water tables. Beaver ponds benefit other wildlife species by providing standing water, edge, and riparian plant diversity. The ponds provide fish habitat during the summer low flow period.

Confidence level for the ratings of habitat condition and trend: The ratings were based mainly on expended habitat trends under the Northwest Forest Plan and professional judgement, and the confidence level is good. Trends for some species were based on reports in Thomas *et al.* (1993) and Holthausen *et al.* (1994). The assumption for all nonfederal land was that forested areas would follow the minimum requirements under the Forestry Practices Act, and that restoration of late-successional habitat would not be a part of the management strategy. It was also assumed that the bottomlands and gentle slopes would

continue to be managed for agriculture and rural housing.

Snags: The current habitat condition for snag-dependent species is poor. This reflects past harvest practices, and roadside snag felling contracts. Past activities intended to improve utilization standards, reduce fire hazard, reduce risk to helicopters employed to spray herbicides, and remove defective or nonmerchantable trees removed snags and trees with potential to become snags from the managed stands. Wildlife tree retention was not required until 1983 on BLM and 1991 on private lands. Most of the stands in the Watershed with large snags and old-growth trees had been harvested before these retention requirements took effect.

Preharvest surveys for snags were completed on nine sites in the Watershed. These included 100% surveys on two regeneration harvest units, and on seven areas in a 235-acre commercial thinning unit. As shown in Table WL-2, four sites met or exceeded the minimum snag numbers and five sites were deficient in snags. This small sample suggests the Matrix portion of the analysis area does not currently have the numbers of snags needed to meet the District ROD/RMP minimum requirement for retaining snags sufficient to support species of cavity-nesting birds at 40% of potential population levels[1] throughout the Matrix (USDI 1995, pg. 27). This indicates preharvest snag surveys will be needed for future timber sale units to identify sites that will need snag recruitment treatments.

Post harvest snag survey data has only been collected on two units, Last Yankee and Chicken Deluxe, Unit 2. Both units exceeded the ROD/RMP minimum levels. The Last Yankee unit retained 1.94 snags per acre, and Chicken Deluxe, Unit 2, retained 3.93 snags per acre $\geq$ 11 inches dbh and $\geq$ 10 feet tall.

The current habitat condition for snag-dependent species is poor. Implementing the RMP standard and guidelines for snags on the Matrix (USDI 1995), and snag recommendations in the LSR Assessment (USDI, USDA 1998) for the Late-Successional Reserves will result in an improving trend for snag habitat. Timber harvest on GFMA lands will reduce the numbers of large trees that could turn into snags suitable for nesting habitat. However, protecting existing large snags and designating wildlife trees that are, or can grow to be, greater than 24 inches dbh will provide future snag habitat. The RMP management direction to meet the 40% levels throughout the Matrix with the per acre requirement met on average areas no larger than 40-acres will also contribute to the increasing trend by providing for well-distributed snag habitat. The WL Appendix-C: Snag Management on Matrix Land contains a summary of management direction, analysis, and discussion. BLM lands in the Watershed will eventually support 83% of potential population levels of primary excavator species. This is a weighted average based on continued management for snag habitat that can support primary excavators species at the 40% of potential population levels on all Matrix lands, and for 100% potential population levels on all the reserve lands.

[1] The number of snags needed to provide habitat for 40% of potential population levels of primary excavator species is 1.5 snags/acres, and 3.8 snags/ acre are needed to support 100% of potential population levels (Marcot 1991).

Table WL-2: Pre-harvest Snag Survey Results

Survey Area	Township-Range-Section	Acres	Pre-harvest Snag Density (snags/ac) *
Chicken Deluxe Unit 1	27S-11W-35	50	0.40
Chicken Deluxe Unit 2	27S-11W-26	28	2.30
Woodward Creek Thinning - Area 1	27S-12W-01	18	0.89
Woodward Creek Thinning - Area 2	27S-12W-01	11	1.99
Woodward Creek Thinning - Area 3	27S-12W-01	11	0.82
Woodward Creek Thinning - Area 4	27S-12W-01	2	1.50
Woodward Creek Thinning - Area 5	27S-12W-01	23	1.26
Woodward Creek Thinning - Area 6	27S-12W-01	10	1.60
Woodward Creek Thinning - Area 9	27S-12W-01	18	0.06

* Includes snags equal and greater than 11 inch dbh and 10 feet high, in all decay classes. 100% of the area was surveyed. Monitoring Plan for Wildlife Trees and Snags (USDI 1997)

Coarse Woody Debris: Preharvest surveys for decay class I and II coarse woody debris (CWD) have been conducted on 19 proposed thinning units within the GFMA portion of the Watershed (WL Appendix-B: Coarse Wood Debris). One unit has sufficient CWD of the desired sizes and condition to meet the ROD/RMP standard of 120 lineal feet of decay class I and II material at least 16 feet long and at least 16 inches on the large end. Five other units met the minimum volume of decay class I and II in 16-foot long and longer piece standard, but not the 16-inch minimum diameter standard.

Most the CWD sampled in the proposed thinning units were decay class IV and V. Spies *et al.* (1988) observed that woody debris distribution in young natural stands is concentrated in decay classes III, IV and V. In mature stands, the woody debris is more evenly distributed among decay classes II through V. In old-growth, the woody debris is concentrated in decay classes II and III.

Connectivity/Diversity Blocks and Dispersal Habitat: The ROD/RMP designated 837 acres of Connectivity/Diversity Blocks in the Watershed. Management direction for these blocks is to maintain 25 to 30% of each block in late-successional forest. Riparian Reserves, and other allocations with late-successional forests inside the block boundaries, count toward this percentage.

Table WL-3: Connectivity Blocks and Acreage More Than 80-Years of Age Based on 1995 Land Use Allocations

Connectivity/ Diversity Block No.	Name	Township-Range-Section	Forest acres	Acres of late-successional stands (80-years old and older)	Percent of block 80-years old and older
24	Laverne Park	27S-11W-5	615	128	21%
25	Rock Prairie	27S-12W-35	211	52	25%
MW5*	John's Creek	29S-11W-5	11	5	45%
Total acres			837	185	

* Most of the John's Creek Connectivity/ Diversity block is in the East Fork Coquille Watershed, and on the Myrtlewood Resource Area. The acres displayed in this table are for the Umpqua Resource Area only.

Reference Condition

Historically, the assessment area would have supported a mosaic of wetland and riparian habitats along the river's flood plain with a mixture of seral stages in the forested uplands. The key disturbance processes would have been flooding along the valley bottoms, and fire, landslides, and windthrow events in the forested areas (Reference Conditions in the Erosion, and Vegetation sections). Many if not most old-growth stands experienced low to moderate amounts of disturbance. These disturbances contributed

to the development of multiple- size and age-classes (Spies; Franklin 1991).

The distribution of early, mid-seral, old-growth, and climax habitats in the Watershed likely were rarely if ever in equilibrium (Sprugel 1991). Rather the Watershed at any given time was dominated by either early-seral or mid-seral or old-growth habitat with pockets, patches and stringers of the less common habitats providing refuges for species depended on whatever habitats were uncommon at the time. The time between large stand replacement fires was on average about 200 to 250-years. Small stand replacement fires on fire prone sites, and stand modifying fires had shorter return intervals (Fire History Appendix). Moist protected north slope, lower slope and stream side areas provided the refuge habitats for late-successional/ old-growth dependent species during those periods when early or mid-seral forests dominated the Watershed following stand replacement fires. Also during those times, the early and mid-seral stands contained scattered older large green trees, abundant large snags and large down wood. These late-successional stand attributes, in stands dominated by early and mid-seral trees, allowed late-successional forest associated species to survive, disburse and perpetuate in those parts of the Watershed that lacked remnant old-growth stands (North *et al.* 1999). Shallow soil rockland areas and fire maintained prairies provided refuges for early seral species during those periods when mature and old-growth stands dominated the Watershed. Disturbance prone upper slopes, ridges, and landslide tracks provided refuge habitats for species associated with edge habitats (Erosion and Vegetation sections, Fire History Appendix). Fires set by Native-Americans may have benefitted local populations of species associated with early seral conditions and edge habitats during periods when late-successional/ old-growth forests dominated the landscape (LaLande; Pullen (1999). While we commonly associate large snags and CWD with late-successional/ old-growth habitat and we consider the presence of these structures in early and mid-seral forest as important as refuges for late-successional species, these large structural elements also provide necessary habitats for some species associated with early and mid-seral conditions (Hutto 1995).

Raptor nesting and perching sites would have been more common due to the presence of scattered, large Douglas-firs that owe their open grown condition to past fires. Recurring low and moderate severity fires in the late-successional stands would have recruited snags resulting in an array of decay classes. This would have increased the habitat availability and abundance of cavity and snag-related species (14 of the species of consideration). Bark beetle outbreaks would have occurred following major fires and large blowdown events. These outbreaks provided additional snags and short periods of abundant food for insectivores. Large Douglas-firs would have provided a high volume of downed wood. This would have provided abundant habitat for terrestrial amphibians, furbearers, and mollusk species. Fire charring of the downed wood would have been variable, depending on the microclimate and topography near the downed wood, and the fire pattern and intensity. Forested areas would have provided thermal and hiding cover for big game, while foraging areas would have been present in stand gaps, and in recently burned areas, large blowdown patches and other areas containing early seral vegetation. The generally complex forest structure would have provided quality foraging and dispersal areas for the northern spotted owl. Before their conversion to agriculture and rural residential purposes, the flood plains along the lower main stem and lower reaches of major tributaries would have provided a larger area in habitats used by wetland and riparian forest-associated species.

Synthesis and Interpretation

Table WL-4 lists the causes of change between historic and current species distribution and habitat quality for species of consideration in the analysis area. Timber harvest, and agricultural/rural housing activities (converting forest/wetland to pastures, ditching/diking) have replaced natural disturbances. This may cause the absence of many wildlife species that would have normally occupied various seral stages. Management activities have also increased the presence of introduced wildlife species (i.e., bullfrogs, European starlings) and noxious weeds.

Table WL-4: Causes of Change Between Historical and Current Species Distribution and Habitat Quality.

Species of Consideration	Change	Primary Cause
Aquatic Amphibians	- Decrease of cold, clear stream habitat - Increase in fine sedimentation - Higher stream temperature - Increase in dispersal barriers	- Timber harvest practices - " - " - Culverts, road construction
Terrestrial Amphibians	- Loss of large diameter CWM	- Timber harvest practices - Salvage
Northern Spotted Owl Marbled Murrelet Northern Goshawk	- Loss of late-successional habitat	- Timber harvest of late-successional habitats
Northern Spotted Owl	- Loss/fragmentation of dispersal habitat	- Timber harvest
Cavity Nesting Species & Bats	- Loss of snags - Loss of older seral stages - Interruption of snag legacy	- Timber harvest & conversion of land to agriculture/residential - " - Thinning from below, timber harvest, snag felling for fire precaution
Bald Eagle	- Loss of nest trees - Loss of potential nest sites - Interruption of nesting - Unsuccessful nesting	- Timber harvest/ road construction - Harvest on private/public land within 1 mile of large rivers. - Man-made disturbances within line of sight of nest trees - Pesticides
American Marten and Fisher	- Loss and fragmentation of late-successional habitat - Degradation of riparian habitat - Loss of CWM and snags that are used for hiding/resting/denning - Increased human disturbance	- Timber harvest - " - " - Road construction
White-footed Vole and Mollusks	- Loss of natural alder riparian areas	- Timber harvest methods - Inadequate riparian buffers
Big Game	- Human harassment and poaching - Loss of thermal and hiding cover - Loss of calving areas	- Construction of roads and spurs - Timber harvest - "
All Species	- Loss of vegetative & structural diversity	- Planting Douglas-fir monocultures, PCT, brush/hardwood removal

The species most affected are those requiring old-growth forest habitats, or habitat complexity (snags, down wood, complex tree canopies, *etc*.) Population numbers of these animal species have declined, and many are restricted to small isolated habitat islands due to a loss of habitat connectivity.

Snags: The primary excavator bird species have minimum snag diameters and state of decay requirements that must be met in addition to the number of snags on the landscape. For example, retaining 3 or 4 or more snags per acre following a timber harvest would not meet the 40% population objective if all those snags were decay class IV or V. The longevity of a snag is also a factor in evaluating if the snag requirements have been met for the near-term (less than 3 decades) (USDI 1995). This is because the hard snags smaller than 18.8-inches dbh will transition to soft snags before the new stand can produce replacement snags meeting the minimum size required by most of the primary excavator species (Brown 1985 adapted from Cline *et al.* 1980). The WL Appendix-C: Snag Management on Matrix Land includes a

Figure 1 Snag patch on Blue Ridge in 1964. These snags were likely trees killed by the 1936 Mckinley-Fairview Fire.

discussion on snag longevity and decay rates.

Coarse Woody Debris: The decay class II levels reported by researchers may be misleading if taken at face value and if the tendency for tree mortality to occur in pulses or waves is not considered. Therefore, local "shortages" or "excess amounts," particularly of decay class I and II CWD, may be normal at the site scale. Analysis, in the WL Appendix-B: Coarse Wood Debris, shows total CWD levels in 6 of the sampled 19 mid-seral stands meeting or exceeding levels observed in natural young stands by Spies and Franklin (1991). However, these CWD levels are predominantly decay class IV and V, with some stands appearing deficient in decay class III CWD. This uneven distribution of decay classes needs to be taken into account when assessing if there is a surplus of CWD in a stand. Recurring decay class I log recruitment is necessary to obtain and maintain the volumes of decay class II and III CWD within their natural ranges of variability. To insure that there will be sufficient decay class III, IV and V logs in the future, we will need to retain abundant levels of decay class I and II logs on site following catastrophic events in areas managed for late-successional habitat. This will need to be taken into account if salvaging is prescribed within the LSR or Riparian Reserves due to a catastrophic event. Therefore in the LSR and Riparian Reserve, where we are managing for late successional conditions, the function of a "salvage sale" is not to recoup economic loss but rather to facilitate rapid regeneration by opening sufficient plantable spots, and to reduce the risk of additional loss of forests by breaking fuel continuity and the possible spread of insect epidemics consistent with retaining a CWD legacy. At the other extreme, defaulting to the "no action alternative" and leaving all dead wood following a catastrophic event risks a delay in recovery of late-successional habitat in the impacted areas and risks additional losses of late-successional habitat in adjacent areas.

The ROD/RMP standards and guidelines for partial harvest areas in the Matrix is to "apply the same basic management actions/directions [used for regeneration harvest], but they can be modified to reflect the timing of stand development cycles where partial harvest is practiced" (USDI 1995, pg 22). Given their age, the commercial thinning units are unlikely to produce, through natural mortality, the diameter classes of decay I and II CWD needed to meet ROD/RMP standards for regeneration harvest units for at least another 20 years (see the Density Management and attaining Riparian Reserve Function section).

Based on the combination of CWD data analyzed for the North Fork Coquille Watershed (Wildlife Appendix) and in the South Fork Coos Watershed Wildlife Appendix (USDI 2001), logging alone will not necessarily cause the CWD amounts in the subsequently regenerated stand to drop below those amounts observed in natural stands. However, CWD amounts in second growth stands can fall below that observed in natural stands in those areas where forest regeneration was delayed for several decades. Lengthy delays in regeneration occurred on BLM lands in valley side locations logged and grazed in the first half of the 20th century (Vegetation section). The CWD data analyzed for these two watershed documents do not include units logged under contracts that required gross yarding across the entire treatment area or during times when market conditions favored exceptionally high utilization standards.

Butts and McComb (2000), found numbers of ensatina salamander numbers increased with increased total volume of CWD and clouded salamanders were not observed on sites with low amounts of CWD. Their results suggest that ensatina and clouded salamanders may not persist in managed stands where only the minimum amount of CWD is retained. They suggest managing for CWD levels comparable to amounts found in natural stands would more likely provide for terrestrial salamander CWD habitat requirements with the caveat that total CWD volume alone does not address the size and decay stages preferred by terrestrial salamanders nor the requirements of small mammals that use CWD. Butts and McComb suggest managing for a CWD range of 100-300 m^3/ha (1,429-4,288 ft^3/ ac). The low end of this range corresponds to the average CWD amounts observed in mature stands and the upper end corresponds to that found in old growth (Spies et al 1988; Spies & Franklin 1991).

Landscape Connectivity: Connections between habitat areas are especially important in fragmented landscapes. Habitat connections occur at two scales: connections between large LSRs to facilitate movements of fairly mobile species, and connections between habitat patches to facilitate movements of less mobile species. The Connectivity blocks, with their additional standards and guidelines, are intended to facilitate dispersal of mobile late-successional species across the landscape.

The functions of the Riparian Reserve include ". . . improve travel and dispersal corridors for terrestrial animals and plants, and provide for greater connectivity of late-successional forest habitat." (USDA; USDI 1994, pg. 7). This management direction reflects the value of the Riparian Reserves as connectivity between the LSRs, and as extensions of late-successional habitat outside the boundaries of the LSRs. The late-successional stands in the Riparian Reserves can function as refuges and source areas for species benefitted by late-successional habitat thereby maintaining their presence in adjacent Matrix and private lands. Analysis in SEIS Appendix J-2 (Holthausen et al 1994) indicated the long term viability of certain late-successional associated species is provided for by the Riparian Reserves widths implemented by the ROD but not by the less extensive reserve widths considered in other alternatives. This implies a function of the Riparian Reserve is to provide late-successional forest habitats to insure viability of some species. The main purpose of the Riparian Reserves is to protect the health of the aquatic system and its dependent species. . . (USDA; USDI 1994, pg. 7). This purpose is met, in part, by meeting ACS objectives through an appropriate mix of passive and active management. The most sensitive parts of the Riparian Reserve, with respect to the near term benefits provided by the forest vegetation to the aquatic system, are those areas within a zone whose width is equal to the half the average height of the overstory trees (see Table DM-1). Outside that zone, ID Teams have greater flexibility in both meeting ACS objectives, and providing for connectivity and benefitting late-successional associated species.

From a landscape perspective, density management treatments in Riparian Reserves within Matrix lands should be designed to maintain or improve connectivity between LSRs (consistent with ACS objectives). In those areas where connectivity between designated blocks of late-successional habitat is less critical, density management treatments designed to develop late-successional characteristics, consistent with meeting ACS objectives, may be more beneficial for late-successional species.

The standards and guidelines for the Forest Plan provide for habitat for late-successional and old-growth forest related species. Regeneration harvest on Matrix land that is adjacent reserve land is consistent with the Forest Plan. The Forest Plan is designed so that neither randomly locating Matrix regeneration harvest units nor a bias toward locating regeneration harvest units on Matrix land next to reserves will prevent attainment of the Forest Plan objectives for late-successional/old-growth habitats. However, preferentially scheduling regeneration harvest in the Matrix so that isolated and fragmented Matrix stands are cut first would allow the Matrix stands that are next to reserves to provide a short term unplanned benefit for late-successional/old-growth associated species (Franklin; Forman 1987). The attainment of this higher level of benefit would be consistent with the Forest Plan if attaining the additional benefit does not prevent attainment of other Forest Plan objectives, which include economic objectives and benefits for species that use early and mid-seral habitats. Well-situated Matrix stands 40-years of age and older next to reserve lands can augment interior habitat, and reinforce habitat connections in the near term while early and mid-seral stands inside the reserves mature. These benefits could be realized by scheduling regeneration harvests so that isolated Matrix stands are harvested first. In effect, this delays regeneration harvest of Matrix stands next to LSR #261, allowing them to provide late-successional habitat for a time while the reserve stands that are younger than 40-years of age to mature to the point where they can provide connectivity.

Roads: Roads increase access for legal or illegal hunting, and vehicle traffic can harass wildlife.

Negative effects are particularly well documented for large mammals such as elk (Wisdom *et al.* 1986). Cole and coauthors (1996) noted vehicle traffic on secondary roads was greatest during fall hunting seasons. A telemetry study of elk on part of the Coos Bay District found that elk avoided areas within 492 feet of roads, and poaching accounted for 50% of the elk mortality (Cole *et al*.1996). Cole and coauthors (1997) reported elk mortality declined when gates limited non-administrative access to the study area compared with mortality rates observed before gates where installed and closed and to after gates were open or removed. Poaching was an important cause of mortality among female elk. Cole and coauthors also observed that limiting vehicle access to $\leq$4 trips per week lead to reduced elk core area size, range size, and daily movement, but elk did not shift home ranges or core areas into the areas where vehicle use was limited. However, road access was limited for only 9 months and so the elk may have not had time to acclimatize to the conditions afforded by the limited vehicle access program.

The road surface is also a physical barrier to some small-bodied, ground-dwelling wildlife such as small mammals, snails, and butterflies (Bennett 1991 in Gibbs 1998). Some small wildlife species may not cross a road bed, even if it is closed to vehicles, due to the change in surrounding conditions (Noss; Cooperrider 1994). This is supported by Gibbs (1998) who reported that amphibians are more likely to move across a forest-to-grass edge than across a forest-to-road edge. In addition, amphibians move shorter distances and have relatively poorer dispersal capabilities than other vertebrates. Therefore, a small scale disturbance such as a road can have a large impact on the local population and may limit recolonization capabilities (deMaynadier; Hunter 1995). Vehicle traffic and increased risk of predation can be detrimental to individuals, particularly of small, slow-moving species, while exposed on the road surface during dispersal.

Roads can also provide travel paths for edge associated species into interior habitat, and can provide dispersal corridors for other species associated with early seral conditions. Gated roads, which still receive moderate administrative use ($\geq$4 trips per week), or gates left open do little to reduce harassment to wildlife. Minimizing new road construction, decreasing open road density through closures, and fully decommissioning selected roads will decrease disturbance and barriers that affect wildlife.

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