

## **Appendix B1 Wildlife Species and Habitat of Concern**

### ***Federally Listed Threatened and Endangered Species***

#### **Northern Bald Eagle**

The northern bald eagle had been proposed for Endangered Species Act (ESA) de-listing. If it were removed from the ESA list, it would become a Regional Forester's Sensitive species. Bald eagles make substantial use of the Puget Sound area as winter habitat, with eagles foraging along the major river systems where anadromous fish are found (Watson and Pierce 2001).

Bald eagle winter foraging occurs along the Suiattle River from the confluence with the Sauk River up to Downey Creek, with relatively high use occurring up to Buck Creek and low to moderate use above Buck Creek (Darrington Ranger District files, USDA Forest Service). Night roost stands are known near the All Creek confluence area with the Suiattle, both on and off FS land. Also, concentrated eagle winter foraging occurs in the area downstream from the Boundary Bridge across the Suiattle (Road 25) to the All Creek confluence area. There are no known eagle nest sites in the watershed.

#### **Gray Wolf**

The gray wolf was reclassified from endangered to threatened status in 2003 for the Western Distinct Population Segment (DPS), which includes Washington. Historically, the wolf occupied much of the continental United States, but as of the 1980s, wolves occupied less than 1 percent of their former range (Laufer and Jenkins 1989). Breeding populations of wolves in Washington were reported as extirpated by the 1930s (Young 1944), which was believed to be a result of fur trading pressure in the early 1800s, followed by the establishment of bounties in 1871 on all predators in the Washington Territory. Between 1827 and 1859, over 7,700 wolf pelts were traded from or near the Cascades in Washington and British Columbia (Laufer and Jenkins 1989). The last reported wolf shot in the North Cascades was in 1975.

While the wolf is described as a habitat generalist (Mladenoff et al. 1995), wolf density is related to available food resources (Fuller 1989). The western Washington deer population is not known, but Washington Department of Fish and Wildlife (WDFW) biologists agree that the decline in deer harvests from hunting is related to a decrease in deer population (USDA Forest Service 2002). Additionally, the watershed and the surrounding Darrington District does not support an elk herd that could provide adequate wolf prey, although there likely are a few elk occasionally in the watershed.

Key wolf habitats include riparian areas, meadows for denning and rendezvous sites, areas with concentrated prey (deer, elk, goat) and areas away from human disturbance. Wolves are reported as particularly sensitive to disturbance during the denning and rendezvous periods (April through August).

Throughout the 1990s, there were numerous reports of wolves in the North Cascades. In 1991, wolf activity was documented in an area near the Cascade Crest south of the Suiattle watershed. Forest wolf survey efforts occurred throughout most of the 1990s, and included howling surveys in or near the Glacier Peak wilderness and Suiattle areas in 1992, 1993, 1997, and 1998. No wolf detections were recorded, but numerous coyote responses were noted (Darrington Ranger District files, USDA Forest Service 1992b). There have been no recent confirmed reports of wolf sightings in the North Cascades, and at this time, the Forest has concluded that there is no indication of resident wolves west of the Cascades crest on the Mt. Baker-Snoqualmie National Forest (MBS), and that the wolf prey population (primarily deer and elk) is insufficient to support a resident reproductive wolf population (USDA Forest Service 2002b).

Habitat quality on the Mt. Baker-Snoqualmie National Forest and in the watershed currently is not supporting high numbers of deer. Without the prey base, wolves are not expected to reoccupy west of the Cascades. However, the portion of the MBS adjacent to the Cascades crest, such as the upper Suiattle watershed, could be important for wolf dispersal or as part of wolf territories that may be established east of the crest.

### Canada Lynx

Lynx were federally listed as a threatened species in 1999 across their range in the United States. The lynx is not considered historically abundant in westside habitats (USDI Fish and Wildlife Service 2000). Habitat modeling for the lynx includes the sub-alpine forest zone, but this forest association exists in such small acreage on the Forest that no lynx analysis units (LAU – delineated areas for evaluating effects of activities on lynx) have been designated wholly on the MBS. However, small portions of 2 LAUs, which are located mostly on the Wenatchee NF, occur along the Cascades crest in the headwaters area of the Suiattle River from about Dome Peak south to High Pass on the east side of the river. Approximately 16% (10,191 acres) of the 61,906-acre Agnes LAU and 20% (15,730 acres) of the 77,035-acre Chiwawa LAU are located in this area. However, only a small fraction of these LAU portions on the MBS contain mapped suitable lynx habitat.

Limited lynx surveys (hair snag pad method) were conducted in the Cascades from 1998 to 2001. In 1998, survey included the Suiattle River drainage, with no detections reported from the DNA testing of collected hair samples. Surveys from 1999 to 2001 in the North Fork Nooksack River and Canyon Creek drainages (north on the Mt. Baker Ranger District) did not result in any positive detections for lynx, nor did other surveys on the Snoqualmie District of the MBS.

Because the Suiattle River drainage extends to the crest of the North Cascades, there is potential for dispersing animals to move through the crest area from eastside habitat. Areas with the most potential for use by dispersing animals would include the upper reaches of the watershed in the Glacier Peak Wilderness. The limited amount of suitable habitat on the west side of the Cascades crest in western Washington is not believed sufficient to support a lynx territory solely on the west side. Consequently, this habitat may only provide for a portion of a territory centered on the east side, or for potential north-south lynx dispersal near the crest.

## ***Pacific Northwest Region Sensitive Species***

### **Peregrine Falcon**

The peregrine falcon, which was removed from the Endangered Species list in 1999, remains listed as a sensitive species for the MBS. Peregrines use cliffs for nesting and often forage along large lakes, rivers, and riparian valley bottoms for small birds and waterfowl. While there are no known or historic nest sites within the basin, there may be structurally suitable cliff nesting habitat on White Chuck mountain, and perhaps other cliff areas in the watershed. However, it is uncertain whether the Suiattle riverine system has sufficient avian prey availability to support breeding falcons.

### **Wolverine**

The wolverine has been petitioned for listing under the ESA and is a rare species in Washington, with limited sightings and records (Johnson and O'Neil 2001, Ruggiero et al. 1994). Trapping pressure in the United States and Canada is suspected of reducing the population to very low numbers during the early part of the 1900s. Wolverines require large areas of relatively undisturbed habitat, typically in higher elevation areas. Adult home range sizes reported in Ruggiero et al. (1994) for wolverines in Idaho and Montana ranged from 83,521 to 104,278 acres.

The Glacier Peak Wilderness and other lightly roaded portions of the watershed contain older forests, rock talus, and sparsely vegetated areas that are expected to provide suitable wolverine habitat. Wolverine use of this habitat could be influenced by a limited prey base and by human disturbance, such as along high-use recreation trails.

The Forest wildlife sightings database contains a 1989 report of a wolverine near Circle Peak, although the confirmation status of this report is uncertain. Besides this report, there are no verified records of wolverine in the watershed. In 2002, there were reports of a small bear-like animal in the watershed to the south of the Suiattle, in the Lake Byrne area of Glacier Peak Wilderness that fit descriptions of a wolverine, but no verification of this sighting was made. In 2003, there were additional reports near Lake Byrne of an aggressive animal that fit the description of a wolverine. The habitat in the Lake Byrne area and much of the upper Suiattle is consistent with descriptions of suitable habitat for wolverines. Reliable sightings have been reported from the Sauk River basin and Cascade Pass (Payne and Taber 1974), so wolverine is likely to be present in the watershed.

Grizzly bear core habitat also would be expected to benefit the wolverine. The security areas described in the grizzly bear section may also serve wolverine by providing security areas free from human disturbance. The Glacier Peak Wilderness provides habitat values for wolverine that are relatively high. Connectivity of habitat for wolverine dispersal also is high with the adjacent drainages to the north, south, and east included in the Glacier Peak Wilderness.

### Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a species of concern in the NWFP, a candidate for federal listing, and a Forest Service sensitive species. Little information is known about current populations on the MBS, but there have been a few detections of Townsend's big-eared bats in the Suiattle drainage and elsewhere on the Forest. The species is strongly associated with caves and abandoned mines for breeding (maternity colonies) and winter hibernacula, but they also occasionally may use abandoned wooden buildings or bridges for roost sites. They typically forage mostly in the air along forest edges, roads, and open habitats, including riparian habitats (Johnson and Cassidy 1997). Habitat inventories are currently insufficient to accurately identify and locate available habitat. In 1999, the barn at the Darrington compound had confirmed use by Townsend's big-eared bats during the summer months. Big-eared bats were also confirmed to be roosting underneath a bridge on Tenas Creek, Road #26 on the Suiattle River.

## ***Mt. Baker-Snoqualmie Forest Management Indicator Species***

### ***Big Game Winter Range (Black-tailed Deer and Elk)***

Black-tailed deer is a Forest indicator species for big game winter habitat in the MBS Forest LMP. Other than an occasional animal, elk are not known to consistently use the watershed in any significant numbers. The closest elk herd occurs in the Nooksack drainage (Skagit to Nooksack River drainages). From the MBS Forest Plan land allocations, there is a 686-acre area allocated to deer and elk winter range (MA 14) on the north side of Road 26 just inside the Forest boundary. Other than this allocated area, most of the watershed generally does not provide deer winter range due to the elevation and resulting snowfall. It is likely that only the lower elevation areas of the mainstem Suiattle River valley provide much deer winter range habitat, and also the non-FS lands at the west edge of the watershed.

The Suiattle watershed does provide summer range habitat, and black-tailed deer occur throughout the area, although in low numbers. The quality of forage in large unbroken expanses of forest seldom supports large numbers of deer (Crouch 1981). Historically, deer are not reported as abundant in the forest areas, with hunting success sought in the meadow areas of the upper elevation ridges.

Deer populations in the Suiattle River drainage likely responded to forage created after stand replacing fires in the 1700's and 1880's. Following fire or timber harvest, there is a period of abundant forage until conifers again dominate the site and shade out the shrub and herbaceous forage species. Deer populations fluctuate in response to this plant succession with increased populations during abundant forage periods, and decreasing numbers with conifer domination (Brown 1961).

The harvest of black-tailed deer is managed by the Washington Department of Fish and Wildlife (WDFW). WDFW records of harvest provide likely trends in the population. Harvest declined throughout the 1990s with the 1999 WDFW report showing the first increase in deer harvested in GMU 448 in several years. Deer forage habitat in the Suiattle watershed is expected to decrease as the forest canopies increase in recently harvested areas, and available forage is further reduced. It is assumed that the reduction of timber harvest on the Forest and the designation of large blocks of LSR will eventually result in reduced habitat quality and deer populations (WDFW 1999). This assumption also is applicable to the Suiattle watershed.

### *Old Growth and Mature Forest Habitat (Marten and Pileated Woodpecker)*

The American or pine marten and pileated woodpecker are Forest MIS species closely associated with mature and old-forest conifer habitat. Marten occur in western hemlock, silver fir, and mountain hemlock zones, with greatest densities typically in mid to high-elevation forest types (Marshall 1993, Ruggiero et al. 1994, Johnson and Cassidy 1997). High canopy closure (70%) and an abundance of down logs, snags, and large diameter conifers provide optimum habitat for the species (Ruggiero et al. 1994). Coarse woody debris is thought to enhance winter foraging habitat, with down logs providing access under the snow for hunting small mammals. Studies found that marten used old growth and large tree stands more often than their proportionate distribution (Jones 1991).

There are reports of marten within the Suiattle River drainage from the Triad Creek area to the Suiattle River trail. Other reports of marten are in association with abandoned shelters within Glacier Peak Wilderness that were likely concentrations of mice or other rodents. (Reed, pers. comm. 2003). Current trapping efforts often are concentrated along roaded areas, so the large unroaded portions of the drainage are considered important for marten. The Glacier Peak Wilderness and other unroaded areas provide high habitat quality, and marten populations are expected to occur throughout much of the Suiattle watershed. The watershed is dominated by mature and old forest habitat, providing abundant marten denning, resting, and foraging habitat. Because about 97% of FS lands in the watershed are allocated to wilderness, LSR, or other non-matrix allocations, habitat for marten is expected to remain abundant and well distributed.

Pileated woodpeckers require large snags for nest cavities. Consequently, they are typically associated with late-successional and old-growth forests for nesting habitat, although they may forage in mid-seral or mature conifer stands. In western Washington, they are relatively common in the western hemlock and silver fir vegetation zones, and less common in high-elevation zones such as mountain hemlock (Smith et al. 1997).

The watershed is dominated by mature and old forest habitat, providing abundant nesting and foraging habitat for pileated woodpeckers. About 97% of FS lands in the watershed are allocated to wilderness, LSR, or other non-matrix allocations, and habitat for this species is expected to remain abundant and well distributed. Pileated worked trees are common within the Suiattle River drainage, frequently on cedar trees with black ant infestations. Pileated woodpeckers were frequently seen in the flats on the south side of the Suiattle between Dusty and Vista Creeks (Reed, pers. comm. 2003).

### Snags and Downed Log Habitat (Primary Cavity Excavators)

Primary cavity excavators (i.e. woodpeckers) are Forest MIS for the unique habitat elements of snags and downed logs. There are over 141 vertebrate species in the region, which use snags and downed log material (CD-ROM matrices in Johnson and O'Neil 2001). Of these, 53 make primary use of snags for breeding activities, such as nesting and denning. Typically, large-diameter snags and logs provide higher quality habitat because they last longer and can be used by a greater number of species. Dozens of other wildlife species use cavities excavated by woodpeckers for nesting, denning, or roosting. Such secondary cavity nesters include bats, flying squirrels, owls, and other bird species. While smaller diameter trees can be used by many of the west-side woodpeckers, there is a disproportionate use of large-diameter snags as nest trees (Lundquist and Mariani 1991).

High snag densities are characteristic of old growth or unmanaged forest stands where stand development includes retention of standing dead trees, but snag habitat is associated with stands of various age classes. The Suiattle watershed has approximately 40%, 60%, and 70% respectively of the western hemlock, silver fir, and mountain hemlock zones in late-seral and old-growth condition. The figure for western hemlock would be higher if private lands were excluded.

Manuwal (1979) found an inverse relationship between snag-dependent bird species abundance and elevation on the Olympic Peninsula, as was found by Lundquist (1988) working in the Washington Cascades. In the Suiattle watershed, 23% of the area is within the western hemlock zone, and 21% is in the Silver fir zone. The remaining 56% basically is in the high elevation zones (mountain hemlock, parkland, alpine).

The MBS Forest Plan requires snag retention to support 40 percent of potential woodpecker population levels on lands managed for timber, and 100 percent population levels within riparian areas and lands not receiving a timber emphasis (USDA 1990a). There are approximately 30,611 acres of mature to old forest stands in the western hemlock zone and approximately 37,593 acres of mature to old forest stands in the silver fir zone. The watershed is dominated by mature and old forest habitat in the forest zones, providing abundant nesting and foraging habitat for woodpeckers. About 97% of FS lands in the watershed are allocated to wilderness, LSR, or other non-matrix allocations, and habitat for primary cavity excavators is expected to remain abundant and well distributed.

In the Suiattle drainage, there are approximately 7810 acres on FS lands where snag habitat levels are likely below minimums established by the Forest Plan. These areas are deficient in large diameter (greater than 25 inches DBH) snag habitat from timber harvest activities in the last 75 years where snags were not retained within harvest units. As forest stands mature, competition for resources will lead to tree mortality resulting in recruitment of small diameter snags. It is expected to take approximately 75 to 80 years for stands to develop larger diameter trees and to begin snag recruitment in the over 20-inch dbh (diameter at breast height) size class.

### Landbird Conservation

The Mount Baker-Snoqualmie National Forest (MBS) is located at the northern end of the Southern Pacific Rainforests physiographic area of the Partners in Flight landbird conservation strategy (Pashley et al. 2000) and in the Northern Pacific Forest Bird Conservation Region (BCR 5) of the North American Bird Conservation Initiative (USDI Fish and Wildlife Service 2002). The following discussion on Landbird conservation on the MBS is largely taken from an unpublished document prepared by Don Gay, District Wildlife Biologist at the Mt. Baker District of the MBS (Gay 2001).

In this physiographic area, bird populations will be maintained in coniferous forest areas through forest management allocations that promote older age classes of forest, and through a variety of silvicultural practices that provide structural and seral age diversity. The MBS has a large portion of the Forest in Wilderness designation, Late Successional Reserve, Riparian Reserve, Wild and Scenic Rivers, and other allocations that maintain large portions of the landscape in older age classes. Because habitat is provided for in higher level plans (Forest/NWFP), population concerns for a large number of bird species are less of a concern at the project scale.

Lowland riparian floodplain habitat has limited representation on the MBS. Forest plan direction to promote riparian forest habitat and to restore stream flows and riparian vegetation is expected to contribute to the conservation of landbirds that find optimal habitat in riparian forests.

The only priority habitat in the Southern Pacific Rainforest physiographic area that occurs on the MBS and within the watershed is coniferous forest. There are 22 priority land bird species identified for this habitat, all but 4 (mountain quail, Allen's hummingbird, Lewis' woodpecker, and white-headed woodpecker) occur on the Forest (Table ). Twelve of these are neotropical migrants.

**Table 1. Priority bird species of the Southern Physiographic Rainforest province occurring on the MBS, their migratory status, and representation as focal species for the Cascades Mountains (C) and Puget Sound lowlands and valleys (L) in the Oregon/Washington Bird Conservation Plan.**

<b>Priority Species</b>	<b>Neotropical Migrant</b>	<b>Focal Species</b>
Blue Grouse		
Band-tailed Pigeon		C
Northern Spotted Owl		
Black Swift	X	C
Vaux's Swift	X	C
Rufous Hummingbird	X	C
Willow Flycatcher	X	L
Hammond's Flycatcher	X	C
Pacific-slope Flycatcher	X	C
Cassin's Vireo	X	
Hutton's Vireo	X	C
Chestnut-backed Chickadee		
Golden-crowned Kinglet		
Swainson's Thrush	X	L
Black-throated Gray Warbler	X	C
Hermit Warbler	X	C
MacGillivray's Warbler	X	
Black-headed Grosbeak	X	

### ***West-Side Coniferous Forest***

West-side coniferous forests appear to have more stable land bird populations than more coastal forests. There are only 8 land bird species with significant declining trends in the Cascade Mountains coniferous forest, compared with 25 in coastal forests of the lowlands and valleys. This is likely due to more extensive, greater magnitude, and more permanent habitat changes in lower elevation forests.

The Oregon/Washington Bird Conservation Plan identifies 5 forest seral stages (early, pole, young, mature, and old-growth). It further identifies attributes (snags, shrubs, canopy closure, etc.) that often vary within a seral stage. Combinations of seral stage and stand attributes were used to identify focal species. The 20 focal species represent combinations of forest seral stages and structural characteristics. Nine of the twenty are priority species identified for the physiographic province. One focal species, western bluebird, does not occur in our area.

Because more than 80% of the MBS is in land allocations that will provide large amounts of old growth and mature seral stages, 5 focal species will be adequately provided for without additional management considerations. Vaux’s swift, brown creeper, red crossbill, varied thrush, and pileated woodpecker are focal species associate with old growth and mature seral stages and are expected to occur well distributed throughout the MBS under existing land management direction.

The remaining 14 focal species (Table 2) are identified for early – young forest seral stages or unique habitats. Five of these (hermit warbler, Pacific-slope flycatcher, Hammond’s flycatcher, Wilson’s warbler, and winter wren) are also focal species for

**Table 2. Focal species, associated forest seral stages younger than mature, and associated habitat attributes for west-side coniferous forests.**

<b>Focal Species</b>	<b>Forest Seral Stage(s)</b>	<b>Habitat Attribute</b>
Hermit Warbler	Mature/Young	Closed Canopy Forest
Pacific-slope Flycatcher	Mature/Young	Deciduous Canopy Trees
Hammond’s Flycatcher	Mature/Young	Open Mid-Story Layer
Black-throated Gray Warbler	Young/Pole	Deciduous Canopy Trees
Wilson’s Warbler	Mature/Young	Deciduous Understory
Winter Wren	Mature/Young	Forest Floor Complexity
Hutton’s Vireo	Pole	Deciduous Subcanoy/Understory
Olive-sided Flycatcher	Early	Residual Canopy Trees
Orange-crowned Warbler	Early	Deciduous Vegetation
Rufous Hummingbird	Early	Nectar-producing Plants
Band-tailed Pigeon		Mineral Springs
American Pipit		Alpine
Black Swift		Waterfalls
Lincoln’s Sparrow		High-elevation wet meadows

mature seral stages, and therefore will largely be accommodated by the mature and old-growth forest stands in the LSR, wilderness, and other land management allocations that are expected to maintain these habitat conditions. Management attention and planning for the habitat needs of the landbird species limited to early – young seral stages or unique habitats is likely of greatest importance for the MBS and the Suiattle watershed. Black-throated Gray warbler, Hutton’s vireo, orange-crowned warbler, and rufous hummingbird are focal species limited to early and pole seral forests and are associated with deciduous woody vegetation. There are opportunities to maintain deciduous woody species in regeneration units for a longer period of time to provide for the conservation of these 4 focal species. Pre-commercial thinning prescriptions can be modified, where necessary, to meet habitat objectives. Where there are inclusions of floodplain riparian habitats that contain > 30% deciduous trees, focal species of the lowlands and valleys may be present.

There also are some implications for decisions on wildfire suppression in the mountain hemlock zone. This area serves as migration habitat for rufous hummingbird and habitat for this species could be improved if wildfires were allowed to burn within prescription to provide additional meadows as late summer and fall foraging habitat.

### ***Other Priority Bird Species***

Chestnut-backed chickadee, Cassin’s vireo, black-headed grosbeak, MacGillivray’s warbler, and golden-crowned kinglet are priority bird species that are not focal species for the lowlands and valleys or Cascades Mountains. The black-headed grosbeak has increasing long and short-term trends in the Cascades Mountains. Cassin’s vireo trends have been increasing in the short-term in the lowlands and valleys and the Cascade Mountains. All others show decreasing trends in the lowlands and valleys, and the golden-crowned kinglet also shows a decreasing trend in the Cascades Mountains.

Black-headed grosbeaks are common at low elevations in deciduous forests, and in mixed conifer-deciduous forests at low to moderate elevations. They are neotropical migrants that winter in Mexico. Highest quality breeding habitat is found at elevations below the silver fir forest zone. Good habitats are believed to be agriculture, wetlands, forest openings, deciduous forest, and mixed conifer-deciduous forest. Where conifers dominate stands, black-backed grosbeaks become scarce or absent.

Cassin’s Vireo are uncommon in the lowlands and valleys and along river valleys in the Cascade Mountains. Primary habitat occurs in the western hemlock forest zone. This is a bird of drier forest conditions, which explains its low abundance on the MBS. It is more common in habitats with conifers than other vireos. It is likely more abundant in stands that do not have complete canopy closure.

MacGillivray's warblers are common in shrubby areas imbedded in a conifer forest matrix. Breeding habitat includes all forest zones on the MBS. Optimal habitats include shrubby wetlands and forest openings. Mid to late-successional forests in wet forests are not considered to be breeding habitat.

Chestnut-backed chickadees are common in all conifer forest zones. They are less common in deciduous forest and parklands.

Golden-crowned kinglets are common in closed canopy forest at all elevation zones. Low quality habitat includes hardwood forests, wetlands, and parkland habitats.

### *Band-Tailed Pigeon*

Band-tailed pigeons experienced statewide population trend declines in Oregon and Washington during the late 1980's and Washington's band-tailed season was closed in portions of the State from 1991-2002. Hunting of band-tailed pigeons was closed statewide in 1995. In 2002, the three-year average index for pigeon numbers was above the reopening level in the State's management plan. The band-tail season runs from September 15-23 with a bag/possession limit of 2/4. Hunters are required to obtain a permit and submit a mandatory harvest report to participate (Washington Hunting News, Krager 2003). In 2002, there was a total reported harvest of 273 band-tails. A similar season was approved for 2003.

These pigeons are attracted to mineral springs and are susceptible to habitat loss adjacent to mineral springs. They will use a variety of lower elevation riparian habitats and make primary use of hardwood and conifer wetlands for breeding. They can be observed in clearcuts and younger forests that serve as foraging habitat, feeding on mountain ash, and elderberry. Band-tailed pigeons have been observed in the Circle Peak, Meadow Mountain, Huckleberry Mountain, Grade Creek and the Suiattle River valley.

### *Vaux's Swift*

Vaux's swift are a State species of concern. They are neotropical migrants occurring in all elevations. They breed primarily in old growth forest, and forage in flight above all seral stages for flying insects. This species is dependent on large old growth trees, broken top snags, hollow trees, or trees with large cavities, which are used for nesting and roosting sites. Old-growth forests and late-seral stands are abundant in the watershed, and these stands likely contain the large mature and decadent trees used as roost sites by this species.

## ***Other Species of Interest***

### **Fisher**

In 2004, the USFWS completed a species status review in response to a petition to list the West Coast distinct population segment of the fisher. Their finding was that listing is warranted, but precluded by other higher priority listing actions, and the fisher was added to the candidate species list (USDI FWS 2004). Fisher were listed as endangered in Washington by the State Fish and Wildlife Commission in 1998, after a status review by WDFW concluded that there were no known populations remaining in the state. WDFW, in partnership with Northwest Ecosystem Alliance, currently is studying the feasibility of reintroducing fisher into Washington. Although the study is now focusing on the Olympic Mountains for a possible reintroduction site due to a finding of more contiguous suitable habitat, the MBS and Suiattle watershed area were included in an earlier phase of the study (M. Skatrud, pers. comm., NWEA 2003). There are no fisher sighting reports in the MBS GIS wildlife sighting database, but the species historically was known to occur in the western Cascades of Washington.

Species susceptibility to trapping (either for the species directly or incidentally when targeting other species) is the likely cause of population declines or possible extirpation from 1800 to 1940. Timber harvest and settlement progressed through the early 1900s resulting in elimination or fragmentation of fisher habitat. Despite protection by the State in 1950, the cumulative effects of habitat loss and continued susceptibility to incidental take have resulted in extirpation from the state or only remnant individuals. Trapping for pine marten still occurs in the province, which may influence fisher populations. FEMAT (USDA et al. 1993) recommended closure of marten trapping in areas of range overlap in Washington, California, and Oregon to reduce incidental take of these species.

In the western states, fisher appears to be closely associated with large tree or late-successional habitat. Habitat structure appears to be more important than tree species composition. Habitat characteristics include a diversity of tree sizes and shapes, light gaps, and associated understory vegetation, snags, fallen trees and limbs, and tree limbs close to the ground. Riparian areas are used disproportionately to their availability and are likely used for movement and dispersal corridors. Areas used disproportionate to their availability had high canopy closure.

In the western Washington Cascades, Aubry and Houston (1992 *in* Lewis and Stinson 1998) found that 87% of reliable fisher records occurred below 1000 meters (3,281 feet) elevation, and the remainder were below 1800 m. It has been suggested that deep, soft snow may inhibit fisher movement. Fisher records were from the western hemlock and silver fir vegetation zones. Throughout their range, fishers apparently avoid large non-forested areas (Heinenmeyer and Jones 1994). Clearcuts, non-forest sites (grasslands, large meadows) and areas above timberline are rarely used, if at all. Large expanses of non-forest habitat can inhibit dispersal and re-colonization of unoccupied habitats.

Fisher prey on small to medium sized mammals and birds, including snowshoe hare, porcupine, mice and voles, and they also will take carrion and some fruits. Fisher will forage in younger stands, provided there is sufficient overhead cover and it is in proximity to older forest. The species may be susceptible to fragmentation of these habitats. Large tree structural habitat classes and snags are used for denning and resting.

Breeding occurs from January through April, with kits born in late March to early April following a 10-month delayed implantation. Females breed at age 1, but do not have their first litter until age 2. Juveniles usually disperse from early to late winter. While fisher appear to be tolerant of moderate levels of human disturbance, high road densities that provide access for trapping, timber harvest, or settlement which fragments habitat may indirectly degrade habitat quality.

Potential fisher habitat in the Suiattle watershed is approximated by the spotted owl nesting and foraging habitat displayed in Figure 10 in Chapter 2 of this document. The occurrence of large contiguous mature and old growth stands in the watershed is expected to provide potential fisher habitat, particularly in conjunction with wilderness area and suitable habitat in adjacent watersheds. The young forest stands resulting from timber harvest in the lower watershed on FS and non-FS lands likely limits the amount of preferred fisher habitat found at lower elevations. However, the mix of younger aged stands and suitable habitat in the valley floor is expected to provide for dispersal of this species, but may still be a limiting factor.

### *Northern Goshawk*

The goshawk was a candidate for federal listing under the ESA. However, the USFWS completed a status review of this species in the late 1990s, and found it did not warrant listing. This species relies on small to large conifer habitat in western Washington, and it prefers north facing slopes in wetter sites. In the 1990s, the WDFW conducted follow-up goshawk surveys on reports of potential sightings.

In the watershed, a goshawk exhibiting nest defense behavior was observed on Sulphur Mountain, and several other sightings also are contained in the MBS wildlife sightings GIS database. These sightings are from the late 1970s to early 1990s. Additionally, there is an historic site in the watershed to the south, where a goshawk defended its territory from climbers and backpackers along the Pacific Crest Trail (1980s). Surveys by the DNR have resulted in detections of goshawks in second growth stands containing a mix of alder and conifers (L. Egtvedt, pers. comm. 1998).

### Harlequin Duck

Harlequin ducks are thought to occur throughout the basin. Important habitat for breeding populations includes mature and large conifer forest or mixed forest stands within riparian zones of Class 1 through 3 streams. Harlequins arrive on their breeding grounds in March or April, typically selecting low gradient reaches of rushing streams. Breeding occurs over a four-week period, with incubation of eggs for approximately 30 days (Genter 1993). Because nests are built along the stream edge, nesting success can also be influenced by spring runoff rates, with higher rates reducing reproductive success. Nesting success is suspected to be impacted by predators and recreational users.

Harlequins are suspected to use most of the Suiattle River drainage, but sightings are limited for harlequin ducks within the drainage. Harlequin ducks are known to occur in many other river systems across the Forest where water quality and down wood provides for caddis flies, a major food source of harlequins (Oregon studies). Down wood also provides potential nesting and hiding sites within the riparian areas.

### Bat Species of Concern

Caves and abandoned mines, wooden bridges and buildings can provide important roost and hibernation sites for several bat species. NWFP standards and guidelines (S&Gs) call for the protection of caves, and abandoned mines, wooden bridges and buildings used by bats, including the fringed myotis, silver-haired bat, long-eared myotis, long-legged myotis, pallid bat, and Townsend's big-eared bat. The pallid bat (*Antrozous pallidus*) occurs only in arid habitats east of the Cascades (Johnson and Cassidy 1997), and the Townsend's big-eared bat was discussed above. Large snags and decadent trees also provide roost sites for these and other bat species, but NWFP land allocations (LSR, riparian reserve, etc.) and S&Gs for retention of large snags and decadent trees in matrix are expected to maintain these roost site habitat elements.

Fringed myotis (*Myotis thysanodes*) bat roost and hibernation sites include crevices in caves, mines, and old wooden buildings. Snags and trees also appear to be used. They are generally found in proximity to mature forests. The availability of snags for roosting has declined considerably from historic conditions in the areas of the watershed with timber harvest. Although primarily known from arid habitats east of the Cascades, Perkins (1988) detected 2 fringed myotis on the Mt. Baker District.

The silver-haired bat (*Lasionycteris noctivagans*) is strongly associated with old growth forests for roosting and foraging, and it likely occurs across the MBS. They roost primarily within large snags and decadent trees (tree cavities and under loose bark), but may hibernate in caves, mines or old buildings during winter. They are closely associated with riparian areas, and are known to use riparian corridors for travel.

The long-eared myotis (*M. evotis*) occurs at all elevations. It is thought to occur throughout the Forest, but not in large numbers (Perkins 1988). It forages on moths at the edges of mature forests. Roost sites include caves, mines, snags, and under loose bark of trees. Small water sources such as ponds in forest clearings appear to be important for this species.

The long-legged myotis (*M. volans*) bat occurs primarily in conifer habitat. It pursues insects high over the forest canopy feeding almost exclusively on moths, primarily within riparian zones. It uses caves, mines, rock crevices, buildings, bridges, and trees for roosting and hibernating. This species was recorded in several locations on the MBS, including sites on the Darrington and Mt. Baker Districts (Perkins 1988).