

3.7 Wildlife

Affected Environment

Big Game Species

Big game species that reside within the boundaries of the project area include mule deer (*Odocoileus hemionus hemionus*), elk (*Cervus elaphus nelsoni*), and moose (*Alces americanus shirasi*). Table 1 displays the estimated numbers of animals and population objectives in the Cache Harvest Unit.

Table 1. Estimated numbers of animals and population objectives in the Cache Harvest Unit for deer, elk and moose.

Species	Population Objective	2006 Population Estimates
Deer	25000	14000
Elk	2300	2300
Moose	200	250

Information provided by Darren DeBloois UDWR Wildlife Biologist

During the Wasatch-Cache NF Forest Plan revision, big game winter range was defined as “critical value” and “high value” habitat for deer and elk and “critical value” habitat for moose. The “high value” moose winter range was not used to define big game winter range since it was broader ranging and the emphasis was for reducing and displaying effects to the most important big game winter habitat, especially where deer, elk, and moose habitat overlapped. In 2006, the Utah Division of Wildlife Resources (UDWR) changed the habitat “value” categories and definitions. “Critical”, “high”, “substantial”, and “limited value” habitat are now categorized as “crucial” and “substantial” value habitat. Crucial value habitat is now the combination of critical value and high value habitat. “Crucial value habitat”, as defined by UDWR, is “habitat on which the local population of wildlife species depends for survival because there are no alternative ranges or habitats available. Crucial value habitat is essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial value habitat will lead to significant declines in carrying capacity and/or numbers of the wildlife species in question.” In contrast, “substantial value habitat” as defined by UDWR, is “habitat that is used by a wildlife species but is not crucial for population survival. Degradation or unavailability of substantial value habitat will not lead to significant declines in carrying capacity and/or numbers of the wildlife species in question.”

Mule deer habitat within the project area consists of only “crucial summer habitat”. No deer winter range habitat occurs within the project area. Deer habitat within the project area is shown on wildlife maps in Appendix D.

Elk habitat within the project area consists of both crucial value summer habitat and a narrow band of crucial winter range (~ 200-350 meters west of highway 89). In 2003, UDWR re-evaluated the accuracy of the elk range delineations in the Franklin Basin area (UDWR letter dated December 22, 2003 in the project file) and indicated that most of the area north and west of Highway 89 is good summer and fall habitat and marginal to poor winter range because of deep snow in most winters. Elk habitat within the project area is shown on wildlife maps in Appendix D. As snow depths recede in the spring the area associated with the summer range/winter range boundaries becomes important transitional habitat for elk.

It is important to note that boundaries identified on the maps are for the typical winter and winter range does vary depending on the severity of winter conditions. Sweeney and Sweeney (1984) found that snow depths of less than 40 cm (15.75 inches) did not physically impair the mobility of elk but snow depths that approached 40 cm was a “response depth” causing elk to move to areas with less snow. They also found that sites with 70 cm (27.6 inches) of snow were rarely used and defined the depth as a “critical depth” which is a serious limitation to elk movement. They suggested that areas with less than 40 cm snow depth as optimum winter range and that maximum winter range included all areas with less than 70 cm.

Moose habitat within the project area consists of crucial value winter range and crucial value summer habitat. In 2003, UDWR re-evaluated the accuracy of the moose range delineations in the Franklin Basin area (UDWR letter December 22, 2003) and indicated that a portion of the area is accurately mapped as moose habitat. Moose habitat within the project area is displayed on maps in Appendix D.

Moose are yearlong residents moving little between summer and winter ranges. Their large body mass and long legs allow the need for only minor adjustments between summer and winter ranges. It is important to note that boundaries identified on the maps are for the typical winter and winter range does vary depending on the severity of winter conditions. Kelsall (1969) found that snow depths exceeding 2/3 chest height (71-97 cm) (28-38 inches) severely restricted movement for moose. Habitat primarily used by moose includes riparian areas with plentiful willow browse and areas such as ridgelines with abundant mahogany shrubs. Within the project area abundant willows are associated in a narrow band along the Logan River, while mahogany stands occur primarily to the north on the south and east aspects of Beaver Mountain.

Gray Wolf

Up until 2002, the last verified gray wolf taken within the State of Utah was in 1930. During the past several years, sightings of wolf-like animals have occurred in Utah. Many of these have been identified as wolf-dog hybrids (Utah Division of Wildlife Resources 2003). In 2002, a wolf from Yellowstone National Park was captured near the town of Morgan in northern Utah, southeast of Ogden. The animal was returned to Grand Teton National Park where it later rejoined its pack. In Utah, the gray wolf is not part of the US Fish and Wildlife Service experimental recovery effort being conducted in Wyoming, Idaho, and Montana. There has not been a breeding pair or a pack identified in

Utah to date, only a dispersing animal. If wolves from the federal recovery areas enter Utah, they will receive protection under the Endangered Species Act. Wolves are not included in the list of threatened or endangered species for Cache County.

Management Indicator Species

The WCNF Revised Forest Plan identified the goshawk (*Accipiter gentilis*), the snowshoe hare (*Lepus americanus*), and beaver (*Castor canadensis*) as “wildlife” management indicator species (Forest Service 2003b:J4-J5). The most current direction for MIS is contained in 36 CFR 219.14(f) of the 2005 Planning Rule (Federal Register, Vol.70, No.3, pps.1022-1061). National Forests, such as the Wasatch-Cache, that revised under earlier regulations and whose plan requires population monitoring or population surveys are required to comply with the Forest Plan. Site-specific monitoring or surveying of a proposed project is not required.

The following information is found in Management Indicator Species of the Wasatch-Cache National Forest, Version 2006-1 (USDA Forest Service 2006c). For additional information on Forest MIS, please refer to that report.

Northern goshawk

The range of the northern goshawk is circumpolar. In the West it is found from Alaska through the Rocky Mountains to New Mexico. While all forested landscapes are used to some extent, certain forest cover types appear to be occupied by goshawks more than others (Graham et al. 1999). Cover types most often occupied by goshawks, based on sightings and nest locations, are Engelmann spruce, subalpine fir, lodgepole pine and quaking aspen, in either single or mixed species forests. The population under consideration for MIS is forest-wide. As noted in the Forest MIS Monitoring Report for 2006, the trend for the forest-wide population is static (USDA Forest Service 2006c).

Specific habitat attributes used by these species include snags, downed logs and woody debris, large trees, herbaceous and shrubby under-stories, and a mixture of various forest vegetation structural stages. No known nest sites occur within the vicinity of the proposed snow trail.

It was concluded in the Conservation Strategy and Agreement for the Management of Northern Goshawk Habitat in Utah that goshawk populations in Utah were viable. This conclusion was based on the findings of Graham et al. (1999) that good quality habitat is well distributed and connected throughout the state, the absence of evidence of a population decline on National Forest System lands since 1991, and conclusions of the U.S Fish and Wildlife Service in their decision not to list the northern goshawk under the Endangered Species Act (Federal Register, 1998).

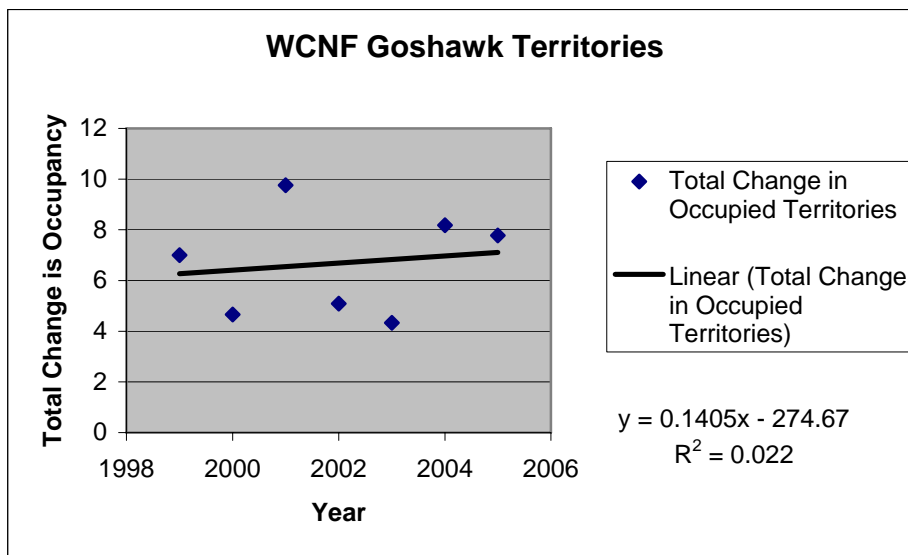
Territory occupancy has been monitored consistently on the Forest since 1999. Table 2 shows the results of that monitoring (USDA Forest Service 2006).

Table 2. Goshawk Territories – Forest-wide

Year	1999	2000	2001	2002	2003	2004	2005
Number of Known Territories	29	31	34	35	45	51	50
Territories Monitored	20	31	23	33	41	36	48
Occupied Territories	7	7	11	14	16	22	20
Percent of Monitored Territories Occupied	.35	.23	.48	.42	.35	.61	.49

Figure 4 shows the total change in territory occupancy from 1999 to 2005. The results show a static trend in occupancy (USDA Forest Service 2006).

Figure 4. Total Change in Occupied Goshawk Territories on the WCNF



Year	1999	2000	2001	2002	2003	2004	2005
Total Change in Occupied Territories¹	7	4.66	9.76	5.09	4.33	8.18	7.775

¹Sum of each Districts change in territory occupancy.

Snowshoe Hare

Snowshoe hares were selected as management indicators for pole/sapling aspen, conifer and mixed conifer. The snowshoe hare is a valuable prey species to the lynx, goshawk, and to other predators. In the Rocky Mountains and westward, hares mainly use coniferous forests in the higher mountainous areas. They are predominately associated with forests that have a well-developed under-story that provides protection from predation and supplies them with food.

For snowshoe hares, the Wasatch-Cache National Forest has been divided into two separate populations (the Wasatch/Bear River Range and the Uinta Mountain “North Slope Range”). The Wasatch/Bear River Range population consists of the Salt Lake, Ogden, and Logan Ranger Districts.

In Northern Utah, a study was done in the Bear River Range on the Wasatch-Cache National Forest where snowshoe hare use was determined in different vegetation types (Wolfe 1982). Table 3 displays the associated hare density using information from Wolfe (1982) which was converted to hares/hectare by Hodges (2000).

Table 3. Snowshoe Hare Density by Vegetation Cover Type

Vegetation Type	Hares/Hectare
Subalpine Fir	0.99
Douglas Fir	0.57
Aspen dense understory	0.22
Aspen-conifer edge	0.17
Engelman spruce	0.1
Aspen-sparse understory	0.01

Wasatch/Bear River Range Population

As part of the Forest Plan monitoring effort for Management Indicator Species, snowshoe hare plots were established across the Forest. In 2003, two, six, and seven grids were established on the Salt Lake Ranger District, Ogden Ranger District, and the Logan Ranger District, respectively. The seven grids established on the Logan Ranger District contain the following vegetation types: spruce-fir, aspen/conifer, aspen, Douglas-fir, mixed conifer, mature lodgepole pine, and young/mid-age lodgepole pine. Pellet counts have been used in many studies to infer snowshoe hare densities. Table 4 displays the results of pellet counts for 2004 and 2005 within each district (USDA Forest Service 2006).

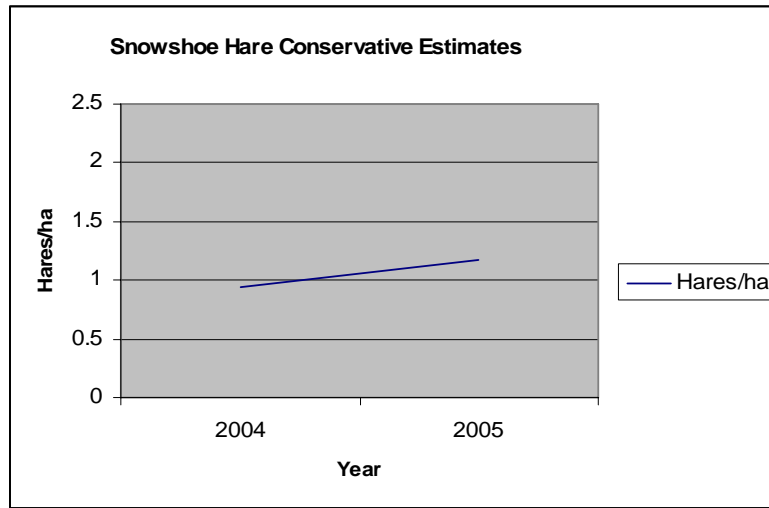
Table 4. Snowshoe Hare Pellet Counts for the Wasatch-Bear River Population on the Wasatch-Cache National Forest

District	Vegetation Type	Total Pellet Counts	
		2004	2005
Ogden	Douglas fir	409	459
Ogden	Mixed Conifer	354	361
Ogden	Aspen/Conifer or Conifer/Aspen	313	229 (n=49)
Ogden	Lodgepole Pine – Mature	216	184 (n=48)
Ogden	Spruce/Fir	41	17
Ogden	Aspen	1 (n=49)	0
Salt Lake	Mixed Conifer	252 (n=44)	650
Salt Lake	Aspen/Conifer or Conifer/Asp	106	155
Logan	Lodgepole Pine/Aspen – young/mid aged	583	863
Logan	Douglas fir	147	85 (n=47)
Logan	Spruce/Fir	135	84
Logan	Aspen/Conifer or Conifer/Aspen	96	41 (n=49)
Logan	Mixed Conifer	53	111
Logan	Lodgepole Pine – Mature	52	183
Logan	Aspen	7 (n=48)	27 (n=49)

Table 5. Conservative and Liberal Estimates of Hares per Hectare Based on the Average Pellets per Plot between 2004 and 2005 for the Wasatch/Bear River Range

	2004	2005
Average Pellets per Plot	3.73	4.65
Conservative and Liberal Estimates (Hares/ha) *	0.94-1.79	1.18-2.24

Figure 1. Conservative Estimates of Hares per Hectare Based on the Average Pellets per Plot between 2004 and 2005 for the Wasatch/Bear River Range



The pellet count data between 2004 and 2005 from the Wasatch/Bear River Range suggests an increase of 25 % (3.73 vs 4.65 pellets per plot) in snowshoe hare numbers. Table 5 and Figure 1 display the conservative and liberal estimates for hares/hectare based on the number of pellets per plot. As indicated by the above data and as noted in the Forest MIS Monitoring Report for 2006, the trend for the Wasatch-Bear River Range population is increasing (USDA Forest Service 2006c).

North Amazon Basin: Since 1998, Dennis Austin (UDWR-retired) and the USFS have been conducting snowshoe hare pellet surveys (sampling methods are not the same as those described above) in Amazon Basin on the Logan Ranger District. The pellet count data from North Amazon Basin suggests that the snowshoe hare population was stable or displayed very little change from the summer of 1998 thru the summer of 2001. From the summer/fall of 2001 the data suggests an increase in snowshoe hare numbers with the highest numbers so far occurring during August 2004 to July 2005 (the most recent survey). This pellet count data represents an increase of 34% between 2004 and 2005, which is similar to the 25% increase suggested by the USFS data (USDA Forest Service 2006).

Beaver

Beaver occur in permanent slow moving streams, ponds, small lakes, and reservoirs. They play an important role in maintaining and enhancing riparian and aquatic ecosystems (Olsen and Hubert 1994) and are important for the creation of habitat for several species of fish, big game, waterfowl, and neo-tropical birds. A beaver colony is typically about 5 to 6 beavers and consists of an adult pair, the present year young, and young of the previous year.

For beaver, the Wasatch-Cache National Forest has been divided into two separate populations (the Wasatch/Bear River Range and the Uinta Mountain “North Slope Range”). The Wasatch/Bear River Range population consists of the Salt Lake, Ogden, and Logan Ranger Districts.

As part of the Forest Plan monitoring effort for Management Indicator Species, square mile sections were surveyed across the Forest. Information regarding the monitoring of the beaver sections for the entire Wasatch/Bear River Range for 2004 and 2005 are contained within the project record. In the beaver section of the 2006 Report for Management Indicator Species of the Wasatch-Cache National Forest (USDA Forest Service 2006c), additional information is provided regarding both populations (Wasatch/Bear River Range and the Uinta Mountain Range).

Tables 6 and 7 display the monitoring results and the estimated number of beaver per square mile within the Wasatch/Bear River Range (USDA Forest Service 2006). At the present time the Forest has only established baseline information for beaver populations (no population trend has been established yet).

Table 6. Wasatch/Bear River Range Beaver Monitoring Results (baseline data: 2004-2005).

District	Number of Sections	Completed sections monitored	Sections monitored w/active dams	Sections-w/old activity, no new activity	Sections w/no activity or H ₂ O present
Wasatch/Bear River Range					
Salt Lake	14	14	1 (1 dam)	3	10
Ogden	17	17	3 (9 dams)	2	5
Logan	32	32	3 (20 dams)	5	15
Total	63	63	7 (30 dams)	10	30

Table 7. Beaver Population Estimates for the Wasatch/Bear River Range (baseline data: 2004-2005).

Population	Active dams	Number of colonies	Individuals	Estimated # of beavers/mi ²
Wasatch/Bear River Range Population	30	7	35	.55

Currently there are not enough years of Forest Service monitoring population data on beaver to indicate a trend. However, there are other source documents provided by the Utah Division of Wildlife Resources (UDWR) that currently indicate a trend. Several

UDWR reports provide information regarding the historical beaver trends for the Forest: The 1979-80 and 1998-1999 Furbearer Harvest Reports ((State of Utah, 1980, 1999 respectively) and the 1971-1982 Beaver Distribution, Habitat and Population Survey (published in 1993 Blackwell) provide relevant information on beaver.

The 1993 Blackwell report restates the trend from the 79-80' Report but calculates carrying capacity for each of the 52 beaver units in the state. Blackwell used beaver habitat data collected from 1971-81 to determine the carrying capacity.

There are 11 trapping units that include some National Forest System lands administered by the Wasatch-Cache National Forest. UDWR beaver units include all land ownerships. Generally, the trend for the Wasatch/Bear River population is static.

With the exception of a few specific locations, Forest Service management of suitable beaver habitat within National Forest boundaries has not changed significantly from 1980 to the present. Therefore, until Forest Service monitoring yields data for population trends, it is assumed that the determinations made in the State of Utah Survey Report remain valid for both populations on the Forest.

Additional information regarding Forest Plan monitoring and trend is contained within the project record (USDA Forest Service Version 2006-1 Management Indicator Species of the Wasatch-Cache National Forest).

Threatened, Endangered, Proposed, and Candidate Species

The U.S. Fish and Wildlife Service lists two Threatened, and one Candidate species as occurring, or potentially occurring, in Cache County. These include the Canada lynx (T), bald eagle (T), and the yellow-billed cuckoo (C).

Canada lynx

The Canada lynx occurs across the boreal forests of Canada and Alaska in association with snowshoe hare habitat or habitat of other suitable prey species. They have also been found in isolated spruce, fir, and lodgepole pine forests of Washington, Idaho, Montana, Wyoming, and Colorado. Early successional stands with high densities of shrubs and seedlings are optimal for hares, and subsequently important for lynx. Mature forest stands are used for denning, cover for kittens, as well as travel corridors. Home ranges of lynx are generally 6-8 square miles, but range from 5-94 square miles. Males have larger ranges than females. Overlapping ranges do occur, mainly among animals of different sex and age classes. Adult lynx of the same sex tend to keep exclusive home ranges. Density of lynx in an area is highly dependent on prey (snowshoe hare) abundance. Most densities range from one lynx per 6-10 square miles.

In 1999-2001, lynx hair snares were established throughout Utah and other western states. No lynx hair samples occurred in northern Utah during this effort.

On July 3, 2003, the U.S. Fish and Wildlife Service issued a Notice of Remanded Determination of Status for the contiguous United States distinct population segment of the Canada Lynx (USDI 2003). The notice states that there is no evidence of lynx reproduction in Utah and that lynx, which occur in Utah, are dispersers rather than residents.

On 9 November 2005, the USFWS proposed critical habitat for the Canada Lynx within the United States; no critical habitat is proposed within the project area or within Utah (50 CFR Part 17, Volume 70, No. 216). Within the USFWS Recovery Outline for the Canada Lynx (USFWS, September 14, 2005), core areas, provisional core areas, secondary areas, and peripheral areas were identified; none of these areas have been identified to occur within the project area.

Reports of lynx in Utah indicate sightings between 1961 and 1982 on the Ashley and Wasatch-Cache National Forests, but no sightings between 1983 and 1993 (USDA Forest Service 1994). In August/September 2004, a transplanted lynx released in southwestern Colorado traveled on to the Wasatch-Cache National Forest and has moved northward through both the Ogden and Logan Ranger Districts into Idaho.

In Utah, Engelmann spruce, white fir, subalpine fir, and lodgepole pine forests at the higher elevations, 7,300 to 10,500 feet (2,250 – 3,250 m) are the primary vegetation cover types that may contribute to lynx habitat. Quaking aspen dominates much of the landscape, but snowshoe hares may use aspen stands much less than conifer stands in this area (Wolfe et al. 1982), probably because they lack dense overstory cover (Hodges 2000). Where they are intermixed with spruce-fir and lodgepole pine stands, aspen stands would constitute secondary vegetation that may contribute to lynx habitat (Ruediger et al. 2000).

Habitat for Canada lynx occurs within the Logan Ranger District, primarily in the conifer cover types dominated by various combinations of lodgepole pine, Douglas-fir, subalpine fir, and Engelmann spruce interspersed with the aspen cover type. The Logan Ranger District lies within a “travel corridor” between two larger habitats areas (in Idaho and within the Uinta Mountains of Utah) and is not considered permanent resident habitat. In a letter from the USFWS dated November 6, 2002, lynx habitat within the Logan Ranger District was reclassified from Lynx Analysis Unit (LAU) to linkage area due to a low percentage of primary habitat.

Maintaining connectivity with Canada and between mountain ranges is an important consideration for the Northern Rocky Mountains Geographic Area (Ruediger et al. 2002). It is likely that the Northern Rocky Mountains Geographic Area and the Southern Rocky Mountains Geographic Area of Colorado and southern Wyoming are poorly connected. Shrub-steppe communities in central and southern Idaho, Wyoming, southeast Montana, and eastern Oregon may provide connectivity between adjacent mountain ranges. Along the Continental Divide, they may also provide an important north-south link between large patches of lynx habitat. Figure 6 displays lynx primary and secondary habitat within the Logan Ranger District. Based on the location of primary and secondary

habitat and the connectivity of habitat, the most direct connection passes through the eastern portion of the Ogden and Logan Ranger Districts; thus connecting into Idaho to the north and the Uinta Mountains to the southeast. Table 9 displays the percentage and number of acres of primary and secondary habitat that occurs on the Logan Ranger District (only USFS managed lands).

Table 8. Acres and Percent of Lynx Habitat on the Logan Ranger District (only USFS managed lands).

Location	Total Acres	Primary Habitat	Percentage	Secondary Habitat	Percentage
Logan Ranger District	274,810	24,182	9	110,133	40

Bald eagle

Bald eagles are winter visitors for the most part to Utah and tend to congregate wherever food is available, often near open water where fish and waterfowl can be caught. In the winter within the project area no open water occurs; the Logan River and its tributaries are frozen over at this time.

Yellow-billed cuckoo

The current distribution of yellow-billed cuckoos (*Coccyzus americanus*) in Utah is poorly understood, though they appear to be an extremely rare breeder in lowland riparian habitats statewide. Yellow-billed cuckoo habitat does not occur within the project area.

Forest Service Intermountain Region Sensitive Species

Of those species listed as sensitive for the Wasatch-Cache NF, the following occur or are likely to occur within the project area: northern goshawk, flammulated owl, three-toed woodpecker, and the Townsend's big-eared bat. The wolverine, great gray owl, and boreal owl may possibly occur within the project area. The sharp-tailed grouse, sage grouse, and peregrine falcon are not known to occur within the project area. Currently, the pygmy rabbit and spotted bat are not known to occur on the district. Detailed habitat requirements and general distribution information for all sensitive species on the Wasatch-Cache National Forest are discussed in the Revised Forest Plan (USDA Forest Service 2003).

Northern goshawk is also a Management Indicator Species (MIS) for the Forest and is described in detail in the MIS section above. No known nest sites occur within the vicinity of the proposed trail.

Flammulated owls breed from southern British Columbia south to Veracruz, Mexico and from the Rocky Mountains to the Pacific. Their winter range is thought to extend from central Mexico to Guatemala and El Salvador. Flammulated owls are a migratory species that occur in mixed conifer forest with spruce and fir at higher elevations and have also been found in aspen communities. They prefer ponderosa pine-Douglas-fir forests with open canopies. Large diameter (>20 inch dbh) dead trees with cavities at least as large as northern flicker cavities are important site characteristics. Territory size varies from 20 to 59 acres and is determined by age and patchiness of overstory trees.

Flammulated owls are present on the Wasatch-Cache National Forest and appear to be fairly well distributed. On the Ogden and Logan Ranger District, flammulated owl habitat primarily consists of mature stands of aspen, aspen/conifer, and conifer/aspen. Flammulated owl studies have occurred on the Ogden Ranger District in which they have focused on the effects of disturbance and feeding habits (Mika 2003).

Three-toed woodpeckers are circumboreally distribution coincides with the range of spruce habitat, however they can be found in sub-alpine fir, Douglas-fir, grand fir, ponderosa pine, aspen, and lodgepole pine forests. The three-toed woodpecker is dependant on recent burns and bark beetle infestations for food resources. Coniferous forests generally above 8000ft (2400m) in elevation are typical of wintering and nesting habitat. In Utah, three-toed woodpeckers also use aspen for nesting where intermixed or adjacent to coniferous forests (Hill et al. 2001). Territory occupancy is year-round however outbreaks or beetle infestations may cause irregular movements. The loss of snags associated with vegetation treatment can have affects on cavity nesting species.

Townsend's big-eared bats are widely distributed throughout the Intermountain Region. The species have been identified in Bat Cave on the Ogden District and in Logan Cave on the Logan District. They may exist in other areas of the Forest where there is suitable cave or cliff roosting habitat. Western big-eared bats use juniper/pine forests, shrub/steppe grasslands, deciduous forests, and mixed coniferous forests from sea level to 10,000 feet. During winter they roost singly or in small clusters in caves, or rocky outcroppings, occasionally in old buildings, or mine shafts.

Boreal owls have a range that is circumboreal. In North America, it breeds from Alaska east across Canada, and south into the mountains of Washington, Idaho, Montana, Wyoming, and Colorado. Boreal owls are closely associated with high elevation spruce-fir forests because of their dependence on this forest type for foraging year round. Nesting habitat structure consists of forests with a relatively high density of large trees (12 inch dbh), open understory, and multi-layered canopy. Owls nest in cavities excavated by large woodpeckers in mixed conifer, aspen, Douglas-fir, and spruce-fir stands. In winter, they may move down in elevation and roost in protected forested areas.

Boreal owls avoid open areas, such as clearcuts and open meadows, except for occasional use of the edges of openings for foraging.

Boreal owls have responded to taped calls in northern Utah in 2-3 locations on the Ashley, Uinta, and Wasatch-Cache National Forests. The Wasatch-Cache NF observation/responses have been concentrated along the Rich and Cache County line on the Logan Ranger District. Nest locations have not been found. In 2001, on the Uinta National Forest, a nesting boreal owl was located; this being the first documented nesting of a boreal owl in Utah (Mika 2000 pers. comm.). In 2006, a survey of the area only documented great horned owl vocalizations within the project area, no other species of owl were heard.

Wolverines

Recent data searches (USDA Forest Service 1994a) indicate that no wolverines were sighted in Utah between 1961 and 1983, but there were sightings between 1983 and 1993, on the Ashley and Wasatch-Cache National Forests. A 1995 survey conducted in Franklin Basin did not produce any tracks or photographic evidence of wolverines (Bissonette et al. 1995). On March 29, 2002 a helicopter survey for wolverine conducted by the Caribou National Forest identified probable wolverine tracks just south of the Idaho/Utah state line (USDA Forest Service 2002a). On March 17, 2004 a vehicle hit and killed a wolverine on U.S. Highway 30 near Fossil Butte National Monument west of Kemmerer. There have been unconfirmed sightings elsewhere on the Wasatch-Cache National Forest.

Great gray owls use mixed coniferous and hardwood forests usually bordering small openings or meadows. They forage along edges of clearings. Semi-open areas, where small rodents are abundant, near dense coniferous forests, for roosting and nesting, are optimum habitat for great gray owls. During winter some birds stay on or near their breeding territories and others make irregular movements in search of prey and favorable snow conditions. In the Intermountain Region, great gray owls occur primarily in lodgepole pine/Douglas-fir/aspen zone and in ponderosa pine. Great gray owl surveys have been conducted on the Logan Ranger District. Data collected from these surveys yielded no evidence of great gray owls. In general, it is felt that these winter vagrants only occasionally visit Utah. In 2006, a survey of the area only documented great horned owl vocalizations within the project area. No other species of owl were heard.

Neotropical Migratory/Song Birds

Two US Forest Service neotropical migratory bird survey point counts routes have been established within the vicinity of the project area; these are the Blind Hollow (outside of the project area) and Tony Grove (within the project area) routes. The results of these surveys are included in the project record.

Priority migratory bird species that occur within the Wasatch-Cache National Forest identified in the Utah Bird Conservation Plan (Utah Partners in Flight 2002) and/or those

identified by USFWS as birds of conservation concern have been identified as species at risk in the Revised Forest Plan (see Forest Plan FEIS, Appendix B-2). The Species at Risk List was revised on February 23, 2004 (see planning record). Of those species, the Brewer's sparrow, broad-tailed hummingbird, red-naped sapsucker, and Williamson's sapsucker are known to occur within the project area.

Brewer's Sparrow (*Spizella breweri*)

Occurs in shrub steppe habitats in the western U.S. particularly in the Great Basin area (UDWR 2000). Brewer's sparrows breed primarily in shrub steppe habitats in Utah and are considered to be shrub steppe obligates. In Utah, Brewer's sparrows are common to very common summer residents. The species winters in the southwest U.S. and into Mexico. Loss of sagebrush steppe habitat is considered the main threat to the species.

Broad-tailed Hummingbird (*Selasphorus platycercus*)

The broadtail is a common breeder in the eastern and central parts of the Great Basin. It winters primarily in Mexico. It nests primarily in riparian habitat though also occurring within aspen, ponderosa pine, Engelmann spruce, subalpine fir, and Douglas fir dominant habitats. Threats to this species would include loss of riparian habitat and lack of wildflowers.

Red-Naped Sapsucker (*Sphyrapicus nuchalis*)

The red-naped sapsucker is a woodpecker that breeds in coniferous forests and montane riparian woodlands of the western United States and southwestern Canada (UDWR 2001). It winters in Baja California and western Mexico.

Williamson's Sapsucker (*Sphyrapicus thyroideus*)

This is an uncommon summer resident in Utah, but occurs throughout most mountainous areas (UDWR 2001).

Species at Risk

Species at risk have been identified in the Revised Forest Plan as “federally listed endangered, threatened, candidate, and proposed and other species for which loss of viability, including reduction in distribution or abundance, is a concern within the plan area. Other species-at-risk may include sensitive species and state listed species.”

Fringed Myotis (*Myotis thysanodes*)

The fringed myotis is a small bat that occurs in most of the western United States, as well as in much of Mexico and part of southwestern Canada (UDWR 2001). It is uncertain whether this species occurs within the Logan Ranger District, since only specimens from

southern and east-central Utah have been reported in the literature (Hasenyager 1980). The fringed myotis inhabits caves, mines, and buildings, most often in desert and woodland areas. The fringed myotis has been found in Utah in a moderately wide range of habitats: lowland riparian, desert shrub, juniper–sagebrush, sagebrush–rabbitbrush, pinyon–juniper–sagebrush, pinyon–juniper, mountain meadow, ponderosa pine forest, and montane forest and woodland (Douglas-fir–aspen) (Oliver 2000).

Pine Marten (*Martes Americana*)

The marten is a furbearing mammal that is about two feet in length from head to tail and yellowish-brown in color. It occurs in much of Alaska and Canada, and its range extends into several areas of the contiguous United States (UDWR 2001). In Utah, the species has been found in many of the high remote mountainous areas of the state. Pine martens prefer forest habitat, where their dens can be found in logs, hollow trees, stumps, and rock crevices.

Environmental Effects

Issue Statement: Wildlife/habitat may be negatively affected by implementation of the proposed action or the alternatives.

Indicator used to compare alternatives:

- The relative degree to which wildlife would be affected by the proposed action or any of the alternatives

This section describes the effects on wildlife species that would result under the different alternatives as described in Chapter 2. There are numerous species which occur on the Logan Ranger District (USDA Forest Service, 2003). The species selected for this analysis are Management Indicator Species (MIS) designated by the 2003 Revised Forest Plan; sensitive species designated by the Regional Forester; species which are listed (threatened, endangered, proposed, and candidates) under the Endangered Species Act; neotropical migratory birds which have been identified as priority species within the Utah Partners in Flight Avian Conservation Strategy and/or those identified by USFWS as birds of conservation concern; species at risk which have been identified by the Wasatch-Cache NF (Species at Risk List revised February 23, 2004); and those species of public interest (e.g. elk) and/or those identified by the public during scoping.

The following effects analysis for wildlife describes the direct and indirect effects of the alternatives on a variety of wildlife species. The cumulative effects section discusses other activities and those that occur off forest that together with the proposed activity may cumulatively affect wildlife.

Two documents which provide information on the effects of recreational activity and provide guidance in dealing with these issues are “The Effects of Recreation on Rocky

Mountain Wildlife” (Joslin et al 1999) and “Wildlife and Recreation: coexistence through management and research” (Knight and Gutzwiller 1995).

Winter recreational activity can cause disturbance (noise and activity) to wildlife species, reduce habitat effectiveness, reduce security habitat, cause habitat fragmentation, cause direct mortality, change or remove vegetation used by wildlife for forage or cover, and increase access for both legal and illegal shooting/trapping. Noise can affect the health, survivorship, reproduction, abundance, distribution of certain wildlife species. The primary focus of this analysis will be associated with the effects of disturbance and snow compaction, and the effects within specific habitat types.

Factors to Consider Regarding the Effects Analysis

Areas identified as winter motorized access are open to motorized activities and other winter recreation activities such as snowshoeing and skiing; thus a compilation of activities occur which could affect wildlife. Within winter motorized access areas, the amount of area that can be covered by snowmobile is usually far greater than can be covered by a person on skis or snowshoes. Though specified as an area open to winter motorized access, use on the ground will vary considerably depending on the type of terrain, vegetative cover, snow conditions, and accessibility. Areas which have fewer trees (e.g. sagebrush habitat) will likely have greater snow compaction, while forested areas may see little motorized use. Snow skiing/snowshoeing activities will likely have little snow compaction capacity as compared to snowmobiles with greater weight, track width, and range.

To assess the potential effects of the alternatives on wildlife (specifically moose, elk, and lynx), tables are used to display the number of acres of specific species habitat within motorized vs. non-motorized recreation use areas. These are displayed in Tables 14, 16, and 18 for the entire Logan Ranger District. In addition, areas with existing and proposed snowmobile trail through non-motorized areas within specific species habitat also need to be assessed to display the full picture. These are displayed in Tables 15, 17, and 19 for the entire Logan Ranger District. Tables 15, 17, and K19 do not represent the total amount of snowmobile trails on the district; they do not include trails through motorized or directly adjacent to motorized areas (i.e. the boundary of the motorized and non-motorized area). In these instances, the effects are displayed in Table 14, 16, or 18. Mileage figures could be converted to acreages but disturbance distances are not clearly defined in the literature. They also vary by species and by individual studies. Both sets of tables need to be used together in order to compare alternatives.

Alternatives 1, 1a, 1c, 6, and 7 are the only alternatives which include the construction of a motorized trail. Construction of the trail includes the clearing of trees and the removal of some shrub vegetation. See alternative descriptions for information on the snow trail location and widths. Disturbance of wildlife associated with the trail construction and trail maintenance activities can be mitigated by allowing construction only during the late summer and fall. Table 9 displays the total trail distance and affected acres within the major vegetation types for Alternatives 1, 1c, and 7. Table 10 displays the total trail

distance and affected acres for Alternative 1a. Table 11 displays the total trail distance and affected acres for Alt 6. Tables 12 and 13 display the percentage of trail within each vegetation type for Alternatives 1, 1a, 1c, and 7 and Alternative 6, respectively.

Table 9. Total distance of the proposed snow trail and affected acres within each of the major vegetation/habitat types for Alternatives 1, 1c, and 7.

Vegetation Type	Distance (feet)	Acres (20 foot width)		Distance (feet)	Acres (8 foot width)	TOTAL ACRES
SHRUB/GRASS/FORB	6912	3.17		7625	1.40	4.57
ASPEN	756	0.35		4708	0.86	1.21
CONIFER	884	0.41		1056	0.19	0.60
ASPEN/CONIFER	0	0		898	0.16	0.16
					TOTAL	6.54

Table 10. Total distance of the proposed snow trail and affected acres within each of the major vegetation/habitat types for Alternative 1a.

Vegetation Type	Distance (feet)	Acres (20 foot width)
SHRUB/GRASS/FORB	14,537	6.67
ASPEN	5,464	2.51
CONIFER	1,940	0.89
ASPEN/CONIFER	898	0.41
TOTAL		10.48

Table 11. Total distance of the proposed snow trail and affected acres within each of the major vegetation/habitat types for Alternative 6.

Vegetation Type	Distance (feet)	Acres (8 foot width)
SHRUB/GRASS/FORB	8,204	1.51
ASPEN	10,710	1.97
CONIFER	639	0.12
ASPEN/CONIFER	1,313	0.24
TOTAL		3.84

Table 12. Percentage of the total distance of the proposed snow trail within each of the major vegetation/habitat types (Alternatives 1, 1a, 1c, and 7).

Vegetation Type	Percentage
SHRUB/GRASS/FORB	63.5 %
ASPEN	24 %
CONIFER	8.5 %
ASPEN/CONIFER	4 %

Table 13. Percentage of the total distance of the proposed snowmobile trail within each of the major vegetation/habitat types for Alternative 6.

Vegetation Type	Percentage
SHRUB/GRASS/FORB	39.3%
ASPEN	51.3%
CONIFER	3.1%
ASPEN/CONIFER	6.3%

General Wildlife

The discussions below include general wildlife species including game species, small mammals, and the gray wolf.

The impacts of disturbance activities have been studied for a variety of species and in some cases with varied results. In some instances, conflicting findings have occurred, such as the response of deer to disturbance by snowmobiles (Aasheim 1980). However, there is no doubt among wildlife professionals and researchers that additional stress is very undesirable to animals especially in late winter (Aasheim 1980). Areas identified as winter motorized access are open to motorized activities and other winter recreation activities such as snowshoeing and skiing; thus a compilation of activities occur which could affect wildlife.

Hunting and Trapping Access: Alternative 4 could possibly restrict access to hunting and trapping within the area closed to all winter recreation activities (24,288 acres) during the time when snow is present. Alternative 2 could possibly limit the means of access (motorized vs. non-motorized) during alternating two week periods. Alternative 5 would alter the means of access (motorized vs. non-motorized) within the 2 areas every other year.

Elk

Ferguson and Keith (1982) found that cross-country skiing did not influence the general overall distribution of elk, but based on track counts, elk use of areas near heavily skied trails (groomed) declined with the onset of the skiing season. They also found that additional skiers on a given day did not cause further displacement of elk. Cassirer et al. (1992) studied the response of elk to cross-country skiers in two locations in Yellowstone National Park. They found that the median distance when elk started to move when approached by cross-country skiers was 400 meters (1,312 feet) in an area seldom visited (less than 10 visits per winter); and 15 meters (49 feet) at Mammoth Hot Springs, an area in which elk frequently encounter people year-round (habituated to human activity). In shrub steppe and upland steppe habitat, Cassirer et al. (1992) recommended restricting cross-country skiers to locations greater than 650 meters (2,133 feet) (75 % of the responses) from wintering areas of nonhabituated elk and to completely avoid disturbing elk, skiers would likely have to remain at distances greater than 1700 meters (5,577 feet).

Aasheim (1980) specified that in Montana to minimize impacts on wintering wildlife, snowmobile use is discouraged or prohibited unless the animals have been traditionally exposed to considerable human activity and in cases where the animals are accustomed to human activity, snowmobiles are usually required to stay on designated trails. A study conducted by Creel et al (2002) found that snowmobile activity does increase stress hormones in elk, but they could not conclude whether current levels of snowmobile activity was affecting the population.

Wisdom et al (2004) found that recreational activities have a substantial effect on elk behavior and that the reactions of elk were more pronounced during ATV and mountain biking activities, than those of horse-riding and hiking. Wisdom et al (2004) determined that 62% of elk responded (flight response) within 100 meters (328 feet) of ATV activity; 43% of elk responded within 500 meters (1640 feet); and 25% of elk responded within 1000 meters (3,280 feet).

The predictability of the human activity or disturbance influences the response by elk (Cassirer et al 1992). Other studies have found that certain wildlife species are less affected by predictable, continuous noises, but were disturbed by sudden, unpredictable stimuli. Schultz and Bailey (1978) (summarizing Geist 1970 and 1971), specified that the effect of disturbance on animals was most damaging when they were in poor condition and when the disturbance was frequent though unpredictable. Responses to disturbance usually have been more pronounced in hunted populations of big game than in unhunted populations (e.g. responses to snowmobile activity: Dorrance et al 1975). Thompson and Henderson (1998) specified “Human activity may be more constant and predictable within areas of human development than in nearby wildlands, where uneven levels of snowmobiling and skiing may delay habituation or prompt avoidance”.

Canfield et al (1999) developed guidelines/recommendations to reduce human disturbance on big game winter range. Two of the most pertinent are to route winter-use facilities, trails, and/or roads away from wintering areas and establish designated travel

routes within area closures where recreation occurs on or across winter ranges to make human use as predictable as possible. Increases in movements and the displacement from foraging habitat can affect the elk's energy budget/reserves.

In relationship to effects to elk habitat, especially involving winter range and recreational activities, Guidelines 29, 30, 43 and 44 from the Revised Wasatch-Cache NF Forest Plan are pertinent (See Appendix C)

The potential effects of the alternatives to elk are compared by the amount of *crucial value winter elk* habitat on the Logan Ranger District with and without winter-motorized access (Table 14) and the number of miles of existing and new proposed snow trail through non-motorized access areas classified as *crucial value winter elk* habitat (Table 15). The differences between alternatives vary between the extremes of affecting approximately 682 acres along with 1.92 miles of snow trail within elk crucial winter habitat. The Logan Ranger District (only USFS managed lands) has 81,128 acres of elk crucial winter habitat. Total acres of elk crucial winter habitat within the UDWR Cache Wildlife Management Unit is 180,693 acres, of which 104,691 acres occurs on the Wasatch-Cache NF (portions of the Ogden and Logan Ranger Districts).

A map displaying winter elk habitat is provided in Appendix D.