3.8 Wildlife

3.8.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of wildlife and wildlife habitats in the analysis area and to disclose the environmental effects of the proposed action and the alternatives on wildlife.

3.8.2 Area of Influence

The area of influence for direct and indirect effects to wildlife is the area within the Millville Peak/Logan Peak project area as shown on the project map. For hunted game species such as deer and elk, the area of influence is the Cache Harvest Unit in northern Utah. See the project file for a map of the Cache Harvest Unit relative to the project area.

The project area is located within a portion of a wildlife corridor which has regional importance in providing linkage to other larger habitat areas. This is especially true for forest carnivores such as the Canada lynx. Most forest carnivores have some preference for forested conifer patches and maintaining connectivity between patches throughout the larger corridor is important. Maintaining vegetation diversity within the corridor is also important to provide for the needs of a variety of species. See the project file for a map of the project area relative to the regional wildlife corridor.

3.8.3 Affected Environment

3.8.3.1 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 3.9 displays the estimated numbers of animals and population objectives in the Cache Harvest Unit.

Table 3.9 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

In 2006, UDWR has changed its 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* is defined by UDWR as "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." *Substantial value habitat* is defined by UDWR as "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 primarily of crucial summer habitat (see mule deer habitat maps in the project file). No deer winter range habitat occurs within the area affected by the proposed action or alternatives.

Elk habitat within the project area consists only of crucial summer habitat (see elk habitat maps in the project file). No elk winter range habitat occurs within the area affected by the proposed action or alternatives. Elk patch analysis maps (in Appendix G) and Table 3.10, below, display patch size after buffering open roads and motorized trails within elk habitat for the existing condition (Alternative C – No Action). The analysis of patch size for elk consists of buffering USFS open roads and motorized trails and other primary routes (e.g. county roads). Roads designated for "administrative use only" are not included in the analysis of patch size since they have limited motorized use, and thus, for this analysis would have little to no effect on elk. Large patch size is an important component of elk habitat.

Table 3.10 Existing elk patch size in acres

Patch Name	Existing Condition (Alternative C)
Dry Canyon	2,370 acres
Big Baldy	1,294 acres
Charley's Hollow	946 acres
Spring Hollow	1,078 acres

Moose habitat within the project area consists of only crucial summer habitat. No moose winter range habitat occurs within the area affected by the proposed action or alternatives.

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, Utah.

3.8.3.2 Management Indicator Species (Wildlife)

The WCNF Revised Forest Plan designated the goshawk (*Accipiter gentilis*), the snowshoe hare (*Lepus americanus*), and beaver (*Castor canadensis*) as wildlife Management Indicator Species (Appendix J of the WCNF FEIS). The Revised Forest Plan requires monitoring to evaluate population trends for these Management Indicator Species (MIS).

The following information is from the annual monitoring report entitled "Management Indicator Species of the Wasatch-Cache National Forest, Version 2006-1". This report is available in the project file.

Northern goshawk – associated with aspen, conifer, and mixed conifer cover types
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.

Three components of a goshawk's home range have been identified including the nest area (approximately 30 acres), post fledging-family area (approximately 420 acres), and foraging area (approximately 5,400 acres). Goshawks nest in a wide variety of forest types including aspen, coniferous, and mixed conifer forests. It typically nests in mature and old forests.

The goshawk preys on large-to-medium-sized birds and mammals, which it captures on the ground, in trees, or in the air. Observations of foraging goshawks show that, in fact, they hunt in many forest conditions. This opportunism suggests that the choice of foraging habitat by goshawks may be as closely tied to prey availability as to habitat structure and composition.

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.

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 to not list the northern goshawk under the Endangered Species Act (Federal Register, 1998).

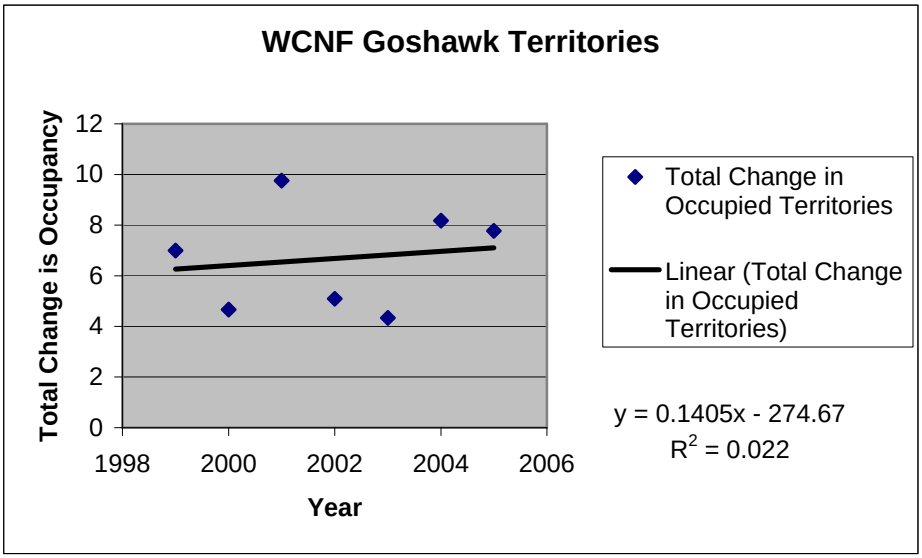
Territory occupancy has been monitored consistently on the Forest since 1999. Table 3.11 shows the results of that monitoring (USDA Forest Service 2006)

Table 3.11 WCNF goshawk territories

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

When monitoring started in 1999, there were a total of 29 known territories on the Forest. In 1999, 20 of the known territories were surveyed of which 7 were observed as occupied. Every year a percentage of territories have been monitored and new territories found. The number of territories monitored in 1999 was divided by the number of territories monitored in the current year. This gives the percent of territories monitored for occupancy each year compared to the baseline data. The change in occupancy was obtained by dividing the number of territories occupied by the number of territories monitored for the current year then multiplying the percent monitored for the year and the number of territories monitored in 1999. These calculations were completed for each district and a sum was taken to show the total change in occupancy for the Forest. Figure 3.1 shows the total change in territory occupancy from 1999 to 2005. The results show a static trend in occupancy.

Figure 3.3 Total change in occupied goshawk territories on the WCNF (USDA Forest Service 2006)



Year	1999	2000	2001	2002	2003	2004	2005
Total Change in Occupied Territories[1]	7	4.66	9.76	5.09	4.33	8.18	7.775

[1]Sum of each district's change in territory occupancy

Snowshoe Hare – associated with pole/sapling aspen, conifer and mixed conifer cover types

Snowshoe hares were selected as management indicators for pole/sapling aspen, conifer and mixed conifer cover types. 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"). These two populations were identified because of the large habitat gap between mountain ranges essentially blocking interactions between the two populations. The Uinta Mountain Range population consists of the Mountain View, Evanston, and Kamas Ranger Districts. The Wasatch/Bear River Range population consists of the Salt Lake, Ogden, and Logan Ranger Districts. The Millville Peak/Logan Peak project area is within the area of the Wasatch/Bear River Range population.

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 3.12 displays the associated hare density using information from Wolfe (1982) which was converted to hares/hectare by Hodges (2000).

Table 3.12 Snowshoe hare density by vegetation cover type (Wolfe 1982 and Hodges 2000)

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

As part of the forest plan monitoring effort for MIS, snowshoe hare plots were established across the forest. In 2003, two, six, and seven grids were established on the Salt Lake RD, Ogden RD, and the Logan RD, respectively. Each grid consists of 50 square meter sample points. The two grids established on the Salt Lake Ranger District contain aspen/conifer and mixed conifer vegetation types. The six grids established on the Ogden Ranger District contain spruce-fir, aspen/conifer, aspen, Douglas-fir, mixed conifer and mature lodgepole pine vegetation types. The seven grids established on the Logan Ranger District contain spruce-fir, aspen/conifer, aspen, Douglas-fir, mixed conifer, mature lodgepole pine, and young/mid-age lodgepole pine vegetation types.

At each of the 50 sample points, the number of snowshoe hare pellets is tallied on an annual basis. On some surveys, individual sample points cannot be relocated (e.g. they are lost or stolen) resulting in a sample size less than 50. Those instances where the sample size is less than 50 are indicated in the table below as n=XX, where n is the number of sample points. Pellet counts have been used in many studies to infer snowshoe hare densities. Table 3.13 displays the results of pellet counts for 2004 and 2005 within each district.

Table 3.13 Snowshoe hare pellet counts for the Wasatch-Bear River population on the Wasatch-Cache National Forest (USDA Forest Service 2006)

District	Vegetation Type	Total Pellet Counts 2004	Total Pellet Counts 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)

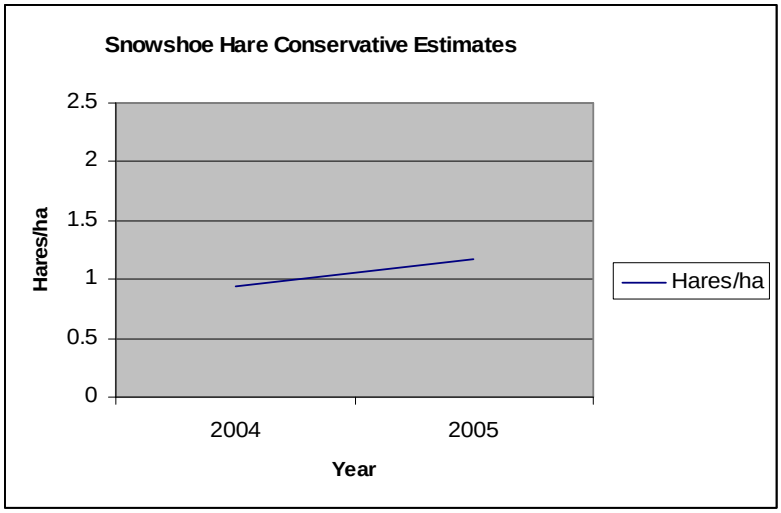
Table 3.14 Conservative and liberal estimates of hares per hectare based on the average pellets per plot between 2004 and 2005 for the Wasatch/Bear River Range

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

The pellet count data between 2004 and 2005 from the Wasatch/Bear River Range suggests an increase of 25 % (3.73 versus 4.65 pellets per plot) in snowshoe hare

numbers. Table 3.14 and Figure 3.2 display the conservative and liberal estimates for hares/hectare based on the number of pellets per plot (USDA Forest Service 2006).

Figure 3.4 Conservative estimates of hares per hectare based on the average pellets per plot between 2004 and 2005 for the Wasatch/Bear River Range



Since 1998, Dennis Austin (UDWR-retired) and the USFS have been conducting snowshoe hare pellet surveys in Amazon Basin on the Logan Ranger District. The sampling methods are different from those described above. 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. Since the summer/fall of 2001, the data suggests an increase in snowshoe hare numbers, with the highest numbers so far occurring during the most recent survey of August 2004 to July 2005. This pellet count data represents an increase of 34% between 2004 and 2005 (similar to the 25% increase suggested by the USFS data described above).

Beaver – Riparian Habitats

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. The Uinta Mountain Range consists of the Mountain View, Evanston, and Kamas Ranger Districts. The Millville Peak/Logan Peak project area is within the area of the Wasatch/Bear River Range population.

As part of the Forest Plan monitoring effort for MIS, sections were surveyed across the forest for beaver activity. To achieve an unbiased, well-distributed sample, square-mile sections (640 acres) were systematically selected as sample units. In order to obtain a 10% sampling intensity, every 10th section was sampled (the first section was selected randomly, and then every 10th section was systematically selected for survey). Only complete sections of National Forest System lands are sampled. By surveying sections and recording the location of active dams, the number of colonies can be determined and converted into the number of beaver by using an average of 5 beaver per colony.

Information regarding the monitoring of the beaver sections for the entire Wasatch/Bear River Range for 2004 and 2005 are contained within the planning record. In the beaver section of the 2006 Report for Management Indicator Species of the Wasatch-Cache National Forest, additional information is provided regarding both populations (Wasatch/Bear River Range and the Uinta Mountain Range).

Tables 3.15 and 3.16 display the monitoring results and the estimated number of beaver per square mile within the Wasatch/Bear River Range (USDA Forest Service 2006). Because the surveys have only been conducted since the Forest Plan revision, at the present time the Forest has only established baseline information for beaver populations.

Table 3.15 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_2O 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 3.16 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, including, *The 1979-80 Furbearer Harvest Report* (State of Utah 1980) and the *1971-1982 Beaver Distribution, Habitat and Population Survey* (published in 1993 by Blackwell).

The 1993 Blackwell report restates the trend from the 1979-80 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. Table 3.17 shows the UDWR units occurring, at least partially, on NFS Lands.

Table 3.17 UDWR Units occurring, at least partially, on NFS Lands

Unit	Unit Location	Status of beaver population 81’
Wasatch/Bear River Population		
2	North ½ Cache County	Static
3	Rich County	Static
5	South ½ Cache County	Static
6	West Weber County	Static
7	East Weber County	Static
8	Davis County	Static
9	Morgan County	Static
10	Northern 3/4 Summit County	Static
11	Southern 1/4 Summit County	Increasing
14	Southwest Salt Lake County	Static
15	Southeast Salt Lake County	Increasing

Source: UDWR 1971-1982 Beaver Distribution, Habitat and Population Survey (Published 1993)

With the exception of a few specific locations, Forest Service management of suitable beaver habitat within National Forest boundaries has not changed substantially from 1980 to the present. Therefore, until Forest Service monitoring provides 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 2006 Management Indicator Species of the Wasatch-Cache National Forest).

In November 2007, Management Indicator Species of the Wasatch-Cache National Forest Version 2007-1 was completed. This version updates information regarding Forest MIS species monitoring and trend. The 2007-1 report was reviewed and findings in this

analysis remain consistent with the most recent information. The 2007-1 version is also available in the project record.

3.8.3.2 Threatened, Endangered, Proposed, and Candidate Species (Wildlife)

The U.S. Fish and Wildlife Service lists one Threatened and one Candidate species as occurring, or potentially occurring, in Cache County. These include the Canada lynx (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 (USFWS) 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 November 9, 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 as occurring 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 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) 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 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 5 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 3.18 displays the percentage and number of acres of primary and secondary habitat that occurs on the Logan Ranger District (only USFS managed lands).

Table 3.18 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

Yellow-billed cuckoos

Yellow-billed cuckoo habitat does not occur within the project area. 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. Historically, cuckoos were probably common to uncommon summer residents in Utah and across the Great Basin (Parrish et al. 2002). Nesting habitat is

classified as dense lowland riparian characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 100 m (333 ft) of water. Overstory in these habitats may be large, gallery-forming trees, 33 to 90 feet in height or developing trees 10 to 27 feet in height, usually cottonwoods. Nesting habitats are found at elevations below 6,000 feet. Cuckoos may require large tracts of contiguous riparian nesting habitat between 100 and 200 acres.

3.8.3.4 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, peregrine falcon, and boreal owl may possibly occur within the project area. The sharp-tailed grouse, sage grouse, and bald eagle are not known to occur within the project area. Currently, the pygmy rabbit and spotted bat are not known to occur on the Logan 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). Note: the bald eagle has been recently reclassified as a Forest Service Sensitive species after the US Fish and Wildlife Service removed it from "Threatened" status.

Bald eagles
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. No open water occurs in the winter within the project area; all streams within the area are frozen over at this time of year. No bald eagles are known to occur in the project area.

Northern goshawk is also Management Indicator Species for the Forest and is described in detail in that section. No known nest sites occur within the vicinity of the proposed road realignment.

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 fire, 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, in Logan Canyon near Card Guard Station, and in Hells Kitchen Canyon. 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.).

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. Aubry et al (2007) found no verifiable records of wolverine occurrence in Utah from 1961 thru 2005. They feel that populations in Utah were extirpated by a combination of unnaturally high mortality and very low or nonexistent immigration. 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, Wyoming. There have been unconfirmed sightings elsewhere on the Wasatch-Cache National Forest. In addition, Aubry et al (2007) specifies that human caused mortality factors no longer pose a significant threat, thus reintroduction may be appropriate.

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 these winter vagrants only occasionally visit Utah.

3.8.3.5 Neotropical Migratory/Song Birds

Two US Forest Service neotropical migratory bird survey routes (point counts) have been established within habitat types similar to the project area. These survey routes are the Snow Basin and Grizzly Peak routes (on the Ogden District). The results of these surveys are included in the project file.

Migratory bird species that occur within the Wasatch-Cache National Forest identified as "priority" 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 (available in the project file). Of those species on the List, the Brewer's sparrow, broad-tailed hummingbird, red-naped sapsucker, and Virginia's warbler occur within the Snow Basin and Grizzly Peak survey routes. Since habitats within these routes are similar to those within the project area, these species may also be found within the project area. However, the Virgina's warbler is not likely to occur within the project area since it typically occurs within lower elevation oak and juniper habitat, not found in the project area.

The **Brewer's sparrow (*Spizella breweri*)** occurs in shrub steppe habitats in the western United States, 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 United States and into Mexico. It nests in the mid-upper canopy of dense sagebrush and are usually located in patches of sagebrush that are taller and denser, with more bare ground and less herbaceous cover than the surrounding habitat. Clutch size is usually 3-4 eggs. Brewer's sparrows will re-nest in a few days if the initial clutch is lost. Brewer's sparrows are primarily insectivorous during the breeding season. Loss of sagebrush steppe habitat is considered the main threat to the species.

The **broad-tailed hummingbird (*Selasphorus platycercus*)** 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, although it also will nest within aspen, ponderosa pine, Engelmann spruce, subalpine fir, and Douglas fir habitats. The broad-tailed hummingbird typically requires streamside areas adjacent to open patches of meadows or grasses with good quantities of wild flowers available throughout the breeding season. This hummingbird feeds on nectar of wildflowers. Nests are from as low as 3 feet to as high as 30 feet above the ground and are often found overhanging a stream. Threats to this species would include loss of riparian habitat and lack of wildflowers.

The **red-naped sapsucker (Sphyrapicus nuchalis)** 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. In the summer, it is commonly found along riparian woodlands at mid-elevations throughout the state of Utah. It occurs in the inland West, inhabiting montane coniferous forests mixed with deciduous tree patches, particularly aspen, cottonwood, and willow. Sapsucker nests are strongly associated with the presence of shelf fungus (Fomes igniarius var. populinus) which advances heart rot in aspen. The red-naped sapsucker is considered a "double keystone" species due to their nest cavity and sap well producing capabilities. Their cavities are used by several cavity-nesting bird species in addition to their sap wells being utilized by more than 40 species of birds, mammals, and insects.

3.8.3.6 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."

As the Forest Plan explains, legal mandates and regulations (i.e. Endangered Species Act) and policy (i.e. sensitive species management) will continue as separate processes for threatened, endangered, and sensitive (TES) species listed under species at risk. These require analysis for any project implemented under the Revised Forest Plan to ensure that negative effects are avoided and viability is provided for these species. MIS species are also considered in project specific analyses.

Species with federal status (i.e. endangered, threatened, candidate, proposed, and USFS sensitive species) are addressed elsewhere in this document under their respective categories. Species not specifically addressed through implementation and monitoring for TES or MIS will be managed opportunistically. By managing habitats within the historic range of variation and properly functioning conditions it is expected that these species will be sustained in the long term. For additional information, see the Wasatch-Cache National Forest Final Environmental Impact Statement (USDA Forest Service 2003) Appendix B-2: Terrestrial Wildlife Diversity and Viability. The following species

listed on the updated Specis at Risk list (February 23, 2004) which have not been discussed elsewhere in this document are discussed below.

The **fringed myotis (*Myotis thysanodes*)** 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 species commonly occurs in colonies of several hundred individuals. 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). Females generally give birth to a single offspring during the summer. Beetles which are plucked from vegetation or the ground are the major prey item.

The **pine marten (*Martes Americana)*** 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. The species mates during the summer, and females give birth to a litter of one to five young during the following spring; litters are often smaller when food is scarce. Martens are typically solitary animals that may cover great distances each day looking for food. The diet of the species consists primarily of small mammals, although birds, insects, and fruits are occasionally consumed.

3.8.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issues to be addressed in this impact analysis:

- The proposed road relocation project may affect wildlife species or their habitats. Potentially affected species include USFWS-listed Threatened, Endangered, Proposed and Candidate species, Forest Service Intermountain Region-listed Sensitive species, WCNF Management Indicator Species (MIS), migratory birds, and general species of local concern.

The project area supports a variety of wildlife species and habitats and is within a larger corridor that serves as linkage habitat for forest carnivores such as the Canada lynx. The road relocation project may have varying effects on wildlife species and their habitats, depending on the location and type of road and timing of road construction activities.

Measurement indicators used to compare alternatives:

a. Miles of road construction (and/or acres modified) within specific vegetation types (habitats) for select species

b. Changes in open road density by 6th order watershed

3.8.5 Effects Analysis Methods and Assumptions

This section describes the direct, indirect, and cumulative effects on wildlife species that would result under the different alternatives described in Chapter 2. There are numerous species that occur on the Logan Ranger District and in the project area, as described above. The species included in this analysis are: management indicator species designated in the 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.

A sub-alternative to the proposed action (Alternative A.1) was added to the analysis between the DEIS and the FEIS. All activities in the sub-alternative (as described in Chapter 2) would be the same as the proposed action (Alternative A) except that the connection to the Top of Spring Hollow Road from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road (20126) instead of conversion to an ATV trail. The high clearance vehicle route would be 12 feet wide (compared to the ATV trail of 50 inches wide in Alternative A). The connector route would be about .25 miles long in either case.

The sub-alternative would result in a slight increase in affected area (0.94 acres) over the proposed action, based on an assumed clearing width of 40 feet for the high clearance vehicle route vs. a 10-foot clearing width for the ATV trail.

The effects associated with Alternative A.1 are not significantly different from those associated with Alternative A. The difference would be an increase in affected area by 0.94 acres of shrub/grass/forb habitat (20.93 acres in Alternative A vs. 21.87acres in Alternative A.1) as displayed in Table 3.20. In addition to being open to ATVs, the new connection (0.25 miles) and the Top of Spring Hollow Road (20126) would also be open to high clearance vehicles. This would slightly increase the potential for disturbance of wildlife by motorized use. There would not be any change in the total miles of motorized routes. Since there is little difference in wildlife effects between Alternatives A and A.1, additional discussion is not necessary to display the difference in effects to the wildlife resource. Effects of Alternative A as described below can be assumed to cover the effects of Alternative A.1, as well.

Effects Analysis Assumptions

To compare the environmental effects by alternative it was necessary to make the following key assumptions.

- Implementation of Alternative A would likely occur over a two-year period and only when the area is accessible for work activities. This would likely only be during the summer and fall, due to the high elevation. Noise disturbance from mechanical activities would be greatest during this time, though it would be limited to specific areas proposed for road reconstruction. Disturbance activities would not occur across the entire area all at once or for the entire duration. Also, during the implementation phase of Alternative A, the area would be closed to summer-motorized public activities.

- Noise can affect the health, survivorship, reproduction, abundance, and distribution of certain wildlife species. In addition, roads, motorized trails, and the associated human use can cause disturbance (noise and activity) to wildlife species, reducing habitat effectiveness and affecting security habitat. Since Alternatives A and C are very similar in location (essentially parallel each other), the effect of disturbance after implementation of Alternative A would not be significantly different between Alternatives A and C.

- Directly after implementation of Alternative A, the total amount of habitat affected would be the sum of the effects of Alternative A and C (see Table A and B). This effect would occur for only a short duration (likely about one year). New vegetation would reestablish over time on the old road prism. The amount of time for recovery would vary based on various site factors. In the near future (approximately 2-10 years) the reclaimed road would resemble nearby vegetation, but be in a younger age class and earlier successional stage.

- Currently the Logan Ranger District has a limited firewood harvest program which only involves collecting firewood within timber sale areas of decked/piled materials. Some of the trees cut for the road relocation may be decked for potential firewood. No other type of firewood harvest is proposed, thus for this analysis, the effects to species which are dependent on snags/down logs will be primarily limited to trees removed for the road relocation.

- Use of forest roads and motorized trails can cause direct mortality (e.g. collisions) to wildlife species. This effect would not be significantly different between alternatives and would not likely reduce any wildlife populations.

3.8.6 Direct and Indirect Effects

The differences between alternatives are displayed in Table 3.19 and 3.20 for the specific portions of road to be relocated or eliminated. Alternative C is the no action alternative for which the miles of road and acres of habitat affected under current conditions is displayed.

Table 3.19 Miles of road and motorized trail by alternative within the specific portions of road to be relocated or eliminated

VEGETATION TYPE	ALTERNATIVE A Proposed Action	ALTERNATIVE B and C Admin. Use Only and No Action
SHRUB/GRASS/FORB *	4.51 miles	4.59 miles
CONIFER	1.48 miles	1.55 miles

* Some of the habitat considered as shrub/grass/forb consists of shrubland with scattered individual or small groups of conifer trees, especially east of Logan Peak.

Table 3.20 Acres affected by alternative within specific portions of road to be relocated or eliminated**

VEGETATION TYPE	ALTERNATIVE A Proposed Action ALTERNATIVE A.1	ALTERNATIVE B and C Admin. Use Only and No Action
SHRUB/GRASS/FORB	20.93 acres ** (A) 21.87 acres (A.1)	22.27 acres
CONIFER	7.15 acres	7.5 acres

** The acre calculation assumes an affected width of 40 feet for the road and an affected width of 10 feet for the ATV trail (the connecting ATV trail and connecting road are 0.25 miles long).

3.8.6.1 General Wildlife

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

Mule Deer

Factors which have been identified as key factors in the decline of mule deer on the Cache harvest unit are as follows: decreased carrying capacity on winter ranges, increased human population impacts, changes in livestock grazing practices on winter range, increased effects of predators, and competition from elk on winter range, and changes in public values regarding management tools (UDWR 1999). Wisdom et al (2004) found that recreational activities have little difference in the measurable response during ATV, mountain biking, horse-riding, and hiking activities. Wisdom et al (2004) determined that 6% to 11% of deer responded in a flight response within 100 meters of ATV, mountain bike, horse, or hiking activity. They specify that deer may respond differently to disturbance than elk. Deer tend to seek dense vegetative cover rather than actually running from the disturbance activity.

Alternative A

This alternative would construct approximately 5.99 miles and close 6.14 miles of road and motorized trail. This alternative would reduce (compared to the existing condition) the miles of open road and motorized trail by 0.15 miles within crucial value summer range. Construction activities would likely displace deer within a small area for a short duration within the area of active construction. This activity would not likely affect deer populations since summer range is abundant and is not considered a limiting factor for deer.

Alternative B

This alternative would reduce disturbance through an administrative use only closure on 17.8 miles of road and motorized trail in the project area. The reduced disturbance may not greatly influence deer, however, since Wisdom et al (2004) noted that only 6% to 11% of deer responded in a flight response within 100 meters of a recreational activity.

Alternative C

This alternative is the existing travel plan. There would be no changes in the location or miles of roads or motorized trails, and thus no change to the existing effect on mule deer.

Elk

Numerous studies demonstrate that elk avoid the areas near open roads (Rowland et al 2004). This effect can cause a reduction in the carrying capacity of the elk population in some areas (Rowland et al 2000). 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 of ATV activity; 43% of elk responded within 500 meters; and 25% of elk responded within 1000 meters. Increases in movements and the displacement from foraging habitat can affect the elk's energy budget/reserves. If an elk's body fat is below

9% as animals enter the winter period, their probability of survival is extremely low (Cook et al. 2004).

Table 3.21 Changes by alternative on patch size for elk in close proximity to Logan Peak

Patch Name	Alt. A and Alt. C	Alt. B
Dry Canyon	2,370 acres	**
Big Baldy	1,294 acres	1,294 acres
Charley's Hollow	946 acres	**
Spring Hollow	1,078 acres	**
Logan Peak**	n/a	12,761 acres
TOTAL PATCH ACRES	5,688 acres	14,055 acres

* An elk patch map for the Logan Ranger District (current Travel Plan) is located within the planning record.
** Dry Canyon, Charley's Hollow, and Spring Hollow all combine to form one large patch called Logan Peak.

Alternative A

This alternative would construct approximately 5.99 miles and close 6.14 miles of road and motorized trail. This alternative would reduce the miles of road and motorized trail by 0.15 miles within crucial value summer range, compared to the existing condition. Construction activities would likely displace elk within a small area for a short duration within the area of active construction. This activity would not likely affect elk populations since summer range is abundant. This alternative would relocate the existing road away from Providence Lake, an unnamed pond, and portions of Spring Creek (an ephemeral stream with a few small ponds). This could benefit elk by reducing disturbance (springs and ponds are very limited in the area). Other than the changes in road location away from ponds and streams, Alternatives A and C are similar in location (they essentially parallel each other), thus the effect of disturbance after implementation of Alternative A or changes in the effects of road density (or elk habitat patch size) would not be significantly different between these alternatives (see Elk Patch Analysis maps in Appendix G and Table 3.21 above).

Alternative B

This alternative would reduce disturbance through an administrative use only closure on 17.8 miles of road and motorized trail. This administrative closure would have

considerable benefits in reducing disturbance to elk and by combining three existing elk patches into one large elk patch of 12,761 acres (see Elk Patch Analysis maps in Appendix G and Table 3.21 above). Total patch acres of Alternative B would be nearly 2.5 times the total patch acres of Alternatives A and C.

Alternative C

This alternative is the existing travel plan, thus no changes in the location or miles of roads or motorized trails and no change in patch acres from existing conditions (see Elk Patch Analysis maps in Appendix G and Table 3.21 above)

Moose

Habitat primarily used by moose includes riparian areas with plentiful willow browse and areas such as ridgelines with abundant mahogany shrubs; neither occurs within the project area. In addition, greater use usually occurs near areas with permanent or seasonal water, which is also limited within the area. Moose can be rather tolerant of human activity. Moose numbers on the Logan Ranger District are currently near carrying capacity and within Utah Division of Wildlife Resources (UDWR) management objectives. No substantial change in moose population numbers is expected with implementation of any of the alternatives.

Alternative A

Construction activities would likely displace moose within a small area for a short duration within the area of active construction. This activity would not greatly affect moose. This alternative would relocate the existing road away from Providence Lake, an unnamed pond, and portions of Spring Creek. This could benefit moose by reducing disturbance and improving riparian vegetation by reducing the potential of illegal motorized use in and around these wetlands. Since alternatives A and C are similar in location (they essentially parallel of each other), the effect of disturbance after implementation of Alternative A would not be significantly different between these alternatives.

Alternative B

This alternative would reduce disturbance through an administrative use only closure on 17.8 miles of road and motorized trail in the project area, though the reduced disturbance would not greatly influence moose.

Alternative C

This alternative is the existing travel plan, thus no changes in the location or miles of roads or motorized trails and no change from the existing effects on moose.

Small Mammals
Information in the literature related to the effects of roads and motorized trails on small mammals is very limited (Hickman 1999). Roads and motorized trails can modify habitat, or cause direct mortality, and disturbance may affect behavior and/or affect small mammal use of adjacent areas. But, considering the species' small territory size, the vast abundance of habitat for each species, and the small amount of area affected (less than 30 acres) the effects on small mammal habitat and their populations would be insignificant.

Gray Wolf
Because there has not been a breeding pair or a pack identified in Utah to date, only a dispersing animal, there would be no direct or indirect effects to the gray wolf from the proposed action or any of the alternatives. If wolves from the federal recovery areas (Wyoming, Idaho, and Montana) were to enter Utah, they would receive protection under the Endangered Species Act. However, the gray wolf is not on the threatened or endangered species list for Cache County. Currently the State of Utah is developing a plan for management of wolves within Utah.

The effects to the wolf would be related to the effects on their prey species such as deer and elk (see the mule deer/elk/moose sections). Studies have shown a strong negative relationship between higher road density and the presence of wolves (Claar et al 1999). In the Midwest wolves were not present where road densities exceeded 0.58 km/km 2 (0.93 mile/mile 2) but in the Rocky mountains wolves occurred in areas with higher road densities (e.g. The Ninemile area in Montana where road densities exceed 2.5 km/km 2 (4.02 mile/mile 2) (Claar et al 1999). Roads with low human activity can provide travel corridors for wolves.

Table 3.22 displays the changes by alternative for miles of "open" road and motorized trail per square mile within sixth order watersheds within USFS managed lands. Miles per square mile vary little between Alternative A and C by watershed, but Alternative B would reduce road density within the Little Logan River and Card Canyon watersheds. Alternative B would reduce road density below 0.93 miles/mile 2 within the Card Canyon watershed. Human influence on adjacent non-USFS lands within the watersheds would be ranked as high for the Little Logan River watershed, while the Card Canyon watershed has less than 1% non-USFS managed land.

Table 3.22 Changes by alternative for miles of "Open" road and motorized trail per square mile within sixth order watersheds* (USFS managed lands only).

Watershed	Alt. A	Alt. B	Alt. C
Little Logan River	1.86	1.15	1.90
Card Canyon	1.01	0.80	1.02

* No changes occur between alternatives within the Millville and Left-Hand Fork Watersheds.

3.8.6.2 Management Indicator Species

Northern goshawk
The northern goshawk is an Intermountain Region Sensitive Species and a WCNF Management Indicator Species.

Human disturbance to nesting goshawks has been a suspected cause of nest abandonment (Reynolds et al 1992). Hamann et al (1999) recommended the following: minimize human presence in active nest areas during the nesting season; maintain low road densities to minimize disturbance; and establish spatial buffers for nests at 400-500 meters (.25-.31 miles)(Jones 1979).

Goshawk nests are not known to occur within the project area; surveys have been conducted in the location of the proposed road with no response. Only 7.15 acres of mature forested habitat (potential nesting habitat) would be affected by Alternative A. Since no nest territories are known to occur within the project area and effects to potential habitat are negligible, the alternatives would likely have no effect on the northern goshawk, and consequently no effect on population trend.

Additional information regarding Forest Plan monitoring and trend is contained in the annual monitoring report entitled “Management Indicator Species of the Wasatch-Cache National Forest, Version 2006-1”. This report is available in the project file.

In November 2007, Management Indicator Species of the Wasatch-Cache National Forest Version 2007-1 was completed. This version updates information regarding Forest MIS species monitoring and trend. The 2007-1 report was reviewed and findings in this analysis remain consistent with the most recent information. The 2007-1 version is also available in the project record.

Snowshoe Hare
As discussed in the small mammal section, information in the literature related to the effects of roads and motorized trails on small mammals is very limited (Hickman 1999). As displayed within Tables 3.12. and 3.13, snowshoe hares primarily utilize forested stands with a preference for conifer and early successional conifer (with a stand age of approximately 16-40 years, saplings and young pines will provide optimum cover and forage for snowshoe hares, exceeding several times the value of a mature stand). Wolfe et al (1982) found that in three years of monitoring of plots in dry meadows (shrub/grass/forb openings), no pellets were found and they considered this habitat type not to be snowshoe hare habitat within any season of the year.

Table 3.20 displays the acres of habitat affected by vegetation type for each of the alternatives. The average home range size for a snowshoe hare has typically been found to be approximately 10 hectares (~ 25 acres), though there is overlap between home-ranges. The 2005 conservative and liberal average estimates are 1.18 to 2.24 hares per hectare or 0.48 to 0.91 hares per acre.

Roads and motorized trails can modify habitat, cause direct mortality, and disturbance may affect behavior and/or affect the use of adjacent areas. But, considering the vast abundance of snowshoe hare habitat, the effects on their habitat and populations would not be significant and differences would be very minor between alternatives. No substantial change in snowshoe hare population numbers is expected with implementation of any of the alternatives.

Alternative A

This alternative would construct approximately 1.48 miles and close 1.55 miles of road and motorized trail within conifer habitat. This alternative would reduce (compared to the existing condition) the miles of road and motorized trail by 0.15 miles within conifer habitat. Directly after implementation of Alternative A, the total amount of habitat affected would be the sum of the effects of Alternative A and C (see conifer vegetation within Table 3.20). This effect would occur for only a short duration (likely to be one year). New vegetation would reestablish over time on the old road prism. The amount of time of recovery would vary based on various site factors. But, in the near future (approximately 2-10 years) the reclaimed road would resemble nearby vegetation types at an earlier successional stage. Young conifer trees would reestablish within the old roadbed (within the conifer forest portion) thus creating valuable snowshoe hare habitat.

In the perspective of the total amount of primary habitat for snowshoe hare, the effect on approximately 7.15 acres within Alternative A would be insignificant. In addition, over-time there would be the recovery of 7.5 acres of conifer habitat, creating a gain of approximately 0.35 acres in the long-term.

Alternative B and C

Alternative C is the existing travel plan, thus no changes in the location or miles of roads or motorized trails, or modification of habitat. Alternative B is similar to Alternative C since no changes in road location would occur, only changes in the amount/type of use (administrative vs. open to the public). The potential for direct mortality may be reduced between Alternatives B and C, but direct mortality is likely very limited due to slow motorized vehicle speed.

Additional information regarding Forest Plan monitoring and trend is contained within the project record (USFS. 2005. Management Indicator Species of the Wasatch-Cache National Forest).

In November 2007, Management Indicator Species of the Wasatch-Cache National Forest Version 2007-1 was completed. This version updates information regarding Forest MIS species monitoring and trend. The 2007-1 report was reviewed and findings in this analysis remain consistent with the most recent information. The 2007-1 version is also available in the project record.

Beaver
Waller et al. (1999) specified that the effects of recreational activities related to disturbance to semi-aquatic mammals is poorly understood. Within the project area, beaver are not present and potential habitat is very limited. Potential areas consist of Providence Lake and portions of Spring Creek (an ephemeral stream with a few small ponds). The potential for these sites to be occupied by beaver is low due to the quality of and quantity of habitat.

Alternative A would relocate the existing road away from Providence Lake and from a portion of Spring Creek. This could possibly benefit beaver by reducing disturbance and by improving adjacent vegetation by reducing the potential of illegal motorized use in and around these wetlands. Even with the proposed changes, the potential for occupancy of the area by beaver would still be very low. No change in beaver population numbers is expected with implementation of any of the alternatives, and consequently no effect on the population trend.

Additional information regarding Forest Plan monitoring and trend is contained in the annual monitoring report entitled "Management Indicator Species of the Wasatch-Cache National Forest, Version 2006-1". This report is available in the project file.

In November 2007, Management Indicator Species of the Wasatch-Cache National Forest Version 2007-1 was completed. This version updates information regarding Forest MIS species monitoring and trend. The 2007-1 report was reviewed and findings in this analysis remain consistent with the most recent information. The 2007-1 version is also available in the project record.

3.8.6.3 Federally Listed Threatened, Endangered, Proposed, and Candidate Species

Canada lynx
As disclosed above in the affected environment, 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. The notice states that there is no evidence of lynx reproduction in Utah and lynx which occur in Utah are dispersers rather than residents.

The Logan Ranger District is a "travel corridor" between two larger habitats areas (in Idaho and within the Uinta Mountains of Utah) and is not considered permanent resident habitat. As stated above, the area within the Logan Ranger District was reclassified in 2002 from a Lynx Analysis Unit (LAU) to Linkage Area, due to a low percentage of primary lynx habitat found here.

The Lynx Conservation Strategy (Ruediger et al 2000) specifies that "There is little information available on the effects of roads and trails on lynx or its prey (Apps 2000, McKelvey et al. 2000)", but "preliminary information available regarding lynx suggests that they do not avoid roads except for highways with high traffic volumes (Apps 2000)."

The Lynx Conservation Strategy notes that "Staples (1995) described lynx as being generally tolerant of humans." It further describes that, "Other anecdotal reports also suggest that lynx are not displaced by human presence, including moderate levels of snowmobile traffic (Mowat et al. 2000, J. Squires pers. comm. 1999, G. Byrne pers. comm. 1999) and ski area activities (Roe et al.1999)." The Strategy also notes that, "In a lightly roaded study area in northcentral Washington, logging roads did not appear to affect habitat use by lynx (McKelvey et al. 2000*c*)."

Singleton et al (2002) developed a model to assess corridors for lynx and other carnivores in Washington. The conceptual basis for model development, they specify "Roads (except at very high densities) are not expected to substantially influence lynx habitat selection. Lynx are not as sensitive to human disturbance as some other species; however they have not been documented to frequent heavily populated areas."

The Lynx Conservation Strategy specifies that, "At this time, there is no compelling evidence to suggest management of road density is necessary to conserve lynx." The authors of the strategy recognized that many watersheds across the country are already highly roaded and research is needed to further investigate the effects of road density.

Table 3.22 displays the changes by alternative for miles of "open" road and motorized trail per square mile within sixth order watersheds within USFS managed lands for the analysis area. Miles per square mile vary little between Alternatives A and C by watershed. However, Alternative B would reduce road density within the Little Logan River and Card Canyon watersheds. Human influence on adjacent non-USFS lands within the watersheds would be ranked as high for the Little Logan River watershed, while the Card Canyon watershed has less than 1% non-USFS managed land. In addition, Alternative B would reduce motorized access within portions of the project area (because these roads would be gated closed and open for administrative use only).

The Lynx Conservation Strategy does not denote any specific conservation measures to address "*movement and dispersal"* related to forest roads and trails, but does specify the following project planning guidelines related to highways: "Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g. straightened of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat." None of the alternatives would pave or otherwise upgrade any of the roads in the analysis area. The Lynx Conservation Strategy specifies that "Construction of roads and trails may reduce the value of some lynx habitat by removal of vegetation and forested cover. On the other hand, in some instances, along less-traveled roads where vegetation provides good snowshoe hare habitat, lynx may use the roadbed for travel and foraging (Koehler and Brittell 1990)."

The July 3, 2003 U.S. Fish and Wildlife Service Notice of Remanded Determination of Status for the contiguous United States distinct population segment of the Canada Lynx (USDI 2003) specified that no evidence exists that certain risk factors pose a threat to

individual lynx, lynx populations, or lynx habitat. They also specify that forest roads are not a threat in all four regions and that the threat within the Northern Rockies/Cascade Region (Region in which Utah is located) is "low" from high volume traffic/development.

In relationship to effects to the wildlife corridor, the following is pertinent from the Notice: "To significantly impact a local lynx population, an activity would have to occur across a very large area (presumably at least the size of several home ranges), create a homogeneous forest that does not provide the various stand ages, species composition, and structure that are good snowshoe hare and lynx habitat, or result in a barrier that effectively precludes dispersal." The effects of forest roads and trails associated with this project within the Logan Ranger District would not create the above conditions.

Alternative A

This alternative would construct approximately 1.48 miles and close 1.55 miles of road and motorized trail within conifer habitat. This alternative would reduce (compared to the existing condition) the miles of road and motorized trail by 0.15 miles within conifer habitat. Directly after implementation of Alternative A, the total amount of habitat affected would be the sum of the effects of Alternative A and C (see conifer vegetation in Table 3.19). This effect would occur for only a short duration, likely one year. New vegetation would reestablish over time on the old road prism. The amount of recovery time would vary based on various site factors. But, in the near future (approximately 2-10 years) the reclaimed road would resemble nearby vegetation types at an earlier successional stage. Young conifer trees would reestablish within the old roadbed of the conifer forest habitat, thus creating valuable prey habitat for species such as snowshoe hare.

From the perspective of the total amount of primary habitat for lynx, the effect of approximately 7.15 acres from implementation of Alternative A would be insignificant. In addition, over time there would be recovery of 7.5 acres of conifer habitat, creating a gain of approximately 0.35 acres in the long-term.

Therefore, since the project area is located within linkage habitat (and not in Lynx Analysis Units); an insignificant amount of habitat would be affected under Alternative A; lynx have successfully moved through the Logan Ranger District; the Lynx Conservation Strategy specifies that "At this time, there is no compelling evidence to suggest management of road density is necessary to conserve lynx"; and road density would not increase from the existing condition; then, a determination is made that the proposed project would have no effect on the Canada lynx.

Alternative B

This alternative would reduce "open" road density within the Little Logan River and Card Canyon watersheds. The Lynx Conservation Strategy specifies that "At this time,

there is no compelling evidence to suggest management of road density is necessary to conserve lynx." Though this alternative would reduce road density, a determination has been made that the project would have no effect on the Canada lynx (see above, Alternative A).

Alternative C

This alternative is the existing travel plan, thus no changes in the location or miles of roads or motorized trails, and therefore, no effect on the Canada lynx.

3.8.6.4 Forest Service Intermountain Region Sensitive Species

Northern goshawk
Northern goshawks are also Management Indicator Species (MIS) for the Forest and are described in the MIS section above.

Peregrine falcon
There are no known nest sites within the project area. None of the alternatives would affect peregrine falcon nesting sites nor is suitable cliff habitat affected by any of the alternatives.

Boreal owl
The boreal owl is known to occur on the Logan Ranger District, but primarily in areas that contain large stands of conifer habitat. Information in the literature related to the effects of roads and motorized trails suggests that boreal owls may tolerate some human disturbances (Hamann et al 1999) (Hayward and Verner 1994). Loss of snags can affect cavity nesting species.

From the perspective of the total amount of mature forested habitat in the analysis area (and on the District) the effect on approximately 7.15 acres within Alternative A would be insignificant. Where possible for Alternative A, minor adjustments to road location should be made to avoid snags with existing cavities which may be used by owls. Because of the small percentage of available habitat affected by any of the alternatives, the effects of any of the alternatives would be negligible on boreal owl habitat or populations.

Great gray owl
As discussed above in the affected environment, it is felt that the great gray owl is a winter vagrant which only occasionally visits Utah. Because it is merely an infrequent visitor, and the affected area under any of the alternatives is small, none of the alternatives would affect great gray owl habitat or populations.

Wolverine
Rowland et al (2003) noted that greater amount of habitat, low road density, and low human population density corresponded closely with observations of wolverines. Carroll

et al (2001) predicted the occurrences of wolverine declined when road densities exceed 1.7 km/ km2 (2.74 miles/mile2). Modeling by Rowland et al (2003) suggested a lower threshold, in that differences in occurrences were distinguishable between moderate (0.44 to 1.06 km/km 2 or 0.71 miles/mile 2 to 1.71 miles/mile 2) and low road densities.

Table 3.22 above displays the miles of "open" road and motorized trail per square mile within sixth order watersheds within USFS managed lands for each alternative. All alternatives, including the existing condition, have or would result in road densities greater than 0.71 miles per square mile within the Little Logan River and Card Canyon watersheds (considered "moderate" in Rowland's modeling). None of the alternatives have a watershed which would exceed 2.74 miles of open road and motorized trail per square mile. Human influence on adjacent non-USFS lands within the watersheds would be ranked as high for the Little Logan River watershed, while the Card Canyon watershed has less than 1% non-USFS managed land.

Road densities (miles per square mile) vary little between Alternatives A and C by watershed. Alternative B would reduce road density within the Little Logan River and Card Canyon watersheds from the existing condition by gating roads and closing them to all but administrative use.

Townsend's Big-eared Bat

The Townsend's big-eared bat is sensitive to human disturbance within their colonies (hibernacula or maternity). No new roads or motorized trails are proposed which would affect known Townsend's Big-eared bat roosting sites, maternity colonies, or hibernacula. Information in the literature related to the effects of roads and motorized trails on small mammals is very limited (Hickman 1999). Only Alternative A proposes changes which would affect vegetation. This alternative would relocate the existing road away from Providence Lake, an unnamed pond, and portions of Spring Creek which could potentially improve adjacent vegetation by reducing the potential of illegal motorized use in and around these wetlands. The effects to foraging habitat for bat species (mainly in riparian habitat areas) would be minor and insignificant. Table 3.22 above, displays the total number of acres affected by Alternative A by vegetation type. These changes in vegetation could influence availability of insects (the bat's common prey), but any effect would be insignificant in comparison to the amount of total habitat available. Implementation of any of the alternatives would not likely affect the Townsend's big-eared bat or influence bat numbers.

Flammulated owl

Information in the literature related to the effects of roads and motorized trails suggests that flammulated owls may tolerate some human disturbances (Hayward and Verner 1994) (Hamann et al 1999). Oleyar (2000) in a study of two sites on the Ogden Ranger District suggested that human activities at a developed site (Maples Campground area adjacent to Snow Basin Ski Area) fledged substantially fewer young than at a site with fewer disturbance activities (Mantua area near Dock Flat). Mika (2003) found the opposite trend within the same study area and specified that prey abundance and natural fluctuations were mostly responsible, though shifts in the amount of disturbance did

occur between the study sites. Mika (2003) did observe nervous flammulated owl behavior and flushing from nests, caused by human activity. Loss of snags can also affect cavity nesting species.

From the perspective of the total amount of mature forested habitat, the effect on approximately 7.15 acres from Alternative A would be insignificant. In addition, within the Ogden and Logan Ranger Districts, flammulated owl nesting has been associated with stands of aspen which do not occur within the area proposed for road relocation. Where possible for Alternative A, minor adjustments to road location should be made to avoid snags with existing cavities which may be used by owls. The effects of any of the alternatives would be negligible on flammulated owl habitat or populations.

Three-toed woodpecker
Information in the literature related to the effects of roads and motorized trails did not suggest that disturbance from recreation presented a problem to woodpeckers and cavity nesters as a group (Hamann et al 1999). Parrish et al (2002) did not suggest any recommendations related to management roads or motorized trails in regards to the conservation of the three-toed woodpecker. Loss of snags can affect cavity nesting species. From the perspective of the total amount of mature forested habitat, the effect to approximately 7.15 acres from Alternative A would be insignificant. The effects of any the alternatives would be negligible on the three-toed woodpecker.

3.8.6.5 Neotropical Migratory/Song Birds

Executive Order (EO) 13186, signed January 10, 2001, lists several responsibilities of federal agencies to protect migratory birds, including "Support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions."

Additional direction comes from the Memorandum of Understanding (MOU) between USDA Forest Service and USDI Fish and Wildlife Service, signed January 17, 2001. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the Forest Service and Fish and Wildlife Service, in coordination with state, tribal and local governments. The MOU identifies specific activities for bird conservation, pursuant to EO 13186, including "Strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent the further loss or degradation of remaining habitats on National Forest System lands." This includes, identifying management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on National Forest System lands, and developing management objectives or recommendations that avoid or minimize these impacts.

Roads and motorized trails may fragment habitat and associated disturbance may disrupt breeding activity and may cause displacement of birds (Hamann et al 1999). Since numerous neo-tropical migratory birds occur within the Logan Ranger District, this

analysis focuses on those species with priority status under the Partners in Flight (PIF) ranking and those identified by USFWS as birds of "conservation concern" within similar habitat.

Since the potential season of operation for road construction is so short at this high elevation, effects to breeding neotropical birds can only be partially mitigated. To minimize effects to neotropical birds, road construction activities should be planned, when possible, to occur within the late summer or fall. As noted below and in Table 3.20, total newly affected acres within Alternative A are small, totaling less than 30 acres. Thus, the potential effect to neotropical birds relative to total habitat is insignificant.

Brewer's Sparrow
Parrish et al (2002) identified habitat loss and fragmentation caused by roads and trails as a concern relate to the Brewer's sparrow. Fragmentation also is known to be a factor with an increase in cowbird parasitism. Parrish et al (2002) recommended the following for the conservation of the Brewer's Sparrow with regards to road management: Avoid road and right–of-way construction in large, contiguous patches of shrub steppe habitat. Manage large blocks of land for contiguous shrub steppe habitat and avoid activities that cause fragmentation. Re-vegetate old roads and other disturbance corridors to native grasses and shrubs.

From the perspective of the total amount of shrubland habitat, the effect on approximately 20.93 acres from Alternative A would be insignificant, especially, considering the recovery of 22.27 acres of shrubland habitat providing a gain of approximately 1.34 acres in the near future. This would come from the reclaimed and revegetated old roads.

Broad-tailed Hummingbird
Threats to the broad-tailed hummingbird are largely unknown. Parrish et al (2002) did not suggest any recommendations related to management of roads or motorized trails in regards to the conservation of the broad-tailed hummingbird. Alternative A would relocate the existing road away from Providence Lake, an unnamed pond, and portions of Spring Creek which could improve adjacent vegetation by reducing the potential of illegal motorized use in and around these wetlands. The differences between the alternatives with regards to the effects to foraging habitat, mainly adjacent to wetlands, ponds, and springs, would be minor and insignificant. The effects of any the alternatives would not likely influence broad-tailed hummingbird numbers.

Williamson's Sapsucker
The habitat of Williamson's Sapsucker is middle to high elevation conifer forests and conifer/aspen stands. Loss of snags can have affects on cavity nesting species.

In considering effects on the Williamson's sapsucker, Alternative A would clear mature trees and snags for the new road over approximately 7.15 acres of forested conifer habitat. From the perspective of the total available habitat for sapsuckers, this modification of habitat would be insignificant. Where possible for Alternative A, minor

adjustments to the road location should be made to avoid snags with existing cavities. The effects of any of the alternatives would be negligible on the Williamson's sapsucker.

3.8.6.6 Species at Risk

Fringed Myotis (*Myotis thysanodes*) For the fringed myotis, effects would be similar to those regarding the Townsend's big-eared bat, although the fringed myotis has not been found to occur on the Logan Ranger District.

American Pine Marten (*Martes Americana)* Hargis et al (1999) found that martens were nearly absent within landscapes having greater than 25 % non-forested cover. The proposed project occurs in a high elevation area with considerable patchiness and few forested acres. The area is likely to be considered marginal habitat for marten considering areas of more contiguous forest within other parts of the district. Hargis et al (1999) analyzed fragmentation of forests and found that the creation of edge habitat was not necessarily detrimental to marten.

Marten are highly vulnerable to the effects of trapping, which can be greatly influenced by access provided by roads and trails. Motorized access does vary between Alternative B and Alternatives A and C (see Table 3.22, above). However, marten trapping is not open within the Logan Ranger District and currently is only open in the northeastern portion of Utah (2004-2005 UDWR Furbearer Proclamation).

From the perspective of the potentially affected area relative to the total amount of primary habitat available, the effect of any of the alternatives on marten habitat or populations would be insignificant.

3.8.7 Cumulative Effects

The discussion regarding wildlife cumulative impacts is brief in this document because of several factors, including the following: 1) direct and indirect effects of the alternatives are limited in duration (e.g., construction activities in Alternative A would be limited to approximately two years); 2) the action alternatives have numerous beneficial effects to wildlife (e.g., Alternative B would provide a relatively large elk patch size; Alternative A would relocate the road away from valuable wetland habitat); 3) the road locations between the Proposed Action (Alternative A) and the current condition (Alternative C) parallel each other and do not vary greatly; and, 4) the impacts which would occur under any of the action alternatives would be negligible (Alternative A would affect only 30 acres which is a minor amount of habitat relative to the total available).

Because the direct and indirect effects of any of the alternatives would be negligible, the incremental impact of any of the action alternatives added to the impacts of past, present, and reasonably foreseeable future impacts to wildlife would be extremely limited and inconsequential. Cumulatively, the effects of implementing any of the alternatives would maintain species viability.

3.8.8 Irretrievable or Irreversible Commitment of Resources

No irretrievable or irreversible commitments affecting wildlife habitat or species viability are expected as a result of implementing any of the alternatives.