

Topic 2 – Biodiversity and Viability

Wildlife

Introduction

The terrestrial wildlife resources in the Wasatch-Cache National Forest are as diverse as the plant communities, geologic features, and elevations in which they exist. Wildlife is dependent on all other resources that comprise and influence a species habitat. This is a complex resource since a land management activity may benefit some species or their habitat while harming other species.

Laws, Policy, and Direction

There are many laws that pertain to and regulate wildlife management within the National Forests. A full review of these laws can be found in, “The Principal Laws Relating to Forest Service Activities” (USDA Forest Service, 1993). Just a few of the important ones include:

Migratory Bird Treaty Act of July 3, 1918, (16 U.S.C. 703-712) controls the taking, killing, possessing, transportation, and importation of migratory birds.

Executive Order 13186, January 10, 2001. Responsibilities of Federal Agencies to Protect Migratory Birds.

Knutson-Vandenberg Act of June 9, 1930, (16 U.S.C. 576, 576a-576b) authorizes the use of funds collected from timber sales through this act to be used for, “protecting and improving the future productivity of the renewable resources of the forest land on such sale area, including sale area improvement operation, maintenance and construction, restoration and wildlife habitat management.”

Bald and Golden Eagle Protection Act of June 8, 1940, (16 U.S.C. 688-668-d) provides protection to bald and golden eagles.

Sikes Act of September 16, 1960, (16 U.S.C. 670a) provides for carrying out wildlife and fish conservation programs on Federal lands including authority for cooperative State-Federal plans and authority to enter into agreements with States to collect fees to fund the programs identified in those plans.

Endangered Species Act of December 28, 1973, (87 Stat. 884 as amended; 16 U.S.C 1531, 1532, 1533, 1536, 1540) declares that “...all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act.”

Wildlife policy and direction are outlined throughout Forest Service Manual 2600.

Affected Environment

General Overview

The Wasatch-Cache National Forest has about 300 vertebrate species of wildlife including approximately 30 fish, 6 amphibians, 18 reptiles, 74 mammals, and 190 birds (Appendix E). These species are spread across the forest using streams, lakes, ponds, barrens, and the diverse vegetative communities with their various age classes in elevations ranging from approximately 5,000 feet above sea level along portions of the Wasatch Front to 13,442 feet above sea level at Gilbert Peak in the Uinta Mountains. Some species are only on the Forest seasonally. Grizzly bear and wolves have been extirpated from the state. Other species such as the lynx and wolverine may occur at unknown levels. In recent times, non-native species such as the red fox and European starling have been added.

Past resource use and the exclusion of fire for almost 100 years has caused changes in some wildlife habitats. These changes have benefited some species and been detrimental to others. As discussed in the vegetation section of this document, defining and measuring the status of ecosystems now, as compared to their historic range of variability, is the foundation for sustainability of ecosystems. Areas that are within their historic range of variability are said to be in "properly functioning condition" (PFC). The vegetation features assessed to make this determination are: 1) Composition- the species list; 2) Structure- the layers and ages of species; 3) Patterns- the patchwork of species and ages across the landscape; and 4) Functions- processes and how they occur and interact on the land. These features are very much related to the quality and quantity of wildlife habitats.

With 300 plus species on the Forest it is impossible to track them all so certain groups are carried forward through planning documents. Big game is carried forward due to the great interest of the public both for hunting and wildlife viewing. Landbirds are of interest not only for wildlife viewing but also because of the international interest in conservation and the protection afforded them through the Migratory Bird Treaty Act and Executive order 13186. Endangered and threatened species are considered because of the requirements of the Endangered Species Act. Species-at-risk, species for which viability may be a concern, are discussed in detail in Appendix B2 and summarized in this chapter. These species are used to help insure continued viability and diversity of species as required in NFMA and 36 CFR 219.19 and 219.26. Management indicator species are required under 36 CFR 219.19. With these species groups it is felt that the Forest can account for the diversity and viability of all species that may be present on the Forest.

Big Game Populations

Changes in big game species composition have occurred in recent decades. **Mule deer** have declined from higher population levels in the 1960's. On the 8 hunting units that contain National Forest System lands administered by the Wasatch-Cache National Forest, deer numbers are currently at or below herd objectives set by the Utah Division of

Wildlife Resources (UDWR, 2002). **Elk** have been aggressively managed by the UDWR in recent decades through transplants and population numbers are increasing on most of the 8 hunting units. Elk are at or above herd objectives on these units (UDWR, 2002). **Moose** have become well established through immigration into the state and through transplants. In some areas numbers are at such levels they have been used as transplant stock to other areas within and outside the state. These areas include the Ogden Valley where land ownership is shared by private, state, and the Forest Service, and some drainages on the North Slope of the Uinta Mountains. **Rocky Mountain bighorn sheep** were reintroduced to the Hole in the Rock area of the Uinta Mountains in 1989. With corresponding reintroductions to the east on the Ashley National Forest, the herd now supports a very limited hunt of 1-2 permits a year. The herd is well below the numbers that habitat is capable of supporting and many areas with suitable habitat remain unoccupied. **Mountain goats** were introduced to the Wasatch Front (Salt Lake County and Utah County on the Uinta NF) in the 1960's, Bald Mountain on the Kamas Ranger District in the 1980's, and Willard Peak on the Ogden District in the 1990's.

Population objectives, harvest levels, and species management are established in herd unit management plans for all of the above big game species by the UDWR. For deer and elk these objectives are:

DEER

This information on Deer herd objectives and postseason surveys in Tables WL-1 and WL2 is from the "2002 Utah Big Game Proclamation, Bucks, Bulls and Once-in-a-Lifetime" pages 60-61.

Table WL-1. Herd Objectives

Unit Name/ Number	Plan Objective	Estimated Winter Population 01/02	Bucks/ 100 Does Postseason	% Bucks >3 points Postseason
2 - Cache	25,000	18,400	15	30
3 - Ogden	12,000	9,400	15	30
4 - Morgan, S. Rich	12,500	10,100	20	30
5 - East Canyon	8,500	8,600	15	30
6 - Chalk Creek	11,500	11,800	15	30
7 - Kamas	9,000	6,800	15	30
8 - North Slope	5,300	4,500	15	30
17 - Wasatch Mts.	40,800	32,200	15	30
18 - Oquirrh Stansbury	10,600	10,800	15	30

Table WL-2. Postseason Surveys

Unit Name/ Number	Bucks/100 Does				Bucks Greater Than 3 Point			
	97-98	98-99	99-00	00-01	97-98	98-99	99-00	00-01
2 – Cache	12	11	11	16	39	50	38	32
3 – Ogden	7	12	11	19	47	44	27	39
4 – Morgan, S. Rich	10	44	24	31	26	40	56	52
5 – East Canyon	18	14	14	18	50	40	56	38
6 – Chalk Creek	12	22	22	25	40	53	53	51
7 – Kamas	7	12	13	21	40	43	42	48
8 – North Slope	9	19	14	18	29	54	46	36
17 – Wasatch Mts.	10	16	13	19	32	37	37	40
18 – Oquirrh Stansbury	15	9	11	17	25	25	25	29

Elk

Table WL-3. Elk herd objectives are from Elk Herd Management Plans prepared by the UDWR. April 1998.

Herd # and Name	Target Herd Size Winter	Estimated Population Winter 2000-01	Post Season Bull to Cow Ratio	Post Season Bulls 2 ½ Years Or Older
2. Cache	2,300	2,100	8:100	50%
3. Ogden	1,200	700	8:100	50%
4. Morgan-South Rich	3,500	3,500	40:100	50%
5. East Canyon Davis/S.L. County Morgan/Summit County	250 200	600 ³	8:100	50%
6. Chalk Creek	1,900	2,400	8:100	50%
7. Kamas	650	650	8:100	50%
8. North Slope Summit/West Daggett Three Corners	1,600 500	1,260 ³	8:100	50%
17. Wasatch Mts.	5,050 200 ¹	5,010 ³	8:100	50%
18. Oquirrh Stansbury	800 250 ²	680 ³	30:100	66%

¹ Wasatch-Cache NF portion (Salt Lake County)

² Stansbury portion is new and not yet hunted. 250 is a target population for the Stansbury portion approved the the Wildlife Board July 9, 1997.

³ Total Unit. Breakdown by County or sub-unit not available.

Table WL-4. Approximate Acreage of Deer and Elk Herd Units On the Wasatch-Cache National Forest. Acreages come from deer and elk herd management plans that are dated April 1998.

Unit # and Name	Area on Forest Summer Range	% of Total Summer Range	Area on Forest Winter Range	% of Total Winter Range
DEER				
2. Cache	228,454	52%	52,258	18%
3. Ogden	44,991	19%	20,007	13%
4. Morgan-S. Rich	37,070	10%	3,251	2%
5. East Canyon	42,642	22%	21,842	13%
6. Chalk Creek	34,439	11%	91	0%
7. Kamas	126,402	60%	6,508	28%
8. North Slope ¹	484,155	85%	84,015	44%
17. Wasatch Mts ²	638,060	59%	126,091	21%
18. Oquirrh Stansbury	54,664	27%	13,650	6%
ELK				
2. Cache	232,746	54%	97,108	28%
3. Ogden	17,554	13%	18,923	11%
4. Morgan-S. Rich	20,993	6%	16,295	6%
5. East Canyon	5,646	24%	11,545	34%
6. Chalk Creek	34,439	12%	91	0.5%
7. Kamas	126,402	66%	9,964	41%
8. North Slope	456,996	86%	93,008	49%
17. Wasatch Mts ^{2,3}	485,340	63%	222,861	27%
18. Oquirrh Stansbury ⁴				

¹ This unit shows 366 acres (9%) in yearlong range.

² This Unit contains National Forest System lands administered by the Wasatch-Cache, Uinta, and Ashley National Forests. Acreages are not broken out by individual Forest.

³ Unit Management Plan also lists 2,356 acres (22%) as Yearlong Range on National Forest System lands. As in ** above, this is not broken out by National Forest.

⁴ Since the Stansbury portion of the unit is new the Unit Management Plan does not yet break out seasonal ranges for the National Forest Portion of the unit.

Big Game Winter Range

Potential forage competition may occur among many species on winter ranges. These are comprised primarily of mountain brush community types including species such as Gambel oak, sagebrush, serviceberry, mountain mahogany, and bitterbrush. Most critical winter range occurs outside the Forest, though the reduction in availability due to development has placed a higher value on the limited national forest winter range.

Winter range has been impacted through urban expansion along the Wasatch front. This has involved a loss of habitat through development, and a reduction in the quality of habitat through the introduction of non-native grasses, forbs, and noxious weeds. In addition, fire cycles for these areas have been altered due to the larger composition of annual species that readily burn, and the high number of human caused ignitions. The proximity of winter range to urban populations and domestic livestock also poses a potential disease transmission risk, and animal harassment from people is of concern.

Winter range on the North Slope is mostly north of the forest boundary. The challenges of urban interface are not present, but conflicts with private ranchlands and competition with domestic livestock for spring forage are a problem in some areas. Summer range conditions are not the limiting factor for big game populations.

There are 152 winter range trend study sites monitored by the UDWR with Forest Service assistance. Of these 69 are on or near National Forest System lands. General conditions of each of the sites and their relative value are difficult to summarize, however each site is described through general trends in soil, browse, herbaceous understory, and browse utilization. Sites on or near the Forest were evaluated last in 1998 (UDWR, 1998c).

Landbirds

Significant concern for bird species' status was emphasized in the Executive Order of January 10, 2001, which provides direction for more consideration through the NEPA process in forest and project planning. It found migratory birds to be of great ecological and economical value to this country and other countries (Clinton, 2001).

In order to monitor migratory and resident birds, the Forest Service initiated monitoring in 1996 by establishing transects across the forest that correspond to national protocol. Baseline data for each transect is being gathered as budgets and personnel levels allow. Monitoring of birds is more beneficial for regional scale information, but can be applicable to detecting some local trends (Canterbury et al. 2000). Each transect is two miles in length, and consists of 10 point counts along the route. Vegetation is inventoried at each point, and transects occur throughout all vegetation community types. Surveys are repeated every five years.

In addition to the migratory birds transects, there are six Breeding Bird Survey routes that occur on or adjacent to the forest that are monitored annually through the national protocol administered by the U.S. Geologic Survey (USGS) to help indicate trends for these species. USGS specifies in their data base that variances derived from individual transects may be invalid so the Forest has used data on a statewide basis to track the status of migratory birds that were used as management indicator species in the 1994 plan.

HawkWatch International has survey sites for migrating raptors on the north end of the Wellsville Range, on the forest, and in the Goshute range just into Nevada. These monitoring sites provide information on range-wide trends for raptors.

Project specific surveys for species at risk also provide distribution information on other species.

Forest Service transects have not been in place long enough to determine trends. At this time, it is assumed that the trends would follow national trends that show some increases and some decreases in individual species. Raptor work by HawkWatch International, which dates back to 1977, indicates the same (Vekasy, 2001). Peregrine falcons have increased, while goshawks appear to be stable over time but decreasing since 1996.

Upland game such as ruffed grouse and blue grouse may have increased, while sage grouse and sharp-tailed grouse have decreased from historic levels. Introductions of turkey have taken place in the past several years with great success and there are turkeys in several areas of the Forest.

Endangered, Threatened, and Sensitive Species

The Utah Field Office of the U.S. Fish and Wildlife Service (FWS 2002b) puts out a list twice of, "Federally Listed and Proposed (P) Endangered (E), Threatened (T) and Candidate (C) Species and Habitat In Utah By County." The following terrestrial species are listed in their document dated August 2002 as occurring or having habitat in counties containing portions of the Wasatch-Cache National Forest. There have been no changes in this list since January.

Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	C
Mountain Plover	<i>Charadrius montanus</i>	PT
Canada lynx	<i>Lynx canadensis</i>	T
Black-footed ferret	<i>Mustela nigripes</i>	E
Ogden Rocky Mountainsnail	<i>Oreohelix peripherica wasatensis</i>	C
Fat-whorled pondsnaill	<i>Stagnicola bonnevillensis</i>	C

The following is a summary of the species status. A more detailed evaluation is included in the Biological Assessment provided to the FWS.

Bald eagle. Where the bald eagle is mainly a winter visitant to Utah it does nest in Salt Lake and Davis Counties at lower elevations in the wetlands around the Great Salt Lake. It is occasionally seen on Forest but its main foraging and roost areas are at the lower elevations where there is abundant prey. There is one large roost area in a secluded area of Box Elder County.

Western yellow-billed cuckoo. The cuckoo is a low elevation riparian shrub inhabitant. Historically it has been observed close to the Forest along the Wasatch Front and in Cache Valley. The UDWR Natural Heritage Program indicates that the species is an historical breeder in the state.

Mountain plover. This plover is a short grass prairie species. It is listed in Duchesne County in Utah and would occur at low elevations off the Forest. It is also listed in Wyoming in Uinta County. There is some habitat for the species close to or on lower elevations of the Forest.

Canada lynx. Historically lynx have been found in Utah in very low numbers. Between 1916 and 1991 there are 27 referenced occurrences with 10 being verified (Ruggiero et.al. 2000). Most are from the Uinta Mountains with others scattered in other locations including Summit (2 specimens) and Cache (one specimen) Counties. There have been no verified records since 1991.

The Canada lynx was proposed for listing as a threatened species under the Endangered Species Act on July 8, 1998 (Federal Register Volume 63, No. 130). The final rule listing the contiguous United States District Population Segment (DPS) was published on March 24, 2000 (Federal Register Volume 65, No. 58). In the final rule it was concluded that the threat to the lynx was the inadequacy of existing regulatory mechanisms, specifically the lack of guidance for conservation of lynx in forest plans and BLM land use plans. It stated that this lack of guidance could allow or direct actions that cumulatively adversely affect the lynx.

The listing included the historic range of the lynx, which includes Utah, and the review by the US Fish and Wildlife Service (FWS) listed 11 counties in Utah as being included in the listing where suitable habitat existed. Counties where National Forest System lands occur that are administered by the Wasatch-Cache National Forest include: Cache, Rich, Summit, Morgan, Weber, Duchesne, and Salt Lake. During the summer of 2000 the three National Forests in northern Utah conducted a review of all ongoing projects on the forest to fulfill consultation requirements with the FWS. In a letter dated August 15, 2000 the FWS concurred with the Wasatch-Cache determination that activities on the Forest would have no affect or may affect but would not likely adversely affect the lynx. The concurrence was based on the evaluation that determined the projects complied with the Canada Lynx Conservation Assessment and Strategy (LCAS) (First Edition was pre August 2000, Second Edition, August 2000 – Ruediger,2000).

In addition to the listing, consultation on ongoing projects, and the publishing of the LCAS, the Forest Service entered into the “Canada Lynx Conservation Agreement” (CA) with the FWS on March 1, 2000. The purpose of the agreement was to promote the conservation of the Canada lynx and its habitat on federal lands managed by the signatories. In accordance with the CA the Wasatch-Cache will manage lynx and lynx habitat consistent with the LCAS and lynx Science Report. Some standards and guidelines from the LCAS will be adopted as itemized standards and guidelines for this Forest Plan. Other LCAS standards and guidelines will not necessarily be itemized in the plan because they will be covered by other management and planning direction or will be evaluated at the project level in coordination with the Fish and Wildlife Service. However, the Plan conclusively adopts the entire CA and LCAS wherever applicable to Forest planning processes.

During this same period the three forests also mapped lynx habitat with maps showing habitat, and non-habitat. With these maps lynx analysis units (LAUs) were identified by biologists from the three forests, FWS, and the Utah Division of Wildlife Resources (UDWR).

The second edition of the LCAS was published in August 2000 (Ruediger et.al. 2000). In it, the habitat definition was refined and using this information the three forests in northern Utah refined their definition that now includes primary, secondary, and non-habitat. A new map was printed using this definition in August 2002. Meetings were again held between the forests, FWS, UDWR, and BLM to review and refine the LAUs. In a letter from the FWS dated November 6, 2002 they concurred with the proposal to eliminate LAUs in the Bear River Range on the Wasatch-Cache and reclassify the area as linkage habitat. The only core habitat in Utah is in the Uinta Mountains.

As directed in the LCAS, the three forests in Utah have conducted hair snare survey transects in an effort to determine if lynx are present in the State. There were two transects on the Uinta Mountains (one on the Ashley, one on the Wasatch-Cache), one on the Uinta National Forest, and one in the Bear River Range on the Wasatch-Cache. There was also one on the Manti-LaSal National Forest in an area where there was a historic taking of the lynx. These transects followed a national protocol. They were run for three years (1999, 2000, 2001) and all samples were analyzed at the same lab. In the three year period no lynx were detected. Brigham Young University is also running transects in the Uinta Mountains in conjunction with a forest carnivore study they are doing. Their third year will be in 2002. The fact that no lynx have been detected does not mean they are not present but the probability is very low.

Black-footed ferret. The ferret is closely connected to prairie dog towns. Any prairie dogs on the Forest would be at the lowest elevations right along the Forest boundary in Summit and Rich Counties. The FWS lists these counties as historical range. Since the UDWR and FWS reintroduced the species to the Uintah Basin they have classed it as S1. Before the reintroduction it was classified as historical.

Ogden Rocky Mountain Snail. One population of this species is known from the mouth of Ogden Canyon. Collections in areas of other subspecies have been collected along with this one and DNA testing is being conducted to see how different the subspecies are. The area where this species is located on Forest is an area of very limited activity. Local staff are aware of the species and efforts are being made to prevent impacts.

Fat-whorled pondsnail. This pondsnail is a low elevation species toward the west desert in Box Elder County. The abrupt rise of the Wasatch Range in Box Elder and Weber Counties make it very unlikely that the species exist on Forest. It occupies small spring-fed, well-vegetated, ponds, although the presence of this species in Lake Bonneville deposits suggests that it previously lived in a large lake. Shells are widespread in the Bonneville Basin, however live specimens have only been found near Corinne in Box Elder County. This is well off the forest and the nearest habitat for this species on forest

would be in Cache County, which is outside the range of the species. This species will not be addressed further in this document (UDWR 1998a).

Sensitive species are those species identified by the Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in numbers or density, or a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution. On the Wasatch-Cache the Regional Forester has designated the following terrestrial species as sensitive:

Spotted bat	<i>Euderma maculatum</i>
Townsend's big-eared bat	<i>Plecotus townsendii</i>
Wolverine	<i>Gulo gulo</i>
Boreal owl	<i>Aegolius funereus</i>
Flammulated owl	<i>Otus flammeolus</i>
Great gray owl	<i>Strix nebulosa</i>
Northern goshawk	<i>Accipiter gentiles</i>
Peregrine falcon	<i>Falco peregrinus</i>
Northern three-toed woodpecker	<i>Picoides tridactylus</i>
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>
Spotted frog	<i>Rana luteiventris</i>

The following is a summary of the status of these species on the Forest. More detail is contained the Biological Evaluation written for this plan.

Spotted bat. Historically the spotted bat has not been documented on the Wasatch-Cache National Forest. In northern Utah the only historical record found by the Utah Natural Heritage Program is a female collected off of a school in Salt Lake City in 1934. Its normal habitat is arid country relegating it mostly to lower elevations on the Forest.

Townsend's big-eared bat. This bat is known from seven locations on the Logan, Ogden, and Salt Lake Ranger Districts. It is associated with caves and mines that it uses for nursery colonies and hibernacula.

Wolverine. Historically the wolverine was found throughout the Wasatch-Cache National Forest. There has not been a confirmed sighting for at least ten years. In the early 1990s one was reported on the Logan Ranger District. Cameras placed over bait were unsuccessful in documenting presence. Wolverine prefer mature and old growth forest but do forage in meadows and talus slopes.

Boreal owl. Utah is the southern edge of the boreal owls range. The species occurs in very small numbers. It has been found in 2-3 locations on the Forest.

Flammulated owl. Flammulated owls are more common in the state than boreal owls but they are still rare. They have not been documented on the Uinta Mountains but have in several locations on the Bear River and Wasatch Ranges.

Great gray owl. The great gray owl is considered a winter vagrant in Utah with one observation recorded by the Utah Natural Heritage Program on the Uinta National Forest.

Goshawk. In 1991, the goshawk was designated as a sensitive species in the Intermountain Region of the Forest Service. As a result of this designation, special management is emphasized to ensure the goshawks viability (FSM 2670). In March of 1997 the Utah Division of Wildlife Resources classified the goshawk as a state sensitive species. The purpose of this designation was to identify species in the State that are most vulnerable to population declines or habitat loss and to stimulate management actions for the conservation of this species.

To address the issue of declining goshawk habitat in Utah, a technical team was assembled. They developed seven questions and attempted to answer them in, "The Northern Goshawk in Utah: Habitat Assessment and Recommendations" (Graham et.al. 1999). The seven questions and a summary of the findings follow, as quoted from the report:

1. Is there adequate nesting habitat available?
Presently there appears to be adequate nesting habitat in the State and on the Wasatch-Cache National Forest to maintain a breeding population of goshawk.
2. Is there adequate foraging habitat available?
Based on habitat features important to selected prey used by goshawks, it appears that foraging habitat is presently available throughout the State and on the Wasatch-Cache.
3. Are northern goshawks able to move freely between habitat patches?
Goshawks appear to be able to move freely among habitat patches throughout Utah and the Forest (it is noted that satellite tracked birds captured on the Wasatch-Cache have wintered south of Delta, Utah and along the Utah/Arizona border).
4. Is the population viable at the State level?
This assessment could not answer the question of population viability directly because there are inadequate demographic data available. Most of the currently forested lands were rated as medium or high value for both nesting and foraging habitat. Where surveys have been conducted, goshawks are present and nesting successfully. Furthermore, all available habitat patches are connected, and no known population is isolated. In general, existing habitat appears to be capable of supporting a viable population of goshawks at the State and Forest spatial scales.
5. Where is the high value habitat?
High value habitat is distributed throughout the State, with 60% controlled by the USDA Forest Service.

6. How are current management policies affecting goshawks?

Current management policies are affecting northern goshawks in a variety of ways. On National Forest Service administered lands in Utah, 20% of the high value habitat is being managed with a timber emphasis, 35% with mixed uses, and 27% with a range emphasis. Each of these management categories allows for activities that either can degrade or improve goshawk habitat. The information in this assessment does not reveal any substantial deficiencies in habitat quality in any management category.

7. What are the important habitat trends and their implications for goshawks?

The most obvious trend in Utah forests and woodlands is the lack of early and mid-seral species in all of the potential vegetation types. If forest management stresses properly functioning condition, importance of large trees, maintaining native processes, using adaptive management, and recognizing the role of fires, the habitat outlook could be favorable for the goshawk and its prey. This is true on the Wasatch-Cache National Forest also.

Urbanization and more intensive uses of the forest by humans could degrade goshawk habitat, especially on private lands. Private lands in Utah will continue to be developed, making the lands administered by Federal entities increasingly important for goshawks. This trend could also affect the connectivity of the habitat across the State.

The situation on the goshawk on the Wasatch-Cache National Forest fits the discussion above. They are found on all Districts on the Forest.

To formalize the recommendations made in the above assessment the six National Forests in Utah amended all Forest Plans in March 2000. The amendment was to cover the period from March 2000 until individual forests revised their forest plans over the next several years.

Peregrine falcon. Peregrine falcons are tied to high cliffs or buildings for nesting in areas where there are abundant avian species for prey. Historically for the Wasatch-Cache this was along the Wasatch Front. The best habitats on National Forest System lands are located in Salt Lake, Box Elder, and portions of Weber Counties. There are known nesting pairs in Box Elder County.

Northern three-toed woodpecker. This species is found in conifer and aspen vegetation types throughout the Wasatch-Cache and Utah. It may presently be at some of its highest population levels on the Forest with the amounts of mature and old growth forests exist.

Columbian sharp-tailed grouse. The range of the sharp-tailed in Utah is in Box Elder, Weber, and Cache Counties. It is a sagebrush/grassland species that would be found at the lower elevations of the Forest.

Spotted frog. The spotted frog is covered under the Aquatic Section of this document.

A forest plan is a programmatic document that sets the framework for future work on the Forest. With the outputs identified in the plan viability and persistence, over time, of the terrestrial TES species the Forest is responsible for protecting, will not be compromised. As individual site-specific projects are proposed in the future a biological assessment/evaluation will be written to determine the effects of that project.

Species-At-Risk (SAR)

Species-at-risk are defined as, “Federally listed endangered, threatened, candidate, and proposed species 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. A species-at-risk also may be selected as a focal species.”

For the Wasatch-Cache Plan revision, the term “species-at-risk” includes:

- Fish and Wildlife Service endangered, threatened, candidate, proposed species.
- Regional Forester designated sensitive species.

Also considered for inclusion as species-at-risk were species identified by:

- The Nature Conservancy as G1, G2, and G3.
- State Natural Heritage programs as S1, and S2
- Partners in Flight species of concern.
- The Forest that do not appear on any other lists.

The SAR list is dynamic and species will be added as deemed necessary or removed as recovery occurs or new information indicates they are not at risk.

By the above definition the Forest has identified 33 terrestrial vertebrate species as SAR. This includes 3 reptiles, 21 birds, and 9 mammals. By the above definition 4 of these species are Federally listed, candidate or proposed, 8 are Forest Service sensitive, 17 are listed as S –1 or 2 by the state, and 4 are concerns of Partners in Flight. These species are discussed in detail in Appendix B-2.

These 33 species were then divided into fine and coarse filter categories. Fine filter species are those for which conservation strategies or recovery plans are available with specific guidelines or recommendations are listed. Coarse filter species were grouped by the vegetation type they use. Management direction centers on the management of the vegetation type in a properly functioning condition within the historic range of variation.

Mollusks

There are a number of mollusks on the Forest as evidence by historic records. In recent years the Forest has started to do some additional surveying for these species. Some of these mollusks are dry land species while other are aquatic or semi-aquatic in nature.

We will continue to collect additional information on these species and provide habitat and species protection as risks and threats are identified. Insufficient information is available to analyze the effects of implementing the Forest Plan on these species.

Management Indicator Species/Management Indicator Communities

Management indicators (Table WL-5) are used to assess the effects of a management activity on wildlife. The general guidance and criteria for selecting management MIS are contained in 36CFR219.19(a) and in the Forest Service Manual 2621.1. The following criteria were used in selecting management indicator species (MIS):

1. MIS must have a strong (but not exclusive) affinity for the habitat type.
2. The habitat type is key habitat in the life cycle of the MIS
3. The MIS is sensitive to change.
4. The MIS is relatively easy to monitor, i.e., high visibility and in adequate numbers.
5. The MIS is somewhat representative of all species that use the habitat type.
6. The MIS is, for the most part, a year round resident on the forest.

The 1985 Forest Plan includes two categories in the MIS discussion. These are Ecological Indicators that are intended to show the effects of management on the ecosystem, and High Interest Species that identify species of economic importance (such as big game) and species of concern (such as Federally listed species, Forest Service sensitive species and other species at risk). The 1985 Plan includes 14 Ecological Indicators to monitor 13 vegetation types, rivers and lakes. There are eight High Interest Species, including 3 big game animals, 2 fish species, and 3 species of concern.

Table WL-5. Management Indicator Species/Management Indicator Communities

MANAGEMENT INDICATOR	ASSOCIATED VEGETATIVE COMMUNITY
Goshawk <i>Accipiter gentilis</i>	Aspen, Conifer, Mixed Conifer
Snowshoe Hare <i>Lepus americanus</i>	Pole/Sapling Aspen, Conifer, and Mixed Conifer
Beaver <i>Castor canadensis</i>	Riparian
Cutthroat trout <i>Oncorhynchus clarki pleuriticus</i> <i>Oncorhynchus clarki utah</i>	Aquatic

Updating MIS was recommended in the Preliminary Analysis of the Management Situation (USDA Forest Service 1999a). The Preliminary Analysis of the Management Situation proposed to use neo-tropical migratory birds for MIS. Upon further consideration and in discussions with the Regional Office it was determined that neo-tropical migratory birds would not be used because of criteria six and the fact that they are not, for the most part, year round residents of the forest.

The Preliminary Analysis of the Management Situation also recommended vegetative indicators because vegetative changes will show up faster than detectable population changes in a faunal species. Vegetative indicators will not be used but will be monitored in connection with Properly Functioning Condition of vegetative types.

Discussion of Individual Management Indicators

Goshawk – aspen, conifer, and mixed conifer. The goshawk is a forest habitat generalist that uses a wide variety of forest ages, structural conditions, and successional stages. The goshawk preys on large-to-medium-sized birds and mammals, which it captures on the ground, in trees, or in the air. Three components of a goshawk's home range have been identified: nest area (approximately 30 acres), post fledging-family area (approximately 420 acres), and foraging area (approximately 5,400 acres). The species nest in a wide variety of forest types including aspen, coniferous, and mixed conifer forests. It typically nests in mature and old growth forests (Nature Conservancy 1999). **Snowshoe hare – pole/sapling aspen, conifer, and mixed conifer.** In the Rockies and westward, hares mainly use coniferous forests. They are predominately associated with forests that have a well-developed understory that provides protection from predation and supplies them with food. Such habitat structure is common in early seral stages but may also occur in coniferous forests with mature but relatively open overstories. (Ruggiero 2000)

Beaver – riparian. The beaver occurs throughout most of North America and is fairly common in Utah. It is found in permanent slow moving streams, ponds, small lakes, and reservoirs. On the Wasatch-Cache National Forest, the Uinta Mountains are classed as “substantial value” habitat and the rest of the Forest as “critical value” or “high value habitat as indicated on Gap Analysis maps.

Bonneville and Colorado River cutthroat trout – aquatic. The number of fish in a reach of stream is not considered a good monitoring factor because some streams are stocked and most streams are fished. Number fluctuations due to stocking and angling make it difficult, at best, to determine the effects of forest management activities on the population. Cutthroat trout (Bonneville or Colorado River, depending on the drainage) will be used as MIS using a “condition” factor as the monitoring tool (see monitoring below).

Vegetation types not monitored by MIS

There are two vegetation types not covered by MIS. The first is the sage/grasslands of which there are 189,600 acres across the Forest. The species which best fit the criteria for sage/grasslands is the sage grouse (*Centrocercus urophasianus*). Since the sage grouse is not spread across the Forest in a manner that it will be able to indicate the effects of management in the sage/grasslands across the Forest it was determined not to fit the criteria in a manner to be acceptable as an MIS. With proposed projects in used habitat the species can be used on a project to monitor the effects of the individual project. This would be determined in a site- specific NEPA document. The

sage/grassland vegetation type will be monitored to track changes in amounts and age classes, as age classes are mapped.

The other vegetation type not covered is oak/maple (mapped separately in the GIS layer with oak covering 90,800 acres and maple covering 14,600 acres). Work in the oak/maple is planned in the form of fuels reduction along the urban interface. This is planned to be mechanical and would serve to give better age class diversity in the type. As with the sage/grassland, oak/maple will be monitored as to assess changes in amounts and age classes, as age classes are mapped.

A complete discussion on MIS and their habitats is contained in Appendix J.

Wildlife Related Recreation

Besides hunting, in the past 10-15 years public interest and participation in non-consumptive recreation, such as wildlife viewing and photography, has greatly increased. With the urban expansion along the Wasatch Front, the Forest has become a favored of population growth in the state. Legislated caps on the number of some big game recreation destination for people. Fishing and hunting have increased, but not at the rate hunting permits have effectively leveled off participation for deer and elk hunting.

Environmental Consequences

General Effects

In evaluating effects of alternatives on terrestrial wildlife species, it must be remembered that any potential activity may be detrimental to some species while it benefits others because of the wide variety of habitat needs. By managing to achieve properly functioning conditions within the historic range of variability, it is assumed terrestrial wildlife species will reach an equilibrium with habitat and will move and adjust as structure and age class composition of vegetation progresses toward potential or is set back to an earlier seral stage.

The primary determinant for evaluating management activities effects on species is the effects of those activities on vegetation communities relative to properly functioning condition (PFC). The effects analyzed in the Vegetation section of this chapter are the basis for much of the effects disclosed for wildlife.

The Management Prescription that, when considered with other management direction such as standards and guidelines, provides the most protection for terrestrial wildlife, along with the ability to improve habitat, is Prescription 3.2 (Terrestrial Habitat Emphasis). Alternative 7 splits 3.2 into 3.2U that consists of those terrestrial habitat areas protected from development because of potential impacts to key habitat elements, and 3.2D that consists of those terrestrial habitat areas where development is allowed for the purpose of maintaining, improving or restoring key habitat elements. For comparison purposes 3.2U and 3.2D have been combined.

There are approximately 309,000 acres of designated wilderness on the Forest (Management Prescriptions 1.1 – 1.4). Within these prescriptions terrestrial wildlife habitat would potentially be protected, but very little or no direct habitat improvement, or other project work would be accomplished. Man caused fragmentation would be at a minimum. The forested lands will remain forested and continue progressing to the mature and old age classes until set back by wildland fire, insects, or disease. Terrestrial wildlife species that prefer the older age classes, such as woodpeckers, will do better in this situation, while those that prefer younger age classes would likely not have abundant habitat.

Wilderness acreages have the potential to change through recommended wilderness acres identified as Prescription 1.5. This will increase the number of acres where potential effects described for designated wilderness apply.

Table WL-6 shows the acreages under Prescriptions 3.2 and 1.5 that have added wildlife management emphasis and protection by alternative.

Table WL-6 Acres of Protective Prescription by Alternative

Management Prescription	Acres by Alternative						
	1	2	3	4	5	6	7
3.2	86,800	138,200	201,600	11,500	24,600	218,300	0
3.2d	0	0	0	0	0	0	85,000
3.2u	0	0	0	0	0	0	122,300
1.5	388,900	145,900	51,500	0	0	69,400	61,400

The potential effects of other management prescriptions on wildlife vary. Emphasis on timber production and grazing, both of which can cause changes in age class, and structure will benefit some species that depend on younger age classes and more open structure such as vesper sparrow and snowshoe hares, while being detrimental to others that need older age classes and a more closed structure such as Brewer's sparrow and goshawk. Fragmentation of continuous forested cover and displacement from activity disturbances that can be caused by all resource activities also affect different species differently. These are discussed below. Standards and guidelines set parameters that mitigate or lessen total impacts for all alternatives. Also, it is assumed that managing for the historic range of variation with properly functioning conditions is the most reliable way to ensure a mix of habitats conducive over time to sustained biodiversity and species viability.

Effects on Terrestrial Wildlife from Roads/Access Management

Potential impacts from roads and trails come from fragmentation of habitat and displacement of wildlife. The amount of displacement on a road or trail is a function of the amount of use on the road or trail and the species of wildlife. Some species are more sensitive to disturbance than other species. Impacts of present roads and trails are the same across all alternatives. Present road densities range from 0.4 miles of road per square mile of habitat in the Stansbury Management Area to 1.4 miles of road per square

mile of habitat in the Bear Management Area (see Table RM-1 under Topic 3 of this Chapter). As noted in Table RM-1, the total miles do not include private, county, state, or other Federal roads that total 166 miles across the entire Forest. Additional impacts come from new road or trail development. For roads, the increase over the next 10 years from timber harvest and oil and gas exploration and development are displayed in Table WL-7. Trail development is assumed to be similar for all alternatives.

Table WL-7 Miles of Projected New Road Construction by Alternative Over 10 Years

Activity	Alternatives						
	1	2	3	4	5	6	7
Projected New Timber Harvest Roads (miles)	0	6	39	49	49	6	7
Projected New Oil and Gas Exploration Roads (miles)	3	3	6	0	10-11	6	7.5
Projected New Oil and Gas Development Roads (miles)	0	0	4	0	4	4	4
Projected New Roads over 10 years	3	9	49	49	64	16	18.5

Since the Revised Plan and FEIS are programmatic documents it is not known where the needed roads will be located. For Timber harvest they will be on the Uinta Mountains or the Bear River Range (Kamas, Evanston, Mt. View, Ogden or Logan Ranger Districts). For the most part the timber roads will be located on big game summer range and may displace big game and reduce habitat effectiveness while in use. Roads constructed for oil and gas exploration and development will all be on the Uinta Mountains and could be located on either summer or winter range. New road construction would have minimal effects on landbirds. New roads will cause more fragmentation of habitat that could affect lynx and wolverine, if they should be present, especially if they remain open to snowmobiling in the winter. Effects on other TES species would be very low. Effects on MIS would also be very low, the effects being felt on the project areas that the roads access.

Motorized recreation in winter can have adverse affects on wildlife caused by the use of valuable energy expended while trying to avoid the disturbance, especially on big game winter ranges. The amount of big game winter range open to winter motorized travel is identified in Table WL-8.

Table WL-8. Winter Recreation Use on Big Game Winter Range

Use	Alt 1	Alt 2	Alt 3	Alt 4 1985 Plan	Alt 5	Alt 6	Alt 7	EC ¹
Motorized	22,400	22,600	108,600	141,700	115,700	78,600	54,500	96,100
NA	0	0	0	15,400 ²	0	0	0	0
Non Motorized	185,000	184,400	98,900	52,200	91,700	128,900	152,900	111,200
Wilderness	37,800	37,800	37,800	36,200	37,800	37,800	37,800	37,800

¹ EC = Existing Condition

²NA = Not Analyzed (land was transferred into National Forest System after 1985 plan was released)

In the above table, the alternatives that close the most winter range to motorized use are Alternatives 1 and 2. Alternative 3 nearly maintains current closures and Alternatives 4, and 5 would open some currently closed areas increasing the potential for negative impacts on wintering big game. Table WL-9, below indicates the same information as the percentage of winter range that is non-motorized.

Table WL-9. Percent of Big Game Winter Range Identified as Non Motorized

	Alt 1	Alt 2	Alt 3	Alt 4 1985 Plan	Alt 5	Alt 6	Alt 7	EC
Total Winter Range W-C N.F.	245,400	245,400	245,400	245,400	245,400	245,400	245,400	245,400
Non Motorized Winter Range	222,800	222,100	136,700	88,300	129,500	166,700	190,700	149,100
% Winter Range Non Motorized	91%	91%	56%	36%	53%	68%	78%	61%

It is noted that the important factor is not how many acres are open to snowmobiling but what acres are actually used and accessible.

If more acres are open to snowmobiling there could be greater adverse impacts to wintering wildlife, depending on where the areas are. This affects big game on winter range by disturbance and species like the lynx and wolverine at higher elevations by disturbance and/or increasing access for competing predators over compacted snow.

In Lynx Analysis Units (all of the Uinta Mountains) the Lynx Conservation Strategy recommends no net increase in the amount of groomed or designated over-the-snow routes or snowmobile play areas. The intent is to allow no more than existing compaction of snow in these areas because of potential for reducing the competitive advantage lynx has in uncompacted snow. Alternatives 1 and 2 would reduce the areas open to winter motorized use in the Uinta Mountains significantly while Alternatives 4 and 5 would open some currently closed areas to motorized use which is inconsistent with the Lynx Conservation Strategy. Alternative 3 maintains currently open areas and

Alternatives 6 and 7 reduce the net of areas open to motorized use from existing but not to the large extent that Alternatives 1 and 2 do. Each of the Alternatives that reduce areas open to winter motorized use in the Uinta Mountains are consistent with the Conservation Strategy.

Effects on Terrestrial Wildlife from Timber Management

Potential impacts include fragmentation, displacement, changes in vegetation structure and age class and grazing. In general, mature and old age classes currently dominate timber cover types. This may be less true on private lands adjacent to the Forest. Loss of the aspen type to conifers through natural succession and fire suppression decreases vegetative diversity that affects many species of wildlife. Alternatives with more potential for timber harvest, would benefit species that prefer more open areas in earlier successional stages, like the snowshoe hare. Species such as the woodpeckers, that prefer mature and old growth where insects are more plentiful would see a reduction proportional to the amount of timber harvest in habitat meeting these needs. Regardless of alternative, species that benefit from older age classes would continue to have an abundance of available habitat because of current conditions and the relatively small acreage to be harvested.

Table WL-10. Possible Harvest in Aspen and Conifer in the 10 Year Peiod

Available Timberland¹	Alt.1	Alt. 2	Alt.3	Alt.4	Alt. 5	Alt.6	Alt.7
Suited for Timber Production (Acres) ²	0	0	38,000	193,900	226,000	28,900	28,900
Unsuited and Harvest Allowed³ (Acres)	0	79,900	131,600 ⁴	55,200	71,800	72,100	171,400
Total Acres of Timber Available	0	79,900	169,600	249,100	297,800	101,000	202,100
Allowed Acres Harvested Over 10 Year Period Aspen and Conifer	0	6,500	7,500	12,500	15,500	5,000	8,500

¹ From GIS layer of available capable aspen and conifer merged with management prescriptions for each alternative.

² Areas available and capable with Management Prescription 5.2 or 6.2.

³ Areas available and capable with Management Prescriptions that allow other harvest for non-timber objectives.

⁴ Of these acres, an estimated 60,000 allow harvest but no road construction.

The most benefits for wildlife would come in alternatives 7, 3, and 2. The most land available for harvest in these alternatives is in the unsuited with timber harvest allowed for other resource purposes. With this, harvest areas could be designed to provide the largest benefit to wildlife by more strongly considering the juxtaposition and age class diversity of harvest areas. Alternatives 4 and 5 have an abundance of suited timberlands in the 5.2 prescription and timber is harvested with more emphasis on timber harvest and monetary returns to the government and logger.

With the projection of flat budgets, and the low level of management activity, and the goal of managing for PFC, wildlife on the Forest should be maintained at present levels if influences outside of the Forest do not cause decreases. Some species such as the goshawk will have reduced habitat due to the shift in mature and old growth but they will still function within the historic range of variation. Habitat for snowshoe hares would increase due to the set back of succession and the development of an understory of brush and young conifers to provide cover and forage. Ground nesting and open canopy landbirds would also benefit. Forage would increase for big game animals although with most timber harvest being accomplished in summer range this would be less of a benefit than it would be if the production is on winter range.

There would be road construction in connection with some timber harvest. See the section on effects from Roads and Access Management.

Effects on Terrestrial Wildlife from Recreation

Use of developed recreation sites is dictated by the size of the site. Differences in use levels from the present plan would be determined by newly developed sites. There are no new developed sites identified in alternative 1. All other alternatives identify 2 new developed sites.

In prescription 4.2, recreation non-motorized, the larger the area the larger the benefits to terrestrial wildlife are. Wildlife would have more secluded areas to feed and rest in. When spread out across the Forest there is not enough difference between alternatives, except possibly for alternatives 5 and 6, to make a measurable difference.

Motorized recreation settings (4.3 and 4.4) have the greatest potential for adverse effects on wildlife through the displacement caused by use on roads and trails and the destruction of habitat through indiscriminate cross-country travel.

Prescription 4.3 is just the converse of 4.2 in that with backcountry motorized the smaller the acreage the larger the advantage to terrestrial wildlife. Again, the very small differences between some of the alternatives would make a measurable difference impossible. Alternative 4 by far has the largest advantage to wildlife with a very small amount open to motorized travel.

Like prescription 4.3 in 4.4, recreation motorized, the less acreage is the most advantageous to terrestrial wildlife. Again, alternative 4 has the largest advantage to

wildlife with the other alternatives being so close that the disadvantages would be the same.

Table WL-11. Comparison of Motorized and Non Motorized Recreation Settings

	Acres by Alternatives						
	1	2	3	4	5	6	7
4.2 Recreation Non-motorized Recreation Settings	4,500	3,600	3,200	3,900	20,500	20,000	3,500
4.3 Backcountry Motorized Recreation Settings	16,000	25,000	30,600	1,800	17,300	32,600	27,100
4.4 Recreation Motorized Recreation Settings	30,900	38,300	41,700	16,600	78,200	49,100	53,800

Management areas where ski resorts are located are the Central Wasatch and North Wasatch-Ogden Valley. Alternative 5 is the only alternative where ski resort expansion is allowed (expansion is defined as additional acres being added to a current permit or a new resort permit is issued). Potential effects from expansion are vegetative type changes if new runs are cleared, fragmentation of habitat and displacement of species. Expansion is not permitted on any of the existing permits although infrastructure improvements within the permit areas are permitted. New expansion proposals would be handled on a case-by-case basis with the proper NEPA documentation and decision. It is not possible to make determinations on the effects on wildlife beyond what is stated here with no concrete proposals in hand.

Effects on Terrestrial Wildlife from Livestock Grazing

Impacts of livestock grazing on wildlife include displacement of wildlife, potential for disease transmission, and changes in plant composition and vegetation community succession that can cause unfavorable habitat conditions for some wildlife species. Desired future conditions for vegetation developed in the 1996 Rangeland Health Amendment and described in the Revised Forest Plan as well as those to be developed site-specifically for individual grazing allotments take wildlife habitat needs into account. To achieve these conditions, grazing standards and guidelines are also contained in the Revised Forest Plan. Full compliance with these will have positive effects on wildlife habitats within active grazing allotments.

Both upland and riparian areas in unsatisfactory condition provide decreased quality and quantity of habitat for associated suites of wildlife species. One difference between alternatives for Forest Plan Revision is the degree to which they provide for rehabilitation of these areas through both vegetation treatments and improved livestock grazing management. In alternatives that remove lands in unsatisfactory condition from grazing suitability, there would likely be a range of improvement probability that can only be predicted with site-specific assessment. Factors include whether or not these are areas that can be easily avoided through livestock herding, and/or salting, and whether or not fencing is a viable option. Any improvement in condition would be a favorable effect for some wildlife species. Alternatives 1, 2, and 6 would result in this range of improvement

on a total of 18,300 upland and riparian acres and Alternative 3 would result in 2,100 acres with a range of improvement on riparian acres. In addition, Alternative 2 would remove livestock grazing from 26,000 acres in watersheds with cutthroat trout emphasis providing for improved upland vegetation and wildlife habitat conditions as well.

Alternative 7 (and the Revised Forest Plan) includes a **forage utilization guideline** for lower (30-40%) allowable use on areas in unsatisfactory condition rather than removing these areas from suitability. With implementation of this Guideline, areas of both upland and riparian vegetation in unsatisfactory condition would improve with riparian areas restored more quickly than uplands. Improvement would be more consistent overall than in Alternatives 1, 2, 6, and 3 because a lower utilization standard could be applied to all the areas more easily than total avoidance of the areas.

Alternatives 4 and 5 do not remove areas in unsatisfactory condition nor do they implement a lower forage utilization allowance for these areas. Some improvement of these areas is expected through implementation of management direction from the 1996 Rangeland Health Amendment, however it is expected that it would be more gradual and less consistent than in any of the other Alternatives.

An additional difference between alternatives with regard to livestock grazing effects on wildlife is the relative reduction of risk for disease transmission from domestic sheep to bighorn sheep. Discontinuing domestic sheep grazing in overlapping areas used by domestic sheep and bighorn sheep in the Eastern Uinta Mountains and Western Uinta Mountains Management Areas would reduce the risk of disease being transmitted from domestic to bighorn sheep. Alternatives 1, 2, 6, and 7 reduce this risk by closing the three currently vacant allotments (Burro Peaks, Thompson Peak, and West Beaver). In addition to these vacant allotments, Alternatives 1, 2, 6 and 7 would discontinue domestic sheep grazing on three sheep allotments (Gilbert Peak, Henry's Fork-Hessie Lake, and Red Castle) that overlap current bighorn sheep habitat if permits were voluntarily waived without preference. Alternative 7 would extend the area protected further for bighorn sheep to four additional allotments (East Fork Blacks Fork, West Fork Blacks Fork, East Fork Bear River, and Stillwater) immediately to the west, again if those permits were voluntarily waived without preference. These closures would extend bighorn sheep habitat and protection from disease across the upper Uinta Mountains.

Finally, disposition of other vacant allotments (not associated with bighorn sheep habitat) is a difference between alternatives with implications for effects on wildlife. Closure of vacant allotments allows for ungrazed areas to provide for long-term habitat without wildlife displacement and without grazing associated changes in vegetation affecting habitats. Alternatives 1 and 2 provide the most long-term habitat benefit closing all vacant allotments. Alternative 7 provides somewhat less long-term habitat benefits than 1 and 2 because it focuses closures only on Salt Lake and Davis County watershed (in addition to the bighorn sheep habitat discussed above). Alternative 6 provides the long-term benefits for bighorn sheep habitat but not for the other vacant allotment areas. Alternatives 3, 4, and 5 do not close vacant allotments thus not providing for long-term habitat benefits although short-term, the allotments would likely continue to remain in ungrazed condition. This is because experienced budget levels have not been adequate to

conduct required analyses on active allotments, making analyses required for stocking of vacant allotments a low priority. This is not expected to change within the planning period.

Effects on Terrestrial Wildlife From Oil and Gas Activities

The following description of effects refers only to the area identified as the “Appeal Settlement Zone” as described in Topic 9 – Oil and Gas. It is estimated to be about 68,300 acres.

Generally, direct and indirect effects to terrestrial wildlife habitat include potential loss of habitat, fragmentation of habitat, displacement due to traffic, noise and human presence, and possible mortality along roads. Effects to big game wildlife species may be increased if they are disturbed during critical seasons of use, such as during birthing and wintering phases. Raptor species react differently to human interference. Oil and gas activities could result in destruction of nests, elimination of essential habitat components and abandoning nests with eggs or young. Reducing the density of trees in some areas could be beneficial to some raptor species by increasing their hunting capabilities. Activities adjacent to wetland and riparian areas where shorebirds and waterfowl may nest could adversely affect the reproductive success of these birds. Non-game species will be displaced and habitat disrupted by oil and gas activities (USDA Forest Service 1994a). As with many activities, oil and gas development will have negative impacts to some species while some activities may be beneficial to other species. Acres cited below are those directly affected, where vegetation is removed for road and well pad construction.

The decision being made in the Forest Plan affects new leases not existing ones. In all alternatives (except Alt 4) an area of existing leases, the Table Top Unit, could be explored and result in effects to wildlife habitat. The degree to which exploration is predicted within the Table Top Unit is affected by whether or not new leases could be issued and under what stipulations.

Lease Notices would be attached where threatened or endangered wildlife species are potentially located. This would ensure the protection of these species through the Endangered Species Act.

Though Alternative 1 does not allow new leasing in the Appeal Settlement Zone, development of existing leases within the Table Top Unit could affect wildlife habitat. Loss of habitat because of oil and gas exploration activities is estimated to be 20 acres. In areas outside of the Table Top Unit that are not currently leased there would be no effects to wildlife. Once existing leases expire, Alternative 1 would likely provide the greatest protection to wildlife because the area is recommended as wilderness.

Alternative 2 is very similar. Again, development of existing leases within the Table Top Unit could affect the wildlife habitat on about 20 acres. Once existing leases expire, leasing availability in areas recommended for wilderness is precluded. On remaining

available acres, new leases could be issued but surface occupancy would not be allowed. No direct loss of wildlife habitat would occur but there may be some indirect effects, such as displacement if directional drilling occurred from adjacent lands since an access road would likely be constructed to the drill site and the sounds associated with construction and drilling may be heard from within the Appeal Settlement Zone.

Alternative 3 precludes new leases in areas recommended for wilderness and does not allow surface occupancy in areas managed for undeveloped and backcountry recreation values. Additional new leases could be issued outside the areas listed above with stipulations applied to protect sensitive resources. An estimated 10,500 acres are available under Standard Lease Terms. Oil and gas activities are estimated to disrupt wildlife habitat on about 75 acres. Some of this development is predicted from existing leases within the Table Top Unit. Elk and bighorn sheep calving/lambing or winter range areas are protected with No Surface Occupancy or Timing Limitation stipulations to restrict activities during critical periods. Disruption and displacement causing stress to these species from oil and gas activities would be reduced. A Controlled Surface Use Stipulation would be attached to all leases requiring surveys to determine the possible presence of any sensitive wildlife species. Operations would be designed or located so as to not adversely affect the viability of the population.

Alternative 4 does not make a leasing decision. Because lessees would not be able to effectively develop a field should one be discovered due to nearby unleased parcels, future activities are not likely.

Alternative 5 leases under standard lease terms. Oil and gas activities are estimated to disturb about 105 acres. Habitat could be disrupted and some species could be displaced. There would be a direct loss of habitat and habitat effectiveness could be diminished during the life of the producing field. Some of the effects could last 20-30 years because of field development. Standard lease terms allows moving operations up to 200 meters or delaying operations up to 60 days. For some critical wildlife periods, such as elk calving period and bighorn sheep lambing, (approximately 60 days), Standard Lease Terms could provide adequate protection. For other periods such as the wintering period for elk and moose (a period of over 150 days), Standard Lease Terms would not be adequate to protect them and could force them to move into marginal habitat creating additional stress. Relocating well pads or rerouting pipelines and roads up to 200 meters could reduce impacts to critical areas to some extent. Introducing increased public access into currently isolated areas could alter the quality and quantity of all habitats.

In Alternative 6, new leases issued as a result of the leasing decision made in the plan revision would not allow surface occupancy. However, existing leases in the Table Top Unit that expire would be immediately renewed in areas not precluded by prescription. Leases would be issued in areas managed for recreation motorized values and terrestrial habitat with appropriate stipulations applied. Oil and gas activities are estimated to disrupt wildlife habitat on about 75 acres. Effects to wildlife in the Table Top Unit where leases are reissued are expected to be less than Alternative 3. In the remainder of the area the effects to wildlife habitat would be minimal because of no surface occupancy.

Alternative 7 would preclude leasing on 20,400 acres recommended for wilderness. On the remaining 47,900 acres available for leasing, surface occupancy would be allowed on 27,000 acres. Habitat could be directly affected on about 85 acres and some species could be displaced due to exploration and development. Some development (included in the 85 acre estimate) is predicted within the Table Top Unit because of existing leases and new leases being offered with surface occupancy.

Under Alternative 7 increased access into currently isolated areas could alter the quality and quantity of all wildlife habitats. There would be a direct loss of habitat and habitat effectiveness could be diminished during the life of the producing field. Some of the effects could last 20-30 years. In critical big game habitats operations are precluded during critical times of the year on about 1,100 acres. Disruption and displacement causing stress to these species from oil and gas activities would be reduced. A Controlled Surface Use Stipulation would be attached to all leases requiring surveys to determine the possible presence of any sensitive wildlife species. Operations would be designed, located, or timed so as to not adversely affect the viability of the population.

Effects on Terrestrial Wildlife from Fire Management

Prescribed fire will have the effect of setting back succession and favoring species that use younger age classes. Effects are similar to timber harvest though on a much broader scale. Prescribed fire offers opportunities in the non-timber types such as sagebrush and oak. Where oak interfaces with urban areas mechanical treatment will be substituted for fire with the same effects. Opportunities are listed in the following table:

Table WL-12. Acres treated by Alternative Over 10 years

Vegetation Type Treated	Alternatives						
	1	2	3	4	5	6	7
Prescribed Fire- Aspen & Aspen/Conifer Mixed	0	80,000	32,000	7,200	7,200	32,000	32,000
Prescribed Fire- Douglas-fir (non-lethal)	0	4,000	2,000	0	0	2,000	2,000
Prescribed Fire- Sagebrush/PJ	0	40,000	20,000	10,000	10,000	20,000	20,000
Prescribed Fire- Oak	0	40,000	20,000	8,000	20,000	20,000	8,000
Mechanical Treatment- Oak	0	16,000	8,000	0	8,000	8,000	20,000
TOTAL acres over 10 years	0	180,000	82,000	25,200	45,200	82,000	82,000

Prescribed fire and mechanical treatment, by improving the age class distribution of vegetative types towards PFC within the historic range of variation, will benefit the most species of terrestrial wildlife.

Wildland fire has the potential of burning large areas, creating younger age classes and adding diversity because of the mosaic created by the fire. Wildland fire use has the same potential in a more planned manner with reduced costs and impacts of suppression.

Effects on Terrestrial Wildlife from Roadless Area Management

Terrestrial wildlife exists better in secluded quiet settings that are not fragmented. Roadless areas provide this type of an environment. As roads are added fragmentation increases and use of the roads displaces many wildlife species and affects the naturalness of the area. The fewer the roads the bigger the benefit is to wildlife. This is displayed in Table WL-14.

Allocations of acreage to non-motorized recreation (only the Semi-Primitive Non-Motorized category) are highest in Alternative 1, and next highest in Alternative 2. Alternative 5 provides the least acreage to this category. Alternatives 6, 7, and the Existing Condition are about equal. Alternative 3 falls between the extremes of the other alternatives.

The existing condition in roadless areas for motorized recreation provides 239,100 acres within motorized recreation ROS categories (the sum of Rural, Roaded-Natural, and Semi-Primitive Motorized); Alternative 7 provides the same amount. Alternative 5 has the most acreage in motorized ROS categories for inventoried roadless areas – 325,400, and Alternative 1 has the least – 112,900. Alternative 2 has 221,800 acres; Alternative 3 has 254,900 acres; Alternative has 364,900 acres; and Alternative 6 has 241,100 acres.

Summer motorized use is restricted to designated Forest system roads and motorized trails. While the acreage allocations shown in the ROS tables might seem to indicate that large areas are for available motorized use, in fact the area actually available for use is considerably smaller and limited to appropriate routes. ROS for motorized categories shows areas where the influence (sights, sounds) of motorized use may be expected by a forest visitor.

Table WL-13. Acres of Roadless Area Designations by Alternative

Activity	Acres by Alternative							
	1	2	3	4/1985	5	6	7	EC
NA	0	0	0	31,220	0	0	0	0
Rural	6,500	6,400	8,400	2,200	10,400	6,800	0	0
Roaded Natural	50,800	106,700	113,100	294,100	135,000	114,300	96,200	96,200
Semi Primitive Motorized	55,600	108,700	133,400	68,600	180,000	120,000	142,900	142,900
Semi Primitive Non-Motorized	492,900	384,000	350,900	209,800	280,200	365,500	366,800	366,800

Cumulative Effects on Terrestrial Wildlife Species

Cumulative effects will vary due to the individual needs and habitat of individual species and impacts from resource uses outside the Forest. Cumulative effects to wildlife are also based on the cumulative effects described for vegetation, watersheds, and aquatic resources, in their respective sections in this chapter.

Past impacts have included commercial and firewood harvest of timber. While structure within some forested stands has been altered, mature overstory canopies have remained due to a lack of clearcutting (except in lodgepole) or other such even-aged management methods in coniferous stands. Current harvesting methods and those planned for use in the future are uneven aged methods in spruce-fir and mixed conifer stands dominated by spruce, and even-aged methods in lodgepole pine stands, mixed conifer stands dominated by lodgepole pine, and aspen stands.

Temporary changes in habitat may be evident through vegetation management or similar type non-permanent disturbances. Commercial timber, prescribed burning and wildland fire (including wildland fire use) are methods used for these temporary changes. These treatments would meet requirements for residual habitat components such as snags, dead and down material, and landscape structure. It is not likely that these activities in combined total would affect any of the wildlife MIS or SOR to the point where viability is compromised beyond current conditions. With the Forest adhering to the most current and preventative measures available for managing habitat, the cumulative effects to the species are anticipated to be minimal as a result of management activities proposed in all alternatives. Old growth would be retained to meet the planned requirement of 20% per vegetative community (30% in aspen).

Livestock grazing has caused the loss of some forb communities and altered the understory of forested communities and the structure of shrub and grass/forb communities. However, grazing levels (in terms of number of livestock and use levels) have been greatly reduced from earlier decades.

Livestock grazing and associated soil loss has altered watershed conditions and aquatic habitats for many species. While management is planned to alter these conditions and prevent any future impacts, recovery may not occur at a rate substantial enough to affect a change in the long term, particularly in terms of vegetative conditions. Watershed and fisheries projects are designed to improve these habitats.

The lack of younger seral conditions is of concern from a diversity of habitat standpoint. Management directed at striving for PFC of vegetation communities would provide improved habitat for many species.

Prescribed fire, wildland fire use, and mechanical (commercial harvest or other methods) methods would be used to diversify structural stages in all alternatives, although it is not anticipated that the level of activity proposed would bring the communities within PFC within the next several decades due to the inability to treat enough habitat, which is in

part due to other resource concerns (e.g. air quality) and in part due to funding. With alternatives that do not allow or significantly limit timber harvest these treatments may become dependent on prescribed fire and wildland fire use

Potential habitat disturbances can be summarized by the number of acres disturbed through typical management activities. While development of roads and campgrounds was much greater through the 1960's, it is not anticipated that the rate of increase will be that great in the future. In addition, some acres of habitat may be gained if roads are decommissioned, however this is an unknown level at this time.

Species with unknown distributions and threats, such as the wolverine, may have more specific management direction applied should ongoing and recent studies and assessments indicate a need for listing under the Endangered Species Act. There are also potentials for immigration from other listed species, such as the wolf, into the Wasatch-Cache NF.

Introductions of non-native wildlife species, which is largely outside of Forest Service control, have the potential to increase cumulative effects through diseases or through resource competition. In all introductions the Forest Service has the responsibility to work cooperatively with the State to assess habitat and potential impacts.

For wildlife species that are subject to hunting or trapping (e.g. big game and beaver), state regulatory mechanisms are responsible for the sustainability of these populations, and directly affect the ecology of managing these species. Should severe winters occur, effects would be more severe on big game species due to the reduction in amount and quality of winter range, primarily off Forest.

Regional risk trends for many species of wildlife are due to trends started during past heavier exploitative uses of habitat. While recovery is slow, it is perceived to be occurring for some habitats and species, although the loss of other habitats in areas being developed or converted to annual grasses and invasive weeds is also of regional concern for many species, both on the Forest and adjacent to it.

While cumulative impacts within the Forest may affect some species, the implementation of goals, objectives, standards and guidelines are expected to conserve existing habitat and improve habitat for some of these species. By managing within the range of historic variation and properly functioning condition it is expected that all species will be sustained in the long term.

Cumulative Effects from Nearby Lands

On lands outside the National Forest, most of the activities with the potential to negatively affect terrestrial resources are outside of Forest Service jurisdiction, such as timber sales on private lands and urban development. The cumulative effects for wildlife resources considers land within the Forest boundary, but takes into consideration the private, state, other National Forest, and BLM lands adjoining it as wildlife do not

recognize property boundaries. The trends of a predominance of mature vegetative conditions occur similarly on adjoining federal and state lands, largely due to similar fire suppression practices. The value of habitat on the Forest would continue to be of higher importance as private land adjoining the Forest is developed in the future. The similar management methods on the Uinta National Forest to the south, the Ashley National Forest to the east, and the Caribou National Forest to the north provide assurance on the maintenance of suitable wildlife habitat and connectivity of forested habitats, although similar concerns on lack of young seral conditions exist.

With the predicted expansion of urban areas adjacent to the Forest, and on inholdings within it, the value of the Forest as a biological reserve will continue to escalate. Urban areas will exert the most influence on the Forest, through fire suppression needs and risks, through expansion of noxious weeds and other undesirable or non-native vegetation species, and through the increased user demand for recreation on the Forest. Urban expansion and development on private in-holdings within the Forest have the potential to increase fragmentation and reduce connectivity of habitats. Similar impacts are anticipated in winter range areas because of their lower elevations and development. These expansions would not likely affect old growth conditions.

Concern is generated should trends of increased use of water diversions and increased recreation demands continue, carrying an associated risk of population declines and potential risks in viability depending on the needs of individual species. Similar trends are anticipated on National Forests and BLM lands adjacent to the Wasatch-Cache.

Fragmentation/Connectivity

“Fragmentation” of habitat on the Forest is naturally occurring in many areas, especially the overthrust belt and the western Uinta Mountains, as is evident viewing the vegetation map. In these areas there is a high degree of dispersion of native vegetative communities, rather than more contiguous or larger blocks of continuous forest canopy. The exception to this is in the Uinta Mountains in the lodgepole, mixed conifer, spruce-fir vegetation type. No conversion or loss of vegetation types has occurred to increase fragmentation at a large scale on the Forest. The high degree of mosaics was likely historically present, however likely represented by more structural diversity within vegetative communities. Smaller-scale habitat fragmentation has occurred primarily through the development of a network of roads and small recreation site developments within the Forest. Although a loss of habitat has occurred historically due to these developments, effects on fragmentation are minimal. Loss of some species such as the lynx, wolf, and grizzly bear was due to harvesting/trapping and competition from other predators, rather than an increase in habitat fragmentation.

Connectivity of habitats at this point has mostly been compromised through development of urban areas adjacent to the Forest. Other than paved highways and small utility corridors, the Forest remains largely intact from its original composition.

The maintenance of the forested corridor of connectivity along the Wasatch Range north to Idaho and Wyoming, south to the Uinta NF and east to the Ashley NF is important. Private land use is the greatest threat to this corridor. Corridor use is important for wide ranging species such as neo-tropical migratory birds, raptors, and for larger bodied mammals that are capable of dispersing across many miles

For some species, such as neo-tropical migratory birds and wide-ranging carnivores, impacts from far off-site areas such as deforestation in Central America or urban expansions in the northwest and western U.S. may have far greater effects on fragmentation and viability than those of Forest management activities both on the Wasatch-Cache and neighboring lands.

Evaluating Viability for Terrestrial Species

A national *White Paper on Managing Viable Populations* provides the most recent direction for considering species diversity and viability (USDA 2001b). The white paper viability process involves eight steps based within a timeframe of both the planning process (15 years), and a more ecologically based timeframe of 100 years. The eight steps involve: 1) describing the ecological context; 2) identifying the species at risk; 3) collection of information on species-at-risk; 4) identification of species groups and focal species; 5) description of conservation measures; 6) incorporating the conservation approaches into the alternatives; 7) evaluating the effects of alternatives; and 8) monitoring.

Expert reviews were conducted for the species chosen, the groupings, the assessment process, and the outcomes. These reviews will continue throughout the Environmental Impact Statement (EIS) process period.

No modeling or population viability analyses were conducted for any of the species due to a lack of population specific information on life histories and habitat relationships. Rather, a ecosystem sustainability approach was taken.

For the W-C Forest Plan revision, the term “species-at-risk” includes:

- Fish and Wildlife Service endangered, threatened, candidate, proposed species.
- Regional Forester designated sensitive species.

Also considered are:

- Species classified by The Nature Conservancy as G1, G2, and G3.
- Species classified by the State Natural Heritage program as S1, and S2.
- Partners in Flight species of concern (except for some fringe species for Utah).
- Species identified by the Forest that do not appear on any other lists.

Species-at-risk for the Wasatch-Cache National Forest are identified in Appendix B. The SAR list is dynamic and species will be added as deemed necessary or removed as

recovery occurs or new information indicates they are not at risk. As viability for all species is required, consideration of these species helps ensure this provision is met. Risks identified for these species are varied, but include, grazing, fire suppression, succession, developed sites, displacement, logging, energy development, water development, pesticides, fragmentation and non-natives. In summary, the implementation of standards and guidelines in the proposed forest plan would conserve existing habitat, improve habitat, and provide for the viability of SAR. By managing within the range of historic variation and properly functioning conditions it is expected that all species will be sustained in the long term.

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 the SAR. These require analysis for any project implemented through the Revised Plan to ensure that negative effects are avoided and that viability is provided for these species. MIS species are also considered in most project specific analyses, though frequently in less detail. A heightened awareness of the non-TES and non-MIS species at risk and their habitat requirements in project planning is warranted to prevent them from becoming listed. Species not specifically addressed through implementation and monitoring for TES or MIS species will be managed for opportunistically.

