APPENDIX V

WILDLIFE REPORT
AND
BIOLOGICAL EVALUATION
FOR
ENVIRONMENTAL ASSESSMENT

EAST ROSEBUD, WEST ROSEBUD, BUTCHER CREEK, AND RED LODGE CREEK ALLOTMENTS, AND BLACK BUTTE WILDLIFE HABITAT AREA

RANGELAND PROJECT

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INTRODUCTION

This report identifies wildlife species and issues considered for analysis in the East Rosebud, West Rosebud, Butcher Creek, Red Lodge Creek, and Black Butte Wildlife Habitat Area Rangeland Project Environmental Assessment. Effects to federally threatened and endangered species were determined based upon criteria in the 2005 Programmatic Biological Assessment For Activities That Are Not Likely To Adversely Affect Listed Terrestrial Species (USDA Forest Service 2005). Effects to Forest Service Sensitive, Management Indicator, and other identified species were determined mainly through the portrayal of changes in habitats used by these species. A discussion of wildlife species and habitats used by each species that will be tracked in the Environmental Assessment are contained later in this report.

APPLICABLE LAWS, REGULATIONS, AND POLICY

a. Federal

Endangered Species Act

Threatened, endangered, and proposed species are managed under the authority of the Federal Endangered Species Act (PL 93-205, as amended). Section 7 of the Endangered Species Act directs federal departments and agencies to ensure actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of their critical habitats (16 USC 1536).

b. State

Montana Gray Wolf Conservation and Management Plan

The Montana Gray Wolf Conservation and Management Plan (Montana Fish, Wildlife and Parks 2003) guides management of wolves in Montana (excluding areas where management authority is reserved to other jurisdictions such as Montana's Indian tribes) in a manner intended to maintain a recovered wolf population, assure that the ecological needs of wolves are met, resolve conflicts, and address public concerns.

Montana Bald Eagle Management Plan

The Montana Bald Eagle Management Plan (Bureau of Reclamation 1994) is intended to guide conservation and management of bald eagles in Montana. It serves as the Conservation and Monitoring Plan now that bald eagles have been delisted.

c. Forest Service

National Forest Management Act (PL 94-588)

The National Forest Management Act provides for balanced consideration of all resources. It requires the Forest Service to plan for diversity of plant and animal communities. Under its regulations, the Forest Service is directed to maintain viable populations of existing and desired species, and maintain and improve habitat of management indicator species.

Forest Service Manual

Forest Service Manual section 2670.22 – Sensitive Species, provides the following direction for sensitive wildlife:

1) "Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions"
2) "Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on national forest system lands"
3) "Develop and implement management objectives for populations and/or habitat of sensitive species."

Forest Service Manual section 2670.31 – Threatened and Endangered Species, provides the following direction for threatened, endangered, and proposed species:

> 3) "Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing"
> 4) "Avoid all adverse impacts on threatened and endangered species and their habitats except when it is possible to compensate adverse effects totally through alternatives identified in a biological opinion rendered by the FWS…"

Custer National Forest Land and Resources Management Plan

Management goals for wildlife and fisheries resources are identified in the Forest Plan under Chapter II – Forest Wide Management Direction and Chapter III – Management Area Direction.

The Forest Plan goal for wildlife and fisheries management is to:

"[M]anage and/or improve key wildlife and fisheries habitats, to enhance habitat quality and diversity, and to provide wildlife and fish-oriented recreation opportunities." (page 3)

The Forest Plan objective for wildlife and fish management is to:

"[E]mphasize active management of wildlife habitat. Mitigation of adverse effects from other resources will continue. Threatened and Endangered plants and animals are given special consideration on an area by area and species by species basis. Special consideration is also given to certain high interest species…by designating key habitat areas where other resource activities are modified." (page 4)

The following Management Areas occur within the project action area:

B: Range Management
D: Wildlife/Other Management
F: Recreation
G: Timber Management
M: Riparian Emphasis

Wildlife goals for the above Management Areas are:

> B: "In areas not considered key for wildlife, adverse impacts to the wildlife habitat will be mitigated where feasible, but not to the exclusion of range and mineral/energy management and development activities. In key wildlife areas, the habitat may not be adversely impacted from development activities." (page 45)
>
> D: "To maintain or improve the long-term diversity and quality of habitat for the selected species identified by the District Ranger as well as accommodate other resource activities such as…livestock grazing… Some short-term habitat impacts may be necessary to achieve long-term wildlife goals." (page 53)
>
> F: (There are no wildlife goals related to project activities.)
>
> G: (There are no wildlife goals related to project activities.)
>
> M: "Manage to protect from conflicting uses in order to provide healthy, self-perpetuating plant and water communities that will have optimum diversity and density of understory and overstory vegetation." (page 80)

Applicable wildlife standards for the Management Areas are:

> B: "Emphasis will be to maintain existing fish and wildlife habitats. These habitats will be improved where

improvement would be consistent with other resource needs. Established uses will have priority on existing livestock ponds where a fishery is being considered as long as the established use is still needed." (page 45)

D: 2. "Wildlife and Fish – a. Emphasis will be placed on maintaining or improving wildlife habitats." (page 53)
3. Range – a. On key wildlife habitats…range management will be aimed at mitigating adverse impacts to wildlife. On the remainder of the management area, range management practices will be consistent with the wildlife habitat needs." (page 54)

F: "Management activities that contribute to the opportunity of wildlife and fish related recreation are encouraged…" (page 62)

G: 2. b. Unique wildlife features such as elk wallows and nesting sites for key birds will be protected. (page 64)

M: 2. a. Wildlife and Fishery Management – 2) Adequate tree and shrub vegetation to contribute to stable bank and stream cover will be maintained unless project analysis indicates a need to reduce cover to meet fish or wildlife habitat objectives. (page 80)
b. Key Wildlife Species and Habitats – 1) Where practical, suitable management techniques will be employed to develop or improve the riparian areas to provide suitable habitat for key species, ie. b) Fencing to protect areas. (page 80)

d. Conservation Strategies

The Canada Lynx Conservation Assessment Strategy

The Canada Lynx Conservation Assessment Strategy (Ruediger et al. 2000) was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands in the conterminous United States. The Strategy contains programmatic and project planning standards and guidelines designed to accomplish the objective of conserving lynx.

The Northern Rockies Lynx Management Direction (LMD), released in March 2007, was developed to fulfill the Forest Service's agreement with the U.S. Fish and Wildlife Service to amend all relevant forest plans. The purpose of the Direction is to "incorporate management direction in land management plans that conserves and promotes recovery of Canada lynx, by reducing or eliminating adverse effects from land management activities on National Forest System lands, while preserving the overall multiple-use direction in existing plans" (USDA Forest Service 2007).

Conservation Strategy for Grizzly Bear in the Yellowstone Ecosystem and the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests Record of Decision

The Conservation Strategy for Grizzly Bear in the Yellowstone Ecosystem (ICST 2003) was developed by the Interagency Conservation Strategy Team, completed in March 2003, and updated in March 2007. The habitat and conservation standards described in the Conservation Strategy have formally been incorporated into the six affected National Forests' Land Management Plans and provide the direction for managing grizzly bear habitat on the National Forests.

Greater Yellowstone Bald Eagle Management Plan

The Greater Yellowstone Bald Eagle Management Plan (Greater Yellowstone Bald Eagle Working Group 1996) is intended to encourage coordinated and effective management of bald eagles in the Greater Yellowstone area and includes information pertinent to the management of bald eagles. It is intended to promote conservation of the species and its habitat.

ALTERNATIVES

As a result of internal and external scoping efforts undertaken for the Forest Service's Proposed Action to continue livestock grazing of the West Rosebud, East Rosebud, Butcher Creek and Red Lodge Creek Allotments, and initiate grazing on the Black Butte Administrative Site, three alternatives were identified for analysis in the Environmental Assessment. The following describes the three alternatives. These alternatives will be used as a basis for determining effects on wildlife species and issues addressed in Chapter 3 of the Environmental Assessment.

Alternative 1 – No Action Alternative/ No Livestock Grazing/Do Not Issue A Term Grazing Permit

A *Term Grazing Permit* would not be issued for the West Rosebud, East Rosebud, Butcher Creek, or Red Lodge Creek Allotments and no livestock grazing would occur on these Allotments in the future. Range improvements on these Allotments would be removed or abandoned. As is currently the case, no livestock grazing would be authorized on the Black Butte Wildlife Management Area.

Alternative 2 - Maintain Existing Livestock Management/Issue a Term Grazing Permit

Alternative 2 would continue current management practices with the issuance of a new *Term Grazing Permit* for the West Rosebud, East Rosebud, Butcher Creek, or Red Lodge Creek Allotments for a ten year period. The permitted class of livestock, on and off dates, number of AUMs, and type of livestock management would be the same for each allotment as in the current permits.

Grazing in the allotments would continue to take place as follows: 1) Red Lodge Creek Allotment – between August 1 and September 28; 2) Butcher Creek Allotment – between June 15 and September 15; 3) East Rosebud Allotment – between September 1 and November 15; and 4) West Rosebud – between June 15 and September 15. As is currently the case, no livestock grazing would be authorized on the Black Butte Wildlife Management Area.

Alternative 3 – Proposed Action Alternative/Change Livestock Management to Meet Forest Plan Direction and Achieve Desired Conditions/Issue a Term Grazing Permit

<u>Red Lodge Creek, Butcher Creek, East Rosebud, and West Rosebud Allotments</u>
New livestock grazing permits would be issued as follows: The new grazing permit for the Red Lodge Creek Allotment would authorize up to a maximum of 134 AUMs at 2.0 acres/AUM (a 30% reduction); for the Butcher Creek Allotment, 48 AUMs at 2.1 acres/AUM (a 30% reduction); and for the East Rosebud Allotment 150 AUMs at 3.4 acres/AUM (no reduction) respectively; and for the West Rosebud Allotment, up to a maximum of 226 AUMs at 3.3 acres/AUM (no reduction). Stocking rate reductions would be implemented in two phases: 20% the first year and the remaining 10% the next year.

For all allotments, the Annual Operating Instructions (AOI) would specify whether the livestock would be cows, cow/calf pairs, yearlings, bulls, horses, or a combination. The AOI would also specify the grazing season for the allotments and the period of use for each. Generally, the turn-on date would not be before July 1st, and would never be before June 15th, to provide for range readiness of forage plants. The allotments (pastures in the case of the West Rosebud Allotment) would be rotated so that they are never grazed during the same period of time two years in a row. The exception to this would be the East Rosebud Allotment. It would only be used after Labor Day weekend to avoid conflicts with high recreation use during the main recreation season. Generally, if the allotment (pasture in the case of the West Rosebud Allotment) is grazed first in any given year, it would be grazed last the next year, and in the middle of the rotation sequence the third year. The Red Lodge Creek and Butcher Creek Allotments would be in one of the following use periods each year: 1) early use June 15th to July 31st, 2) mid season use July 15th to August 31st, or 3) late season use August 15th to September 30th. This deferment would allow for recovery of leaf and root volume during the critical growth periods. It would also allow for forage plants to attain seed set stage on over 50 to 75 percent of allotments each grazing season. The East Rosebud Allotment would be in a late season treatment. The number/class of livestock and dates of the rotation would be flexible depending on the planned use within the pastures on adjoining private land, but would never be

more than 30 days per season. After construction of all range improvements in the West Rosebud Allotment, management direction would include a livestock rotation schedule utilizing a modified five pasture deferred rotation system. The five pastures would be grazed in the following order to facilitate efficient livestock movement between pastures: 1) Morris Creek, 2) Gravel Pit, 3) West Rosebud, 4) Shorey Jungle, and 5) Shorey Swamp. A pasture grazed as part of this deferred rotation system would be in one of the following use periods each year: 1) early use June 15th to July 31st, 2) mid season use July 15th to August 31st, or 3) late season use August 15th to September 30th. The rotation system would require that the grazing sequence of all pastures combined provide for early season use one year, late season use the next, and mid season use the third year.

Management intensity to improve livestock distribution would be increased through herding and improved mineral distribution (salting away from water sources, fence-lines, and other key livestock use areas). When utilization approaches 55% in livestock key use areas (not to exceed 60% in key use areas primarily composed of timothy grass), the permittee would be required to either herd livestock daily away from these areas, use temporary electric fence to exclude livestock from these key use areas, or move livestock off the pasture or allotment earlier than planned for during that particular grazing season.

No range improvements are proposed for the Red Lodge Creek Allotment. One improvement is proposed for the East Rosebud Allotment. It would be a temporary portable corral that would be set up for no more than two days at the allotment boundary fence gate on Forest Road 21778 in section 15, township 7 south, range 17 east (a spur road to a dispersed campsite on East Rosebud Creek). it may be necessary to increase the width of FS Road 21778 by 4 - 6 feet for about 100 feet from the junction of FS Road 2177. One potential range improvement is proposed for the Butcher Creek Allotment, an extension of the existing allotment boundary fence between the Butcher Creek and Red Lodge Creek Allotments. In the West Rosebud Allotment, 2.6 miles of fence would be removed, 3.2 miles of fence would be built, and 1.5 miles of stock driveway would be built.

In the West Rosebud Allotment, a periodic high disturbance or flash vegetation treatment would be allowed through the use of high stock density/short duration grazing in order to enhance palatability of forage species for big game. Between 2,000 and 2,500 cattle would graze the West Rosebud and/or the Morris Creek Pastures for a period of 1 to 2 days every 5 or 6 years. The treatment would generally occur soon after Labor Day to minimize the potential conflict with recreation use, especially in the West Rosebud drainage. Daily herding of livestock would be required to avoid livestock piling up on fences and abusing riparian areas. On the ground monitoring would be required by the permittee and/or Forest Service to insure that vegetation objectives were met.

Black Butte Wildlife Management Area

This proposal includes grazing of an area adjacent to the Morris Creek Pasture of the West Rosebud Allotment to the northwest and the East Rosebud Allotment to the south, historically known as the Black Butte Allotment, now called the Black Butte Wildlife Habitat Area. This area was used as an allotment for cattle grazing until 1970 at which time it was closed to grazing in favor of wildlife habitat management and for possible use as a Forest Service Administrative Site. The area offers high quality wildlife habitat with a mosaic of aspen, shrubs, wet and dry grassland, and beaver ponds. The grassland types, especially the dry sites, are not as healthy as they could be due to lack of disturbance over the past 38 years with the exception of the rapidly moving Shepard Mountain Wildfire that burned most of the area in 1996. Natural water sources exist on the northeast side and south end of the area. While these water sources are considered to be perennial in nature, in an especially droughty year they have the potential to dry up, thus affecting the ability to graze the area with livestock.

The livestock use permit would authorize up to a maximum of between 80 and 110 AUMs, at between 6.0 and 7.5 acres/AUM depending on if a normal grazing treatment or flash grazing treatment would be used. This proposal recommends that light grazing of livestock be used to manage forage plants to maintain health and enhance forage palatability for wildlife using a rest rotation grazing system. Grazing would occur every other year with allowable use set at no more than 35% to 40% use by dry weight in all key use areas. The livestock use permit and Annual Operating Instructions would specify whether the livestock would be cows, cow/calf pairs (c/c), yearlings (yrlgs), bulls, horses, or a combination. The AOI would also specify the grazing season for the area and the period of use. Generally, the turn-on date would not be before July 1st, and would never be before June 15th, to provide for range readiness of forage plants. The turn-off date could be as late as October 15th (before the general hunting season starts) provided there is enough water available for the livestock. The grazing period would be in one of the following use periods: 1) early use June 15th to July 31st, 2) mid season use July 15th to

August 31st, or 3) late season use August 15th to October 15th. The grazing period for the Black Butte Wildlife Habitat Area would never be more than 30 days per season under a normal grazing regime and could be as short as one or two days under flash grazing.

AFFECTED ENVIRONMENT

Habitats

The following vegetation communities that occur in the allotments were used as a means of assessing habitat suitability for the wildlife species that are addressed:

Mountain Grasslands
Sagebrush
Mesic Shrublands
Deciduous Woodlands
Conifer Forest
Riparian Areas/Streams/Seeps

These habitats and some of the wildlife species closely associated with them are discussed below.

a. Mountain Grasslands

Native Grasslands

Grasslands are an important feature of the project area and are present as a mosaic of mountain meadows and mountain grasslands among conifer forest, aspen, and shrubland vegetation. The potential habitat for meadows and grasslands in the project area is Idaho fescue/bluebunch wheatgrass, Idaho fescue/bluebunch wheatgrass/western needlegrass, Idaho fescue/bearded wheatgrass, and Idaho fescue/Richards needlegrass?. The difference in location on the landscape of these habitat types is based mainly on site moisture, with the former two habitat types occupying drier sites and the latter two occupying moister sites. Native grass communities are limited in the project area due to presence of timothy and other non-native species, and occupy as the dominant vegetation approximately 644 acres. Timothy as the dominant vegetation occupies approximately 200 acres. The extent of grasslands and meadows is probably less than it was historically due to increases in sagebrush on some sites, and increased Douglas fir and limber pine density and cover in areas formerly dominated by grass and sagebrush (Arno and Gruell 1983, and Arno and Gruell 1986 in DiBenedetto and Jones 2008).

Native grasses vary in palatability, nutritional value, and cover value depending upon the species, location, and other factors. Thus, the extent that they are utilized by wildlife also varies. For example, in southwestern Montana, Idaho fescue is an important diet component on elk and mule deer winter range, intermediate-elevation spring to fall range, and upper elevation summer range. Palatability of Idaho fescue varies with season and community type, and is rated as good for elk and poor for mule deer. In Yellowstone National Park, grizzly bears forage on Idaho fescue, and it is a common understory component of grouse habitat in Montana. It provides poor cover for small mammals, small nongame birds, and upland gamebirds (FEIS 2008).

Timothy

Timothy is a non-native grass species that occurs in all the allotments. It is the dominant vegetation on approximately 266 acres. It is particularly prevalent in the southeastern portion of the Black Butte Wildlife Area, the northernmost part of the East Rosebud Allotment and the northern portions of the Butcher Creek and Red Lodge Creek Allotments. Timothy as the dominant vegetation also occurs in some openings along the east side of West Rosebud Creek in the West Rosebud Allotment. This species is highly competitive over native grasses and was likely spread by heavy cattle grazing in the 1900's.

Timothy provides forage for deer, elk, and rodents in some western states. The palatability of the species for elk in Montana is rated as fair and for mule deer as poor, however. Timothy also provides cover for game birds and

small mammals, and the seeds are eaten by songbirds and gamebirds. In Montana, the cover value of timothy is rated as fair for upland gamebirds, small nongame birds, and small mammals. The cover value for ungulates is not available for Montana, but in Wyoming it's rated as fair for mule deer and white-tailed deer, and poor for elk (FEIS 2008). Although timothy does have some value to wildlife, it and other non-native grasses lack the species diversity, structural diversity, and productivity of native grasses and thus supports less wildlife species richness and diversity than native grass communities in Montana.

b. Shrublands

Mountain Big Sagebrush

Mountain big sagebrush is the dominant vegetation on approximately 370 acres in the allotments. The majority of it occurs on lower footslopes along the west side of West Rosebud Creek. However, sagebrush is also the dominant vegetation on east-facing slopes in the eastern portion of the West Rosebud Allotment, in the northern end of the Red Lodge Creek Allotment, and one area near the north end of the East Rosebud Allotment. Sagebrush does not occur as the dominant vegetation in the Butcher Creek Allotment or the Black Butte Wildlife Management Area.

The mountain big sagebrush plant community provides habitat for a variety of wildlife species. Since it is considered "evergreen" it tends to provide a higher source of protein in the dormant season than most other plant species that occur in the sagebrush ecosystem. Additionally, due to its growth form, it is often available to foraging wildlife during the snowy season. Many native wildlife species have adapted foraging habits centered around this vegetative community. Mule deer are the primary big game species that rely on the sagebrush communities. Mountain big sage is highly preferred and nutritious to mule deer particularly during winter. Several Neotropical migrant songbirds, particularly the Brewer's sparrow, are also closely associated with this community. Sagebrush stands with a healthy vegetative understory host a variety of insects that are important prey species for songbirds, small mammals, and blue grouse. Mountain big sagebrush provides good cover for birds and small mammals, and fair cover for elk and mule deer (FEIS 2008). Management of sagebrush in the allotments is a primary concern related to mule deer and blue grouse. Sagebrush is important habitat for mule deer fawning and blue grouse nesting and cover (Stewart 2008).

Shrubby Cinquefoil

Shrubby cinquefoil is the dominant vegetation on approximately 181 acres, mostly in the Red Lodge Creek Allotment. Cinquefoil is lightly browsed by mule deer and elk, although in Colorado the stems are important elk winter browse. The seeds of cinquefoil are consumed by songbirds and small mammals. For Montana, the palatability of cinquefoil is rated poor for elk, mule deer, and white-tailed deer. In Wyoming, it is rated as fair for small mammals and upland gamebirds, and good for small nongame birds. Shrubby cinquefoil also provides cover and nesting habitat for various types of wildlife, although in Montana it is rated as poor cover (FEIS 2008).

Common Snowberry

Like shrubby cinquefoil, common snowberry is also a relatively minor vegetative component in the allotments. It is the dominant vegetation on about 105 acres, almost all in scattered patches throughout the East Rosebud Allotment.

Reports of ungulate use of snowberry varies between studies. Rocky Mountain elk have been reported to use common snowberry frequently and heavily during summer in one Western Montana study, and rarely or never in another, even when available. Reports of moose utilization of common snowberry also vary and range from extensive winter use in the Gallatin River drainage in Montana to very light use and unpalatable in Idaho. Common snowberry provides forage for grizzly bears and cover and food for birds, including ruffed grouse, blue grouse, and wild turkeys, and small mammals. Palatability in Montana is rated as fair to good for elk and white-tailed deer, and fair for mule deer, small mammals, and game birds. Cover value in western Montana is rated as poor for elk, fair for mule deer and white-tailed deer, and good for upland gamebirds, non-game birds, and small mammals (FEIS 2008).

c. Deciduous Woodlands

Aspen stands are relatively rare in Montana compared to other Rocky Mountain states. The rareness makes aspen extremely important to wildlife because it adds habitat diversity to the landscape. Aspen is often the only deciduous tree species within a sea of conifers, thus it provides habitat for mammals and birds that otherwise may be absent (Montana Partners in Flight 2001). Aspen is the dominant vegetation on approximately 500 acres and is present in all allotments. Aspen also occurs as a secondary species with Douglas fir and lodgepole pine. Aspen in the project area is typically located in or near drainage bottoms, and on hillslopes between approximately 5420 and 6500 feet elevation. Approximately 160 acres of aspen within the allotment boundaries have been treated by selective conifer removal or small-patch clear-cutting since about 1997 to stimulate regeneration. About 78 of those acres are within primary range.

Within the allotments, aspen provides habitat for numerous wildlife species including ruffed grouse, moose, black bear, white-tailed deer, and migratory songbirds. Wildlife utilization of aspen communities varies depending upon understory plant species composition and age of the stand. Generally, young stands provide the most browse for elk and moose, but mature stands may also be browsed, particularly by moose during winter. Aspen buds, twigs, bark, and/or leaves are consumed by snowshoe hares, cottontail rabbits, beaver, ruffed grouse, and various small rodents. Understory forbs and berry-producing shrubs provide food for black bear, and numerous bird species nest, feed, and roost in understory and overstory (FEIS 2008).

Livestock overutilization of deciduous habitats can be detrimental to wildlife on a local scale. Trampling of understory vegetation reduces forage, hiding cover, and thermal cover, particularly for birds and small mammals. Increases in bare soil also reduces forage and cover, plus may affect plant species diversity and productivity. FEIS (2008) states that heavy livestock browsing can adversely impact aspen growth and regeneration. Some aspen stands within the project area are at risk of disappearance from the landscape due to decadance or competition from conifer species. The addition of impacts of cattle grazing, including trampling, may also supress the natural regeneration needed to sustain the stands in the long-term.

d. Coniferous Forest

Douglas fir, limber pine, lodgepole pine and other conifer forests occur throughout the project area, including approximately 52 acres within primary range. Cattle use of these habitats is typically on gentle slopes near drainages and water, although some use may occur on slopes up to 50%. Conifer forests provide shade during hot summer months and travelways between mountain grassland patches and other forage areas. Cattle use of conifer forests probably occurs mainly along and adjacent to drainages connecting areas of more suitable forage, and at the ecotone between forested and non-forest habitats. Thus, conifer habitats in general receive little livestock use compared to other habitats. Availability of livestock forage is small and thus impacts from cattle are limited and localized.

Limber pine and lodgepole pine are the predominant conifer species that occur in areas utilized by cattle in the project area. Sites with limber pine provide winter range for elk and mule deer. Limber pine seeds are a critical food source for the rodents and birds that cache them, plus for bears that feed from the caches. Palatibility is poor for elk and mule deer, however. Lodgepole pine provides summer range for big game, and may provide browse for mule deer, elk, and moose when other food is scarce. Black bears, small mammals, and various birds forage on cambium and/or seeds, and downed lodgepole pine trees may serve as drumming platforms for ruffed grouse (FEIS 2008).

e. Riparian/Streams/Seeps

Riparian ecosystems in the Western United States typically support greater abundance and diversity of nongame wildlife species than uplands habitats (Schultz and Leininger 1991) and may be the single most productive type of wildlife habitat on land. They provide water, food, and cover for numerous wildlife species, plus nesting and brood-rearing habitat for migratory landbirds. Big game benefit from thermal cover, migration routes, and forage supplied by riparian habitat (Kauffman, Boone, and Krueger 1984). Plant production, structural complexity, and taxonomic diversity are often much greater in riparian systems than in adjacent uplands because of water availability. Such characteristics correlate with higher wildlife abundance and diversity in riparian systems

(Hawkins 1994). During spring migration, over ten times the number of birds may use riparian systems than uplands, and as many as 14 times during fall migration (Knopf, et al. 1988). In addition, bird population densities in uplands may be influenced by the presence of nearby riparian areas (Johnson and Jones 1977). Livestock grazing can alter the structure and composition of riparian vegetation, reducing abundance and diversity of birds, small mammals, and insect populations in riparian areas (Schultz and Leininger 1991). Degredation of riparian ecosystems can also result in reduced wildlife productivity on adjacent non-riparian habitats (Kauffman, Boone, and Krueger 1984). Although riparian systems can be easily damaged by improper livestock grazing management, they also generally improve quickly upon removal of livestock (Schultz and Leininger 1990).

Numerous streams and ponds are present in the project area. Willows are a major source of browse for elk, deer, and moose, plus provide food for small mammals, birds, and beaver. Other riparian shrubs such as alder are also eaten by ungulates. Alder receives light to moderate use by elk in portions of the Rocky Mountains during summer and fall, moderate use by moose in Montana during late winter, and moderate use by mule deer. Alder is also an important food source for muskrats, beavers, snowshoe hare, plus provides food and nesting sites for songbirds (FEIS 2008). The project Riparian and Fisheries reports discuss in detail the functional condition of riparian systems.

Terrestrial and Aquatic Wildlife

The Custer National Forest Land and Resource Management Plan (CNF LRMP) and Forest Service Policy identifies a number of species categories, which are addressed in this document. These include: 1) Threatened and Endangered (protected under the Endangered Species Act), 2) sensitive species (protected under Forest Service Policy - FSM 2670.42), 3) special interest species, (such as hunted species, or high interest species), and 4) Management Indicator Species (those species that represent a group of other species that use similar habitats). The following species are listed as occurring or having the potential to occur on the Custer National Forest:

a. Threatened (T), Endangered (E), Proposed (P), and Candidate (C) Species:

Gray wolf (E) (10j rule)
Lynx (T)
Black-footed ferret (E)**
Least tern (E)**

No Federally Proposed or Candidate Species occur on the Beartooth Ranger District.

b. Region 1 Sensitive Species:

American peregrine falcon
Baird's sparrow**
Bald eagle
Black-backed woodpecker**
Blue-gray gnatcatcher**
Burrowing owl**
Greater sage grouse**
Grizzly bear
Harlequin duck**
Loggerhead shrike
Long-billed curlew**
Long-eared myotis
Long-legged myotis
Pallid bat**
Spotted bat**
Townsend's big-eared bat
Black-tailed prairie dog**
White-tailed prairie dog**

Wolverine
Northern red-bellied dace**
Sturgeon chub**
Yellowstone cutthroat trout*
Great Plains Toad**
Northern leopard frog*
Plains Spadefoot**
Western toad (Boreal toad)*
Greater short-horned lizard**
Milk snake**
Western hognose snake**

** These species are listed for the Custer National Forest but do not occur in the project area due to a lack of suitable habitat. Therefore, they will not be discussed in this document.
* These species are addressed in the project Fisheries Report

c. Management Indicator Species (designated in the CNF LRMP):

Habitat Indicator Species:

Old-growth Forest.....Northern goshawk
Dog hair ponderosa pine.....White-tailed deer
Aspen.....…Ruffed grouse
Open savannah…….Western kingbird**
Riparian tree.....Bullock's oriole (formerly northern oriole)+
Riparian shrub.....Yellow warbler
Hardwood Draw tree.....Ovenbird
Hardwood Draw shrub.....Spotted towhee (formerly rufous-sided towee)
Sagebrush…….....Brewer's sparrow
Prairie grasslands…….Sharp-tailed grouse**
Cold water..... Yellowstone cutthroat trout*
Warm water..... .Largemouth bass**

*This species is addressed in the project Fisheries Report.
**These species do not occur on the Beartooth District and will not be discussed in this document.
+ This species are listed for the Custer National Forest but do not occur in the project area due to a lack of suitable habitat. Therefore, they will not be discussed in this document.

Key species:

Elk
Golden eagle
Merlin
Mule deer
White-tailed deer
Bighorn sheep**
Pronghorn antelope**
Sharp-tailed grouse**

**These species do not occur in the project area and will not be discussed in this document

d. Other species and biodiversity issues that were raised during internal and external scoping:

Blue grouse
Neotropical migrant birds
Residual nesting cover for ground nesting birds
Cowbird nest parasitism

Desired Condition

Desired condition for wildlife is based mainly on habitat suitability. Many wildlife species occupy the landscape and conditions that are suitable for some species may not be suitable for others. The key is to achieve a diversity of healthy vegetation communities across the landscape. Systems that are currently healthy should be maintained, and degraded systems should be managed to increase vigor, density, and diversity of plant species. Assuming that monitoring and on-the-ground livestock management as discusssed in the Riparian, Fisheries, and Rangeland Ecosystem reports for this project are implemented, there is a reasonable expectation that desired conditions for terrestrial wildlife would be achieved.

MANAGEMENT RECOMMENDATIONS

The Black Butte Wildlife Habitat Area has not been grazed since the allotment was closed in 1970. At that time, the Forest Supervisor closed the allotment to grazing in favor of wildlife habitat management or possible use as a Forest Service administrative site. The Area has high quality wildlife habitat in the form of a mosaic of aspen communities, mesic shrubs, wet and upland grasslands, small wetlands, and conifer forest. In addition, non-native timothy is prevalent in the Black Butte Wildlife Area and is highly competitive over native grasses. Although timothy does have some value to wildlife, it and other non-native grasses lack the species diversity, structural diversity, and productivity of native grasses and thus supports less wildlife species richness and diversity than native grass communities.

The Black Butte Wildlife Area supports a diversity of wildlife species. Habitat for two threatened and endangered species (wolf and lynx) and four sensitive terrrestrial species (grizzly bear, loggerhead shrike, wolverine, and long-eared myotis) is present. Four of the District's six ungulate species utilize the area. White-tailed deer are prevalent, keying in especially on aspen communities. Uplands are used for mule deer winter range in some years. Elk and moose also use the area to some extent. Aspen communities and mesic shrubs provide forage and cover for black bears. Numerous migratory songbird species occupy all vegetation types, with aspen communities providing particularly high quality habitat. Columbia spotted frogs occupy the ponds, which also are potential habitat for sensitive species Western (Boreal) toad and Northern Leopard Frog.

Riparian areas and aspen communities are particularly important for wildlife. Nienow (2008) states that the riparian systems in the Black Butte Area are currently functioning properly but are still sensitive to grazing pressure, and that the riparian areas are at high risk of being impacted by livestock. Aspen communities can also be susceptible to damage from livestock. DiBenedetto and Jones (2008) state that timothy is not resistant to heavy grazing, and that heavy use of timothy may improve the competitve advantage of native grasses. Some questions to address regarding livestock grazing in the Black Butte Wildlife Area include:

- Given that water is limited to three small ponds and one small creek and that these sites are in properly functioning condition, how will damage from livestock be prevented or minimized, especially under late season grazing?
- How will damage to aspen stands, particularly those with native vegetation understory, be prevented or minimized?
- How will we ensure that the needed monitoring will take place?
- What other options are there for rejuvenating grasses?
- We state that the proposal probably would do little to control timothy. What options are there for controlling timothy?

ENVIRONMENTAL EFFECTS

Methods

a. Determination of Species Presence

The presence or potential presence of wildlife species and species groups analyzed in this report was determined from the following: 1) For carnivores and ungulates – snow track surveys conducted in winters 2002 through 2007 and information from Montana Fish, Wildlife, and Parks; 2) For raptors and migratory landbirds – songbird surveys

conducted in 1999, 2000, and 2002 through 2004; and goshawk surveys conducted in 2003 through 2005; and 3) For all species and species groups – presence of suitable habitat based on personal knowledge, aerial photo interpretation, and US Forest Service and Montana Fish, Wildlife and Parks geographic information system (GIS) data layers, and Montana Natural Heritage Database.

b. Effects Determination

Various methods were utilized to determine potential effects of the different Alternatives on wildlife. **Direct effects** are those that "are caused by the action and occur at the same time and place" (40 CFR 1508.8). Potential for interaction between livestock and various wildlife species was used to determine direct effects. Examples include social interaction such as avoidance by ungulates of an area due to presence of livestock, or inadvertent trampling by livestock of bird nests and eggs. **Indirect effects** "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (ibid). Potential affects of human activity related to livestock management was considered during analysis and is expected to be a very minor affect. The predominant method used to determine indirect effects on wildlife was through assessment of habitat suitability. Habitat can be analyzed at different scales depending upon what species or species group is being discussed. For example, certain amphibians or migratory songbirds may utilize an area up to a few dozen acres in size during breeding season. On the other hand, ungulates may move many miles between seasonal ranges throughout the year, and large carnivores may occupy home ranges up to several hundred square miles. Expected changes in vegetation is the main component used to assess habitat suitability for most species. These changes were based on detailed discussions of existing and potential plant communities and riparian conditions and the changes in conditions that can be expected under each Alternative as contained in DiBenedetto and Jones (2008) and Nienow (2008). For upland habitats, the term "degraded" as used in this wildlife report equates to low to moderate, and moderate floristic similarity; and the term "healthy" equates to moderate to high/high floristic similarity as described in DiBenedetto and Jones (2008). The term "improved" refers to changes from degraded to moderate to high/high floristic similarity.

Cumulative effects are defined as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (CFR 40 1508.7). Livestock grazing has occurred within the allotments since the early 1900s and is the primary past activity that affected the project area. The exception is the Black Butte Wildlife Habitat Area. The allotment in this area was closed in 1970 in favor of management as an administrative site or for wildlife habitat. The stand-replacement Shepard Mountain fire of 1996 burned the entire East Rosebud drainage and the eastern half of the Black Butte Wildlife Habitat area. Aspen treatments totalling approximately 159 acres also have affected vegetation within the allotments, including 78 acres within primary range. The aspen treatments consisted of small-patch clearcuts and selective conifer removal with the purpose of stimulating aspen regeneration and thus improving habitat for wildlife.

Reasonably foreseeable future activities that were considered in cumulative affects analyses are mechanical treatments to stimulate aspen regeneration, noxious weed control, motorized and non-motorized recreation, small-scale timber activities such as post and pole permits, and prescribed fire. Natural events that are reasonably foreseeable are wildfires. As discussed in DiBenedetto and Jones (2008), fire played an important role in shaping historic vegetation patterns across the landscape. Human-caused changes in fire frequency since the late 1800's have resulted in increased acreage of coniferous forest and altered sagebrush structure and density across the landscape than may otherwise be present today. Potential effects on private lands include increasing development adjacent to the Forest boundary.

Vegetation types and acreages used in this report were based on those within DiBenedetto and Jones (2008).

The cumulative effects analysis area is comprised of the five sixth-code watersheds that the project area is within.

Effects Common to All Alternatives

There are no effects to terrestrial species that are common to all alternatives.

Short-term vs. Long-term Productivity
There are no short-term versus long-term productivity issues for terrestrial species or their habitats under any alternative.

Irreversible/Irretrievable Commitments
There are no irreversible or irretrievable commitments on terrestrial species or their habitats under any alternative.

Unavoidable Adverse Effects
There are no unavoidable adverse effects on terrestrial species or their habitats under any alternative.

Effects Common to All Action Alternatives

No direct effects are common to all alternatives.

For indirect effects under all Alternatives, wildlife habitat would be maintained in areas that have undergone little or no impact from current grazing practices. In addition, areas dominated by timothy or smooth brome are likely to change little under any Alternative.

Cumulative effects result from the incremental impact of past, present, and reasonably foreseeable actions. Some cumulative effects can be beneficial for wildlife. Control of non-native forbs by noxious weed treatment reduces competition with native vegetation, a potential benefit to many terrestrial wildlife species and/or their prey. Treatment of decadent and conifer-encroached aspen stands improves habitat some for species in the short-term and others in the long-term. Continued development of private lands adjacent to the National Forest adversely affects many wildlife species by reducing the availability of habitat.

c. Assumptions

The amount and type of change in vegetation is difficult to assess given that no baseline information exists that describes pre-grazing vegetation composition. However, knowledge of current native vegetation, where present, and effects of grazing and rest on plant communities can indicate changes that can be expected. The expected changes in vegetation are made with the assumption that monitoring will be conducted under Alternatives 2 and 3, and that Alternative 3, if selected, would be fully implemented. Monitoring is important in determining the effectiveness of management and the degree to which desired condition is being reached. Long-term trend monitoring has been proposed by Nienow (2008) for riparian systems and by DiBenedetto and Jones (2008) for upland systems under Alternative 3.

The other assumption is that under all Alternatives timothy will likely remain the dominant grass species in areas where it is currently dominant. Thus, timothy will rarely be mentioned in wildlife habitat discussions.

Effects Summary

Table 1 below summarizes the potential effects to Threatened, Endangered, Sensitive, and Management Indicator Species potentially present in the project area. Aquatic species Yellowstone cutthroat trout, Northern leopard frog, and Western toad (Boreal toad) are discussed in the project Fisheries Report and Biological Evaluation.

TABLE 1 - POTENTIAL EFFECTS OF ALTERNATIVES ON THREATENED, ENDANGERED, SENSITIVE AND MANAGEMENT INDICATOR SPECIES

Threatened, Endangered, & Proposed Species	Alternative 1	Alternative 2	Alternative 3
Gray wolf	Non jeopardy	Non jeopardy	Non jeopardy
Lynx	No effect	NLAA	NLAA

NLAA – Not likely to adversely affect
Non-jeopardy – Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat.

Sensitive Species**	Alternative 1	Alternative 2	Alternative 3
American peregrine falcon	No impact	No impact	Beneficial impact
Bald eagle	No impact	No impact	No impact
Grizzly bear	No impact	May impact individuals*	May impact individuals*
Loggerhead shrike	No impact	No impact	No impact
Wolverine	No impact	No impact	No impact
Long-eared Myotis	Beneficial impact	No impact	May impact individuals*^
Long-legged myotis	No impact	No impact	No impact
Townsend's big-eared bat	No impact	No impact	No impact

* May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.
^ May impact individuals using the Black Butte Wildlife Habitat Area, but there would be no impact on the East & West Rosebud, Butcher Creek and Red Lodge Creek Allotments.

Management Indicator Species – Habitat Indicator Species	Alternative 1	Alternative 2	Alternative 3
Brewer's sparrow	Neutral effect	Neutral effect	Neutral effect
Ovenbird	Positive effect	Neutral effect	Neutral effect
Ruffed grouse	Neutral effect	Neutral effect	Neutral effect
Spotted (rufous-sided) towhee	Neutral effect	Neutral effect	Neutral effect
Yellow warbler	Positive effect	Neutral effect	Neutral effect
White-tailed deer	Neutral effect	Neutral effect	Neutral effect
Management Indicator Species – Key Species	**Alternative 1**	**Alternative 2**	**Alternative 3**
Golden eagle	Neutral effect	Neutral effect	Neutral effect
Merlin	Neutral effect	Neutral effect	Neutral effect
Elk	Neutral effect	Neutral effect	Neutral effect
Mule deer	Neutral effect	Neutral effect	Neutral effect

Abundant literature is available that discusses the effects of livestock grazing on wildlife. The common theme throughout much of the literature is that grazing may affect wildlife habitat namely through changes in structure, composition, and other aspects of vegetation. The vegetation approach is particularly pertinent when considering potential effects of grazing on ungulates and migratory landbirds. For other species, mainly large carnivores, potential effects are related mainly to control of predators that may prey upon domestic livestock.

Alternative 1 (No Livestock Grazing) would provide the fastest rate of recovery of wildlife habitats that have been impacted by grazing, especially riparian vegetation and aspen. This Alternative would also be the most advantageous for large carnivores as it would eliminate potential for control actions related to livestock. Alternative 2 (Maintain Existing Livestock Management), assuming that future management reflects past *actual*

use (versus permitted use), would prevent some degraded riparian habitats from improving in condition, while others would improve over time. Overgrazed upland sites most likely would not improve. Alternative 3 (Proposed Action) may allow degraded riparian habitats to improve, but possibly not to an extent that would fully benefit riparian-dependent wildlife. Degraded upland sites should increase in vegetation abundance and density. Adverse affects that may potentially occur in the Black Butte Management Area would be short term. Under all alternatives, non-native timothy is likely to persist on sites that it currently dominates. The presence of livestock under Alternatives 2 and 3 would provide potential for control actions against large carnivores. However, no control actions have occurred to date on the grazing allotments.

Cumulative effects are not expected under Alternative 1 for most species analyzed. An exception is that future prescribed or wild fires may have short-term adverse effects on habitat for several bird species but positive effects for others. In addition, lack of fire may have a long-term adverse effect on big game habitat. Under Alternatives 2 and 3, potential for cumulative effects from activities on federal land is minimal. However, development on private land adjacent to the National Forest may continue to result in loss of wildlife habitat, particularly for large carnivores. Potential for control actions on large carnivores, including the gray wolf and grizzly bear, occupying private land may also contribute to adverse cumulative effects under Alternatives 2 and 3. Under all alternatives, cumulative effects of aspen regeneration treatments would be beneficial to aspen-dependent wildlife species.

Threatened and Endangered Species

In 2005, the USDA Forest Service completed the Programmatic Biological Assessment For Activities That Are Not Likely To Adversely Affect Threatened and Endangered Terrestrial Species (USDA Forest Service 2005), here after called the Programmatic BA. The Biological Assessment applies to proposed projects on several National Forests, including the Custer National Forest. Included in the Biological Assessment are Screening Criteria to use in determining effects of various components of projects. Potential effects of the proposed project were analyzed by application of the screening criteria to the applicable components of Alternatives 1, 2 and 3 to determine the expected level of effects to species present or potentially present in the project analysis area.

Gray Wolf (*Canis lupus*)

Existing Condition

Suitable habitat for wolves is considered any place with an adequate supply of ungulate prey and freedom from excessive human persecution. Wolf packs generally require large territories. The actual extent of the territory depends primarily on pack size and the abundance and distribution of prey species (U.S. Fish and Wildlife Service 2003). Territories in the Greater Yellowstone Area vary from 33 to 934 square miles, with an average of 344 square miles (Montana Fish, Wildlife, and Parks, 2003)

Wolves were introduced into the Greater Yellowstone Ecosystem in 1995 and 1996. As of the end of 2007, 37 verified packs of 2 or more wolves occured in and around Yellowstone National Park and Central Idaho (Sime et al. 2008). Wolves in the Yellowstone ecosystem are designated as an experimental non-essential population (ESA 10j). Under this designation, the wolves are treated as a proposed species, and therefore are not subject to the prohibitions and consultation requirements of section 7 (a)(2) of the Endangered Species Act (ESA). In February 2005, a new 10(j) rule that applies to experimental population areas within Montana and Idaho became effective. On public lands, the new rule allows livestock permittees to take, without prior written authorization, wolves attacking or in the act of attacking livestock. On March 28, 2008, the Northern Rocky Mountain gray wolf population was determined to be recovered and was removed from the Federal List of Endangered and Threatened Wildlife. In July 2008, a court injunction reinstated Endangered Species Act protections for gray wolves in the northern Rocky Mountains.

One wolf pack is known to occur in the project area. The Rosebud Pack formed in 2005 and occupies predominately the foothills of the Beartooth Plateau, including within the project allotments. This pack is not a breeding pair (Sime et al. 2008). Wolf tracks have been documented in the Red Lodge Creek Allotment and within ½ mile of the Black Butte Wildlife Management Area. No known den or rendezvous sites occur in the project area. No wolf control actions have occurred on the subject allotments. However, control actions resulting from livestock depredation have occurred on nearby private lands in recent years.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No livestock grazing would occur, thus there would be no direct effect to wolves. Removal of livestock would eliminate any potential for depredation by wolves, thus the potential for control actions on wolves relative to livestock grazing would not exist and there would be no indirect adverse effects to the species.

Cumulative Effects
Since there would be no direct or indirect effects, there would be no cumulative effects.

Determination of Effects
Implementation of Alternative 1 ***is not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat***.

Rationale for Determination (based on activity components and screening criteria in the Programmatic BA)

- Removal of livestock would lead to a non-jeopardy determination rather than a "beneficial effect" because the wolf population in the project vicinity is designated as experimental non-essential, which by definition results in a non-jeopardy determination.
- There would be no direct, indirect, or cumulative effects.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects,
The presence of livestock would not cause direct effects to wolves. Wolves may potentially prey on livestock that are present on the allotments. No depredations have occurred on the existing allotments. However, domestic goats on nearby private land were confirmed killed by wolves in 2007, and cattle, sheep, and horse predation by wolves has occurred on private land near the allotments in previous years. Thus, potential exists for depredations on the Beartooth District allotments. Confirmed livestock depredation often results in removal of the wolves from the population. This is an adverse indirect effect on individual wolves, but is not likely to negatively impact the population given that minimum wolf numbers in Montana increased from 316 to 422 between years 2006 and 2007 despite removal of 73 individuals (Sime, et al 2008).

Cumulative Effects
Wolves expanded their range into the Beartooth Mountains area after being re-introduced into Yellowstone National Park, and despite human activities, the wolf population in the Greater Yellowstone Ecosystem has exceeded the recovery goals set by the US Fish and Wildlife Service. Thus, cumulative effects of recreational activity on the Beartooth Ranger District and control actions on wolves that kill livestock on private lands would be small. Loss of habitat from development of private land adjacent to the National Forest would contribute the most to adverse cumulative effects.

Determination of Effects
Implementation of Alternative 2 ***is not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat***.

Rationale for Determination (based on activity components and screening criteria in the Programmatic BA)

- Wolves in the Greater Yellowstone Ecosystem, which includes the project area, are designated as an experimental non-essential population under the Federal Endangered Species Act Section 10j.
- There would be no direct effects.
- Indirect and overall cumulative effects are expected to be minimal.

Alternative 3 – Proposed Action

Direct and Indirect Effects
As in Alternative 2, the presence of livestock would not cause direct effects to wolves. Also as discussed in Alternative 2, wolves may potentially prey on livestock that are present on the allotments, potentially resulting in

control actions to remove the wolves from the population.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Implementation of Alternative 3 ***is not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat***.

Rationale for Determination (based on activity components and screening criteria in the Programmatic BA)

- Wolves in the Greater Yellowstone Ecosystem, which includes the project area, are designated as an experimental non-essential population under the Federal Endangered Species Act Section 10j.
- There would be no direct effects.
- Indirect and overall cumulative effects are expected to be minimal.

Lynx (*Lynx canadensis*)

Existing Condition

In Montana, lynx have been documented in Douglas-fir, western larch, lodgepole pine, subalpine fir and Englemann spruce forests (Ruggiero, et al, 1999). East of the Continental Divide in Montana, the main habitat is composed of subalpine fir. Intermixed Englemann spruce and moist Douglas-fir containing a lodgepole pine component also may contribute to lynx habitat (Ruediger, et al. 2000). Occasional occurrences of lynx in non-forested habitats probably represent transient individuals or animals searching opportunistically for prey (Ruggiero, et al. 1999).

Lynx diet in the Rocky Mountains consists mainly of snowshoe hare plus alternate prey such as red squirrels and other small mammals, grouse, and carrion. Lynx typically den in mature forests with large downed woody debris and hunt in early successional stands with high stem densities or dense understory that support snowshoe hare (Ruediger, et al. 2000).

The project area occurs in the Rosebud and Rock Creek LAUs, with the grazing allotments containing lynx habitat as shown in Table 2. On the Beartooth District, potential lynx habitat consists mainly of high elevation boreal forests comprised of subalpine fir, Engleman spruce, Douglas fir, lodgepole pine, and mixed conifer. These habitats all occur within the analysis area. However, these areas are present primarily where little livestock grazing takes place. Lynx have been reported on rare occasions on or near the Beartooth Mountains portion of the District, but no confirmed lynx sightings have been reported within the analysis area.

Table 2 – Acreage of lynx habitat in project area

	Lynx Habitat		
Lynx Analysis Unit	**Total Acres in LAU**	**Acres in Project Allotments**	**Acres in Primary Range**
Rosebud	58,015	2355	191
Rock Creek	68,426	1467	11

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No livestock grazing would occur, thus there would be no direct effects to lynx. Potential indirect effects would be related to availability of habitat for prey species. Absence of livestock would allow functioning at-risk riparian habitat to improve as impacted vegetation increases in vigor and density, thus providing improved habitat for alternate prey species for lynx in areas where habitat conditions are currently marginal. Healthy riparian areas would remain available as habitat. Most of the aspen and upland shurb communities in the Allotments provide suitable cover, forage, and other requirements for lynx prey species under current livestock management. Thus,

little change would occur in habitat suitability on a large scale after livestock removal from those areas.

Cumulative Effects
No cumulative effects are anticipated.

Determination of Effects
Alternative 1 would have ***no effect*** on Canada lynx.

Rationale for Determination (based on activity components and screening criteria in Programmatic BA)

- Within the context of lynx habitat in the analysis area, improvements in condition of aspen stands and functional-at-risk riparian systems would not be to a large enough extent to constitute a beneficial effect.
- There would be no direct or cumulative effects.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
There would be no direct impacts to lynx from continued presence of livestock under current management. Potential indirect effects would be related to availability of habitat for prey species. If past management (actual use) is continued, then habitat for prey species in currently degraded riparian systems would not be expected to increase because trampled streambanks and over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation that supports an abundant and diverse population of small mammals and birds. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place, then currently upward-trending riparian systems may decline and result in lower prey abundance. Thus, habitat conditions would be maintained in some areas and further degraded in others.

As mentioned under Alternative 1, most of the aspen communities in the Allotments provide suitable habitat for prey species under current livestock management. Thus, little change would occur in habitat suitability with continued grazing. Condition of currently degraded areas would not improve, however, but negative indirect effects would be small given that the majority of aspen communities in the allotments currently provide suitable habitat for lynx prey species. In addition, conditions for prey species in upland shrub communities in lynx habitat would probably change little.

Cumulative Effects
Timber treatments in the cumulative effects analysis area have been minimal and contribution to cumulative effects would be small. Past and future aspen treatments regenerate decadent aspen communties and thus improve habitat for lynx prey species in the long-term. The 1996 Shepard Mountain wildfire also improved habitat by stimulating aspen regeneration in areas where natural succession had converted aspen clones to predominantly lodgepole pine stands.

Determination of Effects
Alternative 2 is ***not likely to adversely affect*** Canada lynx.

Rationale for Determination (based on activity components and screening criteria in Programmatic BA)

- Within the context of lynx habitat in the analysis area, potential changes in habitat conditions for prey species would be small.
- There would be no direct effects.
- Cumulative effects would not be adverse.

Alternative 3 – Proposed Action

Direct and Indirect Effects
There would be no direct effects to lynx from livestock grazing as proposed. Potential indirect effects would be related to availability of habitat for prey species. As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of

certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not improve in condition under Alternative 3. In addition, the riparian areas and aspen communities in the Black Butte Management Area are currently healthy but are at risk of adverse impacts. Such impacts include loss of small mammal and bird habitat through reduced density and structural diversity of riparian vegetation and understory shrubs in aspen communities. Approximately eight acres of lynx habitat in the Black Butte area could be potentially effected, a very small portion of total habitat in the LAUs. Conditions for prey species in upland shrub communities in lynx habitat would probably change little.

Cumulative Effects
Potential cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 is ***not likely to adversely affect*** Canada lynx.

Rationale for Determination (based on activity components and screening criteria in Programmatic BA)

- Within the context of lynx habitat in the analysis area, lowered quality of habitat for prey species in the Black Butte Wildlife Area would be very small.
- There would be no direct effects.
- Cumulative effects would not be adverse.

Sensitive Species

American peregrine falcon *(falco peregrinus)*

Existing Condition

Peregrine falcon distribution is limited by the availability of suitable nesting sites and a ready supply of prey. The primary nesting habitat is cliffs, preferably limestone because of the small depressions that provide nest sites. In the absence of cliffs, peregrine falcons may also nest on steep slopes, river cutbanks, or low rocks and mounds. In the continental United States, most nests are on cliff ledges at least 45 meters high and overlooking water. Peregrine falcons do not maneuver well in trees and thus hunt in more open areas such as meadows, river bottoms, marshes, lakes, and croplands. Birds, ranging from passerines to small geese, comprise the majority of their diet. In temperate continental latitudes, pigeons and doves may be the most frequently taken prey overall (White, et al. 2002).

Peregrine falcons, on the Endangered Species list until removal from the list in 1999, have been increasing in numbers since the early 1980's. In Montana, the population increased from 0 pairs in the early 1980's to 52 pairs in 2004, and the number of young fledged increased from 23 in 1994 (Rogers and Sumner 2004) to 147 in 2006 Sumner and Rogers 2006). The one peregrine falcon eyrie documented in the project area is in cliffs along East Rosebud Creek.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No livestock grazing would occur, thus there would be no direct effects to Peregrine falcons. Potential for indirect effects would be related mainly to changes in prey abundance. Pigeons and doves, typically an important prey item for peregrines, nest and roost in cliff crevices and manmade structures and would not be affected by livestock. In the short term, native grassland and shrubland plant communities that are currently in degraded condition would increase in health and abundance, benefitting peregrine falcon prey species that inhabit those communities. The exception is areas dominated by non-native grasses including timothy and smooth brome. Such grasses will probably persist and possibly invade sites where it is not currently the dominant species, resulting in lowered diversity of peregrine falcon prey species. In the long-term, without periodic disturbance, plant communities could lose productivity and diversity, and prey species abundance may consequently decline.

Cumulative Effects

No cumulative effects from management activities would occur. If future light to moderate intensity wildfire occurs in grasslands and shrublands, plant health and diversity in peregrine falcon habitat would eventually increase and provide improved habitat for prey species.

Determination of Effects
Alternative 1 is expected to have **no impact** on Peregrine falcons.

Rationale for Determination
- No direct effects would occur.
- Short-term indirect effects would be slightly beneficial, but long-term indirect effects would be slightly detrimental.
- No cumulative effects from management activities would occur.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Potential nesting habitat such as cliff faces would be unaffected by this alternative since livestock don't access these areas. No direct effects to Peregrine falcons would occur as they are not expected to interact with livestock. Potential for indirect effects would be related mainly to changes in prey availability. Pigeons and doves, typically an important prey item for peregrines, nest and roost in cliff crevices and manmade structures, and their abundance would not be affected by the presence of livestock. Currently degraded grassland and shrubland plant communities would likely not increase in health and abundance. Abundance and composition of grassland and shrubland plant communities would likely be maintained at sites where they are in a healthy condition. Thus, changes in prey availability resulting from effects of livestock grazing would probably be small.

Cumulative Effects
Future noxious weed control has potential to cause cumulative effects. Toxic effects to Peregrine falcons and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify. Recreational activity has likely had little adverse influence on peregrine falcons given that the known eyrie has been active since at least 1997.

Determination of Effects
Alternative 2 is expected to have **no impact** on Peregrine falcons.

Rationale for Determination
- No direct effects would occur and cumulative effects are unlikely.
- Habitat conditions for prey would generally be maintained similar to the current state.

Alternative 3 – Proposed Action

Direct and Indirect Effects
As described under Alternative 2, direct effects are not expected and potential for indirect effects would be related mainly to changes in prey availability. Pigeons and doves, typically an important prey item for peregrines, nest and roost in cliff crevices and manmade structures, and their abundance would not be affected by the presence of livestock. Currently degraded grassland and shrubland plant communities are expected to increase in abundance and density, providing improved habitat conditions for some prey species. Abundance and density of healthy native plant species, and thus prey species, should be maintained.

Cumulative Effects
Potential for cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 is expected to have a **beneficial impact** on Peregrine falcons.

Rationale for Determination

- No direct effects would occur and cumulative effects are unlikely.
- Habitat conditions for prey in some areas would be maintained. Conditions for some prey species in currently degraded areas are expected to improve in the long term.

Bald Eagle (*Haliaeetus leucocephalus*)

Existing Condition

Bald eagles are occassionally observed within the administrative boundary of the Beartooth Mountain portion of the Beartooth Ranger District during late fall, winter and early spring. Bald eagles have been reported in the East and West Rosebud Allotments and near the Red Lodge Creek Allotment.

Bald eagles nest almost exclusively near large water bodies such as lakes, rivers, or sea coasts (Buehler 2000). Nesting does not occur on the Beartooth District due to lack of suitable habitat.

Roosting habitat in all seasons contains tall trees adjacent to foraging areas. Roost trees are open and accessible, and in the winter are in areas protected from the prevailing winds. In the western states, most roost trees are conifers, although some are also deciduous trees in riparian areas. In Montana, most roost trees are adjacent to shallow water where fish are available prey (ibid). Much of the roosting habitat on and near the Beartooth District is in cottonwood trees along rivers and streams. Foraging occurs along West Rosebud Creek in the West Rosebud allotment and East Rosebud Creek in the East Rosebud Allotment. No suitable roosting or nesting habitat has been documented in the project vicinity.

There have been no known cases of bald eagles preying upon livestock in Montana in recent years (Hoover 2008).

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No livestock grazing would occur, thus there would be no direct effects to bald eagles. No indirect effects to bald eagles due to the absence of livestock are anticipated.

Cumulative effects
Since there would be no direct or indirect effects, there would be no cumulative effects.

Determination of Effects
Alternative 2 would have ***no impact*** on bald eagles.

Rationale for Determination

- No direct, indirect, or cumulative effects are anticipated.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
The presence of livestock would not cause direct effects to bald eagles. No indirect effects to bald eagles due to livestock presence are expected. The potential for eagle/livestock conflicts are small given that bald eagles have not been documented preying on livestock in Montana in recent years, and livestock and eagles are not present concurrently during most of the grazing season.

Cumulative effects
Since there would be no direct or indirect effects, there would be no cumulative effects.

Determination of Effects
Alternative 2 would have ***no impact*** on bald eagles.

Rationale for Determination
- No direct, indirect, or cumulative effects are anticipated.

Alternative 3 – Proposed Action

Direct and Indirect Effects
The presence of livestock would not cause direct effects to bald eagles. No indirect effects to bald eagles are expected for the reasons discussed under Alternative 2.

Cumulative effects
Since there would be no direct or indirect effects, there would be no cumulative effects.

Determination of Effects
Alternative 3 would have ***no impact*** on bald eagles.

Rationale for Determination
- No direct, indirect, or cumulative effects are anticipated.

Grizzly Bear (*Ursus arctos*)

Existing Condition

Grizzly bears seem to prefer very dense cover, but also may utilize open areas close to cover. Day beds typically are located in forest cover, and non-forested areas are used mainly during the summer. Grizzly bears utilize various forest types, including lower elevation Douglas fir and nonforested areas mixed with Douglas fir during spring, and whitebark pine during fall. Douglas fir and whitebark pine habitats, when used, are typically of more mature and late successional stages (Cherry 2001). Home range size for grizzly bears in the Greater Yellowstone Area (GYA) is approximately 341 square miles for females and 1,450 square miles for males. Food availability, weather, and interactions with other bears cause home range sizes to vary (USDA Forest Service 2004).

In the GYA, ungulates (including elk, bison, deer, and moose), whitebark pine seeds, army cutworm moths, and spawning cutthroat trout (within Yellowstone National Park) are important seasonal foods for grizzly bears (ibid). When natural food sources are in short supply, grizzly bears may utilize alternative foods, including livestock. Livestock depredations typically involve sheep. Cattle, particularly calves, may also be preyed upon. However, most grizzly bears that encounter cattle do not make kills. On the Beartooth District, grizzly bears have occasionally been reported in the Absaroka-Beartooth Wilderness and along portions of the Beartooth front, including in the East Rosebud and Red Lodge Creek allotments, in recent years. However, no grizzly bear/livestock conflicts occurred on the Custer National Forest during a 1992 through 2008 reporting period (USDA Forest Service 2004, Barber 2008).

The project area is within the Grizzly Bear Management Area outside the Primary Conservation Area. Acreage of the allotments that are within the best estimate of biologically suitable, suitable but not secure, and biologically unsuitable grizzly bear habitat are 4058, 2552, and 133 acres, respectively. The Forest Plan Amendment for Grizzly Bear Conservation guidelines for livestock grazing are as follows:

- "Outside the Primary Conservation Area in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, livestock allotments or portions of allotments with recurring conflicts that cannot be resolved through modification of grazing practices may be retired as opportunities arise with willing permittees"

- "Inside and outside the Primary Conservation Area, monitor and evaluate allotments for recurring conflicts

with grizzly bears"

Since no conflicts have occurred on the Custer National Forest, conflict resolution is not currently an issue. Monitoring for conflicts is ongoing.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No livestock grazing would occur. Thus, this Alternative would have no direct effects on grizzly bears. Removal of livestock would eliminate any potential for depredation by grizzly bears, thus the potential for control actions on grizzly bears relative to livestock grazing would not exist and there would be no indirect adverse effects to the species.

Cumulative Effects
Since there would be no direct or indirect effects, there would be no cumulative effects.

Determination of Effects
Alternative 1 will have ***no impact*** on grizzly bears.

Rationale for Determination
- There would be no direct, indirect, or cumulative effects.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
The presence of livestock would not cause direct effects to grizzly bears. Bears may potentially prey on livestock that are present on the allotments. Depredations of livestock on nearby private lands has occurred on rare occasion. However, there is no history of depredations in the project area or on the Custer National Forest and thus potential for control actions on individual bears is small.

Cumulative Effects
Grizzly bears have expanded their range throughout the Yellowstone ecosystem, and despite human activities, the bear population has met the recovery goals set by the US Fish and Wildlife Service. Thus, recreational activity on the Beartooth Ranger District is not expected to contribute to cumulative effects. The most likely adverse cumulative effects are control actions on grizzly bears that kill livestock on private lands, and loss of habitat from development of private land adjacent to the National Forest.

Determination of Effects
Alternative 2 is ***may impact individuals, but is not likely to cause a trend to federal listing or loss of viability*** of grizzly bears.

Rationale for Determination
- Existing livestock grazing would be maintained and there is no history of depredations or control actions in the analysis area.

Alternative 3 – Proposed Action

Direct and Indirect Effects,
As discussed in Alternative 2, the presence of livestock would not cause direct effects to grizzly bears, and potential for control actions on individual grizzly bears is small.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 ***may impact individuals, but is not likely to cause a trend to federal listing or loss of viability***

of grizzly bears.

Rationale for Determination

- The class of livestock would be the same vulnerability as is currently grazed.
- Numbers of livestock would be the same as or similar to that currently grazed except for in the Black Butte area, which hasn't had livestock grazing since 1970.
- There is no history of depredations or control actions in the analysis area.

Loggerhead Shrike (*Lanius ludovicianus*)

Existing Condition

Loggerhead shrikes occupy a variety of open habitats with short vegetation, such as riparian areas, open woodlands, pastures with fencerows, old orchards, agricultural fields, and mowed roadsides. The species hunts from perches such as shrubs, hedgerows, and fences. Loggerhead shrikes usually nest in isolated trees or large shrubs and prefer plants with thorns. Nest sites appear to be based more on degree of cover than on tree or shrub species, although plants with thorns are usually the preferred nest sites. Large, diffusely branched trees are not used for nesting. In Colorado and Idaho, nest sites have been documented in hawthorn, sagebrush, bitterbrush, greasewood, and Russian olive. Documented average height above ground of nests in Rocky Mountain states varies from 0.8m in Idaho to 2.03m in Colorado. Breeding season may occur from February to July, depending upon geographic area. Nest initiation in northern Colorado peaks in late May. Loggerhead shikes may attempt to renest within a few hundred meters of the first nest if the initial brood fails. The percentage of pairs studied that attempted second broods was highly variable and included 0% of 89 of pairs studied in southern Idaho, 10% in Minnesota, and 14% to 37% in Indiana. The species typically only has one brood (Yosef 1996).

Factors contributing to the declines of shrikes include the loss of large insect prey due to the use of insecticides, and loss of habitat. Land use practices that negatively affect this species include the reduction of structural diversity in riparian habitats, removal of shrubs along roads and fencelines, and conversion of native vegetative communities to agriculture and other human uses (ibid).

Wiggins (2005) states that although effects of livestock grazing on loggerhead shrikes is inferred from observations rather than determined from experimental studies, grazing effects seem to depend on local habitat types. Grazing may improve foraging habitat in tall, dense grasslands, but may be detrimental in short-grass and shrub-steppe habitats. Livestock damage to thickets and small trees may threaten nesting habitat.

Loggerhead shrikes have not been documented on the Beartooth District. In the analysis area, habitat for the species occurs in the Black Butte Wildlife Area and the northern portion of the Red Lodge Creek Allotment.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects

Absence of livestock would eliminate any potential for the direct impacts of trampling of nests, eggs, or chicks by livestock. Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. With no grazing, riparian areas in the Black Butte Area would continue to provide quality habitat. Little change in habitat and forage availability or quality is expected in the uplands in the short term. The majority of upland shrub communities is currently healthy. Over the long term, forage availability in the uplands may decline with lack of periodic disturbance.

Cumulative Effects

Past and present management activities such as timber harvest, aspen regeneration, noxious weed control, and recreation are expected to have had minimal impact on loggerhead shrikes. Reasonably foreseeable future management activities except prescribed fire also would have minimal impact. Future prescribed fire or wildfires may initially lower upland shrub coverage, reducing habitat availability in the short term. Deciduous shrubs would become re-established in time. Sagebrush may take up to 30 years or more to return to pre-burn densities.

Determination of Effects
Alternative 1 would have a ***no impact*** on loggerhead shrikes.

Rationale for Determination
- No direct effects would occur and cumulative effects would be minimal.
- Improved habitat in the short term would be beneficial, but decline in habitat quality may occur over the long-term.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. Grazing in the Red Lodge Creek would occur after fledging, and no grazing would take place in the Black Butte Area. Thus, no direct impacts would occur in these two areas.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. With no grazing, riparian areas in the Black Butte Area would continue to provide quality habitat. Nest sites and foraging conditions in currently degraded upland shrub communities would likely not improve, and would probably be maintained at sites that are currently healthy.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Loggerhead shrikes could occasionally ingest prey that have been sprayed with herbicides because they forage in areas that receive herbicide treatment. Toxic effects to loggerhead shrike and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have ***no impact*** on loggerhead shrikes.

Rationale for Determination
- No direct effects would occur.
- Indirect effects are expected to be minimal and cumulative unlikely.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. The deferred rotation system in the Red Lodge Creek Allotment would ensure that potential for trampling would not occur every year. There is potential for trampling in this allotment one in every three years. In the Black Butte area, the rest rotation system would ensure that potential for trampling would be eliminated in alternate years, at a minimum. In addition, a grazing permit would not be issued in subsequent years if vegetation, watershed conditions, and other resources are not moving toward desired conditions.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance resulting from habitat alteration over time. Riparian areas in the Black Butte Management Area are currently healthy but are at risk of being impacted in the short term under this Alternative. The risk of long term impacts is small, however, since grazing permits would not be issued in future years if vegetation and watershed conditions are not moving toward desired condition, ie., riparian areas damaged in the short term would recover. Currently degraded upland shrub communities are expected to increase in abundance and density, improving nesting habitat and foraging conditions for loggerhead shrikes.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects

Alternative 3 would have ***no impact*** on loggerhead shrikes.

Rationale for Determination

- Direct and indirect effects would be minimal, and cumulative effects unlikely.
- Potential adverse affects in the Black Butte area would be short term.

Wolverine (*Gulo gulo*)

Existing Condition

Wolverines in Montana are associated with coniferous forests. The species requires large, isolated tracts of wilderness that support a diverse prey base and has minimal human disturbance. Although they do not appear dependent upon specific cover types or topography, wolverines in Montana are often found in spruce-fir forests (USDA Forest Service 1996). They tend to occupy higher elevations during summer than in winter, and they rarely use dense young timber, burns, wet meadows, or clear cuts (Hornocker and Hash 1981). Their diet may consist of carrion, large and small mammals, birds, berries, and other food. Den sites have been reported in narrow passages with abundant fallen logs; under tree roots or protruding rocks; or in caves, deep snow, or burrows in overhanging banks.

Wolverines occur in low densities and are generally solitary except during their breeding season. Home ranges in Montana vary from about 40 square miles for lactating females to over 160 square miles for males (Butts 1992). The species is thought to be negatively affected by human activity and habitat alteration whereby interactions with humans result in wolverine population declines. Direct human-caused mortality, habitat loss, and habitat fragmentation have been reported as likely causes (Austin 1998).

Wolverine sign has been reported in various areas on the Beartooth District. In addition, unconfirmed wolverine sightings have also been reported. Suitable denning habitat in the form of large boulder talus slopes is lacking in the project area. However, foraging habitat occurs throughout the allotments.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects

Wolverines would not be directly affected by the absence of livestock and associated developments. Elimination of livestock would remove a potential source of carrion that could provide a limited and sporadic food source for wolverines. Individual wolverines that travel through the allotments may potentially alter their travel routes due to human activity associated with removal of range developments, but displacement would be temporary and would occur in small, isolated portions of available habitat. Once removal of developments has been completed, potential for disturbance from human activity associated with livestock management would be eliminated.

Cumulative Effects

No cumulative effects are expected.

Determination of Effects

Elimination of livestock would have ***no impact*** on wolverines.

Rationale for Determination

- Removal of livestock would eliminate a very minimal and sporadic potential food source for wolverines.
- There would be no direct or cumulative effects.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects

No direct effects to wolverines are expected to occur due to presence of livestock or livestock management activities. Wolverines have a large home range and potential for individuals to travel through areas occupied by livestock is small. Livestock that die may provide a source of carrion for wolverines. The number of head that

die in any given year may vary from none to several on an allotment, and any particular allotment may have no livestock losses over several concurrent years. Thus, dead livestock as a food source for wolverines would be limited and sporatic, and any indirect benefit to wolverines would be minimal.

Individual wolverines that travel through the allotments may potentially alter their travel routes due to human activity associated with livestock management and maintenance of existing range developments. However, displacement would be temporary, sporadic, and occur in small, isolated portions of available habitat.

Cumulative Effects
The most likely potential for cumulative effects would be from recreational activities that occur in the project area. Motorized recreation in the project area takes place on existing roads and non-motorized recreation such as hiking and horseback riding occurs mainly on existing trails. Effects from these activites in the project area are expected to be minimal. Human activity due to livestock management would not add significantly to existing and anticipated future activity. Thus, potential for cumulative effects would be minimal.

Determination of Effects
Implementation of Alternative 2 would have ***no impact*** on wolverines.

Rationale for Determination
- The food source potentially provided by dead livestock would be too limited and sporadic to constitute a beneficial impact.
- Potential indirect effects would be temporary, sporadic, and occur in small, isolated portions of available habitat.
- The potential for cumulative effects would be minimal.

Alternative 3 – Proposed Action

Direct and Indirect Effects
The potential for direct and indirect effects would be essentially the same as under Alternative 2.

Cumulative Effects
As discussed for Alternative 2, the potential for cumulative effects would be minimal.

Determination of Effects
Implementation of Alternative 3 would have ***no impact*** on wolverines.

Rationale for Determination
- The food source potentially provided by dead livestock would be too limited and sporadic to constitute a beneficial impact.
- Potential indirect effects would be temporary, sporadic, and occur in small, isolated portions of available habitat.
- The potential for cumulative effects would be minimal.

Bat species: Long-eared Myotis (*Myotis evotis),* **Long-legged Myotis** (*Myotis volans*), and **Townsend's Big-Eared Bat** (*Corynorhinus townsendii*)

Existing Condition

The long-eared myotis occurs in a wide variety of habitats in the Rocky Mountains, including subalpine shrublands, montane grasslands, forests, wet meadows, and Douglas fir forests. It is adapted for gleaning insects from leaves and bark in thick vegetation, and roosts in rocky areas in subalpine habitats, abandoned buildings, hollow trees, loose bark, caves, and mines (Adams 2003). Foods found in Montana specimens include small moths, beetles, and leafhoppers. The species is widely distributed and locally abundant in Montana, and many individuals probably migrate out of the state in autumn. (Foresman 2001). On the Beartooth District, the species has been documented at water bodies in the East Rosebud and West Rosebud Allotments, and immediately east of the Red Lodge Creek Allotment.

The long-legged myotis occurs throughout the Rocky Mountain states, with occurrence records ranging from the plains in New Mexico to 11,500 feet in elevation in Colorado. The species occurs mostly in forested areas, pursuing prey through and around forest canopies. Roosting areas include trees, rock crevices, crevices in stream banks, and buildings. In Montana, this species occurs in montane coniferous forests and occasionally in riparian cottonwood habitats. Diet is comprised of moths, flies, beetles, and other insects (Adams 2003). The species has been documented in the Beartooth Mountains, but not in the project area. However, the project area is within the known elevation range for the species. Potential habitat in the project area includes rock outcrops, conifer forests, and riparian areas.

Within the Greater Yellowstone Ecosystem, Townsend's big-eared bats are dependent upon rocky outcrops, caves, and old mines for roosting habitat. The species forages over sagebrush grasslands, riparian areas, open pine forests, and arid scrub (Clark et al. 1989), feeding mainly in the air along forest edges (Kunz and Martin, 1982). In Montana, Townsend's big-eared bats are found in a variety of habitats including mesic Douglas fir forests, Rocky Mountain and Utah juniper, limber pine, and sage brush (Foresman, 2001). This species has been documented from 1968 to 7820 feet in elevation. Small moths are the primary forage, but other nocturnal insects such as beetles, true flies, and wasps are also eaten (MTNHP 2006).

The Townsend's big-eared bat has not been documented in or near the Beartooth Mountains portion of the District. However, the project area is within the known elevation range for the species. Potential habitat in the project area includes rock outcrops, Douglas fir and limber pine forests, and sagebrush.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Bat species would not be directly affected by the absence of livestock and associated developments. Potential indirect effects to long-eared myotis would be related to changes in insect abundance resulting from alteration in riparian condition over time after livestock removal. In currently degraded riparian systems, insect diversity and abundance would be expected to increase as trampled streambanks recover and over-utilized riparian vegetation increases in vigor and density. The result would be an improved prey base for bats. No indirect effects to long-legged myotis and Townsend's big-eared bats are expected since these species typically forage in forested environments.

Cumulative Effects
No cumulative effects are expected under Alternative 1.

Determination of Effects
Overall, implementation of Alternative 1 would have a ***beneficial impact*** on long-eared myotis and ***no impact*** on long-legged myotis and Townsend's big-eared bats.

Rationale for Determination
- No direct or cumulative impacts are expected.
- Indirect effects to long-eared myotis would be beneficial because of an expected improvement in the prey base.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Bats would not be directly affected by the presence of livestock and associated developments. As with Alternative 1, potential indirect effects to long-eared myotis would be related to changes in insect abundance resulting from alteration in riparian condition over time. If past management (actual use) is continued, then insect diversity and abundance in currently degraded riparian systems would not be expected to increase because trampled streambanks and over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation that supports an abundant and diverse insect population. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place,

then currently upward-trending riparian systems may decline and result in lower insect abundance. No indirect effects to long-legged myotis and Townsend's big-eared bats are expected since these species typically forage in forested environments.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Long-eared myotis could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to long-eared myotis and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Overall, Alternative 2 would have ***no impact*** on long-eared myotis, long-legged myotis, and Townsend's big-eared bats.

Rationale for Determination
- Prey diversity and abundance for long-eared myotis would not increase in degraded riparian areas under continuation of current management.
- No direct or indirect impacts to long-legged myotis or Townsend's big-eared bats are expected.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Bats would not be directly affected by the presence of livestock and associated developments. As with Alternatives 1 and 2, potential indirect effects to long-eared myotis would be related to changes in insect abundance resulting from alteration in riparian condition over time. As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not improve in condition under Alternative 3. In addition, the riparian areas in the Black Butte Management Area are currently healthy but are at risk of being impacted under this Alternative. However, impacts would be short term since a grazing permit would not be issued in subsequent years if vegetation, watershed condition, and other resources are not moving toward desired conditions. No indirect effects to long-legged myotis and Townsend's big-eared bats are expected since these species typically forage in forested environments.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 ***may impact individuals, but is not likely cause a trend to Federal listing or loss of viability*** for long-eared myotis, and would have ***no impact*** on long-legged myotis, or Townsend's big-eared bats.

Rationale for Determination
- Availability of insects for forage in the Black Butte Management Area may be reduced in the short term, but would improve again in the long term.
- No direct or indirect impacts to long-legged myotis or Townsend's big-eared bats are expected.

Management Indicator Species (MIS)

Brewer's Sparrow (*Spizella breweri*)

Existing Condition
The Brewer's sparrow is considered a sagebrush obligate. The species typically occurs in open shrublands but may also occur in large parks within conifer forest. In studies of sagebrush shrubland habitat components, Brewer's sparrows are positively correlated with sagebrush and shrub cover with above average vegetation height. The species is most closely associated with big sagebrush (*Artemisia tridentata*) and is negatively

correlated with grass cover. Brewer's sparrows forage primarily in shrubs but will also forage on open ground between shrubs or at the base of bunchgrasses. The primary food sources are insects and seeds of grasses and forbs (Rotenberry, et al 1999).

The species builds an open cup nest in a shrub, preferring large, living sagebrush (Paige, C., and S.A. Ritter. 1999). In Montana, height of nest above the ground has ranged from 3.5 to 9.5 inches above ground, with an average of 6.5 inches. In Idaho, 90% of nests studied were placed between 7.9 and 19.7 inches high, with an average nest height of 15.4 inches. Nests studied in Idaho were placed an average of 7.1 inches horizontally from the outside edge of the nest shrub. Brewer's sparrows will renest and lay a new clutch if the first nest is lost (Rotenberry, et al 1999). Brewer's sparrows thrive best where sagebrush is maintained in tall, clumped, and vigorous stands.

Brewer's sparrow populations on breeding grounds have declined significantly since the 1960's. Loss and fragmentation of native shrubland and shrub steppe through conversion to agriculture and invasion by non-native vegetation may be the primary cause of declines (ibid). Heavy grazing that removes herbaceous cover may adversely impact Brewer's sparrows, although the species' response to past grazing has been inconsistent (Hutto and Young 1999). In addition, the species may potentially be affected by large-scale insect or weed control programs (Rotenberry, et al 1999).

Brewers sparrows have been documented in the northern portion of the Red Lodge Creek allotment, and habitat is present on the sagebrush hillsides west of West Rosebud Creek in the West Rosebud Allotment.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate potential for trampling of nests, eggs, or chicks by livestock. The majority of the sagebrush communities currently support Brewer's sparrows and would continue to do so in the absence of livestock.

Cumulative Effects
No cumulative effects are expected.

Determination of Effects
Alternative 1 would have **neutral effect** on Brewer's sparrows.

Rationale for Determination
- There would be no direct or cumulative effects, and indirect effects are not expected.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Disturbance or destruction of nests, eggs, or chicks could occur if livestock trample sagebrush plants containing Brewer's sparrow nests during breeding season. Grazing in the Red Lodge Creek Allotment would occur after fledging, thus no direct impacts would occur in this area. The deferred rotation system in the West Rosebud Allotment would ensure that potential for trampling would not occur every year. There is potential for trampling one in every three years. Indirect effects would be related to availability of insect prey and seeds of grasses and forbs. Livestock do not typically concentrate in sagebrush areas under current management, and forage availability with continued grazing is likely to change little.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Brewer's sparrows could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to Brewer's sparrows and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have **neutral effect** on Brewer's sparrows.

Rationale for Determination
- Potential for direct, indirect, and cumulative effects is small.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Disturbance or destruction of nests, eggs, or chicks could occur if livestock trample sagebrush plants containing Brewer's sparrow nests during breeding season. The deferred rotation system in the West Rosebud Allotment would ensure that potential for trampling would not occur every year. There is potential for trampling in this allotment one in every three years. The potential for trampling in the Red Lodge Creek Allotment would increase under this alternative since grazing could take place during breeding season, which isn't the case under current management. Livestock do not typically concentrate in sagebrush areas under current management and are not expected to under Alternative 3. Thus, forage availability with continued grazing is likely to change little.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 would have **neutral effect** on Brewer's sparrows.

Rationale for Determination
- The potential increase in direct effects would not be enough to constitute a negative effect.
- Potential for indirect and cumulative effects is small.

Northern goshawk *(Accipiter gentilis)*

Existing Condition
In the Northern Region of the Forest Service, northern goshawks use a variety of mature and old growth forest habitats. Nest stands are typically characterized by a closed canopy and open understory. Aspen occurs in some patches that goshawks use but is a secondary species in the stand. On the Gallatin National Forest, sub-alpine fir, Douglas fir, and mixed Douglas fir/lodgepole pine forests are used for nesting (USDA Forest Service July 1996). Habitat alteration from timber and fire management are the primary concerns relative to goshawk viability (Kennedy). Since the proposed project does not include either of these activities, impacts to goshawks are not expected and the species will not be discussed further.

Ovenbird (*Seiurus aurocapillus*)

Existing Condition

Ovenbirds nest in deciduous or conifer/deciduous forests comprised predominantly of deciduous trees (Van Horn and Donovan 1994). The species was detected predominantly in aspen, but also in other cover types including Douglas fir, mixed conifer, and lodgepole pine, during landbird surveys conducted from 1994 to 1996 in the Forest Service Northern Region (Hutto and Young 1999). Landbird surveys conducted on the Beartooth District from 2002 to 2004 resulted in ovenbird detections predominantly in aspen communities, but also in mature Douglas fir, lodgepole pine, mixed conifer, and mixed conifer/deciduous habitats.

Ovenbirds require large areas of contiguous, interior forest habitat. Canopy height and high canopy closure, and to a lesser extent percent ground cover, aspect, and basal area, are important aspects of ovenbird territories. Nests are typically constructed on the ground where the forest floor is open and small trees and shrub growth are low. However, nests also may be built under moderately dense herbaceous vegetation or at the base of a bush, tree, or fallen log. A thick forest floor leaf layer harboring a ready supply of invertebrates is another important aspect of nest sites, with nesting typically taking place from mid May through June (Van Horn and Donovan

1994). Ehrlich (1988) states that ovenbirds are a frequent cowbird host.

Populations of ovenbirds in their breeding range have declined significantly over the past 30 years. Conversion of large forested areas to isolated fragments has likely sped the decline. The increase in edge habitat that results from forest fragmentation has led to increased predation and cowbird parasitism (Van Horn and Donovan 1994).

Ovenbirds have been documented in aspen stands and extensive conifer forests on the Beartooth District, including in the Red Lodge Creek Allotment. Habitat is present in the other allotments and the Black Butte Wildlife Area as well.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate any potential for trampling of nests, eggs, or chicks by livestock. Removal of livestock could reduce potential for nest parasitism by brown-headed cowbirds. Potential for reduction in thickness of the forest floor leaf layer and establishment of bare ground due to disturbance from livestock would be eliminated, especially in aspen communities. Thus, habitat for the invertebrates that ovenbirds prey upon would be maintained.

Cumulative Effects
No adverse cumulative effects are anticipated.

Determination of Effects
Alternative 1 would have ***positive effect*** on ovenbirds.

Rationale for Determination

- Although there would be no direct or cumulative effects, indirect effects would be beneficial.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Grazing in the Red Lodge Creek and East Rosebud Allotments would occur after fledging, and no grazing would take place in the Black Butte Area. Thus, no direct impacts would occur in these three areas. Since nests may be constructed on the ground, potential exists for livestock to trample nests, eggs, or nestlings in the West Rosebud and Butcher Creek Allotments. The likelyhood is small, however, because typical temperatures during ovenbird breeding season would not drive cattle to seek the cooler temperatures of interior forest. Forest fragmentation has not occurred in the project area, thus potential for direct impacts to birds nesting near forest edges would be minimal. In addition, the deferred rotation system in the West Rosebud and Butcher Creek Allotments would ensure that potential for trampling of nests, eggs, or nestlings would not occur every year. The potential for trampling in these two allotments would occur one in every three years.

Indirect effects could occur if changes in vegetation and forest floor litter result in reduced availability of invertebrates. This could take place if cattle activity reduces the forest floor leaf litter and increases bare ground significantly. The greatest potential for adverse effects would be if cattle concentrate in aspen communities. Under current management, most areas with ovenbird habitat receive light livestock use. Thus, health and structure of vegetation, as well as the availability of insects, seeds, and other forage, are likely to change little with continued grazing. An exception is degraded aspen communities. Most of the aspen communities that provide suitable cover, forage, and other requirements for ovenbirds under current livestock management would change little.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Ovenbirds could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to ovenbirds and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have a **neutral affect** on ovenbirds.

Rationale for Determination
- Potential for direct, indirect, and cumulative effects is small.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. Grazing in the East Rosebud Allotment would occur after fledging, thus no direct impacts would occur in this allotment. The deferred rotation system in the West Rosebud, Red Lodge Creek, and Butcher Creek Allotments would ensure that potential for trampling would not occur every year. There is potential for trampling in these three allotments one in every three years. The likelyhood is small in these three allotments, however, because typical temperatures during ovenbird breeding season would not drive cattle to seek the cooler temperatures of interior forest. Forest fragmentation has not occurred in the project area, thus potential for direct impacts to birds nesting near forest edges would be minimal The exception is the Black Butte Wildlife Area, where there is a likelihood that livestock would use at least some aspen stands and thus could trample nests, eggs, or nestlings. However, potential for trampling would not occur every year. The rest rotation system would ensure that potential for trampling would be eliminated in alternate years, at a minimum. In addition, a grazing permit would not be issued in subsequent years if vegetation and other resources are not moving toward desired conditions.

Potential for indirect affects would be similar to those under Alternative 2. The main difference is that aspen communities with native vegetation understory in the Black Butte Wildlife Area that are currently healthy are at risk of reduced foraging habitat through reduced litter and increased bare ground. The risk for long-term adverse affects is small, however, since permits would not be issued in future years if vegetation and soil conditions are not moving toward desired condition.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 would have a **neutral affect** on ovenbirds.

Rationale for Determination
- Potential for direct, indirect, and cumulative effects is small.

Ruffed Grouse (*Bonasa umbellus*)

Existing Condition

Ruffed grouse are closely associated with communities of quaking aspen and utilize pure aspen and mixed aspen/conifer communities year-round. Conditions needed for drumming males include dense overstory for protection from avian predators, high stem densities but with ground-level visibility for detecting ground predators, and presence of logs, rocks, or other objects for use as drumming platforms. Stands with open understory and dense overstory provide nesting habitat, with stands that are fairly open at ground level being preferred. Nests are typically located on the ground at the base of a tree, stump, or boulder, but may also be placed in deadfalls and brush piles or at the base of shrubs. If the first nest is destroyed early in the season, a second nest will be constructed. However, only one brood will be raised per season (Rusch, et al. 2000).

Egg laying may occur from early April to early July, peaking between mid April and early June. Hatching may begin in early May, with the brood leaving the nest within 24 hours of hatching. Chicks can easily move large distances soon after hatching (ibid). Average hatch date was June 24 (Johnson 1999) in a study area near the project area. A variety of habitats are suitable for brood-rearing, with the best being 5 to 15-year-old sapling stands containing closed canopy (Pierson 1990).

Ruffed grouse occupy many of the pure aspen and mixed aspen/conifer communities within the allotments. Habitat is present in all of the allotments, and ruffed grouse have been documented in the East Rosebud, Red Lodge Creek, and Black Butte areas. Stand condition ranges from young, dense, pure aspen to mature aspen/conifer with little natural aspen regeneration.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate any potential for trampling of nests, eggs, or chicks by livestock. Most of the aspen communities in the Allotments provide suitable cover, forage, and other requirements fo ruffed grouse under current livestock management. Thus, little change would occur in habitat suitability on a large scale after livestock removal from those areas.

Cumulative Effects
Aspen treatments are designed to stimulate new aspen growth, thus would be a beneficial cumulative effect on a small scale over time as regenerating stands attain structure compatable with ruffed grouse needs.

Determination of Effects
Alternative 1 would have **neutral effect** on ruffed grouse.

Rationale for Determination
- No direct effects would occur.
- Positive indirect and cumulative effects would be small.

Alternative 2 – Maintain Existing Livestock Management

Direct Effects
Since nests are constructed on the ground, potential exists for livestock to trample nests, eggs, or nestlings in the West Rosebud and Butcher Creek Allotments. In the Red Lodge Creek and East Rosebud allotments, livestock would be present after the chicks have fledged. Thus, no direct effects would occur in these two allotments nor in the Black Butte Wildlife Area where livestock would not be grazed.

As mentioned under Alternative 1, most of the aspen communities in the Allotments provide suitable ruffed grouse habitat under current livestock management. Thus, little change would occur in habitat suitability with continued grazing. Condition of currently degraded areas would not improve, however, but negative indirect effects would be small given that the majority of aspen communities in the allotments currently provide suitable ruffed grouse habitat.

Cumulative Effects
Future noxious weed control is one activity with potential to cause cumulative effects. Ruffed grouse could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to ruffed grouse and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Aspen treatments are designed to stimulate new aspen growth, thus would be a beneficial cumulative effect on a small scale over time as regenerating stands attain structure compatable with ruffed grouse needs.

Determination of Effects
Alternative 2 would have a **neutral effect** on ruffed grouse.

Rationale for Determination
- Direct, indirect, and cumulative effects would be small.

Alternative 3 – Proposed Action

Direct Effects
Potential direct effects on ruffed grouse would be similar to those under Alternative 2. Potential for trampling of nests, eggs, or nestlings would remain small.

As previously mentioned, most of the aspen communities in the Allotments provide suitable ruffed grouse habitat under current livestock management. Little change would occur in habitat suitability under the proposed grazing management. The exception would be in the Black Butte Wildlife Area. Aspen communities occupy a sizable portion of the area. Stands with native understory vegetation are at risk of adverse impacts such as reduced forage availability and loss of nesting habitat through density and structural diversity of understory shrubs. Such impacts are likely to be small, however, since permits would not be issued in future years if vegetation and soil conditions are not moving toward desired condition. Stands that have timothy as a dominant understory species already provide lower quality habitat for ruffed grouse due to relative lack of grass and shrub species diversity, conditions expected to change little as a result of grazing.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 would have a **neutral effect** on ruffed grouse.

Rationale for Determination
- Direct, indirect, and cumulative effects would be small.

Spotted Towhee (*Pipilo maculatus*)

Existing Condition

Spotted towhees occupy dense, broadleaf, shrubby thickets only a few meters tall. Juniper, willow, rose, sage, snowberry, and sumac are some of the plants that the species is often associated with. Nests are commonly built on or above the ground near the edges of thickets or isolated plants, or at the base of logs or grass clumps. Egg laying has been reported from late April to early July. In northeastern Colorado, eggs are laid from mid-June to early July. In arid regions of the West, Spotted towhees have been adversely affected by heavy cattle grazing in riparian and subriparian communities. During breeding season, spotted towhees mainly eat insects such as beetles, grasshoppers, and moths, plus arthropods that occur in the litter layer (Greenlaw 1996). Spotted towhees have been documented near but not within the project area. Habitat in the allotments is present in riparian areas, mesic shrub communities, and sagebrush.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate any potential for the direct impacts of trampling of nests, eggs, or chicks by livestock. Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. Degraded riparian habitat would improve as impacted vegetation increases in vigor and density, thus increasing availability of nesting habitat and forage. Healthy riparian areas would remain available as habitat. Little change in habitat and forage availability or quality is expected in the uplands in the short term. The majority of upland shrub communities is currently healthy. Over the long term, forage availability in the uplands may decline due to lack of periodic disturbance.

Cumulative Effects
Past and present management activities such as timber harvest, aspen regeneration, noxious weed control, and recreation are expected to have had minimal impact on spotted towhees. Reasonably foreseeable future management activities except prescribed fire also would have minimal impact. Future prescribed fire or wildfires may initially lower upland shrub coverage, reducing habitat availability in the short term. Deciduous shrubs would become re-established in time. Sagebrush may take up to 30 years or more to return to pre-burn densities.

Determination of Effects
Alternative 1 would have a ***neutral effect*** on spotted towhees.

Rationale for Determination
- No direct effects are expected and cumulative effects would be minimal.
- Improved habitat in the short term would be beneficial, but decline in habitat quality may occur over the long-term.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. Grazing in the Red Lodge Creek and East Rosebud Allotments would occur after fledging, and no grazing would take place in the Black Butte Area. Thus, no direct impacts would occur in these three areas. The deferred rotation system in the West Rosebud and Butcher Creek Allotments would ensure that potential for trampling would not occur every year. There is potential for trampling in these two allotments one in every three years.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. If past management (actual use) is continued, then nest site availability and insect diversity and abundance in currently degraded riparian systems would not be expected to increase because trampled streambanks and over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation that supports an abundant and diverse insect population for forage. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place, then currently upward-trending riparian systems may decline and result in lower insect abundance and nest site quality. Nest sites and foraging conditions in currently degraded upland shrub communities would likely not improve, and would probably be maintained at sites that are currently healthy.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Spotted towhees could occasionally ingest prey that have been sprayed with herbicides because they forage in areas that receive herbicide treatment. Toxic effects to spotted towhees and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have ***neutral effect*** on spotted towhees.

Rationale for Determination
- Direct effects would be absent in two allotments and in the Black Butte Area, and there would be potential for direct effects in the other two allotments only one out of every three years.
- Indirect and cumulative effects are unlikely.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. Grazing in the East Rosebud Allotment would occur after fledging, thus, no direct impacts would occur in this allotment. The deferred rotation system in the West Rosebud, Red Lodge Creek, and Butcher Creek Allotments would ensure that potential for trampling would not occur every year. There is potential for trampling in these three allotments one in every three years.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance resulting from alteration in riparian condition over time. As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not

improve in condition under Alternative 3. In addition, the riparian areas in the Black Butte Management Area are currently healthy but are at risk of being adversely impacted under this Alternative. Currently degraded upland shrub communities would likely increase in abundance and density, improving nesting and foraging conditions for spotted towhees. Conditions on currently healthy sites would probably be maintained.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 would have a ***neutral effect*** on spotted towhees.

Rationale for Determination

- Direct effects would be absent in one allotment, and there would be potential for direct effects in the other three allotments only one out of every three years.
- Habitat conditions may not improve in degraded riparian systems and may decline in the Black Butte Area. However, conditions in the uplands are expected to improve.
- Cumulative effects are unlikely.

Yellow Warbler (*Dendroica petechia*)

Existing Condition

Riparian obligate bird species are those that construct over 90% of their nests in riparian vegetation or where over 90% of their abundance is in riparian vegetation during the breeding season (USDI BLM 2005). In the Forest Service Northern Region, yellow warblers are a riparian obligate and are most common where shrubs are well developed and large deciduous trees are present. Habitat includes riparian bottomlands and streamside shrublands (Hutto and Young, 1999). Yellow warblers build their nests in willows, hawthorn, raspberry, and other shrubs. Documented nest heights above the ground are quite variable and have ranged from 1.6 to 7.2 feet, depending upon geographic area. Only one brood is raised per season. Egg-lying typically peaks from late May to mid June, but may continue into mid July. Information was not available regarding whether renesting will occur if the initial nest is destroyed (Lowther, et al. 1999).

Intense grazing has negatively impacted yellow warbler populations in the western United States, mainly due to reduction or removal of riparian willows and increased brown-headed cowbird numbers (ibid). Yellow warblers are one of the three most common hosts for cowbird parasitism (Ehrlich,1988). Management of cattle to maintain willow habitats has resulted in increased yellow warbler population density in some areas of the west (Lowther, et al. 1999).

In the project area, yellow warblers have been documented in young and mature aspen stands in the East Rosebud Allotment and the Black Butte Wildlife Area. High quality habitat is present in properly functioning riparian systems along West Rosebud Creek and some of its tributaries in the West Rosebud Allotment. Lower quality habitat is available in the Butcher Creek Allotment in functioning at-risk riparian systems. The methodology and results of determining functioning condition of riparian systems is discussed in Nienow (2008).

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
The potential for trampling or other physical disturbance of nests, eggs, or chicks by livestock would be eliminated. Removal of livestock could reduce potential for nest parasitism by brown-headed cowbirds. Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. Riparian systems currently functional-at-risk would eventually achieve proper functioning condition, thus providing habitat for yellow warblers and other riparian wildlife species in areas where habitat conditions are currently marginal. Functioning at-risk riparian habitat would improve as impacted vegetation increases in vigor and density, thus increasing availability of nesting habitat and forage. Healthy riparian areas would remain available as habitat.

Cumulative Effects

The potential for adverse cumulative effects is expected to be minimal. Aspen treatments are designed to stimulate new aspen growth, thus have been and would continue to be beneficial on a small scale over time as regenerating stands attain structure compatable with yellow warbler needs.

Determination of Effects
Implementation of Alternative 1 would have a ***positive effect*** on yellow warblers.

Rationale for Determination

- Potential for trampling or other disturbance of nests, eggs, or chicks by livestock would be eliminated.
- Condition of degraded riparian vegetation would improve over time.
- Adverse cumulative effects would be minimal; slight beneficial cumulative effects would be expected.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Grazing in the Red Lodge Creek and East Rosebud Allotments would occur after fledging, and no grazing would take place in the Black Butte Area. Thus, no direct impacts would occur in these three areas. The deferred rotation system in the West Rosebud and Butcher Creek Allotments would ensure that potential for trampling would not occur every year. The potential for trampling in these two allotments would occur one in every three years. If a clutch has already been laid when disturbance or destruction occurs, a second clutch will likely not be laid. If a clutch has not been laid when disturbance occurs, it is not known whether or not a new nest would be constructed.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. If past management (actual use) is continued, then nest site availability and insect diversity and abundance in currently degraded riparian systems would not be expected to increase because trampled streambanks and over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation that supports an abundant and diverse insect population for forage. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place, then currently upward-trending riparian systems may decline and result in lower insect abundance and nest site quality. Thus, habitat conditions would be maintained in some areas and further degraded in others.

Cumulative Effects
The potential for adverse cumulative effects is expected to be minimal as discussed under Alternative 1.
In addition, future noxious weed control is one activity with potential to cause cumulative effects. Yellow warblers could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to yellow warblers and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Implementation of Alternative 2 would have a ***neutral effect*** on yellow warblers

Rationale for Determination

- Although currently degraded habitat conditions would not improve, currently healthy habitat would remain so.
- The potential for cumulative effects is small.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Since nests are constructed near the ground, potential exists for livestock to trample nests, eggs, or nestlings. Grazing in the East Rosebud Allotment would occur after fledging, thus no direct impacts would occur in this allotment. The deferred rotation system in the West Rosebud, Red Lodge Creek, and Butcher Creek Allotments would ensure that potential for trampling would not occur every year. There is potential for trampling in these three allotments one in every three years. In the Black Butte area, the rest rotation system would ensure that potential for trampling would be eliminated in alternate years, at a minimum. If a clutch has already been laid when disturbance or destruction occurs, a second clutch will likely not be laid. If a clutch has not been laid when disturbance occurs, it is not known whether or not a new nest would be constructed.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance resulting from alteration in riparian condition over time. As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not improve in condition under Alternative 3. In addition, the riparian areas and aspen communities in the Black Butte Management Area are currently healthy but are at risk of adverse impacts. Such impacts include loss of nesting habitat through reduced density and structural diversity of riparian vegetation and understory shrubs in aspen communities. However, such impacts would be short term since grazing permits would not be issued in future years if vegetation, watershed condition, and soils are not moving toward desired condition.

Cumulative Effects
Cumulative effects would be the same as those under Alternative 2.

Determination of Effects
Alternative 3 would have a ***neutral effect*** on yellow warblers.

Rationale for Determination
- The potential for increased adverse direct and indirect effects compared to the current situation would not be to an extent that would constitute a negative effects
- Potential adverse affects in the Black Butte Wildlife Area would be short term.

Golden Eagle *(Aquila chrysaetos)*

Existing Condition

Golden eagles breed in open and semi-open habitats over a wide elevation range. Nests are typically built on cliffs, but occasionally also occur in trees, on the ground, in river banks, and in man-made structures. Open areas such as grasslands and shrub-steppes provide foraging habitat, and heavily forested areas are typically avoided. Nests sites are usually located close to hunting grounds. Eighty to ninety percent of prey items are mammals, mainly hares, rabbits, squirrels, prairie dogs, and marmots. Other mammals eaten include ungulates, carnivores, and domestic animals. Golden eagles often feed on carrion, and have been documented feeding on livestock, both carrion and eagle kills (Kochert 2002).

In the project area, golden eagle habitat is present mainly in the lower elevation open areas in the northern half of the Red Lodge Creek allotment and in the Black Butte Wildlife Area. Although golden eagles and nests have not been documented in the project area, they have been observed on adjacent private lands to the north.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Removal of livestock would have no direct effects on golden eagles. Potential indirect effects would be related mainly to prey availability. Changes in habitat conditions for golden eagle prey species are not likely to be large enough to affect prey abundance or diversity. Indirect effects on golden eagles would be minimal.

Cumulative Effects
No cumulative effects are expected.

Determination of Effects
Alternative 1 would have a **neutral effect** on golden eagles.

Rationale for Determination
- No direct or cumulative effects are expected.
- Indirect effects are expected to be minimal.

Alternative 2 – Maintain Existing Livestock Management

Direct Effects
Since cliffs and ledges that provide nesting sites for golden eagles are not accessible to livestock, presence of livestock would not affect these nest sites. Although golden eagles occasionally nest on the ground, the availability of potential ground nesting areas on the allotments is limited, thus the potential for direct effects to ground nests is small. Potential indirect effects would be related mainly to prey availability. Golden eagles currently forage in and near the allotments, thus continuation of current grazing practices are not expected to cause adverse indirect effects to the species.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Golden eagles could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to golden eagles and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have a **neutral affect** on golden eagles.

Rationale for Determination
- Direct, indirect, and cumulative effects are unlikely.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Potential for direct effects would be the same as under Alternative 2.

Indirect Effects
Potential for indirect effects would be essentially the same as for Alternative 2.

Cumulative Effects
Cumulative effects would be the same as under Alternative 2.

Determination of Effects
Alternative 3 would have a **neutral affect** on golden eagles.

Rationale for Determination
- Direct and cumulative effects are unlikely.

Merlin *(Falco columbarius)*

Existing Condition

Merlins occupy open grasslands to semi-open forests. Nest sites typically provide a good view of surrounding terrain and may be in deciduous riparian stands, shelterbelts, or in conifer stands near open grasslands. The species uses nests built by other birds such as jays, crows, or magpies. Merlins rarely nest in tree cavities, on cliffs, or on the ground. Small to medium-sized birds comprise the majority of the diet, but merlin may also consume a small proportion of mammals, insects, or reptiles. Loss of suitable habitat, including nesting trees and foraging habitat, may be the main factor that affects merlin numbers in North America. (Warkentin 2005).

Although merlins have not been documented in the project area, potential habitat occurs in the Black Butte Wildlife Area, and in the northern portions of the Red Lodge Creek and Butcher Creek allotments.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No direct effects would result from removal of livestock and associated range developments.

Potential for indirect effects would be related mainly to changes in prey abundance. In the short term, native grassland and shrubland plant communities that are currently in degraded condition would increase in health and abundance, benefitting merlin prey species that inhabit those communities. In the long-term, without periodic disturbance, plant communities may lose productivity and diversity, and prey species abundance may consequently decline.

Cumulative Effects
No cumulative effects from management activities would occur. If future light to moderate intensity wildfire occurs in grasslands and shrublands, plant health and diversity in merlin habitat would eventually increase and provide improved habitat for prey species.

Determination of Effects
Alternative 1 would have a **neutral affect** on merlin.

Rationale for Determination
- No direct or cumulative effects would occur.
- Indirect effects would be minimal.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Since merlins rarely nest on or near the ground, presence of livestock under current management is expected to have no adverse direct effects on merlin. Potential indirect effects would be related to changes in prey abundance. Foraging conditions in currently degraded grassland and shrub communities would likely not improve, and would probably be maintained at sites that are currently healthy.

Cumulative Effects
Future noxious weed control is the only activity with potential to cause cumulative effects. Merlin could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to merlin and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Determination of Effects
Alternative 2 would have a **neutral effect** on merlin.

Rationale for Determination

- No direct effects would occur and cumulative effects are unlikely.
- Habitat conditions for prey would remain similar to their current condition.

Alternative 3 – Proposed Action

Direct and Indirect Effects

Since merlins rarely nest on or near the ground, presence of livestock under the proposed management system is expected to have no adverse direct effects on merlin. Potential indirect effects would be related to changes in prey abundance resulting from habitat alteration over time. Currently degraded grassland and shrub communities would likely increase in abundance and density, improving foraging conditions for merlin. Conditions on currently healthy sites would probably be maintained.

Cumulative Effects

Cumulative effects would be the same as under Alternative 2.

Determination of Effects

Alternative 3 would have a **neutral effect** on merlin.

Rationale for Determination

- No direct effects would occur and cumulative effects are unlikely.
- The extent that habitat conditions for prey in some areas would be improved would not be enough to constitute a beneficial effect.

Elk *(Cervus elaphus)*

Existing Condition

Although elk historically occupied both forests and grasslands, elk in the Rocky Mountains currently inhabit mainly coniferous forests with rugged terrain, spending most of the summer in alpine or subalpine zones or streambottoms. Elk use a variety of slope percents, choosing slopes between 15 and 30 percent most frequently. More open areas are used during spring and summer probably because of earlier green-up of vegetation (FEIS 2008). Lower elevation grasslands and shrublands are used as winter range.

Feeding habits of elk vary throughout their range and with season. FEIS (2008) reports that grasses and forbs are preferred during spring and summer, and woody browse during winter. Kufeld (1973) combined the results of forty-eight food habit studies to determine what plants Rocky Mountain elk normally eat and the relative value of those plants. His results for Montana studies showed that grasses or shrubs were concentrated on during winter, depending upon forage availability; that grass was highly used in spring and the primary forage in fall; and forbs were the dominant summer forage. Value rankings varied depending upon season, but some plant species reported as being highly valuable and that occur in the project area are bluebunch wheatgrass, Idaho fescue, *Poa* and *Carex* species, aspen, chokecherry, and willow species. Elk diet composition and forage preference studies conducted by Van Dyke (1993?) in southeastern Montana showed that in winter, spring and fall, elk preferred graminoids as a category in bunchgrass-sagebrush habitats, but only slightly preferred graminoids in bunchgrass-forb habitats. Vegetation generalizations for elk in a particular area may not necessarily apply to other areas, however. For example, Van Dyke, et al (1992a?) reported variations in summer diet of two different elk herds in southeastern Montana.

Elk habitat selection studies conducted in the Beartooth Mountains showed elk preference for bunchgrass-forb habitat types in winter, even though this habitat type was relatively uncommon. Thus, elk may require bunchgrass-forb sites on predominately bunchgrass-sagebrush winter ranges in the study area. Bunchgrass-sagebrush sites that were converted through burning to bunchgrass-forb sites received increased elk use, and elk seemed to select forage plants based on species and quality of the plant. Douglas fir habitats were rarely selected in winter but strongly selected in spring. Wintering elk in the project vicinity seemed to prefer bed sites with relatively level ground and low sapling density but enough surface vegetation to serve as a bedding mat. In addition, elk preferred feeding and resting areas with slopes less than 25% (Van Dyke 1992?).

Elk use of the project area varies depending on location. Presence of elk is virtually non-existent in the East Rosebud Allotment, but the northcentral portion of the West Rosebud Allotment serves as winter/spring range. Total counts of elk on the Morris Creek winter range, between the West Rosebud drainage and the Black Butte Wildlife Area, increased from 33 in 1977 to over 200 in years 2000 through 2006. Numbers were slightly lower in 2007, with a count of 184 (Montana Fish, Wildlife and Parks 2007). Private lands to the north on the Morris Creek winter range are utilized more than Forest Service. Elk occupy the Black Butte Wildlife Area to a lesser degree and primarily during spring. The northern portion of the Red Lodge Creek and Butcher Creek areas are used during summer and fall (Stewart 2008). Counts of elk on the Butcher Creek winter range have varied greatly, with lows in the 30's in 1976, 1977, and the late 1999s, and highs of over 100 from 2002 through 2005. Somewhat lower numbers of 81 were counted in 2006 and 2007 (Montana Fish, Wildlife and Parks 2007).

Krausman (1996) provides some generalizations regarding interactions between elk and livestock. They are as follows:

- The potential for competition is highest on winter and spring-fall ranges where either forage quantity or quality is limited and where both species can commonly share "ecologically compressed habitats" on low elevation bottomlands or foothills.
- Competition is usually low on high-elevation summer ranges.
- The potential for competition increases during late summer and fall on high elevation summer ranges.
- Elk and cattle often distribute themselves spacially in a manner that minimizes competition.
- Elk and cattle often distribute themselves seasonally in a manner that minimizes or heightens competition.
- Where spacial or seasonal distributions overlap, differences in diets between elk and cattle can sometimes minimize competition.
- The potential for competition is high on rangelands experiencing a declining trend in condition.
- High elk densities may induce negative effects on forage conditions similar to that caused by high stocking rates of cattle, resulting in lower animal performance.
- Elk show an aversion to the presence of cattle that may or may not restrict their grazing choices.
- On productive rangelands that were grazed historically by native herbivores, systems of cattle grazing can be designed to enhance forage or foraging conditions for elk. Likewise, grazing by elk can enhance conditions for cattle.
- Competition can be high at a given time and place during a year and low or nonexistent in the same place and time in subsequent years.

One study in Oregon showed that elk preferred ungrazed areas and showed no difference in their use of season-long versus deferred-rotation pastures. However, in another study area, elk use was higher under season-long than deferred grazing when cattle stocking rates were light, but preference was the opposite when cattle stocking was high. In Montana and east-central Idaho, elk preferred pastures in rest and avoided pastures actively grazed by cattle. However, little other data is available regarding the response of elk to various grazing systems. Livestock stocking rate is the grazing variable that has the most influence on the composition, quantity, and nutritive value of forage available to ungulates. On more productive rangelands in the Rocky Mountains, light livestock grazing may "condition" grasses for elk by causing high nutrition regrowth or improving access to nutritious plant parts. Moderate livestock forage utilization rates between 25% and 60% can be positive, neutral, or negative on forage conditions for elk, depending on timing of grazing, physiological response of key forage plants to grazing, and the inherent productivity and condition of the range. Livestock forage utilization rates above 60% may significantly reduce or eliminate key forage plants for elk and cattle, thus increasing competition for limited forage (Krausman 1996).

Water is considered limiting to elk on many arid and semi-arid rangelands. Increased distribution and availability of water may enhance elk use of the driest grasslands, especially during dry seasons and years. However, water sources developed for cattle use may increase the potential for competition between elk and cattle, or may reduce elk use in favor of cattle. This is because roads open to motorized travel are associated with most water developments and elk avoid livestock, although elk will return to grazed areas after cattle have left. A more even distribution of water that results in more even distribution of livestock may reduce grazing choices by elk unless

livestock-free areas are also available within an elk herd's seasonal home range.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate the potential for the direct effect of competition between elk and livestock. In the short term, individual elk may alter their behavior due to human presence associated with removal of range developments. Once removal of developments is complete, this disturbance factor would be eliminated.

In the short term, native grassland and shrubland plant communities that are currently in degraded condition would increase in health and abundance, benefitting elk that inhabit those communities. The exception is areas dominated by non-native timothy and smooth brome. Such grasses will probably persist, and timothy may invade sites where it is not currently the dominant species, resulting in lowered grass species diversity for elk forage. In the long-term, without periodic disturbance, plant communities would lose productivity and diversity, and forage diversity and abundance may consequently decline. Lack of grazing or other disturbance such as fire would allow plant litter to accumulate, making accessability to forage harder for elk.

Cumulative Effects
Historically, periodic wildfire rejuvenated vigor and diversity of plant communities across the landscape. Absence of grazing in addition to the lack of wildfires could add to degredation of forage plants in grassland and shrublands over the long term.

Determination of Effects
Alternative 1 would have a **neutral effect** on elk.

Rationale for Determination
- Short-term improvement in forage condition and the absence of potential for social competition with livestock would be offset by long-term decline in forage accessability in grasslands and shrublands.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Elk typically do not occupy the West Rosebud Allotment during the livestock grazing season, and livestock would not be present in the Black Butte Wildlife Area. Thus, social competition between elk and cattle would not take place in these areas. Potential exists for elk to be displaced by livestock every year in the Red Lodge Creek and Butcher Creek Allotments since elk utilize these areas during livestock grazing season. The period of time that competition could occur on the Butcher Creek Allotment would vary each year because of the deferred rotation system.

Currently degraded grassland and shrubland plant communities would likely not increase in health and abundance. Abundance and composition of grassland and shrubland plant communities would likely be maintained at sites where they are in a healthy condition. The exception is areas dominated by non-native timothy and smooth brome, which will probably persist. Thus, changes in availability and quality of forage would likely be small.

Cumulative Effects
Elk could potentially ingest vegetation sprayed for noxious weed control. Although the toxicity level of some herbicides and inert ingredients that may be used on the Beartooth District in the future is uncertain, it is expected to be low. In addition, the chance of elk ingesting doses great enough to cause toxic effects is small. Hunting pressure could potentially influence elk movement, but to what extent is not known. Given that elk counts have generally increased in the project area as a whole, human-caused cumulative effects are probably small.

Determination of Effects
Alternative 2 would have a **neutral effect** on elk.

Rationale for Determination

- Minimal direct, indirect, or cumulative effects are expected.
- Forage quality and accessability would change little from its current condition.
- The elk population in the project vicinity has increased substantially since the early 1970's despite the presence of livestock.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Elk typically would not occupy the West Rosebud Allotment or the Black Butte Wildlife Area during the livestock grazing season, thus social competition between elk and cattle would not take place in these areas. Potential exists for elk to be displaced by livestock every year in the Red Lodge Creek and Butcher Creek Allotments since elk utilize these areas during livestock grazing season. The period of time that competition could occur on both allotments would vary each year because these two allotments would be rotated so they are never grazed during the same time two years in a row.

Currently degraded grassland and shrubland plant communities are expected to increase in abundance and density, potentially providing improved foraging conditions for elk. Currently healthy upland plant communities would likely remain similar to their current condition. In general, areas currently dominated by non-native timothy and smooth brome would probably change little. Flash grazing once every 5 to 6 years as proposed for the West Rosebud Allotment and once every 6 to 8 years in the Black Butte Wildlife Area may help reduce expansion of non-native grasses somewhat, but whether the dominance type would significantly shift toward native grasses is not known.

Cumulative Effects
Cumulative effects would be essentially the same as under Alternative 2.

Effects Determination
Alternative 3 would have a **neutral effect** on elk.

Rationale for Determination
- Direct, indirect, and cumulative effects would be minimal.
- The elk population in the project vicinity has increased substantially since the early 1970's despite the presence of livestock. Continuing grazing under the new system, plus the expected improvements in some plant communities, are not expected to affect the elk population trend.

Mule Deer *(Odocoileus hemionus)* **and White-tailed Deer** *(Odocoileus virginianus)*

Existing Condition

Five major ecological zones provide deer habitat in Montana. These types are mountain-foothills, timbered breaks, prairies, plains riverbottom, and northwest montane forest. The project area is considered part of the mountain-foothills environment. Hall, et al. (1997) suggests habitat be defined as "…the resources and conditions present in an area that produce occupany – including survival and reproduction – by a given organism." Deer habitat provides functions that contribute to survival of individuals, populations, and species, and thus provides more than just food, water, cover, and space. Functions include reproduction and maintenance, and characteristics of the habitats that support these functions vary widely across a species' distribution. Habitats vary throughout the year and may be interspersed within a single year-long range, may overlap seasonally, or may be spacially separated seasonal ranges (Mackie, et al. 1998).

On deer study areas in Montana, habitat suitable for reproduction is generally in diverse, mesic environments. Such areas are dominated by various forbs and crops, but also contain shrubs and grasses. Other important characteristics of reproduction habitat include microsites that provide alternate forage sources throughout summer, opportunity for isolation from other deer, security from predators, and minimal competition with other ungulate species and domestic livestock. Diverse, mesic montane forests at middle elevations were determined to be the primary reproductive habitat for mule deer in mountain-foothill environments. Reproductive habitat for

white-tailed deer usually included ponds, marshes, streams, and other riparian features. Diverse vegetation providing abundant succulent vegetation from spring to late summer was particularly important, as was proximity to agricultural crops in some areas.

Maintenance habitat must provide the resources needed for adult survival. Included is winter habitat for all deer and summer habitat capable of sustaining males and non-reproductive females. Summer maintenance habitats in the Montana study areas were typically drier and less diverse, occurred in a wider variety of environments, and may have had greater risk of predation and/or competition than reproductive habitats. Maintenance habitats in the Montana mountain-foothill study areas consisted of subalpine/alpine and shrub-grass steppes above and below the montane forest zone, and dry ridges and hillslopes.

In mountain habitats, winter range is associated with areas that receive minimal snow accumulation. Geographic location, topography, climate, and vegetation help define winter range and patterns of deer usage within that habitat. Both mule deer and white-tailed deer winter across a mixture of trees, shrubs, forbs and grasses and thus are not tied to specific vegetation types during winter. Most of the deer winter ranges studied were grazed by livestock. Thus, deer use of winter range, in contrast to reproduction habitat, did not appear to be influenced by prior livestock grazing (ibid)

Forage use by mule deer, white-tailed deer and livestock varies between areas, seasons, and years, and with intensity of livestock use. Mule deer on average consume predominately shrubs and trees year round, with the proportion increasing through the fall and being highest during winter. Use of grasses is typically highest in spring and very low in summer. Forb use is highest in summer and typically much lower than shrub and tree use during the rest of the year. Mule deer diet can be highly variable and include mushrooms, lichens, and horsetails if present. White-tailed deer forage on many species of browse, forbs, grasses, mushrooms and fungi, and plant fruiting bodies. They will feed on whatever forage is available and can select the most nutritious and palatable plants or plant parts. Browse is the primary winter food, and herbaceous plants are the dominant food during the growing season. Cattle appear to use forbs more in spring and when grazing is light, and grasses typically predominate in the summer diet. Forbs may also be a large portion of cattle diet during summer in some areas. Shrubs and trees are typically used only lightly as forage by cattle. Also, cattle tend to concentrate on the most abundant grasses whereas mule deer, when they utilize grasses, tend to prefer subdominant species (Krausman 1996).

Mule deer winter range generally occurs in the lower elevations near the Forest boundary and on private lands. Some mule deer do winter in the Black Butte area, but winter use of the West Rosebud drainage has decreased over the years. The Red Lodge Creek area provides fawning and summer habitat, but mule deer typically do not winter there. White-tailed deer occur mainly at lower elevations, also, and winter primarily on private lands outside the Forest Boundary. White-tailed deer are prevalent in the Black Butte area outside winter months.
No critical winter range or fawning habitat for either species occurs in the project area.

Various aspects of livestock grazing may affect mule deer and white-tailed deer. Changes in forage, cover, and plant productivity, and disturbance of deer by livestock and associated human activity, may cause deer to change distribution patterns, habitat use, and population density, or modify their activity. White-tailed deer are very adaptable and thrive in close association with humans and agricultural developments. Some studies, including in Montana, noted that mule deer avoided areas with large numbers of cattle, and that the shift to use of other areas within their home ranges may or may not be detrimental. Such shifts are probably gradual and continuous where mule deer and cattle co-exist on a range and are probably not very significant unless grazing is intensive. Numerous authors discuss use of livestock to enhance habitat for mule deer and white-tailed deer. Removal of old vegetation via livestock grazing can improve conditions for both species of deer by stimulating new growth palatable to deer and improving accessability to palatable deer forage. In addition, cattle use of forage less palatable to deer can reduce competition with forage used by deer, and shrub heights can be reduced to levels available to deer. It is unclear whether white-tailed deer avoid livestock as some studies have shown avoidance whereas others have reported that whitetails ignored livestock. Perceived avoidance may be related more to lowered forage quantity and quality than to the actual presence of livestock (Krausman 1996). A common thread in much of the literature is that low to moderate grazing intensity may be compatable with or beneficial to deer, and that heavy livestock grazing or total lack of grazing may lead to reduced vigor, diversity, and production of plants important for deer.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate the small potential for social competition between deer and livestock. In the short term, individual deer may alter their behavior due to human presence associated with removal of range developments. Once removal of developments is complete, this disturbance factor would be eliminated.

In the short term, native grassland and shrubland plant communities that are currently in degraded condition would increase in health and abundance, benefitting deer species that inhabit those communities. In the long-term, without periodic disturbance, plant communities would lose productivity and diversity, and forage diversity and abundance for deer may consequently decline. Lack of grazing or other disturbance such as fire would allow plant litter to accumulate, making accessability to forage harder for both deer species. Given the total area currently grazed in comparison to available habitat, however, the effects of reduced forage condition in the project area compared to forage available throughout mule deer range would be minimal. Degraded riparian vegetation would likely increase in vigor and density, providing improved cover for white-tailed deer over the long term.

Cumulative Effects
Historically, periodic wildfire rejuvenated vigor and diversity of plant communities across the landscape. Absence of grazing in addition to the lack of wildfires would add to degredation of forage plants over the long term. However, as with indirect effects, the overall effect would be minimal given that forage is available throughout deer range .

Determination of Effects
Alternative 1 would have a **neutral effect** on mule deer and white-tailed deer.

Rationale for Determination
Mule deer:

- The effects of reduced forage condition in the project area compared to forage available throughout mule deer range would be minimal. Thus, the extent of the area that would undergo reduced forage productivity and availability would not be enough to constitute a negative effect.

White-tailed deer:

- White-tailed deer habitat in the project area is limited compared to available habitat on adjacent private lands and thus the effects of reduced forage condition in the project area compared to forage availability throughout white-tailed deer range would be minimal. The extent of riparian area that would undergo improved cover value is also minimal and would not be enough to constitute a beneficial effect.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Social competition between livestock and either deer species is likely to be minimal. Forage competition would also be low since there is little dietary overlap between deer and cattle. Individual deer may alter their behavior due to human presence associated with livestock management, but the disturbance would be short duration and localized.

Currently degraded grassland and shrubland plant communities would likely not increase in health and abundance. Abundance and composition of grassland and shrubland plant communities would likely be maintained at sites where they are in a healthy condition. The exception is areas dominated by non-native timothy and smooth brome, which will probably persist. Thus, changes in availability and quality of forage for deer would likely be small.

Currently healthy riparian systems are expected to remain so. Degraded riparian systems would likely not improve. Thus, cover for white-tailed deer would probably change little over the long term.

Cumulative Effects
Mule deer or white-tailed deer could potentially ingest vegetation sprayed for noxious weed control. Although the toxicity level of some herbicides and inert ingredients that may be used on the Beartooth District in the future is uncertain, it is expected to be low. In addition, the chance of deer ingesting doses great enough to cause toxic effects is small. Future aspen treatments will improve habitat for white-tailed deer. Cumulative effects would be minimal overall.

Determination of Effects
Alternative 2 would have a **neutral effect** on mule deer and white-tailed deer.

Rationale for Determination
Mule deer:

- Minimal direct, indirect, or cumulative effects are expected.

White-tailed deer:

- Minimal direct, indirect, or cumulative effects are expected.

Alternative 3 – Proposed Action

Direct Effects
Potential direct effects would be the same as under Alternative 2.

Currently degraded grassland and shrubland plant communities are expected to increase in abundance and density, potentially providing improved foraging conditions for deer. Currently healthy upland plant communities would likely remain similar to their current condition. In general, areas currently dominated by non-native timothy and smooth brome would probably change little. Flash grazing once every 5 to 6 years as proposed for the West Rosebud Allotment and once every 6 to 8 years in the Black Butte Wildlife Area may help reduce expansion of non-native grasses somewhat, but whether the dominance type would significantly shift toward native grasses is not known. Some aspen communities in the Black Butte Management Area are currently healthy but are at risk of adverse impacts such as reduced cover for white-tailed deer.

Cumulative Effects
As under Alternative 2, deer could potentially ingest vegetation sprayed for noxious weed control. Although the toxicity level of some herbicides and inert ingredients that may be used on the Beartooth District in the future is uncertain, it is expected to be low. In addition, the chance of deer ingesting doses great enough to cause toxic effects is small. Cumulative effects to white-tailed deer would be slightly positive since future aspen treatments would improve cover for the species in the long term.

Effects Determination
Alternative 3 would have a **neutral effect** on mule deer and white-tailed deer.

Rationale for Determination
Mule deer:

- Minimal direct, indirect, or cumulative effects are expected.

White-tailed deer:

- Minimal direct and cumulative effects are expected.
- Reduced cover for white-tailed deer habitat would probably not be to a large enough extent to constitute a negative effect.

Other Species and Biodiversity Issues

Black Bear *(Ursus americanus)*

Existing Condition

Riparian areas in the East Rosebud and West Rosebud Allotments, and portions of the Butcher Creek allotment, are heavily used by black bears. Important habitats include moist areas and berry-producing shrub fields. Black bears become active immediately following hibernation that typically ends during late March or early April. Once black bears break hibernation, they seek succulent vegetation such as grass, sedges, and forbs. Additionally, food material such as carrion or insects found under rocks and logs are highly utilized. By mid-summer, berries become the primary food source, though succulent vegetation remains important throughout the year. As fall approaches, limber pine nuts may become an important food item. Hibernation may begin as early as October depending on the weather and food availability. Of primary concern is the maintenance of healthy riparian areas and the availability of food within the allotments, particularly in spring and early summer soon after bears come out of hibernation.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
No direct effects are expected from removal of livestock and associated developments.

Livestock grazing impacts to riparian vegetation would no longer occur. Absence of livestock would allow riparian vegetation to increase in vigor and density. Riparian systems currently functional-at-risk would eventually achieve proper functioning condition, thus providing improved foraging habitat for black bears in areas where habitat conditions are currently marginal to poor. Healthy riparian areas would remain available as habitat. The condition of berry-producing shrubs may change little due to livestock removal because in some areas they are heavily browsed by ungulates.

Little change in habitat and forage availability or quality is expected in the uplands in the short term. The majority of upland shrub communities is currently healthy. Over the long term, forage availability in the uplands may decline due to lack of periodic disturbance.

Individual black bears that travel through the allotments may potentially alter their travel routes due to human activity associated with removal of range developments, but displacement would be temporary and would occur in small, isolated portions of available habitat. Once removal of developments has been completed, potential for disturbance from human activity associated with livestock management would be eliminated.

Cumulative Effects
The potential for adverse cumulative effects is expected to be minimal. Potential future timber activity such as post and pole removal would most likely occur in lodgepole pine stands that provide minimal forage for black bears. Aspen treatments are designed to stimulate new aspen growth, thus would be beneficial on a small scale over time as regenerating stands attain structure and composition compatable with black bear needs.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
No direct effects are expected from continuation of grazing under current management.

If past management (actual use) is continued, then forage availability in currently degraded riparian systems would not be expected to increase because over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place, then currently upward-trending riparian systems may decline and result in lower forage quality for bears. Thus, habitat conditions would be maintained in some areas and further degraded in others.

Foraging conditions in currently degraded upland shrub communities would likely not improve, and would probably be maintained at sites that are currently healthy.

Individual black bears that travel through the allotments may potentially alter their travel routes due to human activity associated with livestock management and maintenance of existing range developments. However, displacement would be temporary, sporadic, and occur in small, isolated portions of available habitat.

Cumulative Effects
Potential for cumulative effects would be the same as those described under Alternative 1.

Alternative 3 – Proposed Action

Direct and Indirect Effects
No direct effects are expected under Alternative 3.

As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not improve in condition under Alternative 3. In addition, the riparian areas and aspen communities in the Black Butte Management Area are currently healthy but are at risk of adverse impacts such as reduced vigor of riparian vegetation, and vigor and density of understory shrubs in aspen communities.

The condition of berry-producing shrubs in the uplands probably would change little. Chokecherry in particular has been heavily browsed, especially evident in the Black Butte Wildlife Area. Introduction of livestock to this area would probably have a minor effect on berry-producing shrubs in the uplands. Some aspen communities in the Black Butte Wildlife Area, however, are currently healthy but are at risk of being adversely impacted under this Alternative. Such impacts include loss reduced density and vigor of forage plants in aspen communities, and lowered protective cover for bears.

The level of human activity would increase slightly during installation of new range developments, but the increase would be very short term. Human activity associated with livestock management and maintenance of new and existing range developments would not differ much from that under Alternative 2.

Cumulative Effects
Potential for cumulative effects would be the same as those described under Alternative 1.

Blue Grouse *(Dendragapus obscurus)*

Existing Condition

Blue grouse have displayed long term population declines throughout the historic ranges of blue grouse in Montana. Blue grouse utilize available habitats in a reverse elevation migration pattern. Nesting and brood rearing occurs at lower elevations in the sagebrush/grassland/conifer ecotones. The broods begin to move upward by the middle of August and by early September most broods are located near the 6,500 to 7,000 foot level. As winter approaches, birds continue to migrate up slope until reaching the upper elevation limits of the spruce/fir vegetative community. Winter forage consists of conifer needles with Douglas-fir and subalpine fir being preferred (Burleigh, 1972).

Breeding range includes shrub/steppes, grasslands, in or along edges of montane forest edges, and in alpine/subalpine ecotones. Nests are almost always on the ground in a location with at least some overhead cover. During spring and summer, blue grouse forage on leaves and flowers of herbs; and leaves, flowers, and berries of shrubs. Hawthorn, Ribes, serviceberry, rose, huckleberry, Arnica, buffaloberry, and vetch are some plant foods that have been documented. Invertebrates are an important food item for young chicks. Winter food consists primarily of conifer needles (Zwickel 2005). The availability of quality nesting and brood rearing habitat is considered the primary limiting factor for blue grouse populations. Nest depredation occurs when adequate residual cover is not available. In addition, young blue grouse require adequate cover to avoid predators. Blue

grouse chicks are dependent on insects during much of their early life. Good vegetational structure in grassland/shrub/sagebrush vegetation communities is an important factor in the maintenance of high insect populations. Berry-producing shrubs are also important. To minimize predation, blue grouse need to disperse over a large area. Activities that concentrate populations into smaller areas increase susceptibility of individuals to predation (Stewart 2006).

Blue grouse are somewhat unique in that they live longer than most game birds, although reproduction rates are generally lower than other galliformes. This is an important consideration in the management of this species. Once populations are significantly depressed, recovery is not as rapid as in many other upland game bird species.

In the project area, blue grouse use sagebrush for nesting and cover, particularly in the West Rosebud Allotment. Blue grouse also utilize the moist habitats in the Shorey Jungle and Shorey Swamp pastures of the West Rosebud Allotment for brood rearing, plus occupy various habitats in the Red Lodge Creek area.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Absence of livestock would eliminate any potential for trampling of nests, eggs, or chicks by livestock. The majority of the sagebrush communities and moist habitats currently support blue grouse and would continue to do so in the absence of livestock, thus indirect effects are not expected.

Cumulative Effects
No cumulative effects from management activities would are expected.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
Since nests are constructed on the ground, potential exists for livestock to trample nests, eggs, or nestlings. Livestock typically do not concentrate in sagebrush areas under current management, thus potential for trampling is small. Indirect effects would be related to availability of insect prey plus plants used for forage. Forage availability with continued grazing is likely to change little in sagebrush habitats. In other shrub communities, foraging conditions in currently degraded sites would likely not improve, and would probably be maintained at sites that are currently healthy.

Cumulative Effects
Future noxious weed control is one activity with potential to cause cumulative effects. Blue grouse could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to blue grouse and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Potential direct effects on ruffed grouse would be similar to those under Alternative 2. Potential for trampling of nests, eggs, or nestlings would remain small. Indirect effects would be related to availability of insect prey plus plants used for forage. Forage availability with continued grazing is likely to change little in sagebrush habitats. In other shrubland communities, foraging conditions would probably improve at degraded sites and be maintained on healthy sites. The Shorey Swamp and Shorey Jungle pastures have not been grazed in past years, but are proposed for grazing in Alternative 3. Livestock would be present on each of these two pastures for a maximum of two days, and the pastures would not be grazed during the same season two years in a row. The short duration of livestock occupancy and the deferred rotation system would minimize potential indirect impacts to blue grouse.

Cumulative Effects

Potential for cumulative effects would be the same as under Alternative 2.

Neotropical Migrants And Brown-Headed Cowbirds

Existing Condition

Migratory birds respond to changes in vegetation rather than to cattle themselves. Cattle have little immediate impact on birds that nest and forage in forest canopies, but can have substantial impact on species that rely on shrub and ground vegetation. Shrub and grass layers are not necessarily eliminated by grazing, but rather the physical structure is modified over time. Structural characteristics that are detrimental to some bird species may benefit other species (Krausman 1996).

The Beartooth Mountain area provides habitat for a diverse assemblage of neotropical migrant bird species. Many of these species are closely associated with shrubland and grassland habitat features that occur in the project area. Surveys conducted in the East Rosebud, Black Butte, and Red Lodge Creek areas identified a myriad of neotropical migrant birds using the area habitats for nesting and foraging.

Declines in neotropical migrant bird populations have been attributed to agricultural conversions of native habitats, loss of habitat quality in remaining native habitats, habitat fragmentation, cowbird parasitism, competition by non-native species introduced to North America, losses of historic processes (fire, herbivory, etc.) and many other factors (Saab, 1997).

Brown-headed cowbirds have been documented in the Beartooth Mountains, including in the East Rosebud, Black Butte, and Red Lodge Creek allotments. In the eastern United States, cowbirds have been responsible for declines of many neotropical migrant bird species. Western species, particularly those occuring on or adjacent to prairie habitats, may be more resilient to cowbird parasitism. Cowbirds were historically associated with bison herds. Woodland and prairie systems that were frequented by bison probably had historic populations of cowbirds. However, even in the "west" cowbirds have expanded substantially, both in terms of occupied habitats and population levels. At lower elevations, outside of the project allotments, private lands with cattle present year round provide a habitat reservoir for cowbirds.

The effects of cowbird parasitism have not been assessed in the Beartooth Mountains. Parasitism undoubtedly occurs at some level in the project area.

Effects

Brown-headed Cowbird Parasitism

Selection of any of the alternatives would not change the occupancy of habitats by brown-headed cowbirds. In the Sierra Nevada, female cowbirds were recorded commuting several kilometers from livestock concentration areas to search for nests to parasitize (Trail & Baptista 1991). The proximity of these allotments to other lands with year-round domestic livestock use renders this area available to brown-headed cowbirds under any alternative. Not all bird species are used as hosts for the cowbird. The Management Indicator Species yellow warbler, ovenbird, and spotted towhee are susceptible to parasitism, with the yellow warbler being one of the top three bird species preferred by the cowbird.

Neotropical Migrant Habitat

Grazing has a differential effect on avian foraging. Aerial insectivores and bark feeders are not likely affected because they do not rely on vegetation as a feeding substrate. It has been found that an increase in grassland vegetation contributes to habitat diversity that can increase the diversity of insect communities (Krueger and Anderson 1985). Overgrazing by livestock can alter the structure and composition of plant communities in ways that enhance conditions for population outbreaks of grasshoppers. As rangeland conditions improve, the likelihood of outbreaks decreases and grassland birds should be able to effectively maintain grasshopper populations at lower levels. Grassland birds would benefit from a stable supply of an insect prey base.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
Removal of livestock would eliminate potential for trampling of nests, eggs, and nestlings of species that nest on the ground or in the lower portions of shrubs. Riparian systems currently functional-at-risk would eventually achieve proper functioning condition, thus providing habitat for migratory songbirds in areas where habitat conditions are currently marginal. Functioning at-risk riparian habitat would improve as impacted vegetation increases in vigor and density, thus increasing availability of nesting habitat and forage. Healthy riparian areas would remain available as habitat. The majority of upland shrub communities is currently healthy. Over the long term, forage availability in the uplands may decline due to lack of periodic disturbance, potentially leading to decline in nesting and foraging conditions for migratory landbirds.

Cumulative Effects
No cumulative effects are expected under this Alternative.

Alternative 2 – Maintain Existing Livestock Management

Direct Effects
Direct effects from nest trampling may occur on ground nesting birds that have not completed incubation or whose young have not fledged. Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance. If past management (actual use) is continued, then nest site availability and insect diversity and abundance in currently degraded riparian systems would not be expected to increase because trampled streambanks and over-utilized riparian vegetation would not recover. Riparian areas that are currently properly functioning would likely contain vigorous, dense vegetation that supports an abundant and diverse insect population for forage. Riparian systems that are trending upward would likely provide increased forage over time. If permitted use, which has been substantially higher than the actual use over the past twenty years, takes place, then currently upward-trending riparian systems may decline and result in lower insect abundance and nest site quality. Thus, habitat conditions would be maintained in some areas and further degraded in others.

Cumulative Effects
Activities that most likely impacted habitat for neotropical migrant birds in the past were heavy livestock grazing and introduction of timothy. Past impacts to nesting and foraging habitat from heavy grazing have been reversed to a large extent by substantial stocking level reductions since the mid 1900s, but areas dominated by timothy are not likely to return to native grasses.

Future noxious weed control is one activity with potential to cause cumulative effects. Migratory landbirds could occasionally ingest prey that have been sprayed with herbicides if they forage in areas that receive herbicide treatment. Toxic effects to birds and prey species are unlikely, however, because the herbicides that are expected to be used on the Custer National Forest in the future have not been found to bio-accumulate or bio-magnify.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Direct effects from nest trampling may occur on ground nesting birds that have not completed incubation or whose young have not fledged.

Potential indirect effects would be related to availability of nesting habitat and changes in insect abundance resulting from alteration in riparian condition over time. As discussed in the project Riparian report, estimating future conditions for riparian areas in the West Rosebud and East Rosebud Allotments with even a moderate level of certainty is not possible. Riparian systems in the Butcher Creek Allotment are currently degraded and may not improve in condition under Alternative 3. In addition, the riparian areas and aspen communities in the Black Butte Management Area are currently healthy but are at risk of adverse impacts. Such impacts include loss of nesting habitat through reduced density and structural diversity of riparian vegetation and understory shrubs in aspen communities. Currently degraded upland shrub communities are expected to increase in abundance and density, improving nesting habitat and foraging conditions for migratory songbirds.

Cumulative Effects
Potential cumulative effects would be the same as under Alternative 2.

Residual nesting cover for ground-nesting birds

Existing Condition

Several bird species potentially present in the project area construct their nests on the ground. Different species have different nest site requirements. For example, nests of savannah sparrows and western meadowlarks are typically well concealed and constructed in fairly dense grasses or forbs. Species such as these require sufficient residual grasses and herbs for thermal and visual protection. Other species, such as the lark sparrow and horned lark, nest on bare ground.

Hutto and Young (1999) review potential effects of grazing and other management practices on numerous bird species. Effects may be negative, positive, or inconclusive, depending on the species being considered. For example, regarding some species potentially present in the project area, savannah sparrows have been shown to be negatively affected by grazing; western meadowlarks are considered to be negatively affected, but the effect is generally weak or inconclusive; vesper sparrows have shown inconsistent responses to grazing; conclusions are not available for green-tailed towhees; and horned larks respond positively to grazing. Different species have different habitat requirements, and an important aspect of habitat availability for a variety of species is to maintain a diversity of vegetation structure and composition.

Alternative 1 – No Livestock Grazing

Direct and Indirect Effects
By removing livestock grazing from the allotments, grasses and forbs are expected to gain an overall increase in height as well as diversity of structure and composition in the short term. Over the long-term, productivity may decrease with lack of disturbance. Bird species that prefer dense, taller vegetation for nesting would benefit from this alternative, whereas species that require short stature vegetation and bare ground would be negatively affected.

Cumulative Effects
No cumulative effects are expected under this alternative.

Alternative 2 – Maintain Existing Livestock Management

Direct and Indirect Effects
With continuation of the current deferred grazing system, vegetation structure and composition would probably remain similar to its current condition. Existence of bare ground and short stature grasses in over-utilized areas would benefit bird species requiring these nesting habitat components, and would be of detriment to species requiring dense cover for nesting.

Cumulative Effects
The most likely cause of adverse impacts from past activities is the introduction of non-native timothy and smooth brome. Areas dominated by these species are not likely to return to native grasses under continuation of current livestock management.

Alternative 3 – Proposed Action

Direct and Indirect Effects
Residual ground cover would probably change little in areas where vegetation is currently healthy. The greatest change would occur in currently over-utilized areas. Improved livestock distribution in these areas would result in increased residual ground cover height and density. This would benefit bird species requiring taller stature grasses and lower bare ground coverage, and be of detriment to species requiring more bare ground and short-stature grasses.

Cumulative Effects
The potential for cumulative effects would be the same as under Alternative 2.

CONSULTATION WITH OTHERS

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