ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

BIOLOGICAL OPINION

for the 2010 Amendment to the 1999 Biological Assessment
for Livestock Grazing on the Northern Portions of the
Pinedale Ranger District

Agency:	U.S. Forest Service Bridger-Teton National Forest Jackson, WY
Consultation Conducted by:	U.S. Fish and Wildlife Service Wyoming Field Office Cheyenne, Wyoming
Date Issued:	January 18, 2011

Table of Contents

List of Tables

List of Figures

INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on our review of the Bridger-Teton National Forest's (Forest) 2010 Amendment to the 1999 Biological Assessment for Livestock Grazing on the Northern Portions of the Pinedale Ranger District and its determination of "may affect, likely to adversely affect" the threatened grizzly bear (*Ursus arctos horribilis*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended 50 CFR §402.14. Your April 1, 2010 letter requesting initiation of formal consultation and amended Biological Assessment (BA) were received on April 13.

This biological opinion is based on information provided in the BA, telephone conversations with Ms. Jenna Casey of your staff, Northwest Wyoming Level 1 meeting discussions in October 2009 and March 2010, and other sources of information. A complete administrative record of this consultation is on file in the Cheyenne Field Office.

Consultation History

In 1997, the Forest developed a BA to assess the effects of livestock grazing on the Elk Ridge Complex allotments and after on-going discussions with the Service, the BA was later expanded to include six additional permitted allotments: Badger Creek, Beaver-Twin, New Fork-Boulder, Pot Creek, Roaring Fork, and Upper Green River. The BA was amended in January 1999 based on further discussions between the Forest and the Upper Green River Cattle Association permittees and their attorney after which formal consultation was subsequently initiated. The Service completed the associated biological opinion (6-WY-97-F-002, July 16, 1999), which included incidental take in the form of lethal removal for 5 grizzly bears (4 males and 1 female) for on-going grazing activities. Non-lethal take was not specified.

Since the original consultation, grizzly bear populations in the Greater Yellowstone Area (GYA; hereafter referred to as GYA, Yellowstone Grizzly Bear Ecosystem (YGBE), or Greater Yellowstone Ecosystem (GYE)) have expanded and grizzly bears are much more likely to come into conflict as a result of forest management activities, in particular, recreation and grazing. The Forest has also met or exceeded the level of take provided in the 1999 biological opinion (BO). Therefore, based on new information including increasing grizzly bear ranges and population levels, as well as on-going livestock depredations in the Project area, the Bridger-Teton National Forest reinitiated consultation on livestock grazing in the northern portions of the Pinedale Ranger District. The Forest has expanded the original Project area to include nine allotments, due in part to adjacency of additional allotments and associated grizzly bear activity.

I. DESCRIPTION OF THE PROPOSED ACTION

The proposed action addresses on-going, authorized, commercial, domestic cattle and sheep grazing on nine allotments in the northern portion of the Bridger-Teton National Forest's Pinedale Ranger District: Badger Creek, Beaver-Twin Creeks, Noble Pastures, Roaring Fork, Upper Green River (Mud Lake/Fish Creek, Mosquito Lake Pastures, Tepee/Tosi/Kinky S, Moose/Gypsum, Kinky Creek N), Wagon Creek, New Fork-Boulder, Pot Creek, and Elk Ridge Complex (Elk Ridge, Rock Creek, Lime Creek, Tosi Creek); see Figure 1 and Table 1.

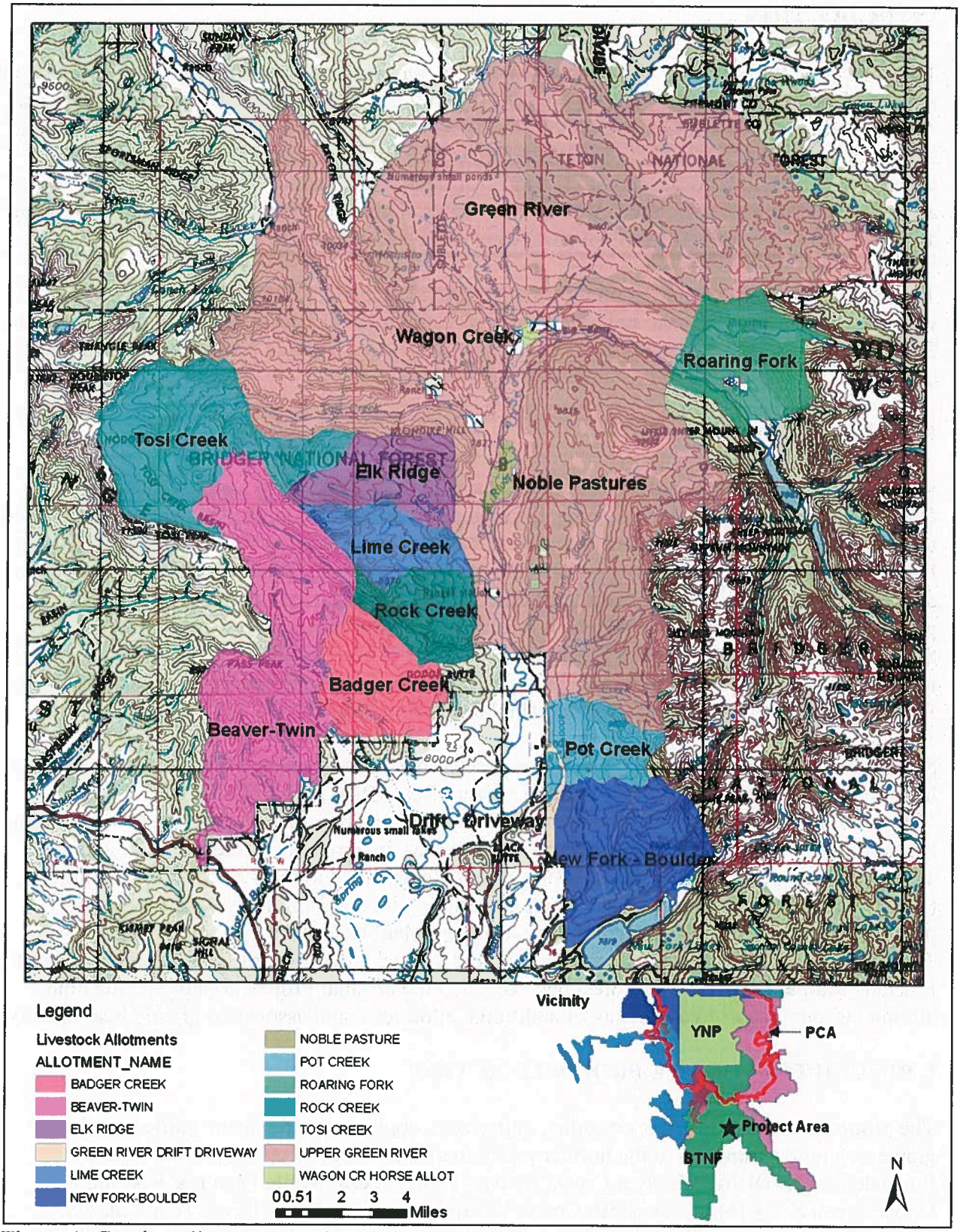

Figure 1. Grazing allotments on the northern portion of the Pinedale Ranger District (2010 BA).

Table 1. Livestock grazing allotments on the northern portion of the Pinedale Ranger District, Bridger-Teton National Forest (from 2010 BA).

Allotment Name	Total Acres	Suitable Acres	Grazing Season	Number Livestock	Grazing Management System
Badger Creek	7,325	2533	July 1st – September 30th	157 Cc	Season long
Beaver-Twin Creeks	22,266	13351	July 15th – October 15th	700 Cc	Season long
Noble Pastures	760	760	June 14th – September 20th	1616 Cc	Deferred Rotation
Roaring Fork	8,275	6047	June 16th – October 15th	170 Cc	Season long
Upper Green River: Mud Lake/Fish Creek Mosquito Lake Pastures Tepee/Tosi /Kinky S Moose/Gypsum Kinky Creek N	123,933	73181	June 16th – October 15th	7596 Cc	 Deferred Rotation Rest Rotation Deferred Rotation Deferred Rotation Rest Rotation
Wagon Creek	240	240	July 15th – October 15th	106 Cc	Deferred On/off
New Fork-Boulder	8294	3932	July 1st – September 30th	511 Cc	Deferred Rotation
Pot Creek	4665	2307	July 16th – October 15th	380 Cc	Deferred Rotation
Elk Ridge Complex: Elk Ridge Rock Creek Lime Creek Tosi Creek	31,430	17548	July 6th – September 26th	3750 El	Rest Rotation
TOTALS:	207,188	119,899		3,750 El 11,236 Cc	

Allotment Management Plans are prepared for each allotment, which includes approximately 46,100 Animal Unit Months (AUM's) of domestic cattle grazing proposed for continued authorization in the Project area (nine allotments), which is located in portions of Fremont, Sublette, and Teton Counties, Wyoming. This Project will not impact the road densities within the Project area.

All nine grazing allotments occur within occupied grizzly bear habitat, but are outside the GYE Recovery Zone (described below in the "Conservation" section) and 10-mile buffer surrounding the Recovery Zone. The Elk Ridge Complex allotment, which is comprised of 4 smaller allotments (Elk Ridge, Tosi Creek, Lime Creek, and Rock Creek), is for sheep grazing and the remaining eight allotments are for grazing cattle. Given continued use of these grazing allotments by livestock and grizzly bears, depredations and human/grizzly bear conflicts are expected to continue.

The Forest's BA included as part of the proposed action the following required Conservation Measures. Additional measures related to the 2003 Grizzly Bear Conservation Strategy, the Forest Service Occupancy and Use Restrictions (Order Number 04-00-104), and a summary of required grizzly bear management actions are provided in the Attachment. Conservation measures and directions listed immediately below are verbatim from the Forest's updated BA and have been identified as necessary to minimize potential adverse effects to grizzly bears and to meet the intent of the Act relative to the Forest Service's responsibilities under section 7(a)(1) of the Act.

Bridger-Teton National Forest's Required Grizzly Bear Conservation Measures (BA p. 8):

- The FS will request reinitiation of consultation in the event of significant changes to the grazing situation.
- All livestock predation will be reported to U.S. Fish and Wildlife Service (USFWS), BTNF, and Wyoming Game and Fish Department (WGFD).
- Annual discussions between USFWS, BTNF, WGFD, Wildlife Services, and Upper Green River Cattle Association permittees to discuss the conservation measures.
- All depredation control work will be conducted by WGFD or its authorized agent following Interagency Nuisance Bear Guidelines (pp. 51-70 in Interagency Grizzly Bear Guidelines; USDI U.S. Fish and Wildlife Service 1986).
- Bear Sanitation Guidelines will be followed for all camps associated with livestock operations (See Food Storage Order 04-00-104).
- Herders and riders are required to watch all livestock closely for sick, injured, or stray animals.
- Permanent Forest Service employees will monitor allotments on a regular basis.
- On Sheep Allotments:
  - All livestock carcasses will be removed as soon as practical and sick or injured animals will be removed or treated when possible.
- On Cattle Allotments:
  - All carcasses will be removed or treated within ½ mile of Green River Lakes Road, Union Pass Rd, FS 605, 660, 663B and 663C, GRL and Whiskey Campgrounds,

private cabins, Kendall and Fish Creek guard station, permitted cow camps, permitted outfitter camps, Lake of the Woods, Waterdog Lakes, and North Beaver and Tosi trailheads.

- Additionally, all dead stock posing a health or safety hazard will be moved when within ¼ mile of live streams, springs, lakes, water, riparian areas, system roads and trails, developed recreation areas, dispersed camping, and picnic sites.
- Sick or injured animals will be removed when possible.
- No sheep, cattle, or carcass will be removed if human safety is of concern.

II. STATUS OF THE SPECIES

Species Description

The grizzly bear is a subspecies of the brown bear (*Ursus arctos*). The grizzly is a large bear with long, curved claws, humped shoulders, and a face that appears to be concave. A wide range of color variations exist; from light brown to nearly black. Guard hairs are often paled at the tips giving the pelage a grizzly appearance, hence the name "grizzly." The bear's coloration is influenced by springtime shedding, new growth, nutrition, and climate (USFWS 1993).

In the lower 48 states, the average weight of grizzly bears is 400 to 600 pounds for males and females average 250 to 350 pounds. An occasional male may exceed 800 to 1,000 pounds. Adults stand 3.5 feet at the hump when on all fours. They may rear up on their hind legs reaching heights of over 8 feet (USFWS 1993).

The muscle structure of the grizzly bear is developed for massive strength and quickness. It can run at speeds of up to 45 miles per hour. Movement is achieved by a normal ambling position on all fours and an upright position on the hind legs that improves the opportunity to see and smell (USFWS 1993).

Life History

Home range and dispersal: Grizzly bears require large areas to fulfill their basic biological needs, including food and shelter. Their home ranges average 130 to 1,300 square kilometers (50 to 500 square miles). Within these home ranges, the grizzly bear uses a diverse mixture of forests, moist meadows, grasslands, and riparian habitats to complete its life cycle. Grizzly bears generally prefer large, remote areas of habitat for feeding, denning, and reproduction that are isolated from human development (USFWS 1993). They require dense forest cover for hiding and security. In the Yellowstone ecosystem, lodgepole pine (*Pinus contorta*) forests are a large and dynamic part of grizzly bear habitat. Long distance movements of some grizzly bears increase the risk of contact with highway crossings, hunters, recreationists, and a variety of developments associated with human use.

Diet: The grizzly bear is an opportunistic omnivore that uses a wide variety of plant and animal food sources. Grizzly bears in the YGBE have the highest percentage of meat consumption in their diet of any inland grizzly bear population (Hilderbrand *et al.* 1999). About 30 to 70 percent

of the grizzly bear diet in the YGBE is from some form of animal matter. Meat in the grizzly bear's diet varies by season and available forage. Ungulates are an especially important food source for bears in the spring and fall (Knight *et al.* 1984) and use of carcasses in Yellowstone National Park is well documented (Podruzny and Gunther 2001).

Grizzly bears also eat small mammals such as pika and marmots, however, these mammals form a relatively minor portion of the bear's diet. Spawning cutthroat trout in streams surrounding Yellowstone Lake have been documented as an important food source for grizzly bears (Mattson and Reinhart 1995). Army cutworm moths are also an important food source for bears in the YGBE (Mattson *et al.* 1991). Army cutworm moths congregate in remote, high altitude alpine talus areas and feed on alpine flowers. These moths provide important dietary fat in the fall, when grizzly bears are preparing for hibernation, and are also positively correlated with bear reproductive success (Bjornlie and Haroldson 2001). During times of great moth abundance, White *et al.* (1999, as cited in Robison *et al.* 2006) estimated a grizzly bear may eat up to 40,000 moths per day and more than one million per month, representing 47 percent of its annual caloric budget. The uneaten moths then migrate back to lower elevations to deposit their eggs, leaving the alpine areas between August and October. Army cutworm moth congregation sites are in remote areas and therefore, potentially reduce human-bear conflicts by isolating the bears. Grizzly bears will also eat ants (Mattson 2001) and earthworms (Mattson *et al.* 2002). Grizzly bears make use of domestic ungulates to varying degrees in some portions of the GYA, either in the form of carrion or as prey.

The grizzly bear also makes use of a variety of vegetative food sources. Whitebark pine seeds are an important fall source of food for grizzly bears in the YGBE (Mattson and Reinhard 1997). Bears consume whitebark pine seeds contained in red squirrel cone caches (Mattson and Reinhard 1997). Studies show that in years when the whitebark pine seed crop is low, there is an increase in human-bear conflicts (Haroldson *et al.* 2003). This is likely due to bears seeking alternative food sources, such as exotic clover species (Reinhart *et al.* 2001) and yampa that occur at lower elevations and closer to humans. In addition to supplying a food source high in fat, whitebark pine seed crops also serve grizzly bears by keeping them occupied at high elevations far from intense human use. Other grizzly bear seasonal foliage use includes roots (Mattson 1997), graminoids, horsetail, forbs, and fruits (whortleberry and huckleberry) (Knight *et al.* 1984, Mattson *et al.* 1991). Bears also eat limited amounts of mushrooms.

Den site selection: Grizzly bears generally construct dens in areas far from human disturbance at elevations of approximately 2,000 to 3,050 meters (6,500 to 10,000 feet). Grizzly bears den from the end of September to the last week in April or early May, with entrance and emergence dates affected by the gender and reproductive status of the bears. Denning bears can be disturbed by winter sport activities, such as snowmobiling; current studies are focused on minimizing disturbance by controlling access to important denning areas (Haroldson *et al.* 2002, Podruzny *et al.* 2002). If pregnant female bears are disturbed in their dens and this disturbance causes them to relocate to a new den prior to parturition, negative consequences can occur in the form of reduced cub fitness and survival (Linnell *et al.* 2000, Swenson *et al.* 1997).

Population Dynamics

Grizzly bear numbers have greatly declined during the past two centuries. It is believed that the grizzly bear population in the contiguous American west numbered over 50,000 individuals prior to the 18th Century (USFWS 1993). As of 2009, the estimated total population of grizzly bears in the lower 48 states was 1,400 individuals (C. Schwartz, pers. comm., August 10, 2010). The exact size of the grizzly bear population in the YGBE is currently unknown, as the very nature of the grizzly bear and the rugged terrain it inhabits make any census efforts extremely difficult.

In 1996, Eberhardt and Knight (1996) used several different estimates of population parameters to determine a minimum total population size in the GYA of 245 grizzly bears, an estimated population size of 390 grizzly bears using marked females, and an estimated population size of 344 grizzly bears using distinct family groups. In 2003, the Interagency Conservation Strategy team identified the minimum population estimate for the YGBE grizzly bear population in 2001 as 365 grizzly bears. In 2009, The Interagency Grizzly Bear Study Team (IGBST) estimated the total YGBE population at 582 bears (Haroldson 2009). Intensive management has resulted in the YGBE population increasing at a rate of 4 to 7 percent per year since the early 1990s. However, the most recent linear model estimate shows a slowing trend in the rate of increasing population than was observed in 2008 (Haroldson 2009).

The Grizzly Bear Recovery Plan (USFWS 1993) outlines recovery strategies for the various grizzly bear ecosystems. The plan defines a recovered population as one that can sustain the existing level of known and unknown human-caused mortalities that exist in the ecosystems and are well-distributed throughout their recovery zones. Long-term survival of the Yellowstone grizzly bear population over the next 100 to 200 years is contingent upon minimizing average annual mortality within the total population and especially that of adult females (Knight and Eberhardt 1984, 1985). Preventing adult female mortality is the key factor in maintaining the grizzly bear population (Knight and Eberhardt 1984).

Changes were made to the 1993 Recovery Plan's Demographic Recovery Criteria 1 and 3 and included in the 2007 Demographic Recovery Criteria (USFWS 2007), because the 1993 version was no longer considered the best technique to assess recovery of the Yellowstone grizzly bear population. Methods for calculating population size, estimating the known to unknown mortality ratio, and estimating sustainable mortality levels for the Yellowstone grizzly population based on best available science (USFWS 2007) were subsequently revised. All demographic estimates are based on annual information from the Recovery Zone and 10-mile buffer area.

Criterion 1 now sets a minimum target number of 48 adult females with cubs of the year (COY), which is equivalent to approximately 500 total individual bears in the GYA. The desirable total population of grizzly bears in the GYA is 400; therefore, to assure this goal is met, 48 adult females with COY is conservative. In addition, this target number shall not go below 48 for any 2 consecutive years.

Criterion 3 changed the allowable mortality limits for each bear class, which are calculated annually based on total population estimates of each bear class for the current year. For

independent females (at least 2 years old), a 9 percent limit was considered sustainable because simulations have shown this level of adult female mortality allows a stable to increasing population 95 percent of the time (Harris *et al.* 2006, as cited in USFWS 2007). This rate is not to be exceeded in 2 consecutive years. For independent males (at least 2 years old), a 15 percent limit was considered sustainable because it approximates the level of male mortality in the GYA from 1983 to 2001, a period when the mean growth rate of the population was estimated at 4 to 7 percent per year. This rate is not to be exceeded in 3 consecutive years. Both are based on all causes of mortality. Sustainable mortality for dependent young (i.e., cubs of the year and yearlings) is 9 percent for this population segment and is based on human causes only.

In 2009, there were 117 verified sightings of females with COY within the YGBE. Of those sightings, 42 unduplicated females were differentiated using the rule set described by Knight *et al.* (1995) and the total number of COY observed was 89, with a mean litter size of 2.12 (Haroldson 2009). Based on the linear model under the Revised Criteria, there were 55 females with COY, which is above the required minimum of 48 in any 2 consecutive years. All 18 Bear Management Units (BMU; BMUs are described below in the "Conservation" section) in the GYA were occupied by female grizzly bears with COY in 2009 and all 18 BMUs have had verified observations of females with young in at least 4 years of the last 6-year (2004 to 2009) period (Podruzny 2009).

There were 31 known and probable mortalities in the GYE during 2009; of these, 24 were attributable to human causes and 6 are under investigation. Thirteen of the mortalities were females, 12 of which count toward the mortality threshold, 11 were independent aged males, and 8 were dependent young. Using the Revised Criteria and methodology presented by IGBST, estimates of total mortality of independent females and independent males were within sustainable limits in 2009 (under 22 and 24 mortalities, respectively) as were human-caused dependent young mortalities (under 16).

Status and Distribution

Historically, the grizzly bear ranged in the United States from the Great Plains to the Pacific Coast and from the northern U.S. border with Canada to the southern border with Mexico. Currently in the contiguous U.S., the grizzly population has been reduced to roughly 2 percent of its former range. It presently occupies portions of British Columbia and Alberta, Canada and portions of Montana, Idaho, Wyoming, Washington, and Alaska.

The grizzly bear was listed as threatened in the lower 48 states in 1975 [70 Federal Register (FR) 69858] due to concerns about the bear's population status throughout its remaining range. The Yellowstone area population had been reduced to 229-312 bears due to low adult female survival (Knight and Eberhardt 1985). The first grizzly bear recovery plan in 1982 identified five ecosystems thought to support the species within the conterminous United States. They include the GYA, the Northern Continental Divide Ecosystem in north-central Montana, the Cabinet-Yaak area of northwest Montana and northern Idaho, the Selkirk Mountains of northern Idaho, northeast Washington and southeast British Columbia, and the North Cascades area of north-central Washington. The Yellowstone grizzly bear population is discrete from other grizzly

populations, has markedly different genetic characteristics, and exists in a unique ecological setting where bears use terrestrial mammals as their primary source of nutrition (Mattson 1997, 70 FR 69865).

The Service proposed to establish a Distinct Population Segment of the grizzly bear for the GYA and surrounding lands, and concurrently delist it from the Act on November 17, 2005 (70 FR 69854). As part of this proposal, grizzly bear habitat security in the Primary Conservation Area (defined below in the "Conservation" section) is achieved primarily by managing motorized access which: (1) minimizes human interaction and reduces potential grizzly bear mortality risk, (2) minimizes displacement from important habitat, (3) minimizes habituation to humans, and (4) provides habitat where energetic requirements can be met with limited disturbance from humans (70 FR 69867). To prevent habitat fragmentation and degradation, the quantity and levels of secure habitat, road densities, developed sites, and livestock allotments will not be allowed to deviate from 1998 baseline measures (70 FR 69882).

The final rule to delist the grizzly bear was published on March 28, 2007, and became effective April 30, 2007. Prior to this final rule, the Service: (1) finalized the 2003 Conservation Strategy (Interagency Conservation Strategy Team 2007) that guides post-delisting monitoring and management of grizzly bears in the GYA, (2) appended the habitat-based recovery criteria to the 1993 Recovery Plan and the Strategy, and (3) appended the 1993 Recovery Plan and the Strategy with an updated and improved methodology for calculating total population size, known to unknown mortality ratios, and sustainable mortality limits for the Yellowstone grizzly bear population.

An order was issued by the Federal District Court in Missoula on September 21, 2009, which enjoined and vacated the delisting of the GYA grizzly population. In compliance with this order, the GYA grizzly population is again treated as a threatened population under the Act. Because two remaining cases challenge the same Final Rule in the District of Idaho, the Service is coordinating closely with the Department of Justice to determine what effect, if any, this order has on that pending litigation, and whether further proceedings in the District of Montana are warranted.

The range of the grizzly bear in the Greater Yellowstone Ecosystem has increased, as evidenced by the 48 percent increase in occupied habitat since the 1970s (Pyare *et al.* 2004, Schwartz *et al.* 2002, USFWS 2005). The most recent estimate of the known area occupied by grizzly bears in the YGBE is approximately 37,258 sq km (14,385 sq mi), an increase of 2,842 sq km from 34,416 sq km reported in the year 2000. In addition to increased sampling effort, the increase in distribution likely reflects bears continuing to expand into suitable but unoccupied habitats on the edge of their current distribution. Because of the methods used to determine occupied area however, occupancy beyond this perimeter cannot be ruled out. Figure 1 in Schwartz *et al.* (2006) shows unique sightings of unduplicated females with cubs outside of the known grizzly bear distribution in the GYE during the period of 1990-2004, suggesting occupancy by resident females in the area.

Conservation

In an effort to facilitate consistency in the management of grizzly bear habitat within and across ecosystems, the Interagency Grizzly Bear Guidelines were developed by the Interagency Grizzly Bear Committee (IGBC) (51 FR 42863, November 26, 1986) for use by land managers. The IGBC developed specific land management guidelines for use in each of the five ecosystems including the YGBE. The YGBE includes lands primarily within Yellowstone and Grand Teton National Parks, John D. Rockefeller, Jr. Memorial Parkway, significant portions of the Bridger-Teton, Shoshone, Targhee, Gallatin, Beaverhead, and Custer National Forests, adjacent private and State lands, and lands managed by the U.S. Bureau of Land Management.

The Conservation Strategy for the Grizzly Bear in the GYA was released in 2003 and the strategy became effective once the final delisting rule took effect in 2007. The State and Federal implementation plans within the Strategy provided a framework for managing the Primary Conservation Area (PCA, synonymous with the Recovery Plan's Recovery Zone) and adjacent areas of suitable grizzly bear habitat. The PCA is the area considered the adequate seasonal habitat needed to support the recovered Yellowstone grizzly bear population for the foreseeable future and allow bears to continue to expand outside the PCA. A recovered grizzly bear population is one having high probability of existence into the foreseeable future (greater than 100 years) and for which the five factors in Section 4(a)(1) of the Act have been successfully addressed. The PCA was designed specifically with these five factors in mind. Approximately 58.5 percent (5,383 sq mi) of the PCA encompasses National Forest System lands within six National Forests. Due to grizzly bear relisting in 2009, the 1993 Recovery Plan is the current management document in use in addition to existing forest plan direction; however, the Conservation Strategy provides the best available science, so all are incorporated into project analyses.

Recovery zones have been established for the grizzly bear and include areas large enough and of sufficient habitat quality to support a recovered bear population. According to the Grizzly Bear Recovery Plan (USFWS 1993), a recovery zone is defined as that area in each grizzly bear ecosystem within which the population and habitat criteria for achievement of recovery will be measured. Areas outside of recovery zones may provide habitat that grizzly bears will use, but are not considered necessary for the survival and recovery of this species. The area outside the recovery zone but within a 10-mile diameter buffer is managed to conserve grizzlies and their habitat whenever possible; population and mortality data within this buffer zone are collected and used to assess recovery criteria. Beyond the 10-mile buffer, grizzly bear populations are not considered when determining whether recovery goals have been met, however protection is still accorded to the grizzly bear under the Act.

The Yellowstone Grizzly Bear Recovery Zone covers approximately 23,828 sq km (9,200 sq mi or 5,888,000 acres) of primarily National Park Service and Forest Service lands – approximately 89 percent of the known distribution of grizzly bears in the YGBE. Grizzly bears also occur in and use areas outside the Recovery Zone.

The Recovery Zone is divided into smaller areas called Bear Management Units (BMUs) for the purpose of habitat evaluation and monitoring. BMUs were designed to:

(1) Assess the effects of existing and proposed activities on grizzly bear habitat without having the effects diluted by consideration of too large an area,

(2) Address unique habitat characteristics and bear activity and use patterns,

(3) Identify contiguous complexes of habitat which meet year-long needs of the grizzly bear, and

(4) Establish priorities for areas where land use management needs would require cumulative effects assessments.

Areas within the Recovery Zone are also stratified into Management Situation Zones 1, 2, 3, 4, or 5, each having a specific management direction.

"Management Situation 1" (MS1) lands contain population centers of grizzlies, are key to the survival of the species and are where management decisions will favor the needs of the bear even when other land use values compete.

"Management Situation 2" (MS2) lands are those areas that lack distinct population centers and the need for this habitat for survival of the grizzly bear is more uncertain. The status of such areas is subject to review. Here, management will at least maintain those habitat conditions that resulted in the area being classified as MS2.

"Management Situation 3" (MS3) designation is intended for lands where grizzly bears may occur infrequently. There is high probability that Federal activities here may affect the species survival and recovery. Management focus is on human-bear conflict minimization rather than habitat maintenance and protection.

"Management Situation 4" (MS4) lands are areas where grizzlies do not occur in the area but habitat and human conditions make the area potentially suitable for grizzly occupancy, and the area is needed for the survival and recovery of the species. Grizzly-human conflict minimization is not a management consideration on these lands.

"Management Situation 5" (MS5) lands are areas where grizzlies do not occur, or occur only rarely in the area. Habitat may be unsuitable, unavailable, or suitable and available but unoccupied. The area lacks survival and recovery values for the species or said values are unknown. In this area, maintenance of grizzly habitat is an option. Grizzlies involved in grizzly-human conflict are controlled.

Threats

Isolation from human activities is extremely important for bear survival, as grizzly bears habituate to human foods quickly and become pests. Pest bears often must be eliminated or removed from developed areas. Managing human-caused bear mortality is a goal of the Recovery Plan and is essential to maintaining a viable grizzly bear population (USFWS 1993). Primary threats to grizzly bears are associated with motorized and dispersed recreational use, livestock grazing, and forest management activities, including timber harvest. Recreation use includes hunting, fishing, camping, horseback riding, hiking, biking, off-road vehicle (ORV) use, activities associated with private lands, and snowmobiling. Direct human-caused mortality is the most obvious threat to the grizzly bear. This kind of mortality can occur in several ways: (1) mistaken identification by big game hunters, (2) malicious killing, (3) defense of human life or property, (4) accidental death (vehicle strike, electrocution, etc.), or (5) management removals. Bears are removed to defend human life or property, usually because bears have become dangerously bold as a result of food conditioning and habituation at campsites, lodges, resorts, and private residences, or they become habituated predators of livestock (Knight and Judd 1983).

Human-grizzly bear interactions have been increasing in the ecosystem due, in part, to increasing human use and development, increasing bear numbers, and bears and people both expanding their range of occupancy, thereby increasing the chances of adverse encounters. The frequency of grizzly bear-human conflicts is inversely associated with the abundance of natural bear foods (Gunther *et al.* 2004a). That is, most grizzly bear mortalities are directly related to grizzly bear-human conflicts. The greatest mortality increase in recent years is self-defense in fall by big game hunters. According to Gunther *et al.* (2009), five areas were identified as having 76 percent (411 of 539) of conflicts in the GYE over the previous 3 years. These included: (1) the area encompassing Cooke City, MT, the Clarks Fork River, Crandall Creek, Sunlight Creek, and the North and South Forks of the Shoshone River (152 conflicts), (2) the Green River and Dunoir Creek drainages (134 conflicts), (3) the Gardiner Basin (64 conflicts), (4) the area encompassing West Yellowstone, MT and Island Park, ID (47 conflicts), and (5) the area encompassing the Wood River, Cottonwood Creek, and Grass Creek drainages (14 conflicts).

There are a number of naturally or semi-naturally occurring factors that also may influence GYE grizzly bear population levels. Whitebark pine seeds provide an important food source for grizzly bear; however, abundant cone crops are not produced every year. Additionally, white pine blister rust, which has had severe consequences on whitebark pine in the Northern Continental Divide Ecosystem, occurs in the Yellowstone area. The Yellowstone cutthroat trout, which is an important food source for grizzly bears in the area, has been negatively influenced by introduced lake trout, which are less available to bears due to their deeper water habits (Reinhart *et al.* 2001). Winter-killed ungulates are an important food supply, but ungulate populations vary widely in numbers and are influenced by weather conditions. The reintroduction of wolves has increased competition for ungulate prey and winter-killed carrion. Army cutworm moths, which also provide important food for bears in some areas, could be affected by pesticide use in agricultural areas. Recent fires may have impacts on available food and cover over the short term, particularly to individual bears with heavily burned home ranges. Fire, in general, over

time stimulates many forage species and berries preferred by bears, provided alternate food supplies and cover are available to maintain bears through the immediate aftermath of a fire.

Grizzly bears have experienced displacement from available habitat (loss of habitat effectiveness) due to increased human uses from: (1) increased amount of roading (Kasworm and Manley 1989), (2) ORV use, and (3) recreation use. They have also experienced loss of existing available habitat due to: (1) increased development on private land related primarily to residential housing and (2) potential for increased development on public land related primarily to oil/gas and recreation development. The grizzly bear also faces a decrease in value of available habitat due to: (1) a loss of biodiversity (especially early succession vegetative types) and (2) sub-optimal composition, structure, and juxtaposition of vegetation as a result of fire suppression, management strategies, and advancing succession. Finally, the bear faces isolation from fragmentation of available habitat due to: (1) major development of private land, (2) construction of major highways that block or restrict movement, (3) inadequate provisions for linkage on minor roads and highways, and (4) large blocks of clearcuts.

III. ENVIRONMENTAL BASELINE

Under the provisions of section 7(a)(2), when considering the "effects of the action" on listed species, the Service is required to consider the environmental baseline. Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts on the grizzly bear of all Federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

Activities considered in the environmental baseline include several highway reconstruction projects and livestock grazing allotment authorizations for the Shoshone and Bridger-Teton National Forests and Bureau of Land Management (BLM) lands in northwestern Wyoming. Specifically, these project activities are the 287/26 Highway Reconstruction project (aka Towgotee Pass Highway, letter number WY5998, August 22, 2003), the Forest Services' issuance of commercial grazing permits on the Teton Division of the Bridger-Teton National Forest (WY4715, December 3, 2002), and the permitting of commercial livestock grazing on the North and South Zones of the Shoshone National Forest (WY7155, September 30, 2004) and livestock grazing as described in the BLM's Pinedale, Cody, Lander, and Worland Resource Management Plans (WY9751d, September 1, 2006).

Action Area

Action area, as defined by the Act's implementing regulations (50 CFR 402.02), is the entire area to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. For the purposes of this consultation, the Service defines the action area as those portions of the GYA that include all nine livestock allotments (Project area) and any surrounding area with grizzly bear occupied habitat, where grizzly bear home ranges may

partially or wholly overlap with any of the nine allotments. We assume that some of those grizzly bear home ranges likely overlap the Recovery Zone or 10-mile buffer; however, most of the action area is primarily outside of either.

Status of the Grizzly Bear within the Action Area

The action area is occupied by grizzly bears and based on radio-collared bears, there were a minimum of 11 known grizzly bear home ranges that overlapped the allotments in 2009 (Pers. comm. between J. Casey and M. Haroldson, Oct. 2009). The BA indicated that from 1999 to 2009, there were 305 reported grizzly bear conflicts in the Project area (nine allotments). Most of these (67 percent) resulted in cattle injuries or depredations, 24 percent were sheep conflicts, 5 percent were property damage, 2 percent chance encounters, and 1 percent was garbage-related. One human injury occurred within a sheep allotment in 2009. During this 11-year period, there were 5 grizzly bear mortalities within the Project area; all were males and while all had a previous history of livestock depredation prior to removal, the mortalities were not directly related to grazing. They occurred in both sheep and cattle allotments. There were also 26 grizzly bears trapped in the Project area and relocated as a result of livestock conflicts. Of those 26 bears, 50 percent (13) are alive or of unknown status, 31 percent (8) were subsequently relocated elsewhere for livestock, garbage, or developed site conflicts, 15 percent (4) were killed in hunter-related self defense, and 1 bear was a vehicle-strike mortality.

Female grizzly bear survival was modeled for the Project area using landscape features (as described in the BA, pp. 35-37) to identify source and sink habitats (habitat quality that affects (grizzly bear) population increase or decline, respectively). According to the model, survival of independent grizzly bears improved as secure habitat and elevation increased, but declined as road density, number of homes, and site developments increased. Two allotments, Tosi Creek and Badger Creek, had mean female survival estimates over 91 percent. This 91 percent threshold was based on an estimate of sustainable mortality that demonstrates increasing population growth (source habitat) for the Yellowstone bear population. All other allotments were below this threshold, indicating the Project area overall is a potential sink for grizzly bears.

Secure habitat, defined in the BA as areas greater than or equal to 10 acres (4 hectares) in size and occurring more than 500 meters from an open or gated motorized access route or recurring helicopter flight line, was calculated for the Project area by the IGBST. Most allotments have 50 percent or less secure habitat except for Roaring Fork (75 percent), Tosi Creek (part of Elk Ridge Complex sheep allotment, 95 percent), Beaver-Twin (80 percent), Badger Creek (95 percent), and New Fork-Boulder (60 percent). As previously mentioned, road densities will not be impacted by the Project.

Denning habitat was mapped within the Project area. Of the nine allotments, all have at least 97 percent suitable denning habitat except for Noble Pasture and Wagon Creek allotments, and Tosi Creek, which have 71, 87, and 82 percent, respectively.

Factors Affecting the Grizzly Bear within the Action Area

Factors affecting grizzly bears in the action area are primarily associated with livestock grazing but may also include timber harvest activities, recreational activities (hunting, fishing, camping, horseback riding, hiking, biking, off-road vehicle use, and snowmobiling), management control actions, residential development, educational programs, food storage orders and garbage disposal practices, wildlife and fisheries management practices, realty actions, insect control programs, fire management practices, drought, disease, or insect outbreaks. These factors may result in: (1) increased mortality, (2) change in the quality or quantity of habitat and availability of food, (3) displacement from habitat, and (4) change in the rate of human/grizzly bear encounters.

Increased mortality. Grizzly bears may be killed as either a direct or indirect result of management removals due to habitual conflicts with livestock. They may also be killed in defense of human life or property, usually a result of food conditioning and habituation at campsites, lodges, resorts, and private residences. Big game hunters may mistakenly identify grizzly bears as black bears and kill them. In other cases, individuals may maliciously kill grizzly bears.

Change in the quality and quantity of habitat. Grizzly bears face a decrease in value of available habitat due to (1) a loss of biodiversity (especially early succession related vegetative types) and (2) sub-optimal vegetation quality as a result of fire suppression, management strategies, and advancing succession. Grizzly bears also face isolation due to fragmentation of available habitat from (1) major development of private land, (2) construction of major highways that block or restrict movement, (3) inadequate provision for linkage on minor roads and highways, and (4) large clearcuts.

Food and cover are important aspects of grizzly bear habitat. The abundance of important food items can change over time depending on a number of factors, which were discussed in the "Threats" section above.

Displacement from habitat. As previously discussed in the "Threats" section, grizzly bears have experienced displacement from available habitat due to increased human uses from (1) roading, (2) ORV use, and (3) recreation use. They have also experienced displacement due to (1) development on private land related primarily to residential housing and (2) development on public land related primarily to oil/gas and recreational development. Realty actions such as conversion of lands to residential or mineral development can result in displacement of the bears from previously suitable habitat.

Change in the rate of human/grizzly bear encounters and conflicts. An expanding grizzly bear population may result in an increase in the rate of human/bear encounters and conflicts. However, education, food storage, proper disposal of garbage, pet food and livestock carcasses, management infrastructure, and compliance and enforcement of permit requirements will help prevent these incidents and is part of the overall management strategy for grizzly bears (Pers. comm., M. Bruscino, January 2011).

IV. EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, with the effects of other activities interrelated or interdependent with that action. Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). The effects of the action are added to the environmental baseline to determine the future baseline and to form the basis for the determination in this opinion. Should the Federal action result in a jeopardy situation and/or adverse modification conclusion, the Service may propose reasonable and prudent alternatives that the federal agency can take to avoid violation of section 7(a)(2). Effects to grizzly bears are typically evaluated by assessing potential impacts to known use areas, to important grizzly bear prey or their habitat; and the potential for an increase in mortality risk to grizzly bears. The effects discussed below are the result of direct and indirect impacts of proposed livestock grazing activities that may result in adverse effects to grizzlies.

Factors to be Considered

Project factors potentially affecting the grizzly bear are sheep and cattle grazing and related activities, such as cow camps, herders, and food storage associated with human presence that may result in conflicts between bears and livestock or humans.

Analyses for Effects of the Action - Direct and Indirect Effects

The potential direct or indirect effects to grizzly bears from the above factors are: (1) harassment, harm, or death, (2) change in the quality or quantity of habitat and availability of food, (3) displacement from habitat as a result of human activities associated with grazing, and (4) change in the rate of human/grizzly bear encounters. Direct effects are effects that result directly or immediately from the proposed action on the species. Direct impacts of the proposed action include impacts to individuals, habitat displacement, and temporary movement by bears in response to activities associated with livestock herd management and nearby livestock cow camps. Indirect effects are effects that are caused by, or result from, the proposed action and occur later in time after the proposed action is completed. The BA indicated that grazing activities will affect only a small amount of permanent habitat for grizzly bears and there will be no direct or indirect effects to grizzly bear secure habitat, denning habitat, or whitebark pine because livestock grazing typically doesn't impact these habitats.

Direct Effects

Management removal of bears occurs to defend human life or property such as livestock, usually because bears have become dangerously bold as a result of food conditioning or have become habituated predators of livestock. Direct effects resulting from management actions associated with livestock conflicts may include illegal, accidental, or defensive taking of grizzly bears by grazing permittees, their employees, or members of the public, for example, a herder shooting a bear that is attacking livestock during the night. Vehicle/bear collisions may result from bears feeding on vehicle-killed livestock carcasses on roads. Grizzly bears also experience

displacement from available habitat, loss of habitat effectiveness, loss of existing available habitat, a decrease in value of available habitat, and isolation due to fragmentation of available habitat. State and Federal management actions may include harassment or aversive conditioning, trapping and releasing on site, trapping and relocating, and trapping and removing from the population. Recommendations from the Guidelines for Grizzly Bear Control Actions in Response to Livestock Depredations (IGBC 1986) involve a two-strike policy for males and a three-strike policy for females prior to consideration for removal. Additional impacts associated with management actions on individual bears include disruptions to behavior, social systems, and activity patterns and the potential for short-term declines in reproductive potential as a result of trapping, handling, and relocating bears. A low probability exists for inadvertent bear deaths associated with trapping, handling, and transporting bears although there is potential.

A potential risk exists for the taking of bears by public agency personnel, permittee personnel, or members of the public as a result of accidentally encountering bears feeding on livestock carcasses and being charged, feeling that they are at risk of personal harm, and shooting a bear in self-defense (riding unaware upon a bear feeding upon a carcass and being charged). A human mauling occurred in one of the actively grazed sheep allotments in 2009. Human activities associated with grazing or livestock herd management and near livestock cow camps could result in disturbance and displacement of bears in both time and space.

Indirect Effects

Indirect effects are those effects that are caused by, or result from, the proposed action and occur later in time after the proposed action is completed. Indirect impacts associated with the proposed action may include: (1) conditioning of bears to livestock as prey and subsequent conflicts and associated management actions outside of the Forest, (2) the loss of reproductive potential for bears removed from the population, and (3) potential disturbance to grizzly bear behavior patterns, social systems, and activity patterns, including declines in foraging efficiency, reproductive potential, and survival associated with relocating bears, and the effects of these on the long-term viability of the GYE population.

Carcass disposal may also disrupt normal behavior patterns, social systems, and activity patterns by attracting bears away from their normal feeding and sheltering areas. Livestock carcasses are strong unnatural attractants, and as such, become very effective bear baits. Wherever such carcasses are available within occupied habitat, bears are drawn to the area causing their normal behavior patterns to be disrupted in the short term. This change in use and behavior has the potential to make the grizzly bear more susceptible to other impacts, in particular, conflicts with humans or motorized vehicles – a potential human health and safety concern. Anderson *et al.* (2002) noted, "(T)hus, while carcass removal may reduce the concentration of bears in an area, it may not prevent bears from developing depredatory tendencies or repel depredating bears from grazing areas."

When carcasses are disposed of in the same location within occupied habitat over the long term, dump behavior develops. Such unnatural dump behavior was well documented in Yellowstone National Park and adjacent communities when garbage dumps were available to bears causing

the bears to become food habituated. These changes in normal behavior can cause food conditioning in bears and generate conflicts between humans and livestock. When these bears are then relocated, significant effects on their social systems, behavior patterns, and activity patterns occur. Removal of bears means a loss of those bears' reproductive potential. It is important to note that survival rate of cubs (not in the company of their mothers) that are relocated into occupied habitat is generally quite low.

Similarly, grizzly bears that are exposed to livestock may also develop a disruption in normal behavior and feeding patterns, including learning to associate livestock as easy prey. Relocation of these animals elsewhere may transfer the learned depredating behavior, potentially resulting in further conflicts or depredations and subsequent removal from the population. According to the BA, during the 11-year period from 1999 to 2009, there were no lethal management removals of grizzly bears in the Project area. However, numerous bears were trapped and relocated due to chronic livestock depredations and some relocated bears were subsequently removed from the population – an indirect effect of learned depredating behavior.

Analysis for Effects of the Action

One of the most challenging and controversial aspects of grizzly bear conservation in the Yellowstone ecosystem has been management of the grizzly bear-livestock interface. Grizzly bear conflicts with livestock throughout the ecosystem have generally been managed according to the Interagency Grizzly Bear Guidelines, which include a protocol for nuisance bear management. From 1973 to 2009, there were a total of approximately 530 grizzly bear deaths in the GYA. Of those, 391 were human-caused deaths. From 1999 to 2009 on the Forest, 45 conflicts occurred, of which 7 (16 percent) were attributed to livestock. While livestock depredations in the GYA are on-going, and direct or indirect mortality to depredating grizzly bears, whether in this Project area or elsewhere, applies toward GYA mortality thresholds, the number of allotments and distribution of livestock in the ecosystem have not prevented achieving grizzly bear demographic recovery criteria.

The rate of grizzly bear-human conflicts is inversely associated with the abundance of natural bear foods (Gunther *et al.* 2004). When native bear foods are of average or above average abundance, there tend to be few grizzly bear-human conflicts involving property damage or anthropogenic food. When the abundance of native bear foods is below average, incidents of grizzly bears damaging property and obtaining human foods and garbage increase, especially when bears are hyperphagic in late summer and fall. However, livestock depredations tend to occur independently of the availability of natural bear foods (Gunther *et al.* 2004).

The BA (pp. 18-19) summarized literature indicating a difference in whether grizzly bear depredation of livestock is likely to occur. Most, if not all, situations where grizzly bears are exposed to domestic sheep will result in conflict or depredation. However, not all grizzly bears that come into contact with cattle will make kills. Within the Project area, the sheep allotment (Elk Ridge Complex) has had documented grizzly bear/livestock conflicts and 3 of the 8 cattle allotments have had conflicts (Green River, Badger Creek, and Beaver-Twin). Given that all of

these allotments are contiguous, it's reasonable to assume all are at risk for on-going or new conflicts.

Human presence and activities in grizzly bear occupied habitats may lead to bear-human encounters. Habituation to humans and human activities can also lead to conflicts with grizzly bears which may ultimately lead to their relocation, harm, or death (McClellan 1989). Habituation is the loss of a bear's natural wariness of humans, resulting from continued exposure to human presence, activity, noise, etc. A bear habituates to other bears, humans, or situations when such interactions give it a return in resources, such as food, that outweighs the cost of the stress that precedes habituation (McArthur-Jope 1980). Habituated bears often end up obtaining human food or garbage and learn to associate people with food. As a result, they can be removed from the population. Such habituated or food-conditioned bears are also more vulnerable to illegal killing because of their tolerance to people. However, in their study of the effects of access on human-caused mortality of Yellowstone grizzly bears, Mattson and Knight (1991) indicated that mortality rates associated with all levels of access (roads, developments, or backcountry) have decreased over time. They point out that most of this observed improvement is due to better management and removal of attractants, such as garbage and other edibles that have been a major cause of bear deaths in the past, and that these may have been the easiest reductions to achieve.

In order to minimize the chances that grizzly bears will conflict with livestock grazing and associated human activities, the Forest has committed to implement a number of conservation measures as listed above in the "Description of the Proposed Action" section and other required actions listed in the Attachment. It is not expected that management relocations or removals to a limited number of grizzly bears in the Project area will have a significant impact on the grizzly bear population as a whole in the Greater Yellowstone Ecosystem.

V. CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Cumulative impacts are the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Past, present and foreseeable future actions may include: continued livestock grazing and associated activities, increasing recreational use (non-roaded and roaded, authorized and unauthorized), timber harvesting and fuels reduction, elk feeding on feedgrounds, grazing and other effects from the public's personal-use livestock, and hunting in grizzly bear country. They also might include oil and gas development, increased roading and human use of these roads leading to displacement of bears, private land development, bear baiting in occupied grizzly bear habitat leading to increased chance of accidental shooting, food conditioning bears to natural bait, spread of noxious weeds, management of other wildlife species, especially other threatened, endangered, or sensitive species, and other private, local, or State of Wyoming activities.

Certain components of these activities could displace or modify the behavior of grizzly bears. Grizzly bear habitats could also be modified or degraded by the activities which, to some extent, are reasonably certain to occur within or adjacent to the Project area. Many of the cumulative effects could result in conflicts to or with grizzly bears. Most grizzly bears that persistently kill livestock are eventually relocated or removed from the population. As grizzly bear populations expand outside the Recovery Zone, the proportion of livestock depredations occurring outside this area will likely increase, especially since there are more livestock grazing operations outside the Recovery Zone than inside. It is likely that more grizzly bears will be killed if livestock depredations continue.

The primary state-permitted activity that will occur on public and private land is regulated wildlife hunting, trapping, and fishing. These activities will likely remain the same or similar to existing levels and thus the potential for grizzly bear/human conflicts will likely increase, particularly as the grizzly bear increases in number and distribution. One of the greatest causes of grizzly bear mortalities in recent years is self-defense in fall by big game hunters. Black bear hunting will continue and possibly increase on state and private lands near the Forest. This is another potential source for grizzly bear/human conflict and human-caused grizzly bear mortality.

Additional activities that will likely occur in the action area include actions on private inholdings and private lands adjacent to the Forest. These activities include construction of homes and development of residential subdivisions. This can reduce or fragment available bear habitat and reduce its effectiveness due to human disturbance. In these human activity areas, bears can become human-habituated and food-conditioned which will lead to increases in grizzly bear/human conflicts, particularly as bears increase in number and distribution. Private lands currently grazed will likely continue to have livestock grazing and these actions can have similar effects as those on the Forest. Loss of, displacement from, or decrease in value of available habitat can occur from increased development on private lands related to oil and gas exploration and development and recreational developments. With increases in developments on the periphery of the Bridger-Teton National Forest, there will be increases in recreational activities on both private and public lands, which can lead to increases in grizzly bear/human conflicts and cumulative effects.

In addition, foreseeable land management actions within the YGBE may also affect grizzly bears. These include: (1) major road reconstruction projects which narrow, change, and confine passage corridors and alter secure habitat both for the grizzly bear and its prey, (2) campground and resort community reconstruction projects, which change the pattern of human use in areas and potentially increase the potential for food conditioning and habituation by the grizzly bear, (3) continued grazing pressure in areas of spring and summer range for the grizzly bear, and (4) continued pressure for development in areas of the YGBE that, until fairly recently, had relatively low levels of human use and occupancy. Higher levels of human activities in an area with increasing grizzly bear populations will continue to result in management actions to protect both bears and humans, and on occasion, direct human-caused mortality to the grizzly bear will occur. However, given that Pyare *et al.* (2004) reported that expansion in the southern end of the ecosystem has been exponential and the area occupied by grizzly bears has doubled

approximately every 20 years, the population has been able to withstand this level of management action.

VI. CONCLUSION

After reviewing the current status of the grizzly bear, the environmental baseline for the action area, effects of the Project and the Forest's commitment to implement conservation measures, and the cumulative effects, it is the Service's biological opinion that the direct and indirect effects of grazing on the nine allotments in the northern portions of the Bridger-Teton National Forest's Pinedale Ranger District, as proposed, is not likely to jeopardize the continued existence of the grizzly bear. Although we anticipate some level of take of grizzly bears from management relocations and mortality due to management removals within the Project area, it is our opinion that the proposed action will not appreciably reduce the likelihood of both the survival and recovery of grizzly bears. No critical habitat has been designated for grizzly bears; therefore, none will be affected. Our conclusion that the proposed action is not likely to jeopardize the continued existence of grizzly bears is based primarily on the information presented in the 2010 Amendment to the 1999 Biological Assessment for Livestock Grazing on the Northern Portions of the Pinedale Ranger District, additional information provided by the Forest, and informal discussions between Service and Forest personnel.

The Service has reached this conclusion by considering the following:

1) The grizzly bear has experienced significant recovery and met its recovery zone goals in the Greater Yellowstone Ecosystem. Current information indicates that this population of grizzly bears has grown an average of 3 to 4 percent or more annually, although the rate slowed from 2008 to 2009. In addition, the range of grizzly bears in the Greater Yellowstone Ecosystem has increased, as evidenced by the 48 percent increase in occupied habitat since the 1970s (Pyare *et al.* 2004, Schwartz *et al.* 2002).

2) The Forest is committed to implementing conservation measures, additional measures related to the 2003 Conservation Strategy, the Forest Service Occupancy and Use Restrictions (Order Number 04-00-104), and other Forest Plan required grizzly bear management actions to minimize potential impacts to grizzly bears. These actions include managing livestock carcasses, requiring food storage guidelines at all camps associated with livestock operations, and monitoring allotments on a regular basis.

3) Although grizzly bear/livestock conflicts will likely continue and individual grizzly bears may be adversely impacted by management relocations and removals, the overall core population of grizzly bears of the Greater Yellowstone Ecosystem is expected to remain relatively unaffected by grazing activities in the Project area. The adverse effects from the proposed livestock grazing on grizzly bears will occur in an area that constitutes only a small portion of the grizzly bear's range in the GYA. Therefore, while adverse effects to individual grizzly bears are expected, considering the large amount of grizzly bear habitat in the GYA, resource management within such habitat, and the status of the

grizzly bear, we do not expect the level of adverse effects to appreciably diminish the numbers, distribution, or reproduction of grizzly bears.

4) Finally, the loss of no more than 6 bears within any consecutive 3-year period throughout the lifespan of this project (approximately 10 years) will have a relatively minor impact on the overall population of this species. Mortality is expected to remain within the constraints of recovery criteria mortality limits established by the Recovery Plan (USFWS 1993).

In summary, we have determined that the proposed action will not appreciably diminish the reproduction, numbers, or distribution of grizzly bears. We conclude that the proposed action will not affect the survival of grizzly bears nor will it impede recovery.

INCIDENTAL TAKE STATEMENT

Section 4(d) and 9 of the Act, as amended, prohibit the take of listed species of fish or wildlife without a special exemption. The Act defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. A special rule under the Act is in effect for grizzly bears in the 48 conterminous states of the United States (50 CFR 17.40(b), Special Rule). Under the terms of the Special Rule, taking is prohibited except as provided in paragraphs 17.40(b)(1)(i)(B) through (F). The exceptions to the take prohibition include the defense of human life and the removal of nuisance bears when the taking conforms to the requirements specified in the regulations.

Although there are exceptions to the take prohibition for grizzly bears, the exceptions do not address all sources of incidental take that may result from the proposed Federal action. For example, harm is further defined by regulation (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Bridger-Teton National Forest so that they become binding conditions of any grant, permit, or Allotment Management Plan issued by the Forest, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Forest (1) fails to implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of the incidental take, the Forest must

report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR 402.14(i)(3)].

Amount or Extent of Take Anticipated

Although the act of relocating or removing nuisance grizzly bears in accordance with the special rule is an exception to the taking prohibition (50 CFR 17.40(b)(1)(i)(C)), the exception does not address all forms of take that may be associated with permitting grazing. The Service anticipates take in the form of harm to grizzly bears as a consequence of livestock grazing and the associated livestock management operation in habitats commonly used by grizzly bears. The habitat modification of adding a significant additional potential food source that results in the death or injury of bears is "take" in the form of harm. Grazing livestock as part of the proposed action is a significant modification to grizzly bear habitat, including approximately 46,100 Animal Unit Months of cattle that present a substantial potential food source for grizzly bears. The likely depredation of some of the permitted livestock represents an impairment of natural feeding behavior that will in some cases ultimately lead to management removal or death of grizzly bears. In addition, grazing and associated activities have the potential for other adverse effects to grizzly bears (e.g., displacement, habituation, increased exposure to other potential sources of mortalities, etc.) as described in the Biological Opinion's "Analysis for Effects of the Action." However, it would be speculative for the Service to assume these other potential effects will in fact result in incidental take and identify a specific level of incidental take attributable to these other potential adverse affects.

The level of "take" in the form of harm is difficult to detect and quantify. Therefore, in such cases the Service uses surrogate measures to gauge the level of "take" in the form of harm. In this Incidental Take Statement, we are anticipating that the level of incidental take resulting from the proposed action in the form of harm is proportional to the number of grizzly bears that are killed within the action area. We base this on the fact that both the level of take through harm and bear mortalities (even when excepted by the Special Rule) will correlate to the level of bear use and grazing use within the action area. Specifically, the Service believes this level of take in the form of harm is proportional to the management actions for nuisance bear control in compliance with the Interagency Grizzly Bear Guidelines (IGBC 1986) or from defense of life or illegal killings, when grazing or associated activities are reasonably believed to have contributed to the injury or death of the grizzly bear (e.g., direct connection to grazing, such as the management of bear depredating livestock, or indirect connection to grazing, such as a bear illegally killed while feeding on a livestock carcass, etc.). Although we are including some cases of illegal mortality of grizzly bears within our surrogate used to quantify incidental take, the illegal killing or injury of grizzly bears (including trapping or shooting by private citizens) is not exempted by either the special regulations or this biological opinion.

The Service anticipates a total of 6 grizzly bear mortalities within any consecutive 3-year period as a result of the proposed action. The period in which this biological opinion is anticipated to be in effect is approximately 10 years. The Service has identified this level of take based upon the historic level of conflict that has occurred in this area of the Bridger-Teton National Forest, past and current bear occurrences and discussions with grizzly bear specialists from the Service,

Wyoming Game and Fish Department, and the U.S. Forest Service. The grizzly bear is expanding throughout its range and throughout the Forest. It is incumbent upon the Service to identify a level of take that is reasonably likely to occur. We do not anticipate any other incidental take as a result of the proposed action.

Effect of the Take

In this Biological Opinion, the Service has determined that this level of anticipated take is not likely to jeopardize the continued existence of the grizzly bear. This is based in part, on the fact that measured population parameters in past years have met established recovery plan levels, while bear mortality has generally been below the threshold levels established in the recovery plan. However, the Service anticipates that the direct and indirect effects of implementing grazing on northern portions of the Pinedale Ranger District could maintain or add to the existing level of incidental take. The Service is using a surrogate measure to gauge the level of "take" in the form of harm. The measure we are using is the number of bear mortalities in the action area that result from management removals of depredating grizzly bears or from defense of life or illegal killing, where grazing activities are likely to have contributed to the injury or death of the bear. No critical habitat for the grizzly bear has been designated; therefore none will be destroyed or adversely modified.

REASONABLE AND PRUDENT MEASURES

The reasonable and prudent measures, with their implementing terms and conditions and the reporting criteria, are designed to minimize the impact of incidental take that might otherwise result from the authorized activities under the Livestock Grazing on the Northern Portions of the Pinedale Ranger District. If, during the course of the authorized activities, any level of incidental take has exceeded the amount anticipated in the Incidental Take Statement, such take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Forest must immediately provide information related to the circumstances of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

The Service believes the following reasonable and prudent measures (RPM) are necessary and appropriate to minimize take of grizzly bear.

RPM 1. Minimize bear/livestock conflicts and associated management actions.

RPM 2. Minimize habituation and bear-human conflicts.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of the Act, the Bridger-Teton National Forest must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. The terms and conditions described below are non-discretionary, and must be undertaken by the Forest so that they become binding conditions of

any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Forest (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse.

T&C1. To monitor the impacts of the Project, the Forest will, in coordination with the Service, review the effectiveness of the Forest's Conservation Measures and other management efforts outlined in the Biological Assessment as they apply to all allotments and describe the progress of the proposed action, including impacts to the grizzly bear (50 CFR ' 402.14(1)(3)). This process shall consider: (1) adverse effects resulting from Project activities, including grizzly bear and grazing conflicts and resolutions for these nine allotments within the Forest, (2) when and if the level of anticipated incidental take is approached, and (3) when and if the level of anticipated take is reached.

T&C2. If more than 2 grizzly bears are killed related to grazing activities in the Project area (as described in the Incidental take Statement) in any given year, the Forest will coordinate with the Service regarding the adequacy of existing mechanisms to minimize additional take.

T&C3. *Reporting:* In order to document the review process and improve the understanding of the effectiveness of the Conservation Measures, the Forest will complete an annual report with the following information:

- Document the Forest's efforts to implement and enforce all conservation measures as described as part of the proposed action in the Biological Assessment related to grazing activities on the nine allotments.
- Document the Forest's efforts to implement and enforce the additional measures included in the Attachment to this biological opinion (Food Storage, etc.)
- Document the Forest's efforts to monitor for compliance with all appropriate grazing regulations on these allotments. While the Service acknowledges that the Forest Service's educational efforts have been successful and compliance is generally good, the Service remains concerned about the potential for additional reported or unreported grizzly bear encounters resulting from non-compliance on the part of some forest users. Improved efforts by Forest Service personnel, including food storage compliance and carcass disposal, should help prevent this problem.

This annual report will be submitted to the Service's Wyoming Field Office by April 15 of the subsequent year (e.g., 2011 report will be due April 15, 2012).

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is reached (the 6 grazing-related grizzly bear mortalities within any consecutive 3-year period), such incidental take represents new information requiring re-initiation of consultation and review of the reasonable

and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures and development of additional terms and conditions.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

CR1. Educate livestock grazing permittees and their employees about their responsibilities relating to conservation of grizzly bears, the potential occurrence of grizzly bears on grazing allotments, the risks of working in bear country, the protected status of the grizzly bear, the need for heightened awareness of bears, appropriate personal safety measures, and proper behavior in bear country.

CR2. Permittees should make bear pepper spray and proper training on its use available to field going employees in areas of bear occurrence.

CR3. Where possible, avoid important grizzly habitat components such as riparian areas, travel corridors and drainages, and berry stands for intense livestock use.

CR4. Continue to identify and implement opportunities that reduce the potential for grizzly bear conflicts.

CR5. Evaluate the potential for aversive conditioning of nuisance grizzly bears in the vicinity of the allotments.

CR6. Ensure that electric fences used for sheep are in proper working condition and educate permittees and their employees on proper operation and timing of use. The Service recommends that (1) all permanent fencing be fully wildlife passable, (2) any electrified segments have a bottom wire with a minimum height of 20 inches, and (3) if electrified, the fence be off and down during the period of non-use by livestock. (Note: the Forest Service does allow temporary night fencing under certain circumstances.)

CR7. Grazing permittees will be made aware of their responsibilities through the permitting process in regard to laws and regulations concerning the taking of grizzly bears (Interagency Grizzly Bear Guidelines 1986).

CR8. In cooperation with the Service, the Wyoming Game and Fish Department and the permittees, identify levels of livestock losses to grizzly bears that would prompt cattle or sheep relocation within the allotment or to another allotment.

CR9. Work in cooperation with the Service, the Wyoming Game and Fish Department, and the Interagency Grizzly Bear Study Team to identify and collect any needed information related to the movements, survival, and reproduction of grizzly bears inhabiting the allotment area.

REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the action outlined in your August 30, 1999 and April 2010, request for formal consultation for cattle and sheep grazing on nine allotments in the northern portion of the Bridger-Teton National Forest's Pinedale Ranger District. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your assistance in the conservation of endangered, threatened, and proposed species. If you have any questions or comments on this biological opinion or your responsibilities under the Act, please contact our office at the letterhead address or phone Ann Belleman at (307) 578-5116.

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Attachment

Forest Plan Amendment for Grizzly Bear Habitat Conservation (from BA, pp. 27-28)

(*FWS Note:* We are including the following information for background purposes only. Due to relisting of the grizzly bear, the amendment to the Forest Plan which incorporated the Conservation Strategy is currently invalidated; however, the Conservation Strategy provides the best available science and is therefore considered in proposed projects.)

The decision in this amendment applies to National Forest System lands in the six Greater Yellowstone Area national forests, which includes the BTNF. This amendment established the framework for future decision making by outlining direction for sustaining a recovered grizzly bear population, as identified in the Conservation Strategy. The selected alternative was programmatic in nature and guides implementation of site-specific projects that tier to forest plans. Since this project is outside of the PCA, only guidance in this Amendment for activities outside of the PCA will be discussed.

The Goals, Standards, Guidelines and Monitoring Items for areas outside the PCA identified in the chosen alternative in the Record of Decision (ROD) for the 2006 Forest Plan Amendment for Grizzly Bear Habitat Conservation (USDA Forest Service 2006) are:

- Goal:
  - Outside of the PCA, in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, accommodate grizzly bear populations to the extent that accommodation is compatible with the goals and objectives of other use.
- Standard 5 – Nuisance Bears:
  - Coordinate with State wildlife management agencies to apply Conservation Strategy nuisance bear standards
- Guideline 2 – Livestock Grazing:
  - Outside of the PCA 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.
- Guideline 3 – Food Storage:
  - Outside of the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, emphasize proper sanitation techniques, including food storage orders, and information and education, while working with local governments and other agencies.
- Monitoring Item 1 – Secure Habitat and Motorized Access:
  - Outside of the PCA, in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, monitor and submit for inclusion in the Interagency Grizzly bear Study

Team Annual Report: changes in secure habitat by national forests every two years.

- Monitoring Item 3 – Livestock Grazing:
  - Inside and outside the PCA, monitor and evaluate allotments for recurring conflicts with grizzly bears.
- Monitoring Item 5 – Whitebark Pine:
  - Monitor whitebark pine occurrence, productivity and health inside and outside the PCA in cooperation with other agencies. Annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: results of whitebark pine cone production from transects or other appropriate methods and results of other whitebark pine monitoring.

Summary of Management Actions Related to Habitat and Mortality Risk Implemented within the Project Area

The following is a brief summary of the actions that the Bridger-Teton National Forest has required within the project area to maintain or improve grizzly bear habitat and reduce grizzly bear/human conflicts.

Food storage orders/regulations Food storage Order 04-00-104 (USDA Forest Service 2004):

1. All food and refuse must be acceptably stored or acceptably possessed during daytime hours.
2. All food and refuse must be acceptably stored during nighttime hours, unless it is being prepared for eating, being eaten, being transported, or being prepared for acceptable storage.
3. Any harvested animal carcass must be acceptably stored, unless the carcass is being field dressed, transported, being prepared for eating, or being prepared for acceptable storage.
4. Camping or sleeping areas must be established at least ½ mile from a known animal carcass or at least 100 yards from an acceptably stored animal carcass.

Bear resistant facilities/sanitation

The Bridger-Teton NF and WGFD has provided bear resistant facilities (i.e. bear resistant food boxes, food tubes, garbage containers, meat hanging poles, panniers, etc.) at campgrounds, trailheads, dispersed campsites, and to permittees in the project area.

Information, Education and Patrolling

Substantial information and education materials (pamphlets, brochures, signs, videos, etc.) and programs have been provided to the public at all Forest Service offices, including the Pinedale Ranger District. Signs and brochures are available at campgrounds, trailheads, dispersed recreation sites, picnic areas, etc. Forests contributed financing for the production of the information and education film "Living in Grizzly Country." Forests have cooperated with state wildlife management agencies and other cooperating institutions and individuals in giving "Living in Bear Country Workshops," which includes bear identification, safe camping, hiking, hunting, and working procedures to use in bear country, and the proper use of bear deterrent pepper spray. Wilderness rangers and other backcountry patrols have been used to inform and

educate the public on food storage orders, and to check on compliance with these orders. Field patrols have been used during hunting seasons to reduce hunter-caused conflicts and grizzly bear mortalities, specifically within the project area.

Special grizzly bear requirements in permits

Permits associated with this action contain clauses requiring protection of the grizzly bear and its habitat, and proper food storage and sanitation. See proposed action for details regarding livestock permits requirements in the project area.

Whitebark pine

Whitebark pine seeds are an important food source for grizzly bears. A GYA Whitebark Pine Task Group has been formed to gather information on the status of this tree in the GYA. Current work on whitebark pine includes planting in several areas of the GYA to provide long-term habitat improvement, cone collection from healthy superior trees, silvicultural treatments to improve growth and establishment, prescribed burning to encourage whitebark pine seedling establishment, inventory and blister rust surveys, inventories to locate superior trees, work to prevent mountain pine bark beetle attacks on superior trees, and reading of whitebark pine cone production transects every year in cooperation with the IGBST.

Planning, coordination, monitoring, and cooperation

The forest works cooperatively with the USFWS and WGFD on nuisance grizzly bear management, specifically within this project area. Forest Service personnel contributed to the development of the Conservation Strategy and the state management plans for the grizzly bear. They participate in annual coordination meetings with state agencies, other federal agencies, organizations, and various committees. The Forest Service cooperates in the collection of data on the grizzly bear population and habitat throughout the project area.