

**BIOLOGICAL OPINION
FOR
U.S. SHEEP EXPERIMENT STATION GRAZING,
AGRICULTURAL RESEARCH SERVICES**

14420-2014-F-0074



**U.S. FISH AND WILDLIFE SERVICE
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I. INTRODUCTION

This document contains the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) of the action proposed by the Agricultural Research Services' (ARS) United States Sheep Experiment Station (Sheep Station), as described below, and its effects on the threatened grizzly bear (*Ursus arctos horribilis*). This Opinion was prepared in accordance with the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

This Opinion is based on information presented in the Sheep Station's Biological Assessment (Assessment) for the proposed action (ARS 2011) and the other sources of information cited herein. The August 19, 2011, Assessment is incorporated in this opinion by reference.

A. Consultation History

- December 2008 – The Service concurs with the Sheep Station's determination that the Interim (short term) Grazing Activities may affect, but will not adversely affect Canada lynx (*Lynx canadensis*).
- August-October 2009 – Through a combination of meetings and e-mails the Sheep Station and the Service discussed the subject consultation, including the biological assessment format, proposed actions, and effects determination for species.
- December 2009 – The Service received a draft Biological Assessment for the Sheep Station's Grazing and Associated Activities Project. The Sheep Station determined their project may affect, but will not adversely affect Canada lynx and grizzly bear. In January 2010, the Service submitted a review of the draft biological assessment. As part of the review, the Service noted an inability to concur with the "not likely to adversely affect" determination presented in the draft biological assessment.
- August 23, 2011 – The Service received the final Assessment, which stated the proposed action is likely to adversely affect grizzly bear.
- November 08, 2011 – The Service issued an Opinion that the proposed action was not likely to jeopardize the continued existence of the grizzly bear, and included an incidental take statement for the effects of Sheep Station grazing and associated activities on grizzly bears.
- May 2013 – Plaintiffs Cottonwood Environmental Law Center, Western Watersheds Project, Gallatin Wildlife Association, Native Ecosystems Council, and Yellowstone Buffalo Foundation, legally challenged the Service's Opinion. A settlement agreement reached February 1, 2014, stated that the Service would revise the Opinion.
- May 2014 – The Service provided ARS a draft BO for their review on May 9, 2014. ARS sent a letter to the Service on May 16, 2014 requesting consideration of modifications to the Opinion. A Level 2 meeting between ARS, the Service, and the Forest Service was subsequently held on May 20, 2014, to discuss the Opinion. Following the May 20th meeting, a revised draft BO was transmitted from the Service to ARS on May 27, 2014, followed by a letter from ARS to the Service on May 28, 2014. This Opinion considers input received in the May 16th and 28th letters and at the May 20th

meeting. We incorporate into this Opinion updated baseline information and the best available information about the proposed action and its likely effects.

A complete decision record for this consultation is on file at the Service's Eastern Idaho Field Office in Chubbuck, Idaho.

B. Executive Summary

This document analyzes the effects on the threatened grizzly bear (*Ursus arctos horribilis*) of sheep grazing and associated activities proposed by the Agricultural Research Services' (ARS) United States Sheep Experiment Station (Sheep Station). ARS determined that sheep grazing and associated activities are likely to adversely affect grizzly bears, because of the probability that grizzly bears would become habituated to eating sheep, leave the action area, and eventually be subject elsewhere to management relocation or lethal removal. Management relocation and lethal removal are not a part of ARS's proposed action, but may result outside of the action area because of the proposed action. In this Biological Opinion, we conclude that up to one adult grizzly bear and two cubs may be relocated or removed elsewhere in the ecosystem after becoming habituated to predating on sheep on ARS lands. Habituation is the loss of a bear's natural wariness of humans caused by the continued exposure of the bear(s) to human presence, activity, noise, etc. A grizzly bear habituates to other bears, humans, or situations when such interactions give it a positive return in resources, such as food, that outweighs the cost of the stress that precedes such habituation. As described in the effects of the action section, take is quantified based on the relationship between the number of grizzly bear/sheep conflicts and the number of grizzly bear removals in the Greater Yellowstone Area. As described below, other potential effects from the proposed action, including changes in natural food availability, hazing by sheepherders, and grizzly bear displacement, are not likely to rise to the level of take.

C. Purpose and Organization of This Biological Opinion

In accordance with the requirements of section 7(a)(2) of the Act and its implementing regulations, the formal consultation process culminates in the Service's issuance of an Opinion that sets forth the basis for a determination as to whether the proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat, as appropriate. The regulatory definition of jeopardy and a description of the formal consultation process are provided at 50 CFR¹ 402.02 and 402.14. If the Service finds that a proposed Federal action is not likely to jeopardize a listed species but anticipates that it is likely to cause incidental take of the species, then the Service must identify that take and exempt it from the prohibitions against such take under section 9 of the Act through an Incidental Take Statement. No critical habitat has been designated for grizzly bears, so only jeopardy will be analyzed in this Opinion.

¹ CFR represents the Code of Federal Regulations which is a codification of the general and permanent rules published in the Federal Register by Executive departments and agencies of the Federal Government. It is published by the Office of the Federal Register National Archives and Records Administration. More information can be found at <http://www.gpoaccess.gov/cfr/index.html>

Analytical Framework for the Jeopardy Analyses

In accordance with policy and regulation, the jeopardy analysis in this Biological Opinion relies on four components:

- *Status of the Species*, which evaluates the range-wide condition of grizzly bears, the factors responsible for that condition, and its survival and recovery needs;
- *Environmental Baseline*, which evaluates the condition of grizzly bears in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of grizzly bears;
- *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on grizzly bears;
- *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on grizzly bears.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of grizzly bears, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of grizzly bears in the wild, at the rangewide scale.

The jeopardy analysis in this Opinion places an emphasis on consideration of the rangewide survival and recovery needs of grizzly bears and the role of the action area in the survival and recovery of grizzly bears as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

II. DESCRIPTION OF THE PROPOSED ACTION

The term “action” is defined in the implementing regulations for section 7 at 50 CFR 402.02 as “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: (a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air.”

No trapping, transportation, or lethal removal of grizzly bears on the Sheep Station is proposed as part of this action (Assessment, p.11, 12). Shepherders will not attempt to kill grizzly bears, even if a bear is preying on sheep, and the Sheep Station will not request control actions of grizzly bears that have killed sheep, in order to minimize impacts to grizzly bears (Assessment, p. 35). Under the proposed action, the Sheep Station intends to avoid grizzly bear/sheep conflicts through implementation of Conservation Measures, including moving sheep from areas

with conflicts if necessary (see Conservation Measures section, below). If trapping, transport, or lethal removal of a grizzly bear were needed, the Sheep Station would re-initiate consultation with the Service (Assessment p. 12).

A. Proposed Action

Sheep Grazing

ARS proposes to continue research on sheep grazing and associated activities on lands in Idaho and Montana administered by ARS, the Department of Energy (DOE), and the U.S. Forest Service (USFS) (Figure 1). These lands include: the Henninger and Humphrey ranches (ARS); the Big Mountain, O'Dell, and Tom's Creek pastures (ARS); East Beaver, Meyers Creek, and Snakey-Kelly allotments (USFS); Headquarters (ARS); and the Mud Lake Feedlot (DOE). See pages 1-8 of the Assessment for more information on the scope of the proposed sheep grazing activities.

The ARS action addressed in our November 8, 2011, Opinion also included grazing and associated activities on the Bernice Allotment, administered by the Bureau of Land Management (BLM). BLM has since withdrawn its Memorandum of Understanding (MOU) with ARS, and no longer allows ARS to graze sheep on that allotment (BLM 2012). Consequently, the Bernice allotment will not be considered in this Opinion.

The Forest Service action of issuing a grazing permit to ARS is covered by a separate consultation (USFWS 2012); ARS's proposed trailing of sheep on Meyers Creek Allotment and proposed grazing on East Beaver and Snakey-Kelly Allotments are included in this Opinion because it is a part of the larger ARS-authorized action of sheep grazing.

ARS proposes to continue a rotational grazing system (Assessment, p. 7). Approximately 2,000 sheep would be grazed at the Henninger Ranch from late June to early July. In early July, these sheep would be moved to the "Summer Range," which includes Tom's Creek Pasture (East Summer Range), Big Mountain Pasture (West Summer Range), and O'Dell Pasture (West Summer Range). In late August, the 2,000 sheep would be moved back to the Henninger Ranch (Assessment, Figure 2). In mid-September, sheep are moved off of Henninger Ranch to ARS lands outside of occupied or suitable grizzly bear habitat. Sheep distribution from mid-September to late June is described in the Assessment (p. 3-5), and is outside of suitable habitat for grizzly bears.

The Summer Range includes three pastures. In general, one pasture is rested each year, so each pasture is rested every third year. Under the proposed action, this rest/rotation cycle may be modified, such as if there is a severe drought or if sheep are moved to avoid repeated grizzly bear/sheep conflicts.

To move from one pasture to another, sheep would be trailed along existing roads (Assessment, p.8). Sheep would be trucked between grazing locations that are not contiguous or are not within trailing distance (Assessment, p. 7). To get to Tom's Creek Pasture (East Summer Range), sheep

would be trailed across the Meyers Creek Allotment, in 3 days or less in July and again in late August.

Shepherders would carry rifles to protect the sheep, and bear spray for personal safety and to scare off inquisitive animals. If a grizzly bear is threatening sheep, herders may discharge their rifle into the air if they think it would help frighten the bear and encourage it to leave the area (hazing). A herder may shoot directly at a grizzly bear only if his personal safety is threatened. Historically, this situation has not occurred during Sheep Station activities.

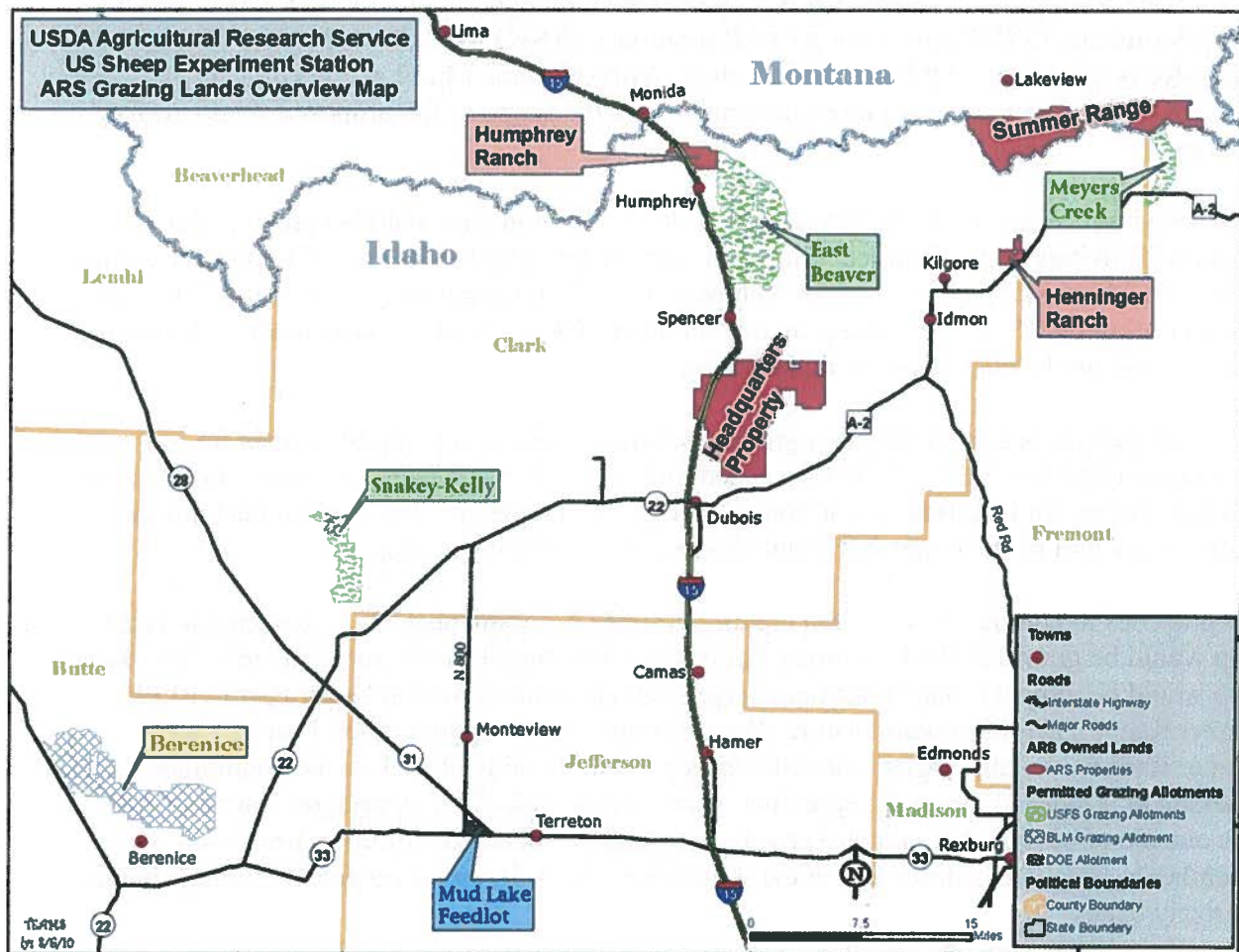


Figure 1. US Sheep Experiment Station Grazing Lands

Activities Associated With Grazing

The proposed action also includes activities that support grazing operations. These include fence maintenance, repair of existing roads and firebreaks, prescribed burning, grass seeding, and use of herder camps (Assessment, pp. 7-10).

Permanent fence is in place on Henninger ranch, and is inspected and repaired annually (Assessment, pp. 9, 68). A let-down horse corral fence is in place on O'Dell Pasture, and is dropped to ground level each season after completion of grazing activities (Assessment, pp. 9, 72). O'Dell pasture also contains a wildlife enclosure fence and a sheep enclosure fence, to evaluate grazing impacts on vegetation. The entire fenced area is less than a ½ acre (ac). Other enclosures in the West Summer Range are drop fence structures erected to exclude sheep when pastures in enclosure areas are grazed, and are dropped at the end of grazing (Assessment, p. 9).

Repair of existing roads and the firebreak around Headquarters is confined to existing right-of-ways and associated disturbed areas. Prescribed burns would only occur at Headquarters. Seeding would occur at Headquarters and Humphrey ranch.

Cattle and horse grazing is occasionally included as part of the grazing regime at Headquarters, Humphrey, and Henninger ranches. Mean cattle and horse usage is approximately 2962 AUMs across all three properties (Assessment, p. 10).

Herder camps are associated with each grazing location. At Henninger Ranch, herders would use a 12 foot (ft) by 7 ft trailer, with a tow-behind to transport gear (Assessment, p. 8). Camp activities would affect a ¼ ac or less at each site. Camps in the Summer Range would use a 7 ft teepee tent, with minimal associated disturbance, and would be moved every 3 to 4 days to follow the sheep herd as it grazes (Assessment, p. 9). Trash from herders' camps would be transported back to Headquarters for disposal.

B. Conservation Measures

The proposed action includes nondiscretionary avoidance and minimization measures that will be implemented by ARS to reduce potential adverse effects to grizzly bears. The Service and ARS worked closely to develop these measures. Additional best practices and more details on the below are described in the Assessment (p. 11-13) and are incorporated here by reference. ARS and its employees will implement the following measures during grazing operations:

1. When creating research plans that include sheep grazing, ARS will consider the history of livestock-bear conflicts on ARS lands. If recurring conflicts develop, the Sheep Station will modify the grazing schedule and/or sheep movements to avoid additional conflicts.
2. The Sheep Station will use good husbandry practices so that sheep are as healthy as possible, are suitable for research, and the number sick/stray animals is kept to a minimum. An institutional animal care and use committee will evaluate research protocols and livestock management practices to ensure they are consistent with good animal husbandry, and comply

with Federal laws that govern the use of agricultural animals in research. Protocols and practices that do not comply are not approved.

3. Sheepherders, working dogs, and guard dogs will be kept with the sheep full-time when on rangelands to reduce the likelihood of conflicts or encounters with grizzly bears, and to assist in efficient and prompt movement of animals when necessary. In the Summer Range, sheep are accompanied by a minimum of two guard dogs, two herd dogs, and a full time shepherd.
4. Sheep will be bedded in the evenings on an approximately 1 ac area. On moonlit nights, when sheep have the tendency to get up and graze, sheepherders will exercise extra vigilance.
5. Lamé livestock, which may occur occasionally, will be watched closely. When lame animals do not recover, they will be removed from the herd within a short period of time (approximately every 3 days when the camp tender brings supplies), and transported back to the Headquarters property.
6. All unnatural attractants to bears will be minimized. This includes treatment or removal of livestock carcasses, and proper storage of human foods, garbage, and dog food. Approved "bear-proof" containers will be used. Damaged containers will be repaired or replaced promptly so that they work as designed. Camp tenders and managers will make periodic visits (approximately every three days) to remove trash and/or dead animal carcasses in order to eliminate potential bear attractants. In some locations, it is not feasible to remove carcasses (due to degree of decomposition and/or access to get them out). In such cases, a carcass will be left in place and decomposition expedited with the addition of lime, which also makes the carcasses less attractive and unpalatable for grizzly bears.
7. At least two formal training-orientation meetings will be conducted annually with Sheep Station employees and herders to review identification of grizzly bear and other wildlife. Sanitation and garbage removal practices, nonlethal procedures to address livestock-wildlife encounters, and who to contact should encounters occur will be discussed at these meetings.
8. Herders will be instructed to avoid encounters with grizzly bears. Herders may move sheep to other areas of the pasture to avoid an immediate threat. Moving sheep to other pastures/locations will occur if encounters persist.
9. Herders will report all bear sightings to their supervisor. When on ARS land, all existing and suspected bear activity and (or) conflicts will be reported directly to Animal and Plant Health Inspection Service (APHIS), Wildlife Services. APHIS Wildlife Services would then contact state and federal agencies as necessary to conduct damage investigations. When on USFS-administered lands, all existing and suspected bear activity and (or) conflicts will be reported directly to USFS contacts as well as APHIS Wildlife Services. DOE-administered land is outside of the current range of grizzly bears and outside of suitable grizzly bear habitat, so a reporting protocol for grizzly bears is not proposed for these lands.
10. All sightings that are confirmed grizzly bears, or show positive evidence of grizzly bear in the vicinity of livestock, will be reported by the Sheep Station to the Interagency Grizzly Bear Study Team (IGBST) within one week.

11. In an interagency agreement with the USFS (USFS 2007), the Sheep Station agrees to comply with grizzly bear management goals on the Meyers Creek and East Beaver Allotments (as described in USFS 2004, p.6) including notifying appropriate personnel of grizzly bear conflicts or encounters, and temporarily stopping or modifying grazing as necessary, should bear conflicts arise with humans or livestock. This agreement may be updated based on future consultation between USFS and the Service regarding livestock use of the Meyers Creek Allotment.

C. Term of the Proposed Action

ARS's proposed action has a term of 10 years following issuance of this revised Opinion (Assessment p. 34).

D. Action Area

The term "action area" is defined in the implementing regulations for section 7 at 50 CFR 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." An action includes activities or programs "directly or indirectly causing modifications to the land, water, or air" (50 CFR 402.02).

In this case, the area where "land, water, or air" is likely to be affected is lands administered by ARS, DOE, and USFS where grazing, trailing, and associated actions authorized by the Sheep Station would occur (Figure 2). These lands include the Humphrey Ranch, Tom's Creek Pasture, Big Mountain Pasture, O'Dell Pasture, Henninger Ranch, Headquarters, Mud Lake Feedlot (DOE), Meyers Creek Allotment (Forest), East Beaver Allotment (Forest), and Snakey-Kelly Allotment (Forest; Assessment, p. 1). Trailing locations are described in detail in the Assessment (p. 8).

In addition, we include adjacent lands where the scent of sheep and above-ambient noise levels caused by sheep grazing are likely to extend. Above-ambient noise levels may be caused by the sound of sheep, herders, and herd guard dogs. The spatial extent of sheep scent and noise on adjacent lands would likely be highly variable, depending on topographic and weather conditions (Hong et al. 2011, Lim et al. 2000, Guo et al. 2005). For the purposes of this analysis, we assume that sheep scent and noise may travel up to 3 miles from the boundaries of the Sheep Station, based on the distance odor can travel from livestock operations, as reported in the literature (e.g. Guo et al. 2005). Around Tom's Creek, Big Mountain, and O'Dell pastures, Humphrey and Henninger ranches, and Meyers Creek, East Beaver, and Snakey-Kelly allotments, the 3-mi distance is likely an overestimate, because odor associated with livestock operations that is analyzed in the literature is from manure pits and other elements of commercial concentrated livestock operations, that are very different from the open range grazing that the Sheep Station proposes in these areas.

The areas affected, directly or indirectly, by other activities under the proposed action are not likely to extend beyond the Sheep Station because they are spatially confined activities expected to occur on a limited area within Sheep Station boundaries.

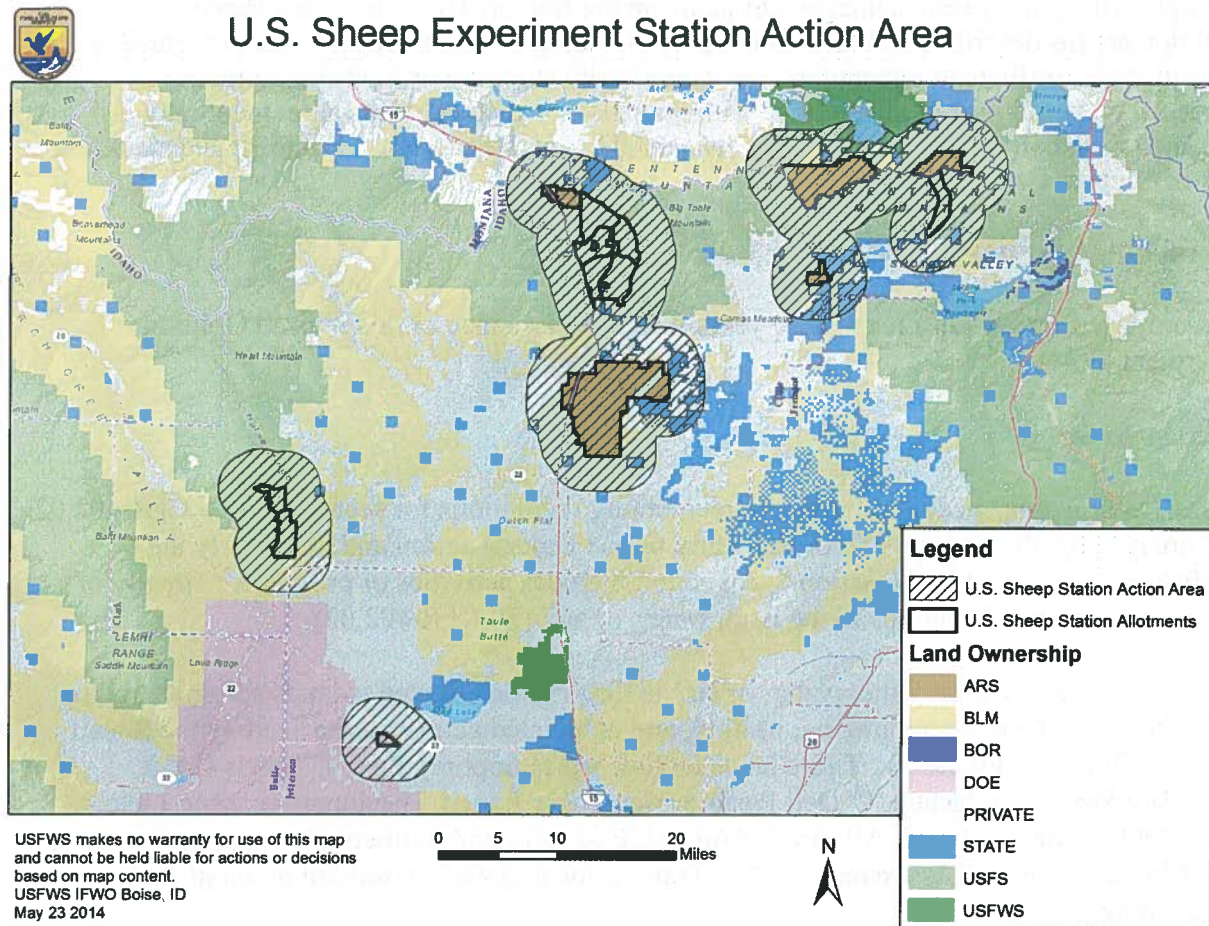


Figure 2. U.S. Sheep Experiment Station Action Area

III. STATUS OF THE GRIZZLY BEAR

This section evaluates the current condition of grizzly bears, the factors responsible for that condition, and its survival and recovery needs at the range-wide scale.

A. Regulatory Status

Grizzly bears were listed under the Act as threatened in the conterminous U.S. on July 28, 1975 (USFWS 1975, p. 31736).

On March 29, 2007, the Service designated the Greater Yellowstone Area (GYA) population of grizzly bears, which inhabits the Greater Yellowstone Recovery Zone (Recovery Zone) (see discussion below), as a distinct population segment (DPS), and removed the GYA DPS from the List of Threatened and Endangered Wildlife under the Act. The delisting became effective on April 30, 2007 (USFWS 2007a, p. 14866).

On September 21, 2009, the Federal District Court in Missoula, Montana issued an order enjoining and vacating the delisting of the GYA DPS of the grizzly bear. In compliance with this order, the grizzly bear population in the GYA is once again listed as threatened under the Act, and is no longer considered a DPS.

To date, no critical habitat for grizzly bears has been designated under the Act.

B. Species Description

The grizzly bear is one of two subspecies of the brown bear that occupy North America. Grizzly bear coloration varies from light brown to almost black, with guard hairs often paled at the tips. Grizzly bears are generally larger than black bears (*Ursus americanus*) and can be distinguished from them by longer, curved claws, humped shoulders, and a more concave face. In the lower 48 States, male grizzly bears average 400 to 600 pounds and female grizzly bears average 250 to 350 pounds. Adult grizzly bears stand 3.5 to 4.5 ft at the hump when on all fours, and can exceed 8 ft in height when standing on their hind legs. A more complete discussion of the biology and ecology of this species may be found in the Grizzly Bear Recovery Plan (USFWS 1993).

C. Life History

Home Range and Dispersal

Most areas currently inhabited by the species are in contiguous, relatively undisturbed mountainous habitat exhibiting high topographic and vegetative diversity. Grizzly bear home ranges average 50 to 500 square miles. The home ranges of adult bears frequently overlap and there is little evidence that they are territorial. Grizzly bears exhibit a high degree of home range fidelity (Schwartz *et al.* 2003). Within its home range, a 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 isolated from human development for feeding, denning, and reproduction (USFWS 1993). They require dense forest cover for hiding and security. In the GYA, 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

Grizzly bears are opportunistic omnivores that use a wide variety of plant and animal food sources (Bjornlie *et al.* 2013). Grizzly bears in the GYA have the highest percentage of meat consumption in their diet of any inland grizzly bear population (Hilderbrand *et al.* 1999). About 40 to 80 percent of grizzly bears' diet in the GYA is from some form of animal matter. Meat in a 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).

Spawning cutthroat trout in streams surrounding Yellowstone Lake are 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 GYA (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 their abundance is 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 remaining 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 also eat ants (Mattson 2001) and earthworms (Mattson *et al.* 2002). Small mammals, such as pika and marmots, form a relatively minor portion of the bear's diet. 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.

Grizzly bears also make use of a variety of vegetative food sources. Whitebark pine seeds are an important fall source of food for grizzly bears in the GYA when they are available (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. Other grizzly bear seasonal food includes roots (Mattson 1997), graminoids, horsetail, forbs, and fruits (whortleberry and huckleberry) (Knight *et al.* 1984, Mattson *et al.* 1991). Grizzly 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 6,500 to 10,000 ft. 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 such disturbance by controlling human access to important denning areas (Haroldson *et al.* 2002, Podrutzny *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).

D. Grizzly Bear Survival and Recovery Needs

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) for use by land managers. The IGBC developed specific land management guidelines for use in each of the five ecosystems currently occupied by grizzly

bears (GYA, Northern Continental Divide, Selkirk, Cabinet Yaak, and North Cascades, Figure 3).

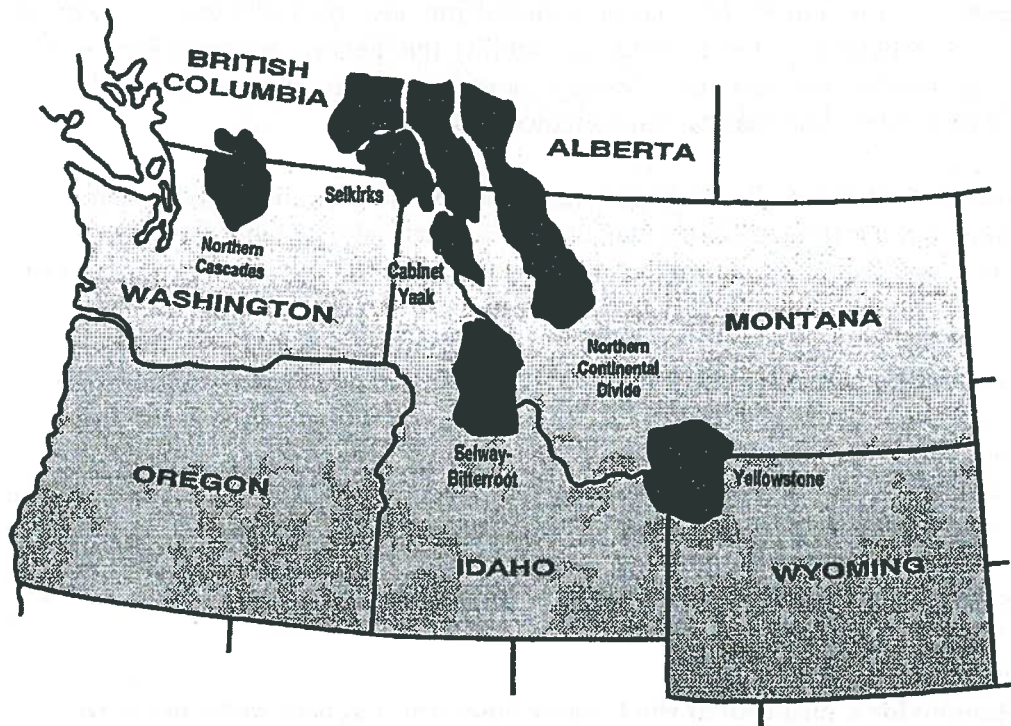


Figure 3. Grizzly bear ecosystems in the conterminous 48 States (USFWS 1993).

Grizzly bear recovery zones have been established to include areas large enough and of sufficient habitat quality to support a recovered bear population in each zone. 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. Grizzly bears are still protected under the Act wherever they occur in the U.S.

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.

A complete discussion of the conservation needs of the grizzly bear is presented in the Grizzly Bear Recovery Plan (USFWS 1993).

E. Current Rangewide Condition of the Grizzly Bear and Factors Influencing that Condition

Historically, grizzly bears ranged from the Great Plains to the Pacific Ocean and from the northern United States border with Canada to the southern border with Mexico. The current distribution of grizzly bears in the contiguous United States is reduced to roughly two percent of its former range. Grizzly bears currently occupy parts of British Columbia and Alberta in Canada, and Montana, Idaho, Wyoming, Washington, and Alaska in the United States. Within the contiguous United States, 6 recovery zones/ecosystems have been identified (USFWS 2011): (1) the GYA; (2) Northern Continental Divide; (3) Cabinet-Yaak; (4) Selkirk; (5) North Cascades; and (6) Bitterroot. The Bitterroot ecosystem is not currently occupied by grizzly bears.

Habitat degradation and fragmentation, and negative human/bear interactions are the primary factors responsible for grizzly bears' current threatened status (USFWS 2011). Grizzly bears preferentially use large areas with a low density of roads and low levels of human activity. Secure habitat is defined as areas larger than 10 ac in size and greater than 500 meters from an open road (USFWS 2007b, Service 2011). The average amount of secure habitat in each recovery zone ranges from 53% in the Selkirks to 86% in the GYE (USFWS 2011).

Grizzly bears have been threatened by motorized and dispersed recreational use and forest management activities, including timber harvest. Dispersed recreational uses include hunting, fishing, camping, horseback riding, hiking, biking, off-road vehicle (ORV) use, and snowmobiling. Roads, ORVs, and some recreational uses can displace grizzly bears from

available habitat (loss of habitat effectiveness due to human disturbance). Increased development on private land, primarily of residential housing, also decreases habitat availability. Finally, grizzly bears face a decrease in the quality of available habitat due to a loss of biodiversity (especially early succession related vegetative types) and sub-optimal composition, structure, and juxtaposition of vegetation as a result of fire suppression, management strategies, and advancing succession.

Direct human-caused mortality is the most obvious threat to grizzly bears. 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 (4) management removals. Bears are removed (management removals) to protect human life or property, usually because bears have become dangerously bold as a result of food conditioning at campsites, lodges, resorts and private residences, or they become habituated predators of livestock. Habituation is the loss of a bear's natural wariness of humans caused by the continued exposure of the bear(s) to human presence, activity, noise, etc. A grizzly bear habituates to other bears, humans, or situations when such interactions give it a positive return in resources, such as food, that outweighs the cost of the stress that precedes such habituation.

Loss of genetic diversity in grizzly populations in the lower 48 states of the U.S. is a long-term potential concern, because of small population size (Selkirk, Cabinet-Yak, and North Cascades populations) and limited potential for genetic exchange among populations (Selkirk, North Cascades, and GYA populations) (USFWS 2011).

Table 1 shows the current grizzly bear population estimate for each of the 6 recognized recovery zones/ecosystems. The text following the Table discusses grizzly bear status and threats in each of the recovery zones.

Table 1. Estimated grizzly bear population size (in terms of individuals) and population growth rate by Recovery Zone/Ecosystem (USFWS 2011).

Recovery Zone	Estimated Population Size	Trend (% change annually)
Greater Yellowstone Area*	582*	+4, 7%*
Northern Continental Divide	930	+3%
Cabinet-Yaak	42	-3.8%
Selkirk	80	+1.9%
North Cascades	<20	Unknown
Bitterroot	0	n/a

*Because of the location of the action area, more recent population data are presented in the Greater Yellowstone Area subsection, below.

Greater Yellowstone Area

The 9,209-square mile GYA recovery zone includes portions of Wyoming, Montana, and Idaho and portions of six National Forests (Beaverhead, Bridger-Teton, Custer, Gallatin, Shoshone, and Targhee), Yellowstone and Grand Teton National Parks, John D. Rockefeller Memorial Parkway, adjacent private and State lands, and lands managed by the Bureau of Land Management.

Best available information suggests the GYA grizzly bear population is stable and slightly increasing in the GYA ecosystem. In 2012, there were an estimated 610 or 718 grizzly bears in the GYA (numbers depend on the method used to estimate population size) (Haroldson et al. 2013). The grizzly bear population has met its recovery zone goals in the GYA. Current information indicates that this population of grizzly bears grew an average of 4% or more annually from 1983-2001. The population's rate of growth slowed during 2002-2011 to 0-2.2%, likely because of the increase in grizzly bear density in the GYA (IGBST 2012, IGBST 2013). The range of grizzly bears in the GYA has increased, as evidenced by the 48% increase in occupied habitat between the 1970s and early 2000s, and is still expanding (Pyare *et al.* 2004, Schwartz *et al.* 2002, IGBST 2013, Bjornlie et al. 2013 Figure 2). Range expansion and population increases, including in the Centennial Mountains, have been concurrent with the Sheep Station implementing the same actions described in the proposed action, and with other federal and nonfederal actions described in the baseline. This means that historical activities comparable to the proposed action have had little to no discernible effect on the population's trend towards recovery.

The long-term conservation of grizzly bears in the GYA continues to depend largely on managing bear-human conflicts, which can result in human-caused mortality of grizzly bears. Years in which natural grizzly bear food production and availability are high can result in younger age classes of grizzly bears accustomed to fairly good food availability. A year of drought and poor food production can compel grizzly bears to search widely for food. Such wide ranging movements can bring grizzly bears into closer contact with humans, increasing bear-human conflicts and resultant control/management actions.

The GYA represents the most remote portion of the current grizzly bear range in the U.S. and has been the primary focus of grizzly recovery efforts to date. This work has been very successful. The number and distribution of grizzly bears in this population have exceeded target recovery levels for the last several years. For example, the population of independent female grizzly bears has grown from a low point in 1983 of less than 30 to more than 250 today (Schwartz et al. 2011, Haroldson and Frey 2013). Recovery work continues to reduce grizzly bear mortalities and ensure habitat standards for maintaining a recovered population in this ecosystem.

The 1975 listing of grizzly bears in the coterminous U.S. identified genetic isolation of some populations of grizzly bear as a potential threat (40 FR 31734). Loss of genetic diversity is a potential concern for GYA grizzly bears, because of the large distances between this and other U.S. populations (USFWS 2011). The 1993 Recovery Plan characterizes the Yellowstone population as isolated from other populations, and suggested genetic management may become appropriate for this population (USFWS 1993). A genetic study by Miller and Waits (2003) suggests that heterozygosity (i.e. genetic variation) was historically low in the GYA population, even before the decline of grizzly bears in the 20th century, and that the viability of the population is unlikely to be affected by genetic factors in the next several generations.

Human-grizzly bear interactions have been increasing in the GYA due, in part, to increasing human use and development, increasing bear numbers, and bears and people both expanding their range of occupancy, increasing the chances of adverse encounters. Education, proper food storage, proper disposal of bear attractants, infrastructure management, and compliance and enforcement of permit requirements will help prevent these incidents and is part of the overall management strategy for grizzly bears in the GYA. The frequency of grizzly bear-human conflicts is inversely associated with the abundance of natural bear foods (Gunther et al. 2004). Mortalities from grizzly bear-human conflicts currently are a primary source of grizzly bear mortality and are documented in the IGBST annual reports and mortality database.

With the decline of whitebark pine and cutthroat trout in the GYA, grizzly bears over the past decade have exhibited reduced selection for whitebark pine habitat, and corresponding increased consumption of meat (IGBST 2013). Bear movements and home range size did not change with the change in diet, and recent analyses suggest that grizzly bear body condition and fecundity rates have not changed with the changing diet (IGBST 2013). Although not yet verified, the change in diet may lead to an increased probability that grizzly bears would seek out livestock or be in areas with an increased probability of negative interactions with humans. It has been established that variation occurs annually in the number and location of conflicts, influenced by natural food abundance, livestock use patterns, availability of unsecured anthropogenic foods, and an expanding population (both geographic and numbers) of both grizzly bears and humans and that no single factor can be attributed to low or high conflicts in a given year and it is always the accumulation of multiple factors. Natural foods, climate conditions, bear numbers, previous bear removals, management efforts and public actions all factor into the annual variation in bear-human conflicts (Service 2007c, Bjornlie et al. 2013).

The Forest Service has decreased its authorization of livestock grazing in the GYA over the past two decades; currently, the Sheep Station's use of Meyers Creek is the only remaining

authorized sheep grazing on public lands within the GYA Grizzly Bear Recovery Zone (Greater Yellowstone Area Grizzly Bear Habitat Monitoring Team 2013). Sheep grazing does occur on private lands in the Recovery Zone, and on public and private lands in the GYA but outside of the Recovery Zone. ARS lands are outside of the Recovery Zone. Grizzly bear conflicts with livestock in the GYA continue to occur, and can lead to management relocations or removals of grizzly bears. Grizzly bear/livestock conflicts over the past 10 years have occurred frequently in Wyoming and rarely in Idaho and Montana (see IGBST annual reports, 2002-2012). Currently, there are approximately 80,910 sheep in the GYA range of the grizzly bear (C. Servheen, FWS, pers. comm.). In 2012, there were four sheep killed or injured by grizzly bears in the entire GYA; in 2013, there were 23 (C. Servheen, FWS, pers. comm.). This represents 0.005 and 0.007%, respectively, of all sheep in the GYA. Not all grizzly bear-related sheep deaths led to actions against the grizzly bears.

Table 2 summarizes the 239 known and probably grizzly bear mortalities from 1997 to 2009 in the GYA (IGBST 2009). The smallest amount of known and probable mortality (just over 1%) is attributable to sheep grazing activities, including three management removals and one illegal kill over the 12 year period. None of these mortalities was in the action area. According to the IGBST mortality database, during 2010-2013, six grizzly bear mortalities occurred related to sheep, out of 179 mortalities (approximately 3% of mortalities). Four of those six occurred in Wyoming, where range expansion has brought grizzly bears into closer contact with more livestock grazing operations. None of the mortalities between 2010 and 2013 known to be sheep-related were in or near the action area.

Table 2. Known and Probable Grizzly Bear Mortalities in the GYA, 1997-2009.

Category of Mortality	Mortality, Number of Bears	Percentage of Total Mortality
Confrontation	90	30.72
Hunting	76	25.94
Undetermined	58	19.80
Natural	24	8.19
Poaching	16	5.46
Cattle Protection	13	4.44
Research	6	2.05
Under Investigation	6	2.05
Sheep Protection	4	1.37
Grand Total	293	100

A supplement to the Recovery Plan establishes thresholds for mortality of grizzly bears in the GYA that represent the maximum levels of mortality consistent with sustaining a stable or increasing population (USFWS 2007b). The IGBST has since recommended revising those mortality thresholds to reflect updated vital rates for the GYA grizzly bear population (IGBST 2012); revised thresholds have not yet been adopted by the Yellowstone Ecosystem Subcommittee of the Interagency Grizzly Bear Committee. The Recovery Plan Supplement

states that mortality thresholds are not to be exceeded in more than 2 consecutive years for females, or more than 3 consecutive years for males or cubs (USFWS 2007b).

The Recovery Plan's threshold for mortality from all causes of adult (i.e. independent, older than 2 years old) females was 9% of the total GYA population of adult females (USFWS 2007b). The updated mortality threshold recommended by the IGBST (2012) is 7.6% for adult females (IGBST 2012). Although the revised thresholds are a smaller percentage, they may represent a larger number of bears because of the growing population and statistical methodology. Across the GYA, fewer mortalities (from all causes) of adult female grizzly bears have occurred in 12 of the past 14 years than the threshold set to sustain an increasing population (see IGBST annual reports).

The mortality threshold for cubs (i.e. dependent offspring) and yearlings is 9% (USFWS 2007b); IGBST has recommended revising this to 7.6% of the total estimated population of dependent cubs (IGBST 2012). Unlike the threshold for independent females, only human-caused mortalities are counted against the threshold for cubs. The mortality threshold for dependent cubs and yearlings in the GYA has never been exceeded.

No data exist that can inform a sustainable mortality threshold for independent males, because population trajectory is generally independent of male survival rates (IGBST 2012). The mortality threshold for independent males is set at 15%. The mortality threshold for independent males was exceeded in 2008, 2010, and 2011 (fractionally; by less than one bear). The mortality threshold for independent males was exceeded in 2012 under the current protocol (USFWS 2007b); under the revised protocol recommended by IGBST (2012), fewer mortalities occurred than the threshold. The two methods lead to different conclusions because IGBST (2012) recommends not counting against the threshold those mortalities that occur outside of the area considered suitable habitat. This change means that grizzly bear mortalities in areas where long-term expansion or occupancy is likely unsustainable would not be counted against mortality thresholds. It also limits the count of grizzly bear mortalities to areas where systematic data collection efforts occur (IGBST 2012). The increase in mortalities of independent males may be related to independent subadults dispersing into marginal habitat at the edges of the current GYA range.

Northern Continental Divide

The Northern Continental Divide Ecosystem (NCDE) extends from the Rocky Mountains of northern Montana into contiguous areas in Alberta and British Columbia, Canada. The exact size of the grizzly bear population in the NCDE is not known. However, the population is estimated to be 942 bears (USFWS 2013). Data gathered between 2004 and 2009 by the NCDE subcommittee of the Interagency Grizzly Bear Committee indicates the population was increasing at a rate of 3% per year (USFWS 2013).

Threats to grizzly bears in the NCDE include increasing human use, lack of standards on developed sites, and other questions of human access management. A draft Conservation Strategy for grizzly bears in the NCDE was released in April 2013 (USFWS 2013). The purpose of the Conservation Strategy is to describe the coordinated management and monitoring efforts

necessary to maintain a recovered grizzly bear population in the NCDE and document the commitment of these agencies to this shared goal.

Cabinet-Yaak

The Cabinet/Yaak Ecosystem (CYE) in northwestern Montana and northeastern Idaho has at least 42 grizzly bears. Grizzly bear movement between the Cabinet Mountains and the Yaak River drainage is unknown but thought to be minimal (Kasworm et al 2013). These populations are known to be connected to grizzly bear populations to the north of the United States border with Canada based on documented interchanges of radio-collared bears across the border (USFWS 1993).

Population estimates from 2010 were similar to the 1999 estimates of 30-40 bears. Mortality rates and reproductive data suggest the Yaak River portion of the CYE is likely declining (USFWS 2011). The Cabinet Mountains population has been augmented with eight female bears between 1990 and 2009. The reproductive success of one of the augmentation bears has contributed to the increasing population since 1990 (USFWS 2011).

Threats to grizzly bears in the CYE include motorized access, unsustainable human-caused mortality, small population size, and population fragmentation that resulted in genetic isolation (USFWS 2011). The Service considers this population threatened because of continuing high levels of human-caused mortality, a decreasing population trend, genetic and geographic isolation, and inadequate habitat protections. The population is also threatened by increasing habitat fragmentation within the recovery zone (due to mines and private land development) and in intervening habitat with other grizzly bear populations (USFWS 2011). After a 12-month finding, the Service found that grizzly bears within the CYE were warranted for endangered status but precluded by other listing actions (February 12, 1993; 58 FR 8250-8251).

Selkirk

The Selkirk Ecosystem (SE) of northwestern Idaho, northeastern Washington, and southeastern British Columbia includes about 1,080 square miles in the U.S. portion and about 875 square miles in the Canadian portion of the recovery zone. The Selkirk recovery zone is the only defined grizzly bear recovery zone that includes part of Canada because the habitat in the United States portion is not of sufficient size to support a minimum viable population. Grizzly bear habitat is contiguous across the border and radio-collared bears are known to move back and forth across the border. Therefore, the grizzly bears north and south of the U.S./Canada border are considered one population (USFWS 1993). The population of grizzly bears in the Selkirks is estimated at 30 in the U.S. and 58 in Canada (USFWS 2011). The population is estimated to be increasing at a rate of 1.9% annually.

Threats to grizzly bears in the SE include motorized access, lack of a food storage order, human-caused mortality, small population size, and population fragmentation that resulted in genetic isolation. Although the population may be slowly increasing and reconnecting with adjacent populations, high levels of human-caused mortality and a lack of regulatory protective mechanisms in British Columbia and the U.S. still threaten this population (USFWS 2011).

North Cascades

While study of this very rugged and remote habitat indicates that this ecosystem is capable of supporting a self-sustaining population of grizzly bears, only a remnant population may remain that is incapable of persisting without active recovery intervention efforts, including possible augmentation with bears from other areas. A confirmed sighting of a grizzly bear in 2010 is the only report of a grizzly bear in the North Cascades ecosystem since 1996 (USFWS 2011). The population in the North Cascades is likely fewer than 20 animals. No data are available about specific demographic rates.

Threats to grizzly bears in the North Cascades include the very small population size, motorized recreation, population fragmentation resulting in genetic isolation, and a lack of detailed data about population size, trend, survival, and reproductive rates (USFWS 2011).

Bitterroot

The Bitterroot ecosystem is currently unoccupied by grizzly bears (as defined in Service 2000), and has been since before the time of listing. Most suitable habitat within the Bitterroots is protected under the Wilderness Act. The Service prepared an Environmental Impact Statement and signed a November 13, 2000, Record of Decision authorizing the reintroduction of 25 grizzly bears over 5 years to the Bitterroots Ecosystem. These bears would be classified as an Experimental Population under section 10(j) of the Act. To date, no bears have been released in the Bitterroots.

A male grizzly bear that likely originated in the Selkirks of Northern Idaho was shot in the Bitterroots in 2007 (Bitterroots Ecosystem Subcommittee 2007). Prior to 2007, no grizzly bears had been confirmed in the Bitterroots in more than 60 years. It is unknown what route the bear took to reach the Bitterroots, as it did not have a radio collar.

IV. ENVIRONMENTAL BASELINE

The preamble to the implementing regulations for section 7 (USFWS 1986) contemplates that the evaluation of “the present environment in which the species or critical habitat exists, as well as the environment that will exist when the action is completed, in terms of the totality of factors affecting the species or critical habitat will serve as the baseline for determining the effects of the action on the species or critical habitat.” The regulations at 50 CFR 402.02 define the environmental baseline to include “the past and present impacts of all Federal, State, or private actions and other human activities in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.” (emphasis added.) The analysis presented in this section supplements the above Status of the Species section by focusing on the current condition of grizzly bears in the action area, the factors responsible for that condition, inclusive of the factors cited above in the regulatory definition of the environmental baseline, and the role the action area plays in the survival and recovery of the grizzly bear. Relevant factors on lands surrounding the action area that are influencing the condition of the grizzly bear were also considered in completing the status and baseline evaluations.

A. Current Condition of the Grizzly Bear in the Action Area

The Summer Range (Tom's Creek, Big Mountain, and O'Dell pastures), Meyer's Creek Allotment (USFS), and the Henninger Ranch all lie within areas known to be used by grizzly bears. All other grazed lands are outside of the current range of grizzly bears (IGBST, unpublished data; Schwartz et al. 2006; Bjornlie 2013). Other grazed lands are dominated by open sagebrush habitat and contain frequent motorized activity on county roads. Because they are outside of the current range of the grizzly bear, actions on these lands will not affect grizzly bears, and are not described further.

ARS actions on DOE lands are not expected to affect grizzly bears because the DOE lands occur outside of the range of the grizzly bear and outside of suitable grizzly bear habitat. DOE lands could be grazed independently of the rest of the proposed action, and would not affect grizzly bears, so DOE is not a cooperating agency under this consultation.

East Beaver Allotment (USFS) is within potentially suitable habitat for grizzly bears, as defined in 2010 by the Interagency Grizzly Bear Study Team (IGBST). However, no grizzly bears or their sign have been documented within 5.0 mi of the East Beaver Allotment, which is also outside of the most recent range estimate for grizzly bears. Although the range of the grizzly bear has expanded in the Greater Yellowstone Area (GYA), the rate of expansion has slowed over the past decade, particularly on the western boundary of grizzly bear distribution, near the Sheep Station (IGBST; Schwartz et al. 2006; Schwartz et al. 2002; Bjornlie 2013). The lack of current occupancy, and proportionally more open sagebrush habitat and county roads makes the probability of consistent grizzly bear use within the next 10 years discountable. Consequently, we do not consider East Beaver Allotment further in this consultation.

Meyers Creek Allotment is in the grizzly bear GYA recovery zone, and is managed under Management Situation 2 (see Status of the Species section). The remainder of lands used by the Sheep Station are outside of the recovery zone.

Based on information presented in the Assessment and unpublished data collected by the IGBST, grizzly bears occur in the O'Dell Creek, Big Mountain, and Tom's Creek pastures (managed by the Sheep Station) and Meyers Creek Allotment (managed by USFS). These pastures are located in high-elevation portions of the Centennial Mountains in Idaho and Montana. The Meyers Creek Allotment is the only Federally-administered allotment inside the GYA Recovery Zone with sheep grazing (Schwartz et al. 2011). The Sheep Station has not grazed Tom's Creek Pasture or Meyers Creek Allotment since 2008, but their use is proposed as part of the action considered in this Opinion.

Occasional grizzly bear occurrences have been documented at the base of the Centennial Mountains, in the vicinity of Henninger Ranch (Assessment, p. 23). County roads, human use, and open sagebrush habitat limit the probability of grizzly bear occurrence at Henninger Ranch. To date, no grizzly bears have been known to use it (Assessment, p. 23; Haroldson and van Manen 2014); however, a collared grizzly bear was documented 0.33 mi away from Henninger Ranch, so it is reasonable to assume that the ranch may be sporadically used by grizzly bears. All other lands used by the Sheep Station are outside of occupied grizzly bear habitat.

Telemetry locations collected by the IGBST have documented nine different collared grizzly bears (7 males and 2 females) on ARS lands or Meyers Creek Allotment since 2000 (Haroldson and van Manen 2014). Telemetered grizzly bear use of the action area by any single bear has varied from 1 day to 38 days within a year, and ranged from early May to early November. The maximum distance from the Sheep Station (i.e. from Henninger Ranch, Meyers Creek Allotment, or the Summer Range) travelled by any of the nine collared grizzly bears that used the Sheep Station was 78 mi away. The maximum distance ranged from 17 mi to 78 mi, depending on the bear, with an average maximum distance of 71 mi from the Sheep Station (Figure 4).

On average, collared grizzly bears, that used the Sheep Station at some point in time, were 25-34 mi from the Sheep Station. Telemetered bears were located on ARS lands or Meyers Creek Allotment approximately 2% of the time. Because we have no other information on grizzly bear movements for the area, for the purposes of this analysis, we assume that telemetered grizzly bears are representative of all grizzly bears that use the Sheep Station.

Although it is unknown how many grizzly bears are likely to occupy the action area during a given year, we make the following estimate for purposes of this analysis. The Centennial Range contains approximately 3% of occupied grizzly bear habitat in the GYA. Using the larger of the two estimates of grizzly bear population in the GYA (in order to err on the side of overestimating grizzly bear numbers in the Centennials) (718 grizzly bears; Haroldson et al. 2013) and assuming a uniform distribution of grizzly bears throughout their range (which is not the case, but we lack better data specific to the action area), we estimate about 22 grizzly bears occur in the Centennial Range. Due to grizzly bears' large home ranges, we assume that any of the 22 grizzly bears estimated to occur in the Centennial Range would have the opportunity to pass through the action area during the 10-year term of the proposed action, although this is likely an overestimation based on habitat preferences. It is likely that grizzly bear abundance in the action area has increased over the past 10 years, concurrent with Sheep Station grazing at levels comparable to those proposed.

The range of the grizzly bear is expanding in the GYA, and the population has sustained continuous growth over the past two decades. The action area is near the current western edge of the grizzly bear's range in the GYA. Westward expansion of grizzly bears' range in the GYA has greatly slowed over the past 5 years, and may reflect the open sagebrush habitat with more roads and human activity to the west that likely is less suitable habitat for grizzly bears (Bjornlie et al. 2013). Telemetry data indicate that the action area is at the edge of the distribution of female grizzly bears in the GYA. The home range size of a female may be influenced by the presence of cubs. This may be due to reduced mobility, increased nutritional need, and behavioral adaptations of mothers to increase offspring survival (Edwards et al. 2013). The action area is used more frequently by male grizzly bears, which have larger home ranges (Haroldson and van Manen 2014). However, females with cubs have been documented in the vicinity of the Sheep Station, and, based on known female grizzly bear home range sizes, they likely use the action area. The action area is currently suspected to support both sexes of grizzly bear, and all age classes.



U.S. Sheep Experiment Station and 78 Mile Radius

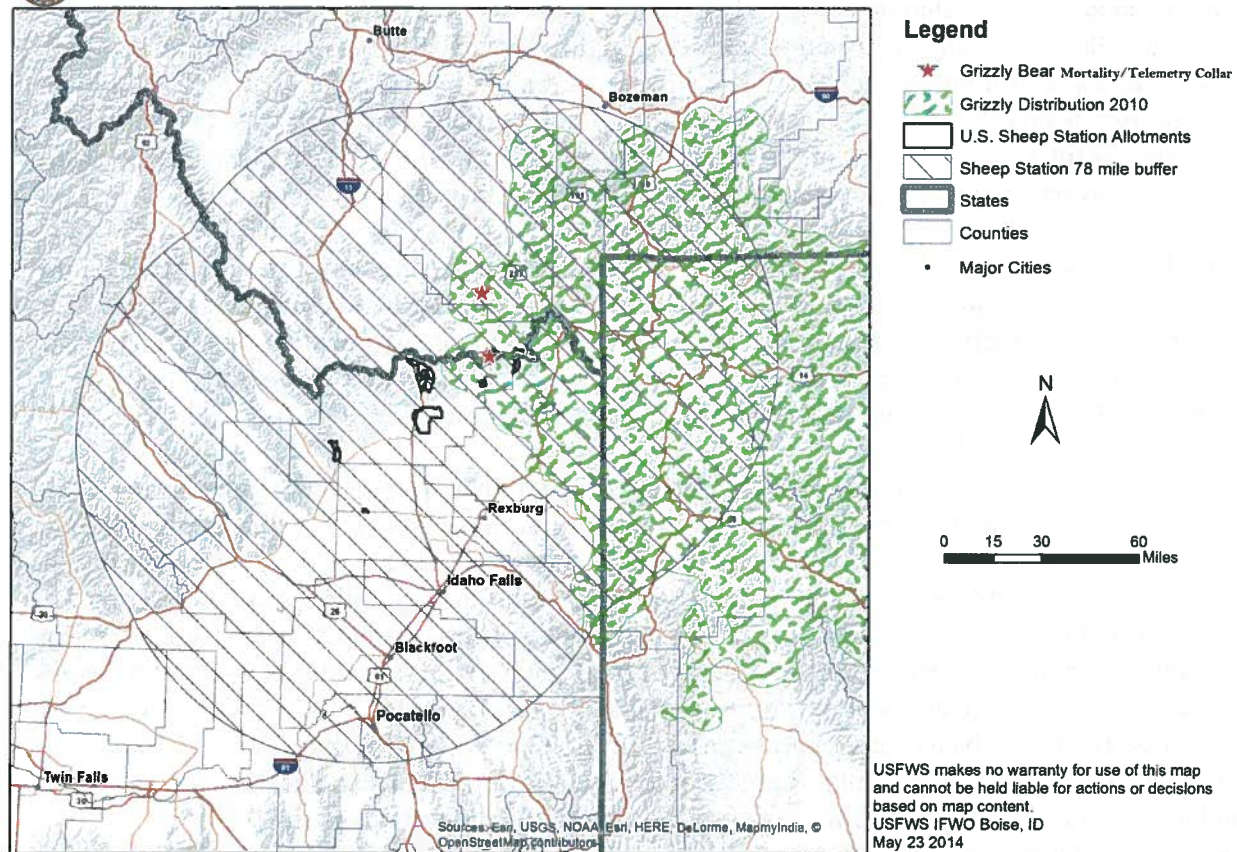


Figure 4. Location of U.S. Sheep Experiment Station with 78 mile radius (maximum travel distance by a collared grizzly bear from the boundary of the Sheep Station) overlay. Red stars indicate location of 2012 sheep-related grizzly bear mortality in the Gravelly Mountains and location of a grizzly bear collar found in 2012 (discussed further below).

B. Factors Affecting the Condition of the Grizzly Bear in the Action Area

Several types of recreational activities occur in the action area. Recreational activities, including hunting, on public and private lands in the parts of the action area surrounding the Sheep Station have the potential to result in the mortality or injury of grizzly bears because of human/grizzly bear interactions. Grizzly bears may be injured or killed in defense of human life by recreationalists. Big game hunters may mistakenly identify grizzly bears as black bears and kill or injure them. In other cases, individuals may maliciously kill or injure grizzly bears. Although some trespass on the Sheep Station by recreationalists occurs, limited access and the lack of historical encounters on the Sheep Station, and the small percentage of the GYA covered by the action area imply the probability of encounters between recreationalists and grizzly bears is discountable. On that basis, grizzly bear/human encounters are not likely influencing the condition of the grizzly bear in the action area. The Sheep Station permits one outfitter/guide to conduct hunting and non-hunting trips on ARS lands in Montana; ARS and the Service are

currently in conversation about the effects of that action on grizzly bears. Otherwise, hunting by the public is not allowed on the Sheep Station, and public recreation is limited.

No known grizzly bear mortalities or injuries have occurred in the action area in the recent past (i.e. since 2000) (Haroldson and van Manen 2014). No management captures of independent aged (>2 years old) grizzly bears have occurred in the action area in the recent past (i.e. since 2000) (Haroldson and van Manen 2014).

There have been no reported grizzly bear/human encounters on the Sheep Station, other than observation of grizzly bear sign. The Service is not aware of data on grizzly bear/human encounters in the rest of the action area.

In 2012, a grizzly bear collar was found in the action area. The bear associated with the collar has not been found, and it is unknown if the bear was killed or not (T. Thibeault, FWS Office of Law Enforcement, pers. comm.); in the absence of better data, the IGBST documents that bear as a “probable mortality” (Haroldson and van Manen 2014). The Service’s Division of Law Enforcement has an ongoing open investigation into the circumstances surrounding the bear collar; no conclusions have been reached in that case. At this time, no conclusions have been made that connect the bear collar to actions by the Sheep Station or its employees. Should the investigation conclude otherwise, reinitiation of this consultation may be necessary, separate from any enforcement actions that may be taken.

One livestock-related grizzly bear mortality that was not an authorized management removal occurred in the Gravelly Mountains of Montana in 2012, and is under ongoing investigation (Haroldson and van Manen 2014). Killed livestock were not associated with the Sheep Station. This mortality is approximately 19 miles north of action area and is not known to be related to the Sheep Station or its employees. Should the investigation conclude otherwise, reinitiation of this consultation may be necessary, separate from any enforcement actions that may be taken.

Under the 1997 Revised Forest Plan for Targhee National Forest, Meyers Creek Allotment is managed under Grizzly Bear Management Situation 2 (see Status of the Species section, above). Meyers Creek is the only sheep grazing allotment in the GYA Recovery Zone on Caribou-Targhee National Forest that has not been phased out as described in USFS (1997). Historically, the Sheep Station used the allotment for approximately one month in late spring/early summer as sheep were moved to ARS’s East Summer Range, and for trailing over 3 days in fall. Under a 2012 USFS decision, the period of ARS use of Meyers Creek Allotment has been reduced to 3 days in early summer and 3 days in fall, for use trailing sheep (USFS 2012). The Forest Service reduced the duration of ARS use to minimize the potential for grizzly bear/sheep conflicts inside of the GYA Recovery Zone. The Service completed a separate consultation with the Forest Service on its issuance of a permit to ARS to use Meyers Creek Allotment (USFWS 2012).

For the purposes of this Opinion, a grizzly bear/sheep conflict is defined as any circumstance in which sheep are killed by a grizzly bear. Grizzly bear/sheep encounters are defined as situations when a grizzly bear is in the vicinity of sheep, but does not kill any sheep. Grizzly bear/human encounters encompass any kind of interaction between a grizzly bear and a human, including

everything from sightings to altercations that result in the death or injury of either the bear or the human.

Over the past 10 years, four bear/sheep conflicts occurred on the Sheep Station that resulted in eight sheep deaths. In all cases, evidence was inconclusive on whether a grizzly bear or black bear killed the sheep; there have been no verified grizzly bear/sheep conflicts on the Sheep Station. No grizzly bear control actions were taken in response to these conflicts. In 2007, three bear/sheep conflicts occurred on the Sheep Station, resulting in the deaths of 7 sheep. Insufficient information existed to determine if the three conflicts in 2007 were caused by grizzly bears or black bears (*Ursus americanus*); although grizzly bear tracks were observed in the vicinity of one of the sheep carcasses, it may have stolen the carcass from a black bear, and evidence was inconclusive regarding what species of bear killed the sheep. Because of the grizzly bear tracks in the vicinity, grizzly bears' known tendency to eat sheep, and that the APHIS Wildlife Services considered taking control action against a grizzly bear (but did not; grizzly bears were not listed in the GYA at the time), we consider it reasonably likely that the grizzly bear fed on the sheep carcass, and so treat this instance a grizzly bear/sheep conflict. In 2008, Sheep Station employees twice reported sighting a grizzly bear. In the same year, one ewe was killed, but it is unknown if it was killed by a grizzly or black bear. In 2007 and 2008, conflicts ended after sheep were moved to new locations on ARS lands. No grizzly bear/sheep conflicts have occurred on the Sheep Station since 2008.

ARS has not grazed sheep on Tom's Creek Pasture or Meyers Creek Allotment since 2008, but includes grazing in these locations as part of the proposed action. Because Tom's Creek Pasture has not been used, O'Dell and Big Mountain pastures have been grazed every year since 2008, and have not been rested.

Although there are private sheep ranches within the action area, the Service is not aware of the details of how private lands in the action area are managed, such as the number of sheep present or the measures private landowners may take to avoid livestock conflicts with grizzly bears. Because of grizzly bears' large home ranges, and the close proximity of private rangeland to the Sheep Station, it is possible that grizzly bears using the Sheep Station may have previously eaten sheep on private lands within or outside of the action area, and thus have a resulting increased probability of feeding on the sheep associated with the proposed action. However, grizzly bear/sheep conflicts on private land in Montana and Idaho over the past 10 years have been few and infrequent (IGBST annual reports, 2002-2012). We are aware of only one instance of a grizzly bear preying on sheep in the action area but outside of Sheep Station lands since 2000; that instance, in 2000, involved 13 sheep on an allotment on the Caribou-Targhee National Forest and 0.9 mi from the boundary of the O'Dell Pasture. No grizzly bears were captured or killed following the predation event. We are not aware of any grizzly bear/sheep conflicts on private land in the action area but off of the Sheep Station in the past 10 years. The previous 10 years of conflict data, discussed above, are considered representative, because grizzly bears have occupied the action area over that time, Federal sheep grazing authorizations have been consistent or diminishing over that time, and 10 years is the proposed term of the action. Based on historical trends of grizzly bear/sheep conflicts in and surrounding the action area and the anticipated comparability of future actions, it is unlikely that sheep on private lands are a consistent food source for grizzly bears that use the action area.

C. The Role of the Action Area in the Survival and Recovery of the Grizzly Bear

The Summer Range contains secure habitat for grizzly bears (as defined by the Recovery Plan supplement, Service 2007b), with relatively low levels of human activity and open roads. Henninger Ranch, Meyers Creek Allotment, and the rest of the action area are not in secure habitat.

Based on telemetry data, grizzly bears use the action area seasonally from early May to mid-November. Grizzly bears that use the action area seasonally move east to Montana and Yellowstone National Park, where their winter dens are. No grizzly bears are known to use the action area for denning. The action area does not contain any sites with significant populations of cutthroat trout or army cutworm moths. Although whitebark pine occurs in the action area, it is relatively low in abundance, and is available in higher abundance on lands in the Centennial Mountains surrounding the action area.

The Centennial Mountains may be a corridor connecting the GYA to undeveloped lands farther west (e.g. the Bitterroots). It is unlikely the GYA currently is serving as a grizzly bear source population for other ecosystems, nor are the Centennials, as the westernmost part of the GYA grizzly bear range, currently connecting this population of grizzly bears to others. The Bitterroots Grizzly Bear Recovery Zone, the nearest other grizzly bear ecosystem as defined in the Recovery Plan, is 150 miles away and is unoccupied by grizzly bears (as defined in Service 2000). Genetic analysis shows that the single grizzly bear detected in the Bitterroots in 2007 likely came from the Selkirks, not the GYA (Bitterroot Ecosystem Subcommittee 2007). However, the potential for grizzly bear movement between ecosystems exists.

V. EFFECTS OF THE ACTION

A. Direct and Indirect Effects of the Proposed Action

The implementing regulations for section 7 define “effects of the action” as “...the direct and indirect effects of an action on the species together with the effects of other activities that are interrelated or interdependent with that action, which will be added to the environmental baseline...” (USFWS 1986, p. 19958). “Indirect effects” are defined in the regulations as “...those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.” (USFWS 1986, p. 19958).

Sheep Grazing

The Summer Range (Tom’s Creek, Big Mountain, and O’Dell pastures), Meyer’s Creek Allotment, and the Henninger Ranch all lie within occupied grizzly bear habitat. All other lands proposed for sheep grazing are outside of areas currently used by grizzly bears, so implementation of the proposed action in these areas will have no impact on grizzly bears.

Within the Summer Range, Meyer’s Creek Allotment, and Henninger Ranch, the potential effects to grizzly bears from proposed sheep grazing action are: (1) direct mortality from a sheepherder defending his life; (2) a change in the availability of food or the quality or quantity

of grizzly bear habitat; (3) attraction to the Sheep Station because of sheep presence; (4) displacement of grizzly bears from habitat as a result of humans and dogs associated with the sheep grazing; and (5) habituation of grizzly bears to humans or sheep. Each of these effects is discussed separately below, although these effects can be connected. For example, by introducing sheep into the landscape, the availability of food has changed. This may lead to a grizzly bear feeding on sheep, which increases the likelihood of a human/bear interaction.

Direct Mortality From A Sheepherder Defending His Life

Under the Act's section 4(d) exemption that is part of the grizzly bear listing rule, grizzly bears may be killed in protection of life (50 CFR 17.40(b)). On the Sheep Station, this means that a sheepherder may legally kill a grizzly bear in self-defense or in defense of others. ARS does not anticipate this occurring, because of the lack of historical grizzly bear/herder conflicts and the inclusion of conservation measures as part of the proposed action to avoid situations where sheepherders would need to defend their lives. For example, sheepherders may haze bears away from the area, are accompanied by guard dogs (Conservation Measure 2), and are provided annual training on grizzly bears and how to avoid encounters (Conservation Measure 7). In addition, sheepherders will practice herd management techniques that minimize the probability of grizzly bear/livestock encounters and conflicts (which could result in threats to the herder's life) (Conservation Measures 2-5), and will minimize food availability and other attractants to grizzly bears (Conservation Measure 6). Thus, the probability of grizzly bear injury or mortality because of confrontations with sheepherders is minimal. In the unlikely event that a sheepherder does kill or injure a grizzly bear in defense of his life, and law enforcement officers confirm that the circumstances conform to the 4(d) exemption, the death or injury of a grizzly bear resulting from the act of a sheepherder shooting the bear in defense of his life would be covered by the special rule promulgated under section 4(d) of the Act for the grizzly bear and would not be prohibited under section 9 of the Act. Thus, death or injury of a grizzly bear due to acts of self-defense will not be discussed further in this Opinion.

Change in the Quality and Quantity of Grizzly Bear Habitat and the Availability of Food

As stated in the "Life History" subsection above, grizzly bears are opportunistic omnivores that use a wide variety of plant and animal food sources. As sheep graze across the landscape, there would be less forage available for grizzly bears and their ungulate prey. However, sheep would use a small percentage of total forage available in the action area. Based on assessments done during past implementation of the proposed action, sheep would consume about 3.6% to 5.1% of available forage on the Summer Range, and 2.3% of forage on Meyers Creek (Assessment, p. 7). Under the proposed action, no one site would have a significant reduction in forage because the band of sheep would move continuously throughout each pasture. The minimal expected reduction in forage would have an insignificant effect on the availability of vegetative food for grizzly bears and their prey, such as deer and elk. Forage consumption on Henninger Ranch is much higher, at 23.8% (Assessment, p.7). However, Henninger Ranch is substantially less suitable habitat for grizzly bears than the Summer Range or Meyers Creek. In addition, it is at the edge of grizzly bear distribution, and grizzly bears have never been documented on Henninger Ranch, though they are in the vicinity (Haroldson and van Manen 2014). Consequently, effects of sheep grazing on grizzly bear forage likely would not change the

probability from existing conditions that grizzly bears would use Henninger Ranch. The addition of a grizzly bear food source (sheep) to the project area is considered below.

Attraction to the Sheep Station Because of Sheep Presence

Based on telemetry data and field observations, grizzly bears are suspected to have a keen sense of smell (Aber, pers. comm., 2014, Craighead 1976, Herrero 1985), which may attract them to the sheep associated with the proposed action or any carcasses of sheep that die. Telemetry data shows grizzly bears in the GYA deviating 5 miles from a straight line of movement to feed on a wild prey (not sheep) carcass before resuming their original path (Aber, pers. comm. 2014). Craighead (1976) documents movements of approximately 18 miles to feed on a carcass, but does not explain how or when the carcass was detected, or how researchers attributed the bears' movement to carcass presence. Detectability appears to be site specific. For instance, Craighead (1976) documents another grizzly that took 60 hours to locate a carcass 1.7 mi away when wind conditions were unfavorable. These studies of the carcasses of wild prey suggest that grizzly bear movement towards the scent of prey carcasses is highly variable, and depends on the individual bear, the prey item, weather and topographic conditions, or other factors.

We are not aware of literature that describes grizzly bears' ability to detect the scent of domestic sheep, or if grizzly bears are attracted to areas with sheep after smelling them. French and French (1990) describe grizzly bears using their sense of smell to find the general location of elk calves in the GYA, but also document bears being unable to find living calves within 6.6 ft of them. While sheep have a unique smell, the results of French and French (1990) suggest that grizzly bears may not make as wide-ranging movements after detecting the scent of live prey as they do with carcasses, which suggests grizzly bears are not likely attracted to the action area because of the scent of sheep. In addition, if grizzly bears were attracted to the action area because of the scent of sheep as a likely prey item, we would expect a history of grizzly bear/sheep encounters in the action area, for as long as the action area has been occupied by grizzly bears. In contrast, no grizzly bear/sheep conflicts have occurred on private land in the action area over the past 10 years, and no sheep deaths on the Sheep Station have been verified as attributable to grizzly bears. Based on the differences between grizzly bear movements towards carcasses and live prey, and the infrequency of historical grizzly bear/sheep conflicts in occupied grizzly bear territory near sheep ranches in the action area, we conclude that the probability of grizzly bears being attracted to the Sheep Station because of the scent of sheep is discountable.

Carcasses of domestic livestock in grizzly bear habitat may disrupt grizzly bears' normal behavior patterns by attracting bears away from their normal feeding and sheltering areas. Wherever such carcasses are available within grizzly bear-occupied habitat, bears may be drawn to the area. This change in habitat use and behavior is likely to make affected grizzly bears more susceptible to conflicts with humans. To address this issue, under the proposed action, livestock carcasses will be removed within 3 days (Assessment, p. 32, Grazing Conservation Measure 6) or treated with lime, which would also make the carcass less attractive and unpalatable for grizzly bears. The probability of grizzly bear use of carcasses is also minimized by the use of herd guard dogs and human presence. Anderson et al. (2002) noted, "(W)hile 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.” The probability of carcass availability is also minimized by implementation of good animal husbandry and herding practices to minimize stray animals and sickness (Conservation Measure 2). Based on implementation of these conservation measures, there is a low likelihood that grizzly bears would be attracted to carcasses associated with proposed sheep grazing. Even if a grizzly bear were attracted to carcasses associated with Sheep Station grazing, grizzly bear/human conflicts are not expected because sheepherders are provided training on how to avoid grizzly bear conflicts (Conservation Measure 7), carry bear spray, can haze bears away from the area, and are not permitted to shoot a grizzly bear except in self-defense.

For the reasons discussed above, the probability of adverse effects from grizzly bears being attracted to sheep or sheep carcasses on the Sheep Station is discountable.

Displacement of Grizzly Bears by Human Activities Associated with Sheep Grazing

Grizzly bears generally try to avoid human contact. The proposed sheep grazing would cause some human disturbance in secure grizzly bear habitat (as defined by the Recovery Plan supplement, Service 2007b). This disturbance would be comparable or smaller than historical practices. This disturbance may displace some bears from the project area or cause other bears to avoid the project area as they move through the landscape. The area Sheep Station proposes to graze at any point in time is a small fragment of the typical home range size of grizzly bears, so displacement means grizzly bears would spend less time on the Sheep Station, but would not be displaced outside of their existing home ranges or away from critical resources. Telemetry data supports this assumption.

Measurable adverse effects due to displacement from suitable habitat are extremely unlikely to occur. The effect of human use of the action area associated with grazing sheep would be concentrated in a very small area within an otherwise extensive patch of high quality grizzly bear habitat. Less than 1% of the Centennials is likely to be used by the Sheep Station at any given time (Assessment p. 28). Sheep Station herders, sheep, dogs, and outfitters are present in any given area for relatively short periods of time. Sheep Station grazing and outfitter activities do not form a physical or permanent barrier to grizzly bear travel or occupancy (Assessment, p.28). Documented telemetry locations of collared grizzly bears indicate that they move through and around the project area, including when sheep and herders are present on the Summer Range (IGBST, unpublished data). The relatively small percentage of the landscape affected by the proposed action, and the large extent of available grizzly bear habitat in this portion of the grizzly bear's range, mean any bears potentially displaced by the proposed action would be able to find comparable suitable habitat nearby. Because the area affected at any given time by grazing operations would be small compared to the distances grizzly bears can travel daily within a home range, it is unlikely that individual grizzly bears would be displaced by human and guard dog presence far enough to significantly alter or interfere with their behaviors. For these reasons, the effects of displacement on grizzly bears because of proposed sheep grazing likely would be insignificant. For the same reasons, the proposed action is not likely to affect grizzly bear connectivity between the GYA and other ecosystems.

Shepherders may shoot a rifle into the air (not at the bear) or use bear spray to haze grizzly bears and discourage their use of the area with sheep. Hazing would be intended to scare off grizzly bears that are threatening sheep or the herders (Assessment p. 32). No shots would be fired at a grizzly bear unless a herder's personal safety is threatened. The probability of such a shot being fired is expected to be discountable, based on the fact that it historically has not occurred during grazing comparable to that proposed and the Sheep Station's implementation of the Conservation Measures described above (Assessment p. 32). Sheep Station's herders also carry bear spray, a commonly used (and encouraged) deterrent that does not harm bears. Based on frequency of occurrence and the methods used during hazing, the probability of a grizzly bear being killed or injured is discountable. Hazing may condition grizzly bears to avoid humans, which would reduce the long-term probability of human/bear encounters or conflicts. Effects of temporary displacement after being hazed likely would be insignificant, due to the large amount of comparable suitable habitat surrounding the action area, and grizzly bears' wide-ranging movements within their home ranges. It is unlikely that grizzly bears displaced by Sheep Station activities would predominantly use surrounding private rangeland, because of the relative infrequency of grizzly bear/sheep conflicts on private lands in Montana and Idaho over the past 10 years (see environmental baseline section, above), and the availability of suitable habitat in other parts of the action area. Consequently, we assume that grizzly bears that may be displaced by Sheep Station actions preferentially use secure habitat surrounding the Sheep Station (which telemetry data demonstrates is suitable occupied habitat), and are not subject to an increased likelihood of death or injury.

In summary, the effects to grizzly bears of displacement from human presence or hazing are likely insignificant, because the area used by sheep and humans at any given time is small compared to surrounding occupied secure habitat, and the action area does not include concentrations of unique resources (e.g. whitebark pine). The probability of other adverse effects to grizzly bears from hazing is discountable, because of the implementation of Conservation Measures that are part of the proposed action.

Grizzly Bear Habituation to Sheep and Humans

Description of Effects of Habituation

Habituation is the loss of a bear's natural wariness of humans caused by the continued exposure of the bear(s) to human presence, activity, noise, etc. A grizzly bear habituates to other bears, humans, or situations when such interactions give it a positive return in resources, such as food, that outweighs the cost of the stress that precedes such habituation. Grizzly bear habituation to humans can lead to human-bear conflicts that may ultimately lead to the relocation, injury, or death of the affected grizzly bear(s) (McLellan 1989). Because of their large home ranges, grizzly bears that have become habituated to humans are likely to continue to exhibit such behavior elsewhere in their movement within their home range.

Generally, the frequency of grizzly bear-human conflicts is inversely related to the abundance of natural bear foods (Gunther et al. 2004). When native bear foods are abundant, there tend to be few conflicts with property or anthropogenic foods. When native bear foods are more scarce, frequency of grizzly bears damaging property and obtaining anthropogenic foods increase,

especially in late summer and fall when bears are gaining weight prior to denning. However, livestock depredations tend to occur independently of the availability of natural bear foods (Gunther et al. 2004, Gunther et al. 2011). Because grizzly bears seem prone to preying on sheep independently of natural food availability, and because of bears' demonstrated ability to learn foraging behavior, we assume that once a grizzly bear has preyed on sheep, it remains conditioned to feed on sheep (i.e. habituation does not change over time, and may occur after eating sheep once).

Grizzly bear depredation of domestic sheep is well documented. Most, if not all, situations where grizzly bears are exposed to domestic sheep may result in conflict or depredation (Knight and Judd 1980), although some grizzly bears coexist with livestock and never prey on them (B. Aber, pers. comm. 2014). Grizzly bear predation on sheep likely would result in the affected bears seeking out domestic sheep to supplement natural foods. This in turn likely would cause a disruption of natural grizzly bear movements and an increased likelihood of human-bear conflicts. Once a bear successfully obtains a food reward at a particular location, the site is usually periodically re-checked for more food (Stokes 1970, Meagher and Phillips 1983, Wilson et al. 2005). The resulting change in feeding behavior constitutes an adverse effect to grizzly bears because it disrupts their normal behavior patterns. The adverse effect of feeding on domestic sheep and altered behavioral patterns does not, by itself, cause injury to the involved grizzly bear. However, a small percentage of grizzly bears that have killed and eaten livestock are more likely to be the subject of bear/sheep or bear/human conflicts in the future that may lead to its authorized or unauthorized removal (killing or translocation) from the wild population. The removal of problem grizzly bears on the Sheep Station by ARS, its employees, or APHIS Wildlife Services is not part of the proposed Sheep Station action, but may occur following bear/sheep conflicts elsewhere in a grizzly bear's home range because that bear learned to prey on sheep on the Sheep Station. Because of the habituation that occurred on the Sheep Station, the grizzly bear's removal elsewhere in its home range would be caused by the proposed action.

The probability of bear/sheep conflicts is minimized by implementation of the Grazing Conservation Measures described above in the "proposed action" section. It is unlikely that many sheep would stray from the flock, due to the continual presence of sheepherders and their dogs. At night, when grizzly bears would be most likely to attack, sheep would be bedded in a small area (approximately 1 ac); sheepherders would be continually present to implement best management practices and to haze grizzly bears if necessary. In the event of recurring conflicts or encounters, sheep would be moved to other pastures, a measure which successfully avoided further grizzly bear/sheep conflicts in 2007 and 2008 (Grazing Conservation Measure 8). Because grizzly bears use both the East and West Summer Range pastures, changing the pastures sheep are in during summer grazing would not be likely to result in effects different from those analyzed here.

As discussed in the Status of the Species and Environmental Baseline sections, the range of grizzly bears is expanding in the GYA, and the population has sustained continuous growth over the past two decades. This has led to increased numbers of grizzly bears in the action area. Additionally, the proposed action includes grazing sheep on Tom's Creek Pasture and Meyers Creek Allotment, which have been rested in the recent past but are in occupied grizzly bear territory and closest to (Tom's Creek) or in (Meyers Creek) the grizzly bear recovery zone.

These factors, combined with grizzly bears increased consumption of meat (IGBST 2013) and a confirmed incident in 2007 of a grizzly bear consuming a sheep on the Sheep Station, lead to a reasonable likelihood of take. This would happen because grizzly bears that have become conditioned to seek out domestic sheep as a result of the proposed action may move into another sheep grazing pasture not managed by the Sheep Station, attack those sheep, and subsequently be killed or relocated.

Calculating the Number of Grizzly Bears Likely Affected by Habituation

Because the likelihood of anticipated effects is difficult to determine based on best available information, we use the past to inform the future. As discussed in the environmental baseline section above, few grizzly bear/sheep conflicts have occurred on private lands in Montana and Idaho over the past 10 years, and none in the action area. Consequently, we assume that grizzly bears may, but are not likely to arrive in the action area with an existing habituation to preying on sheep.

Because we are interested in the likelihood that proposed grazing on the Sheep Station (as opposed to grazing elsewhere in the action area or home ranges of grizzly bears that use the Sheep Station) will cause food conditioning in bears, and because a grizzly bear has been documented eating sheep on the Sheep Station (but not confirmed as killing the sheep), we focus on grizzly bear/sheep conflicts on the Sheep Station for the effects analysis. We also assume that, given that parts of the Sheep Station are in occupied grizzly bear habitat, it is reasonably likely that grizzly bears would intersect the Sheep Station, but are not (as discussed in the Effects of the Action section) attracted to sheep scent nor would have learned to seek out sheep scent. For the purposes of this analysis, we calculate probable rates of future conflicts as if historical unconfirmed encounters were attributable to grizzly bears, so that we do not underestimate the probability of grizzly bears becoming food-conditioned. We also take this approach because three factors mean that historical rates of conflict may not represent the likelihood of future conflicts on the Sheep Station. First, grizzly bears have increased in abundance in the GYA, and likely in the action area. Second, grizzly bears throughout the GYA are eating more meat, as the abundance of whitebark pine declines (IGBST 2013). Third, grizzly bear mortalities related to conflicts sheep have increased in the GYA, although this is most prevalent in Wyoming. For additional details, see the status of the species section. Lacking a better way to calculate the number of bears that Sheep Station actions may affect, we use the highest number of bear/sheep conflicts historically observed in one year.

Over the last 10 years, the highest number of bear/sheep conflicts on the Sheep Station documented in 1 year was three bear/sheep encounters in 2007, when seven sheep were killed by bears (unknown if grizzly or black bears), and a grizzly bear was in the vicinity of the carcasses (Assessment p. 33, 36). No grizzly bears have been killed, injured, or relocated as a result of historical Sheep Station grazing actions, which are directly comparable to the current proposed action.

Based on the above information, a simplistic extrapolation, and a maximum of 3 grizzly bear/sheep conflicts per year, a total of 30 grizzly bear/sheep conflicts may occur on the Sheep Station over 10 years because of the proposed action. However, due to the nature of habituation

as it relates to known grizzly bear site fidelity, it is likely that multiple conflicts would be caused by the same grizzly bear over the 10-year term of the proposed action. If it is assumed that two thirds of grizzly bear/sheep conflicts are caused by a grizzly bear that has had previous contact with sheep and was therefore at least partially food conditioned, and that a maximum of 30 grizzly bear/sheep conflicts are likely, then 10 grizzly bears may be adversely affected by the proposed action in 10 years. As explained above, this adverse effect does not, by itself, cause injury or death to the affected individual grizzly bear.

Ten grizzly bears likely represents an overestimate of the number of affected grizzly bears for several reasons. First, in 8 of the past 10 years, no bear/sheep conflicts occurred on the Sheep Station, despite documented grizzly bear presence during sheep grazing season. The data for 2007 represent the highest documented number of bear/sheep conflicts caused by the Sheep Station grazing action and it is reasonable to expect that the actual number of grizzly bears affected to be less (Assessment p. 36). Historical data from private lands in Idaho and Montana also suggests that 30 conflicts over 10 years is likely an overestimate (IGBST annual reports, 2002-2012). However, as described in the status of the species section, grizzly bear/sheep conflicts have been increasing in the GYA over the past 5 years (*Ibid.*), and grizzly bears are eating more meat as whitebark pine abundance declines, which could lead to increased grizzly bear/sheep conflicts (IGBST 2013). In addition, grizzly bears are presumed to have increased in abundance in the action area over the past 10 years. Because baseline conditions may be changing, and in order to err on the side of overestimating effects, we use the maximum number of conflicts that have occurred in a single year as the basis of our calculation, rather than the historical rate of 4 conflicts over 10 years. We further err on the side of overestimating effects by including in our calculations those sheep deaths on the Sheep Station where it is unknown if a grizzly bear or black bear was responsible but grizzly bears are known to be in the area.

To estimate the number of grizzly bears likely to be subject to control actions (relocation or removal) because of food conditioning to prey on sheep, we rely on a simplistic relationship between the numbers of grizzly bear/sheep conflicts and grizzly bear removals. In a review of grizzly bear/sheep conflicts in the GYA from 1992-2000, Gunther et al. (2004a) found that one grizzly bear was killed for every 39 grizzly bear/sheep conflicts in the GYA. Multiple sheep can be killed in a single instance of conflict. Using this estimate and the estimate of 30 grizzly bear/sheep conflicts in 10 years caused by the proposed action; one adult grizzly bear removal is likely to occur over the 10-year term of the proposed action. If the adult grizzly bear that is relocated or removed is a female with cubs, the cubs would also need to be relocated or removed. On average, females in the GYA have litters of two cubs. Therefore, to ensure we do not underestimate potential effects, we conclude that up to three grizzly bears (one adult and two cubs) are likely to be relocated or removed as a result of the proposed action over the 10- year term of the action.

Population-Level Effects of Relocation or Removal Due to Habituation

Relocated grizzly bears would be moved in accordance with the grizzly bear removal policy (50 CFR 17.40 and Interagency Grizzly Bear Guidelines) to remote areas of the Recovery Zone in the same state where the bear was captured. For example, if the grizzly bear preying on sheep as a result of the proposed action were captured in Idaho, the relocation release site would be in the

Recovery Zone in Idaho; likewise, a bear captured in Montana would be relocated within the Recovery Zone in Montana. Meyers Creek Allotment, which is part of the action area, is the only remaining sheep grazing on public lands in the Recovery Zone, so any relocation site likely would be relatively distant from sheep grazing. Consequently, the choice of relocation site would minimize the probability of a relocated bear continuing to prey on sheep, and would be in maximally suitable habitat. Because the bear would be in suitable habitat occupied by other grizzly bears, it is reasonably likely that the relocated bear would be able to reproduce and continue to contribute to the population, so the relocation of one adult and two cubs would not have population-level effects to grizzly bears.

The lethal removal of up to one adult grizzly bear and two cubs likely would not affect the survival or recovery of the GYA population of grizzly bears. As described in the environmental baseline section, the grizzly bear population increase and range expansion (including in the action area) has occurred concurrently with the Sheep Station's sheep grazing operations, implying that the Sheep Station has not hindered the population's survival and recovery. Historically, management removals after conflicts with sheep are the smallest cause of grizzly bear death in the GYA (see status of the species section, above). Although conflicts with livestock have increased in the GYA over the past 5 years, much of that increase has been in conflicts with cattle, not sheep.

A simple calculation helps assess the contribution of the proposed action to the probability that mortality thresholds (see Status of the Species, GYA subsection) for the GYA would be exceeded. To be conservative, our estimate assumes the GYA grizzly bear population would remain stable over the next 10 years, not continue to grow. We focus on adult female grizzly bears because female survival has a strong influence on population trajectory (USFWS 2011, IGBST 2012). The smaller of the two GYA population estimates for 2012 (to err on the side of overestimating the effect of anticipated take), estimates there are 250 independent females in the GYA (Haroldson and van Manen 2013; see status of the species section for a description of the two population calculation methods). The current mortality threshold to sustain an increasing population in the GYA is 9% (IGBST 2012). Mortality of 9% of 250 independent females would mean 22.5 adult females dying of all causes per year. Projected over 10 years, this would mean 225 independent females in the GYA could die of all causes over the next 10 years, and the population would still increase. As discussed in the status of the species section above, the IGBST recommends managers revise the GYA mortality threshold for independent females to 7.6% from all causes. Under this threshold, 195 adult females could die, from all causes, over the next 10 years, and the GYA population would remain stable. Under either threshold, anticipated loss of a maximum of one independent female over 10 years because of the proposed action is less than 0.5% of the levels of female mortality that would sustain a stable or increasing population of grizzly bears in the GYA. Based on this calculation, it is not likely that the proposed action would affect the survival or recovery of grizzly bears in the GYA.

Activities Associated With Grazing

Proposed fence maintenance, road repair, firebreak maintenance, prescribed burns, grass seeding, and herder camps are either located outside of occupied grizzly bear habitat, or are very small in

spatial extent compared to surrounding highly suitable grizzly bear habitat, so no adverse effects to grizzly bears would be likely from implementing these components of the proposed action.

B. Effects of Interrelated or Interdependent Actions

The implementing regulations for section 7 define interrelated actions as those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

The Forest Service authorizes ARS use of Meyers Creek, East Beaver, and Snakey-Kelly Allotments as an interrelated and interdependent action to ARS's proposed action. Effects to grizzly bears on USFS allotments are described in the effects of the action section. Because use of Meyers Creek is primarily to allow sheep access in and out of the Summer East range (e.g. Tom's Creek Pasture) and is limited to 3 days of trailing in spring and 3 days in fall, the probability of effects to grizzly bears is lower than that associated with the entirety of the ARS grazing action. The Forest Service's action of authorizing Sheep Station use of Meyers Creek Allotment is addressed in a separate consultation (USFWS 2012).

VI. 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 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.

The Service is not aware of any future non-Federal actions reasonably certain to occur in the action area. Ongoing actions in the action area, such as recreational use, hunting, and livestock grazing on private lands, and their impacts on grizzly bears are discussed in the "Environmental Baseline" section, above, and are expected to continue. According to mortality databases maintained by the Interagency Grizzly Bear Study Team, 23% of all grizzly bear deaths since 2009 in the GYA were a result of hunting, either mistaken identity or defense of life. No grizzly bear injuries or mortalities are known to have occurred in the action area from recreational use, hunting, or livestock grazing on private lands; this trend would be expected to continue. The Service is not aware of any reasonably foreseeable circumstances that would significantly alter existing State, tribal, local, or private activities in the action area from what is described in the environmental baseline section. For instance, we are not aware of any pending conservation easements in the action area that would remove land from use for recreation or livestock grazing.

Note: However, as noted in the "Environmental Baseline" section, and as discussed in the "Effects of the Action" section, it is reasonable to assume private land activities (e.g., sheep grazing) within 78 miles of the Sheep Station may result in grizzly bear habituation to sheep, and may subsequently result in grizzly bear removal actions. Because of grizzly bears' large home ranges, and the close proximity of private rangeland to the Sheep Station, it is possible that grizzly bears using the Sheep Station may have previously eaten sheep on private lands outside of the action area, but within the 78 mile radius of the Sheep Station, prior to encountering sheep on the Sheep Station. This habituation, prior to a grizzly bear's occurrence on the Sheep Station,

would result in an increased probability of grizzly bears feeding on sheep on the Sheep Station. Since those grizzly bears would have been habituated to sheep by activities within the 78 mile radius, but unrelated to Sheep Station activities, any future sheep-related grizzly bear removals involving those grizzly bears would not be considered to be caused by Sheep Station activities. Confirmation of grizzly bears responsible for sheep depredation events within the 78 mile radius will be made following the protocol described in Term and Condition 3 in the Incidental Take Statement below.

IX. CONCLUSION

After reviewing the current status of the grizzly bear, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the grizzly bear. No critical habitat has been designated for grizzly bears; therefore, none will be affected.

The Service reached the no jeopardy conclusion for grizzly bears for following reasons:

- (1) The GYA population of grizzly bear has experienced significant recovery and met its recovery zone goals as established in the Grizzly Bear Recovery Plan (USFWS 1993). Current information indicates that this population of grizzly bears has grown an average of 3 to 4 percent or more annually, although the rate has slowed as parts of the GYA likely approach carrying capacity. In addition, the range of the grizzly bear in the GYA has increased, as evidenced by the increase in occupied habitat there since the 1970s (Pyare *et al.* 2004, Schwartz *et al.* 2002, Bjornlie *et al.* 2013 Figure 2). Range expansion and population increase have been concurrent with the Sheep Station implementing the same actions described in the proposed action, and with other Federal and nonfederal actions described in the environmental baseline section, above. This means that historical activities comparable to the proposed action have had little to no discernible effect on the population's trend towards recovery.
- (2) The Sheep Station is committed to implementing conservation measures (see page 6) that minimize potential impacts to grizzly bears. These actions include, but are not limited to: managing livestock carcasses, requiring food storage guidelines at all camps associated with livestock or outfitter/guide operations, full time monitoring by sheepherders, and movement of sheep after a grizzly bear/sheep conflict.
- (3) Although grizzly bear/livestock and grizzly bear/human conflicts are likely to continue and individual grizzly bears may be adversely impacted as a result of the proposed action, the overall core population of grizzly bears in the GYA is expected to remain stable or increase.
- (4) Adverse effects to grizzly bears caused by the proposed action are not likely to obstruct grizzly bear movement and genetic exchange in the GYA or between ecosystems because the Sheep Station would use less than 1% of the Centennial Mountains at any given time and the action does not create a barrier to grizzly bear movements. Any grizzly bears

temporarily displaced by the proposed action could use comparably suitable habitat elsewhere in the vicinity.

- (5) Shepherders may haze grizzly bears by shooting a rifle into the air (not at the bear) or using bear spray, to discourage their use of the area with sheep. Conservation Measures that are part of the proposed action reduce the probability that hazing would occur. If grizzly bears were hazed, the effects of temporary displacement would not significantly interfere with grizzly bears' normal behavior because comparable suitable habitat occurs in close proximity to the areas where sheep would be. Consequently, it is not likely that any take would result from hazing.
- (6) The estimated loss of no more than three bears within the 10-year term of the proposed action represents a relatively minor impact on the overall GYA population of this species, which, as noted above, has increased significantly in distribution and abundance. The anticipated level of grizzly bear mortality caused by the proposed action falls within the scope of recovery criteria mortality thresholds established under the Grizzly Bear Recovery Plan that were developed to facilitate the further increase in grizzly bear numbers and distribution in the GYA (USFWS 1993).

In summary, we have determined that the proposed action is not likely to reduce appreciably the likelihood of both survival and recovery of grizzly bears in the GYA. If the adverse effects of the proposed action on grizzly bears are not significant at the recovery area scale, then those effects are unlikely to be discernible at the rangewide scale. On that basis, we conclude that the effects of the proposed action are not likely to reduce appreciably the likelihood of both the survival and recovery of grizzly bears in the wild.

VII. INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service as an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, such as breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it 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 defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of an Incidental Take Statement. The measures described below are non-discretionary, and must be undertaken by ARS so that they become binding conditions of any grant or permit issued to an applicant, as appropriate, for the exemption in section 7(o)(2) to apply.

A. Amount or Extent of Take Anticipated

Based on the findings presented in the “Effects of the Action” section above, implementation of the proposed action over a 10-year period is likely to cause take in the form of capture or kill of one adult grizzly bear (male or female), or one adult female grizzly bear and her dependent cubs.

B. Effect of the Take

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to jeopardize grizzly bears (see conclusion section, above).

C. Reasonable and Prudent Measures

The Service believes that the following Reasonable and Prudent Measure is necessary and appropriate to minimize the impacts of incidental take of grizzly bears caused by the proposed action.

Reasonable and Prudent Measure 1 - The Sheep Station shall monitor and report annually on the number of confirmed or suspected grizzly bear/sheep conflicts in the project area.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the ARS must comply with the following terms and conditions, which implement the reasonable and prudent measure described above, and outline required monitoring/reporting requirements. These terms and conditions are non-discretionary.

Term and Condition 1: The Sheep Station shall conduct monitoring and reporting of incidental take as follows. By December 31 of each year for the term of the proposed action, the Sheep Station shall submit a report summarizing grazing results for the previous grazing year and any confirmed or suspected grizzly bear sightings or conflicts (with sheep or humans) for that year to the Field Supervisor of the Service’s Eastern Idaho Field Office in Chubbuck, Idaho. Pastures involved in this requirement include Tom’s Creek Pasture, Big Mountain Pasture, O’Dell Pasture, Henninger Ranch, and Meyer’s Creek Allotment. This reporting is in addition to that given to the Interagency Grizzly Bear Study Team as identified on page 13 of the Assessment and in Grazing Conservation Measure 10. The report shall include the following:

- (1) Date when sheep are moved to and from each of the above pastures;
- (2) Number of confirmed and suspected grizzly bear sightings and conflicts for each of the above pastures;
- (3) Outcome of each conflict or sighting (i.e. # of sheep killed, hazing, no conflict);

- (4) A discussion of the actions taken by a sheepherder to avoid more conflicts (e.g., sheep were moved to another area in same pasture or sheep were moved to another pasture);
- (5) Date, reason, and location of any weapon discharge or hazing activity as a result of a grizzly bear/sheep or grizzly bear/human encounter.
- (6) Results of forensic analysis from grizzly bear depredation sites and captured/relocated bears. This information shall be collected in accordance with the protocol prescribed in Term and Condition 3 below.

Changes to the above protocol can be made, as appropriate, in coordination with and the approval of the Service.

Term and Condition 2: The Sheep Station shall annually coordinate with the Interagency Grizzly Bear Study Team to gather data on the number of confirmed or suspected grizzly bear/sheep conflicts that resulted in grizzly bear capture and relocation or mortality within 78 mi of the Sheep Station. The Sheep Station shall report the results of that coordination by December 31 of each year to the Field Supervisor of the Service's Eastern Idaho Field Office in Chubbuck, Idaho.

Term and Condition 3: The Sheep Station shall work with APHIS-Wildlife Services, the Service, Montana Fish Wildlife and Parks, the Idaho Department of Fish and Game, and other appropriate entities to develop and formalize a Service-approved data collection and analysis protocol to facilitate the identification of individual bears for the purpose of assigning take events to Sheep Station activities as appropriate. The protocol would standardize data collection on the Sheep Station and would also be applied at grizzly/sheep conflict sites within a 78 mi radius of the Sheep Station. The protocol would also address data collection from individual bears that are captured for relocation. All samples collected shall be analyzed immediately, and a report documenting the findings of that analysis provided to the Service within 1 week. The Service will use the information provided in the report, or the best available information at the time if confirmation data is not available (e.g., was not collected, was unusable, was lost), to determine if the Sheep Station activities were responsible for habituating the grizzly bear involved in the sheep depredation event and whether take of the grizzly bear is attributable to Sheep Station activities.

VIII. 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 are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop new information on listed species.

The Service recommends the Sheep Station seek alternative lands outside of known grizzly bear use areas for the Sheep Station's Summer Range and USFS's Meyer's Creek Allotment. This

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would reduce the likelihood of adverse effects to the grizzly bear (based on its current distribution in the action area) caused by ARS's sheep grazing activities to a discountable level.

IX. REINITIATION-CLOSING STATEMENT

This concludes formal consultation on the Sheep Station's proposal to continue sheep grazing within the current Sheep Station system. 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 take 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, ARS must immediately contact the Service to reinitiate consultation and to determine if any modification of the operations causing such take must cease pending reinitiation.

If, during implementation of the proposed action, changes in circumstances, situation, or information regarding this proposed action changes, the Sheep Station will assess the changes and any potential impacts to listed species, review the re-initiation triggers above, coordinate with the Service's Eastern Idaho Field Office at (208) 237-6975 for advice (if needed) and make a determination as to whether re-initiation is necessary.

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