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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Designating the Greater Yellowstone Ecosystem Population of Grizzly Bears as a Distinct Population Segment; Removing the Yellowstone Distinct Population Segment of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife; Proposed Rule

DEPARTMENT OF THE INTERIOR

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RIN 1018–AT38

Endangered and Threatened Wildlife and Plants; Designating the Greater Yellowstone Ecosystem Population of Grizzly Bears as a Distinct Population Segment; Removing the Yellowstone Distinct Population Segment of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; notice of public hearing.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to establish a distinct population segment (DPS) of the grizzly bear *(Ursus arctos horribilis)* for the greater Yellowstone Ecosystem and surrounding area. We also propose to remove the Yellowstone DPS from the List of Threatened and Endangered Wildlife. The Yellowstone grizzly bear population is no longer an endangered or threatened population pursuant to the Endangered Species Act of 1973, as amended (ESA), based on the best scientific and commercial information available. Robust population growth, coupled with State and Federal cooperation to manage mortality and habitat, widespread public support for grizzly bear recovery, and the development of adequate regulatory mechanisms, has brought the Yellowstone grizzly bear population to the point where making a change to its status is appropriate.

The proposed delisting of the Yellowstone DPS would not change the threatened status of the remaining grizzly bears in the lower 48 States, which will remain protected by the ESA. If this proposed action is finalized, the Service intends to initiate a 5-year review of grizzly bear populations in the conterminous States outside of the Yellowstone DPS based on additional scientific information that is currently being collected and analyzed. Additionally, prior to finalizing the proposed action, the Service will—(1) finalize the Conservation Strategy that will guide post-delisting management of the grizzly bear in the Greater Yellowstone Area; (2) append habitat-based recovery criteria to the Recovery Plan; (3) append genetic monitoring information to the Recovery Plan; and (4) finalize revised methodology for calculating total population size, known to unknown mortality ratios, and sustainable mortality limits for the Yellowstone grizzly bear population. Both the Conservation Strategy and the supplemental information to be appended to the Recovery Plan have already undergone public review and comment (62 FR 19777, April 23, 1997; 62 FR 47677, September 10, 1997; 64 FR 38464, July 16, 1999; 64 FR 38465, July 16, 1999; 65 FR 11340, March 2, 2000). In a subsequent notice, the revised methodology pertaining to population parameters will be made available for public review and comment. It will be finalized, with public comments incorporated, before this proposed rule is finalized. Finally, the U.S. Forest Service will finalize their Forest Plan Amendments for Grizzly Bear Conservation for the Greater Yellowstone Area National Forests prior to the Service finalizing this action.

DATES: We will consider comments on this proposed rule received until the close of business on February 15, 2006. We will hold one public hearing on this proposed rule scheduled hearing for November 15, 2005. In addition, we have scheduled four open houses (see **ADDRESSES** section for locations).

ADDRESSES: If you wish to comment, you may submit your comments and materials concerning this proposal by any one of several methods:

1. You may submit written comments to the Grizzly Bear Recovery Coordinator, U.S. Fish and Wildlife Service, University Hall 309, University of Montana, Missoula, Montana 59812.

2. You may hand deliver written comments to our Missoula office at the address given above.

3. You may send comments by electronic mail (e-mail) to *FW6_grizzly_yellowstone@fws.gov.* See the Public Comments Solicited section below for file format and other information about electronic filing.

Comments and materials received, as well as supporting documentation used in preparation of this proposed action, will be available for inspection, by appointment, during normal business hours, at our Missoula office (see address above). In addition, certain documents such as the Conservation Strategy and information to be appended to the recovery plan are available at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm.*

The public hearing will be held at the following location:

- January 10, 2006, from 7 to 9 p.m. at the Cody Auditorium, 1240 Beck Avenue, Cody Wyoming.

The open houses will be held at the following locations:

- January 9, 2006, from 4 to 8 p.m. at the Holiday Inn, 5 Baxter Lane, Bozeman, Montana.
- January 10, 2006, from 4 to 7 p.m. at the Cody Auditorium, 1240 Beck Avenue, Cody Wyoming.
- January 11, 2006, from 4 to 8 p.m. at the Snow King Resort, 400 E. Snow King Avenue, Jackson, Wyoming.
- January 12, 2006, from 4 to 8 p.m. at the Shilo Inn, 780 Lindsay Boulevard, Idaho Falls, Idaho.

FOR FURTHER INFORMATION CONTACT: Dr. Christopher Servheen, Grizzly Bear Recovery Coordinator, U.S. Fish and Wildlife Service, at our Missoula office (see address above) or telephone (406) 243–4903.

SUPPLEMENTARY INFORMATION:

Background

Species Description

Grizzly bears are generally larger and more heavily built than other bears (Craighead and Mitchell 1982; Schwartz *et al.* 2003a). Grizzly bears can be distinguished from black bears, which also occur in the lower 48 States, by longer, curved claws, humped shoulders, and a face that appears to be concave (Craighead and Mitchell 1982). A wide range of coloration from light brown to nearly black is common (LeFranc *et al.* 1987). Spring shedding, new growth, nutrition, and coat condition all affect coloration. Guard hairs (long, course outer hair forming a protective layer over the soft underfur) are often pale in color at the tips; hence the name ''grizzly'' (Craighead and Mitchell 1982). In the lower 48 States, the average weight of grizzly bears is generally 200 to 300 kilograms (kg) (400 to 600 pounds (lb)) for males and 110 to 160 kg (250 to 350 lb) for females (Craighead and Mitchell 1982). Grizzly bears are long-lived mammals, generally living to be around 25 years old (LeFranc *et al.* 1987).

Taxonomy

Grizzly bears *(Ursus arctos horribilis)* are vertebrates that belong to the Class *Mammalia,* Order *Carnivora,* and Family *Ursidae.* The grizzly bear is a member of the brown bear species *(U. arctos)* that occurs in North America, Europe, and Asia; the subspecies *U. a. horribilis* is limited to North America (Rausch 1963; Servheen 1999). Early taxonomic descriptions of *U. arctos* based primarily on skull measurements described more than 90 subspecies (Merriam 1918), but this was later revised to 2 subspecies in North America, *U. a. middendorfi* on the islands of the Kodiak archipelago and *U. a. horribilis* in the rest of North America

(Rausch 1963). Subsequent analyses (Hall 1984) suggested seven North American subspecies. DNA analyses provide an additional tool for evaluating taxonomic classification. Using mitochondrial DNA (mtDNA) of brown bears across their worldwide range, five lineage groups or clades have been described: Clade I brown bears from Scandinavia and southern Europe; Clade II from Admiralty, Baronoff, and Chichagof islands in Alaska; Clade III from eastern Europe, Asia, and western Alaska; Clade IV from southern Canada and the lower 48 United States; and Clade V from eastern Alaska and northern Canada (Cronin *et al.* 1991; Taberlet and Bouvet 1994; Kohn *et al.* 1995; Randi *et al.* 1994; Taberlet *et al.* 1995; Talbot and Shields 1996; Waits *et al.* 1998a; Waits *et al.* 1999). The two North American subspecies approach of Rausch (1963) is generally accepted by most taxonomists today. The original listing has been inadvertently modified in the List of Endangered and Threatened Wildlife to *U. arctos* and the range to holarctic. We propose to correct this error to reflect the original listed entity of *U. arctos horribilis* with a historic range of North America.

Behavior

Although adult bears are normally solitary (Nowak and Paradiso 1983), home ranges of adult bears frequently overlap (Schwartz *et al.* 2003a). Grizzly bears display a behavior called natal philopatry in which dispersing young establish home ranges within or overlapping their mother's (Waser and Jones 1983; Schwartz *et al.* 2003a). This type of movement makes dispersal across landscapes a slow process. For instance, McLellan and Hovey (2001) documented male and female dispersal over 20 years and found that grizzly bears gradually move farther from the center of their mother's home range over the course of 1 to 4 years. Females established home ranges an average of 9.8 kilometers (km) (6.1 miles (mi)) away from the center of their mother's home range, whereas males generally strayed further, establishing home ranges roughly 29.9 km (18.6 mi) away from their mother's (McLellan and Hovey 2001). Similarly, Proctor *et al.* (2004) used genetic analyses to find that, on average, females disperse only 14.3 km (8.9 mi) and males disperse 42.0 km (26.0 mi) from the center of their mother's home range.

The home range of adult male grizzly bears is typically 3 to 5 times the size of an adult female's home range (LeFranc *et al.* 1987). The large home ranges of grizzly bears, particularly males, enhance genetic diversity in the population by enabling males to mate with numerous females (Blanchard and Knight 1991; Craighead *et al.* 1995). Grizzly bear population densities of 1 bear per 20 sq km (8 sq mi) have been reported in Glacier National Park (Martinka 1976), but most populations in the lower 48 States are much less dense (LeFranc *et al.* 1987). For example, estimates of grizzly bear densities in the Yellowstone area range from one bear per 50 sq km (20 sq mi) to one bear per 80 sq km (30 sq mi) (Blanchard and Knight 1980; Craighead and Mitchell 1982).

Grizzly bears have a promiscuous mating system (Hornocker 1962; Craighead and Mitchell 1982; Schwartz *et al.* 2003a) with genetic studies confirming that cubs from the same litter can have different fathers (Craighead *et al.* 1998). Mating occurs from May through July with a peak in mid-June (Craighead and Mitchell 1982; Nowak and Paradiso 1983). Age of first reproduction and litter size may be related to nutritional state (Stringham 1990; McLellan 1994; Hilderbrand *et al.* 1999). Age of first reproduction varies from 3 to 8 years of age, and litter size varies from one to four cubs (Schwartz *et al.* 2003a). For the Yellowstone grizzly bear population, the average age of first reproduction is approximately 6 years old, and the average litter size is 2.04 cubs (Schwartz *et al.* 2005). Cubs are born in a den in late January or early February and remain with the female for 2 to 3 years before the mother will again mate and produce another litter (Schwartz *et al.* 2003a). Grizzly bears have one of the slowest reproductive rates among terrestrial mammals, resulting primarily from the late age of first reproduction, small average litter size, and the long interval between litters (Nowak and Paradiso 1983; Schwartz *et al.* 2003a). Given the above factors and natural mortality, it may take a single female 10 years to replace herself in a population (Service 1993). Grizzly bear females cease breeding successfully some time in their mid-to late 20s (Schwartz *et al.* 2003b).

For 3 to 6 months during winter, grizzly bears across their range enter dens in an adaptive behavior which increases survival during periods of low food availability, deep snow, and low air temperature (Craighead and Craighead 1972). Grizzly bears in the lower 48 States spend up to 4 to 6 months in dens beginning in October or November (Linnell *et al.* 2000). During this period, they do not eat, drink, urinate, or defecate (Folk *et al.* 1976; Nelson 1980). Hibernating grizzly bears exhibit a marked decline in heart and respiration rate, but only a slight drop in body temperature (Nowak and Paradiso 1983). Due to their relatively constant body temperature in the den, hibernating grizzly bears can be easily aroused and have been known to exit dens when disturbed by seismic or mining activity (Harding and Nagy 1980) or by human activity (Swenson *et al.* 1997). Both males and females have a tendency to use the same general area year after year but the same exact den is rarely used twice by an individual (Schoen *et al.* 1987; Linnell *et al.* 2000). Females display stronger area fidelity than males and generally stay in their dens longer, depending on reproductive status (Judd *et al.* 1986; Schoen *et al.* 1987; Linnell *et al.* 2000).

In preparation for hibernation, bears increase their food intake dramatically during a stage called hyperphagia. Hyperphagia is defined simply as overeating (in excess of daily metabolic demands) and occurs throughout the 2 to 4 months prior to den entry. During hyperphagia, excess food is deposited as fat, and grizzly bears may gain as much as 1.65 kg/day (3.64 lb/day) (Craighead and Mitchell 1982). Grizzly bears must consume foods rich in protein and carbohydrates in order to build up fat reserves to survive denning and post-denning periods (Rode and Robbins 2000). These layers of fat are crucial to the hibernating bear as they provide a source of energy and insulate the bear from cold temperatures and are equally important in providing energy to the bear upon emergence from the den when food is still sparse relative to metabolic requirements.

Although the digestive system of bears is essentially that of a carnivore, bears are successful omnivores, and in some areas may be almost entirely herbivorous (Jacoby *et al.* 1999; Schwartz *et al.* 2003a). Grizzly bears are opportunistic feeders and will consume almost any available food including living or dead mammals or fish, and, sometimes, garbage (Knight *et al.* 1988; Mattson *et al.* 1991a; Schwartz *et al.* 2003a). In areas where animal matter is less available, grasses, roots, bulbs, tubers, and fungi may be important in meeting protein requirements (LeFranc *et al.* 1987). High-quality foods such as berries, nuts, insects, and fish are important in some areas (Schwartz *et al.* 2003a).

The search for food has a prime influence on grizzly bear movements. In the Yellowstone area, four food sources have been identified as important to grizzly bear survival and reproductive success (Mattson *et al.* 2002). Winter-killed ungulates serve as an important food source in early spring before most vegetation is available (Greene *et al.*

1997; Mattson 1997). During early summer, spawning cutthroat trout (*Oncorhynchus clarki*) are a source of nutrition for grizzly bears in the Yellowstone population (Mattson *et al.* 1991a; Mattson and Reinhart 1995; Felicetti *et al.* 2004). Grizzly bears feed on army cutworm moths (*Euxoa auxiliaris*) during late summer and early fall as they try to acquire sufficient fat levels for winter (Pritchard and Robbins 1990; Mattson *et al.* 1991b; French *et al.* 1994). Lastly, whitebark pine seeds (*Pinus albicaulis*) serve as a crucial fall food due to their high fat content and abundance as a pre-hibernation food (Mattson and Reinhart 1994). The distribution and abundance of these grizzly bear foods vary naturally among seasons and years. In some years, whitebark pine seeds are an important food and in other years, few seeds are available and bears switch to alternate foods.

On average, approximately 79 percent of the diet of adult male and 45 percent of the diet of adult female grizzly bears in the Greater Yellowstone Area (GYA) is terrestrial meat (Jacoby *et al.* 1999). In contrast, in Glacier National Park, over 95 percent of the diets of both adult male and female grizzly bears is vegetation (Jacoby *et al.* 1999). Ungulates rank as the second highest source of net digestible energy available to grizzly bears in the GYA (Mealey 1975; Pritchard and Robbins 1990; Craighead *et al.* 1995). Ungulates provide a high-quality food source in early spring before most plant foods become available. Grizzly bears with home ranges in areas with few plant foods depend extensively on ungulate meat (Harting 1985). Grizzly bears in the Yellowstone area feed on ungulates primarily as winter-killed carrion from March through May although they also depredate elk calves for a short period in early June (Gunther and Renkin 1990; Green *et al.* 1997; Mattson 1997). Carcass availability fluctuates with winter severity because fewer ungulates die during mild winters.

Due to their high digestibility and protein and lipid content, spawning cutthroat trout are one of the highest sources of digestible energy available to bears during early summer in Yellowstone National Park (Mealey 1975; Pritchard and Robbins 1990). Grizzly bears are known to prey on cutthroat trout in at least 36 different streams tributary to Yellowstone Lake (Reinhart and Mattson 1990). From 1997 to 1999, Haroldson *et al.* (2000) identified 85 different grizzly bears that had likely fished spawning streams tributary to Yellowstone Lake. While importance varies by season and year, few bears develop a dependence on this food source. Only four individuals visited spawning streams consistently every year, suggesting that this resource is used opportunistically. Fishing activity can occur any time during the spawning runs but generally coincides with peak spawning numbers in mid-June through mid-July. In contrast to earlier studies which used different assumptions and methods (Reinhart and Mattson 1990; Mattson and Reinhart 1995), Felicetti *et al.* (2004) showed that male grizzly bears are the primary consumers of cutthroat trout, accounting for 92 percent of all trout consumed by Yellowstone grizzly bears.

Alpine moth aggregations are an important food source for a considerable portion of the Yellowstone grizzly bear population (Mattson *et al.* 1991b). As many as 35 different grizzly bears with cubs-of-the-year have been observed feeding at moth sites in a single season (Ternent and Haroldson 2000). Some bears may feed almost exclusively on moths for a period of over 1 month (French *et al.* 1994). Moths have the highest caloric content per gram of any other bear food (French *et al.* 1994). Moths are available during late summer and early fall when bears consume large quantities of foods in order to acquire sufficient fat levels for winter (Mattson *et al.* 1991b). A grizzly bear feeding extensively on moths over a 30-day period may consume up to 47 percent of its annual energy budget of 960,000 calories (White *et al.* 1999). Moths are also valuable to bears because they are located in remote areas, thereby reducing the potential for grizzly bear/human conflicts during the late-summer tourist months.

Due to their high fat content and potential abundance as a pre-hibernation food, whitebark pine seeds are an important fall food for bears in the GYA (Mattson and Jonkel 1990; Mattson *et al.* 1991a). Yellowstone grizzly bears consume whitebark pine seeds extensively when whitebark cones are available. Bears may feed predominantly on whitebark pine seeds when production exceeds 22 cones per tree (Mattson *et al.* 1992). During years of low whitebark pine seed availability, grizzly bears often seek alternate foods at lower elevations in association with human activities (Mattson *et al.* 1992; Knight and Blanchard 1995; Gunther *et al.* 1997, 2004).

The production and availability of these four major foods can have a positive effect on reproduction and survival rates of Yellowstone grizzly bears (Mattson *et al.* 2002). For example, during years when these food sources are abundant, there are few grizzly bear/human conflicts in the GYA (Mattson *et al.* 1992; Gunther *et al.* 1997; Gunther *et al.* 2004). Grizzly bear/human conflicts are incidents in which bears kill or injure people, damage property, kill or injure livestock, damage beehives, obtain anthropogenic foods, or damage or obtain garden and orchard fruits and vegetables (United States Department of Agriculture (USDA) 1986). In contrast, during years when there are shortages of natural food sources, grizzly bear/human conflicts are more frequent, resulting in higher numbers of human-caused grizzly bear mortalities due to defense of life or property and management removals of nuisance bears (Mattson *et al.* 1992; Gunther *et al.* 2004). A nuisance bear is one that seeks human food in human use areas, kills lawfully present livestock, or displays unnatural aggressive behavior towards people (USDA 1986). Introduced organisms (*e.g.,* white pine blister rust and lake trout), habitat loss, and other human activities can negatively impact the quantity and distribution of these four primary foods (Reinhart *et al.* 2001). The effects of invasive species on food supply and human/bear conflict are discussed in more detail in the five factor analysis.

Recovery

Prior to the arrival of Europeans, the grizzly bear occurred throughout the western half of the contiguous United States, central Mexico, western Canada, and most of Alaska (Roosevelt 1907; Wright 1909; Merriam 1922; Storer and Tevis 1955; Rausch 1963; Herrero 1972; Mattson *et al.* 1995; Schwartz *et al.* 2003a). Pre-settlement population levels for the western contiguous United States were believed to be in the range of 50,000 animals (Servheen 1999). With European settlement of the American west, grizzly bears were shot, poisoned, and trapped wherever they were found, and the resulting range and population declines were dramatic (Roosevelt 1907; Wright 1909; Storer and Tevis 1955; Leopold 1967; Koford 1969; Craighead and Mitchell 1982; Mattson *et al.* 1995). The range and numbers of grizzlies were reduced to less than 2 percent of their former range and numbers by the 1930s, approximately 125 years after first contact (Service 1993; Mattson *et al.* 1995; Servheen 1999). Of 37 grizzly populations present in 1922, 31 were extirpated by 1975 (Servheen 1999).

By the 1950s, with little or no conservation effort or management directed at maintaining grizzly bears anywhere in their range, the Yellowstone area population had been reduced in numbers and was restricted largely to the confines of Yellowstone

National Park and some surrounding areas (Craighead *et al.* 1995; Schwartz *et al.* 2003a). High grizzly bear mortality in 1970 and 1971, following closure of the open-pit dumps in Yellowstone National Park (Gunther 1994; Craighead *et al.* 1995), and concern about grizzly population status throughout its remaining range prompted the 1975 listing of the grizzly bear as a threatened species in the lower 48 States under the ESA (40 FR 31734). When the grizzly bear was listed in 1975, the population estimate in the Yellowstone Ecosystem ranged from 229 (Craighead *et al.* 1974) to 312 (Cowan *et al.* 1974; McCullough 1981) individuals.

In 1981, the Service hired a grizzly bear recovery coordinator to direct recovery efforts and to coordinate all agency efforts on research and management of grizzly bears in the lower 48 States. In 1982, the first Grizzly bear recovery plan was completed (Service 1982). The 1982 Grizzly Bear Recovery Plan identified five ecosystems within the conterminous United States thought to support grizzly bears. Today, grizzly bear distribution is primarily within, but not limited to, the areas identified as Recovery Zones (Service 1993), including the Yellowstone area in northwest Wyoming, eastern Idaho, and southwest Montana (24,000 sq km (9,200 sq mi)) at more than 580 bears (Interagency Grizzly Bear Study Team (Study Team) 2005); the Northern Continental Divide Ecosystem (NCDE) of north central Montana (25,000 sq km (9,600 sq mi)) at more than 400 bears (70 FR 24870; May 11, 2005); the North Cascades area of north central Washington (25,000 sq km (9,500 sq mi)) at less than 20 bears (Almack *et al.* 1993); the Selkirk Mountains area of north Idaho, northeast Washington, and southeast British Columbia (5,700 sq km (2,200 sq mi)) at approximately 40 to 50 bears (64 FR 26725, May 17, 1999; 70 FR 24870, May 11, 2005); and the Cabinet-Yaak area of northwest Montana and northern Idaho (6,700 sq km (2,600 sq mi)) at approximately 30 to 40 bears (Kasworm and Manley 1988; Kasworm *et al.* 2004). There is an additional Recovery Zone known as the Bitterroot Recovery Zone in the Bitterroot Mountains of east-central Idaho and western Montana (14,500 sq km (5,600 sq mi)), but this area does not contain any grizzly bears at this time (Service 1996; 65 FR 69624, November 17, 2000; Service 2000). The San Juan Mountains of Colorado also were identified as an area of possible grizzly bear occurrence (40 FR 31734, July 28, 1975; Service 1982, 1993), but no evidence of grizzly bears has been found in the San Juan Mountains since a bear was killed there in 1979 (Service 1993).

In the initial Grizzly Bear Recovery Plan, the Yellowstone Grizzly Bear Ecosystem, later called the Yellowstone Grizzly Bear Recovery Zone, was defined as an area large enough and of sufficient habitat quality to support a recovered grizzly bear population within which the population and habitat would be monitored (Service 1982, 1993). A revised Grizzly Bear Recovery Plan (Service 1993) included additional tasks and new information that increased the focus and effectiveness of recovery efforts.

Grizzly bear recovery has required cooperation among numerous Federal agencies, State agencies, non-government organizations (NGOs), local governments, and citizens. In recognition that grizzly bear populations were unsustainably low, the Interagency Grizzly Bear Study Team (hereafter referred to as the Study Team) was created in 1973 to provide detailed scientific information for the management and recovery of the grizzly bear in the Yellowstone area. Currently, members of the Study Team include scientists from the U.S. Geological Survey (USGS), U.S. Forest Service (USFS), the Service, academia, and each State game and fish agency involved in grizzly bear recovery. The Study Team has developed protocols to monitor grizzly bear populations and some important habitat parameters. These parameters have been used in demographic and habitat management.

In 1983, the Interagency Grizzly Bear Committee was created to coordinate management efforts and research actions across multiple Federal lands and States within the various Recovery Zones to recover the grizzly bear in the lower 48 States. Its objective was to change land management practices to more effectively provide security and maintain or improve habitat conditions for the grizzly bear. The Interagency Grizzly Bear Committee is made up of upper level managers from all affected State and Federal agencies. Also in 1983, the Yellowstone Ecosystem Subcommittee, a subcommittee of the Interagency Grizzly Bear Committee, was formed to coordinate efforts specific to the Yellowstone area and to coordinate activities with the Interagency Grizzly Bear Committee. Members of the Yellowstone Ecosystem Subcommittee are mid-level managers and include representatives from the Shoshone National Forest; the Custer National Forest; the Beaverhead-Deerlodge National Forest; the Bridger-Teton National Forest; Gallatin National Forest; Targhee National Forest; Yellowstone National Park; Grand Teton National Park; the Wyoming Game and Fish Department (WGFD); the Montana Department of Fish, Wildlife, and Parks (MDFWP); the Idaho Department of Fish and Game (IDFG); the Bureau of Land Management (BLM); the Study Team; county government from each affected State; and the Service.

In 1994, The Fund for Animals, Inc., and 42 other organizations and individuals filed suit over the adequacy of the 1993 Recovery Plan. In 1995, the U.S. District Court for the District of Columbia issued an order that remanded for further study and clarification four issues that are relevant to the Yellowstone Ecosystem: (1) The method used to measure the status of bear populations; (2) the impacts of genetic isolation; (3) how mortalities related to livestock are monitored; and (4) the monitoring of disease (*Fund for Animals* v. *Babbitt*, 903 F. Supp. 96 (D. D.C. 1995); 967 F. Supp. 6 (D. D.C. 1997)). Following this decision, all parties filed appeals. In 1996, the parties reached a settlement whereby the Service also agreed to append habitat-based recovery criteria to the Recovery Plan. These issues and the necessary supplements to the Recovery Plan as required by the court order and subsequent settlement are discussed in detail in this section and in the threats analysis.

Habitat Management and Habitat-based Recovery Criteria. In 1979, the Study Team developed the first comprehensive Guidelines for Management Involving Grizzly Bears in the Yellowstone area (hereafter referred to as the Guidelines) (Mealey 1979). The Service (1979) determined in a biological opinion that implementation of the Guidelines by Federal land management agencies would promote conservation of the grizzly bear. Beginning in 1979, the six affected National Forests (Beaverhead-Deerlodge, Bridger-Teton, Caribou-Targhee, Custer, Gallatin, and Shoshone), Yellowstone and Grand Teton National Parks, and BLM in the Yellowstone area began managing habitats for grizzly bears under direction specified in the Guidelines.

In 1986, the Interagency Grizzly Bear Committee modified the Guidelines to more effectively manage habitat by mapping and managing according to three different management situations:

- Management Situation (1) Grizzly habitat maintenance and improvement, and grizzly bear/human conflict minimization receive the highest management priority;

• Management Situation (2) Grizzly bear use is important, but not the primary use of the area; or

• Management Situation (3) Grizzly habitat maintenance and improvement are not management considerations (USDA 1986).

Accordingly, the National Forests and National Parks delineated 18 different bear management units within the Recovery Zone to aid in managing habitat and monitoring population trends. Each bear management unit was further subdivided into subunits, resulting in a total of 40 subunits contained within the 18 bear management units. The bear management units are analysis areas that approximate the lifetime size of a female's home range, while subunits are analysis areas that approximate the annual home range size of adult females. Subunits provide the optimal scale for evaluation of seasonal feeding opportunities and landscape patterns of food availability for grizzly bears (Weaver *et al.* 1986). The bear management units and subunits were identified to provide enough quality habitat and to ensure that grizzly bears were well distributed across the recovery area.

Another tool employed to monitor habitat quality and assist in habitat management is the Yellowstone Grizzly Bear Cumulative Effects Model. The model was designed to assess the inherent productivity of grizzly bear habitat and the cumulative effects of human activities on bear use of that habitat (Weaver *et al.* 1986; Dixon 1997; Mattson *et al.* 2002). The model uses GIS databases and relative value coefficients of human activities, vegetation, and key grizzly bear foods to calculate habitat value and habitat effectiveness (Weaver *et al.* 1986; Mattson *et al.* 2002). Habitat value is a relative measure of the average net digestible energy potentially available to bears in a subunit during each season. Habitat value is primarily a function of vegetation and major foods (Weaver *et al.* 1986; Dixon 1997). Habitat effectiveness is that part of the energy potentially derived from the area that is available to bears given their response to humans (Weaver *et al.* 1986; Dixon 1997; Mattson *et al.* 2002). More specifically, habitat effectiveness is a function of relative value coefficients of human activities, such as location, duration, and intensity of use for motorized access routes, non-motorized access routes, developed sites, and front- and back-country dispersed uses (Mattson *et al.* 2002). The Cumulative Effects Model is updated annually to reflect changes in vegetation, major foods, and the number and capacity of human activities.

As per a court settlement (*Fund for Animals* v. *Babbitt*) and as recommended by Recovery Plan Task Y423, the Service has worked to ''establish a threshold of minimal habitat values to be maintained within each Cumulative Effects Analysis Unit in order to ensure that sufficient habitat is available to support a viable population'' (Service 1993, p. 55). On June 17, 1997, the Service held a public workshop in Bozeman, Montana, to develop and refine habitat-based recovery criteria for the grizzly bear. A **Federal Register** notice notified the public of this workshop and provided interested parties an opportunity to participate and submit comments (62 FR 19777, April 23, 1997). After considering 1,167 written comments, the Service developed biologically-based habitat criteria with the overall goal of maintaining or improving habitat conditions at 1998 levels.

Recognizing that grizzly bears are opportunistic omnivores and that a landscape's ability to support grizzly bears is a function of overall habitat productivity, the distribution and abundance of major food sources, the levels and type of human activities, grizzly bear social systems, bear densities, and stochasticity, there is no known way to deductively calculate minimum habitat values. The Service instead inductively selected 1998 levels because it was known that these habitat values had adequately supported an increasing Yellowstone grizzly bear population throughout the 1990s (Eberhardt *et al.* 1994; Knight and Blanchard 1995; Knight *et al.* 1995; Boyce 2001) and that levels of secure habitat and the number and capacity of developed sites had changed little from 1988 to 1998 (USFS 2004). Specific habitat conditions or criteria include limiting road densities inside the Recovery Zone, maintaining or increasing levels of secure habitat, maintaining or improving habitat effectiveness values in secure habitat, and limiting further site development and livestock grazing allotments on public lands within the Yellowstone grizzly bear Recovery Zone. Additionally, the Service developed four general habitat-based parameters to monitor and relate to population information: (1) Productivity of the four major foods; (2) habitat effectiveness as measured by the Cumulative Effects Model; (3) grizzly bear mortality numbers, locations, and causes; grizzly bear/human conflicts; nuisance bear management actions; bear/hunter conflicts; and bear/livestock conflicts; and (4) development on private lands. A copy of the habitat-based criteria is available at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm.* This revised habitat-based recovery criteria will be appended to the Recovery Plan and is included in the Conservation Strategy. These habitat-based criteria have been maintained successfully at 1998 levels, and the Conservation Strategy ensures they will continue to be met in the foreseeable future (see Conservation Strategy).

Population and Demographic Management. Mortality control is a key part of any successful management effort; however, some mortality, including human-caused mortality, is unavoidable in a dynamic system where hundreds of bears inhabit thousands of square miles of diverse habitat with several million human visitors and residents. In 1977, Eberhardt documented that adult female survival was the most important of the vital rates influencing population trajectory. Low adult female survival was the critical factor causing decline in the Yellowstone area population prior to the mid-1980s (Knight and Eberhardt 1985). In the early 1980s, with the development of the first Grizzly Bear Recovery Plan (Service 1982), agencies began to control mortality and increase adult female survivorship (Interagency Grizzly Bear Committee 1983; USDA 1986; Knight *et al.* 1999). The Recovery Plan (Service 1982, revised 1993) established three demographic (population) goals to objectively measure and monitor recovery of the Yellowstone grizzly bear population:

Demographic Recovery Criterion 1—Maintain a minimum of 15 unduplicated (only counted once) females with cubs-of-the-year over a running 6-year average both inside the Recovery Zone and within a 16-km (10-mi) area immediately surrounding the Recovery Zone. This recovery criterion has been met.

Demographic Recovery Criterion 2—Sixteen of 18 bear management units within the Recovery Zone must be occupied by females with young, with no 2 adjacent bear management units unoccupied, during a 6-year sum of observations. This criterion is important as it ensures that reproductive females occupy the majority of the Recovery Zone and are not concentrated in one portion of the ecosystem. This recovery criterion has been met.

Demographic Recovery Criterion 3—The running 6-year average for total known, human-caused mortality should not exceed 4 percent of the minimum population estimate in any 2

consecutive years; and human-caused female grizzly bear mortality should not exceed 30 percent of the above total in any 2 consecutive years. These recovery criteria have not been exceeded in 2 consecutive years since 1997.

Although the Recovery Plan suggested calculating sustainable mortality as a percentage of the minimum population estimate (as outlined in Demographic Recovery Criterion 3), this method no longer represents the best scientific and commercial information available (see pages 9–11 of Study Team 2005). As per a court settlement (*Fund for Animals* v. *Babbit*) and as recommended by Recovery Plan Task Y11, the Service has worked to ''determine population conditions at which the species is viable and self-sustaining,'' and to ''reevaluate and refine population criteria as new information becomes available'' (Service 1993, p. 44). Beginning in 2000, the Study Team, at the request of the Service, began a comprehensive evaluation of the demographic data and the methodology used to estimate population size and establish the sustainable level of mortality to grizzly bears in the Yellowstone Ecosystem. Accordingly, the Study Team conducted a critical review of the current methods for calculating population size, estimating the known to unknown mortality ratio, and establishing sustainable mortality levels for the Yellowstone grizzly population (Study Team 2005). The product of this work is a 60-page report compiled by the Study Team that evaluates current methods, reviews recent scientific literature, examines alternative methods, and recommends the most valid technique based on these reviews (Study Team 2005) (accessible at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*). The end result of this review is a revised method customized for the Yellowstone grizzly bear population for calculating total population size rather than minimum population size (Study Team 2005). This revised method will be appended to the Recovery Plan and included in the Conservation Strategy.

As with the previous method, the revised method uses counts of unduplicated females with cubs-of-the-year as the baseline data upon which the total population is calculated. From this, the total number of independent females (>2 years old) in the Yellowstone population is calculated (Keating *et al.* 2002). This number is then divided by the modeled sex ratio (Schwartz *et al.* 2005) of grizzly bears in the Yellowstone population to determine the total number of independent males (>2 years old) in the population. The last component of calculating a total population is to add the number of cubs less than 2 years old (*i.e.*, dependent young.). This number is extrapolated from the number of females with cubs-of-the-year (Study Team 2005). Finally, by adding the number of independent males, independent females, and dependent young, the total population is determined. The revised method for calculating total population size produces a larger estimate than the current method which only calculates the minimum population size. For example, using the current method, the minimum population size in 2004 was 431 bears. Using the revised method, the total population estimate of Yellowstone grizzly bears in 2004 was 588 (Study Team 2005). The total population estimate is considered a more accurate representation of actual population size (Study Team 2005). Total population size is critical in determining sustainable mortality.

Also outdated is the Recovery Plan's total human-caused mortality limit and female human-caused mortality limit as outlined in Demographic Recovery Criterion 3. In 1986, Harris (1986) concluded that healthy grizzly bear populations could sustain approximately 6.5 percent human-caused mortality without population decline. To account for unknown/unreported deaths, the Service assumed that for every two bears known to be killed by human causes, there was one that was unknown. This approach on unknown mortalities resulted in the Service adopting a more conservative 4 percent limit on known human-caused grizzly bear mortalities in the Grizzly Bear Recovery Plan (Service 1993).

After critically reviewing the current method of establishing human-caused mortality limits, alternative methods, and scientific literature, the Study Team concluded that Harris' (1986) method was no longer the best available nor the most biologically valid (Study Team 2005). As a result of this effort, the Study Team recommended revising the sustainable mortality limits for the Yellowstone population (Study Team 2005). The revised mortality limits are derived from a more accurate model for establishing sustainable mortality limits for grizzly bear populations (Schwartz *et al.* 2005).

The refined method resulted in new, calculated mortality limits for independent females, males, and dependent young. Unlike the previous method, which only counted human-caused mortalities against a 4 percent limit, the revised method counts all deaths of grizzly bears from any source against the limits. This includes: (1) Known and probable human-caused mortalities; (2) reported deaths due to natural and undetermined causes; and (3) calculated unreported human-caused mortalities. This new method is a much more comprehensive mortality management approach. Between 1980 and 2002, approximately 21 percent of all known grizzly bear deaths were from undetermined causes (Servheen *et al.* 2004). These deaths could not be counted against the 4 percent human-caused mortality limit using the previous method because the cause of death could not be confirmed. The previous method also assumed a 2-to-1 known-to-unknown mortality ratio. Many researchers hypothesize that the ratio of known-to-unknown mortality is much higher than 2-to-1 (Knight and Eberhardt 1985; McLellan *et al.* 1999). After careful consideration and using the best available science, the Study Team adopted a known-to-unknown mortalities ratio of 1-to-1.7 (Cherry *et al.* 2002; Study Team 2005).

For independent females, the revised annual mortality limit, not to be exceeded in 2 consecutive years, which includes all sources of mortality, is 9 percent of the total number of independent females. Simulations have shown that a 9 percent adult female mortality rate allows populations to increase at 3 percent per year with a stable to increasing population 95 percent of the time (Schwartz *et al.* 2005).

The revised mortality limit for independent males (≥2 years old), not to be exceeded in 3 consecutive years, is 15 percent of the total number of independent males and, like the limit for independent females, includes all sources of mortality. This level of mortality was sustainable under different population growth model scenarios simulated by Schwartz *et al.* (2005). The Study Team chose this limit because it approximates the level of male mortality in the GYA from 1983 to 2001, a period when population size was calculated to have increased at 4 to 7 percent each year (Schwartz *et al.* 2005). Independent males can endure a relatively high mortality rate without affecting the overall stability or trajectory of the population because they contribute little to overall population growth (Mace and Waller 1998; Wielgus 2002; Study Team 2005; Schwartz *et al.* 2005).

For dependent young (<2 years old), the mortality limit, not to be exceeded in 3 consecutive years, is 9 percent of the total number of dependent young (Study Team 2005). However, this only includes known and probable human-caused mortalities. This limit is less

than the 15 percent human-caused mortality documented for each sex from 1983 to 2001, a period of population growth and expansion (Study Team 2005). Although it is known that dependent bears experience far higher natural mortality rates than independent bears, there is no known way to sample these mortalities directly in the field. Instead, these rates are calculated from consecutive years of observing radio-collared females with cubs-of-the-year.

Annual allowable mortality limits for each bear class (independent female, independent male, dependent young) are calculated as a running 3-year average based on total population estimates of each bear class for the current year and the 2 preceding years (Study Team 2005). This dampens variability and provides managers with inter-annual stability in the threshold number of mortalities allowed. The Study Team calculates both the total population size and the mortality limits within an area designated by the Conservation Strategy (see The Conservation Strategy section) that overlaps and extends beyond suitable habitat (Figure 1, see Application of the Distinct Population Segment Policy section). Future changes to either of these methods will be based on the best scientific information available. This revised methodology for calculating total population size and establishing sustainable mortality limits will be appended to the Recovery Plan prior to our making a final determination on this proposed action and included in the Conservation Strategy. Applying this method to 1999 to 2004 data, these mortality limits have not been exceeded for consecutive years for any bear class.

Maintaining Genetic Diversity. As per a court settlement (*Fund for Animals* v. *Babbitt*), measurable criteria to assess genetic isolation will be appended to the existing Yellowstone chapter of the 1993 Grizzly Bear Recovery Plan (Service 1993) before we make a final determination on this proposed action. Changes in genetic diversity must be monitored over time in order to make sound decisions regarding the need for augmentation of new individuals to increase diversity if it is being lost. When the Recovery Plan was revised in 1993, many of the genetic techniques and markers commonly used today to assess genetic diversity and isolation were just being developed. Following direction from the Court, the Service reviewed the best available and most recent scientific information pertaining to genetic monitoring and established measurable genetic criteria based on this review. This document was made available for public review in 1997 (62 FR 47677; September 10, 1997). A draft of this document is available for viewing online at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*. This revised genetics recovery criteria will be appended to the Recovery Plan and included in the Conservation Strategy. Long-term management of genetic diversity is discussed in more detail under Factor E.

The Conservation Strategy. In order to ensure the long-term preservation of a viable population, the Recovery Plan calls for the development of ''a conservation strategy to outline habitat and population monitoring that will continue in force after recovery'' (Recovery Plan Task Y426) (Service 1993, p. 55). To accomplish this goal, in 1993, the Service created the Interagency Conservation Strategy Team which included biologists from the National Park Service (NPS), the USFS, the Service, the IDFG, the WGFD, and MTFWP.

In March 2000, a draft Conservation Strategy for the GYA was released for public review and comment (65 FR 11340; March 2, 2000). Also in 2000, a Governors' Roundtable was organized to provide recommendations from the perspectives of the three States that would be involved with grizzly bear management after delisting. In 2002, the draft Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (hereafter referred to as the Strategy) was released, along with drafts of State grizzly bear management plans (all accessible at *http:// mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*). The Service will sign the Strategy, and it will go into effect if we finalize this proposed action.

The purpose of the Strategy and associated State and Federal implementation plans is to—(1) describe, summarize, and implement the coordinated efforts to manage the grizzly bear population and its habitat to ensure continued conservation of the Yellowstone grizzly bear population; (2) specify and implement the population, habitat, and nuisance bear standards to maintain a recovered grizzly bear population for the foreseeable future; (3) document the regulatory mechanisms and legal authorities, policies, management, and monitoring programs that exist to maintain the recovered grizzly bear population; and (4) document the actions which the participating agencies have agreed to implement.

The Strategy identifies and provides a framework for managing two areas, the Primary Conservation Area (PCA) and adjacent areas of suitable habitat where occupancy by grizzly bears is anticipated. The PCA boundaries (containing 23,853 sq km (9,210 sq mi)) correspond to those of the Yellowstone Recovery Zone (Service 1993) and will replace the Recovery Zone boundary if this proposed delisting is finalized (Figure 1 (see Application of the Distinct Population Segment Policy section)). The PCA contains adequate seasonal habitat components needed to support the recovered Yellowstone grizzly bear population for the foreseeable future and to allow bears to continue to expand outside the PCA. The PCA includes approximately 51 percent of the suitable habitat within the DPS and approximately 90 percent of the population of female grizzly bears with cubs (Schwartz 2005, unpublished data).

The Strategy will be implemented and funded by both Federal and State agencies within the Yellowstone DPS. These Federal agencies will cooperate with the State wildlife agencies, MTFWP, IGFD, and WDFG, to implement the Strategy and its protective habitat and population standards. The USFS and NPS (which own and manage approximately 98 percent of the PCA) will be responsible for maintaining or improving habitat standards inside the PCA and monitoring population criteria. Specifically, Yellowstone National Park; Grand Teton National Park; and the Shoshone, the Beaverhead-Deerlodge, the Bridger-Teton, the Caribou-Targhee, the Custer, and the Gallatin National Forests are the primary areas with Federal agencies responsible for implementing the Strategy. Affected National Forests and National Parks are currently in the process of incorporating the habitat standards and criteria into their Forest Plans and National Park management plans via appropriate amendment processes so that they are legally applied to these public lands within the proposed Yellowstone DPS boundaries. The Service would not finalize this proposed action until these amendments to current management plans are completed.

Outside of the PCA, grizzly bears will be allowed to expand into suitable habitat. Here the objective is to maintain existing resource management and recreational uses and to allow agencies to respond to demonstrated problems with appropriate management actions. The key to successful management of grizzly bears outside of the PCA lies in their successfully utilizing lands not managed solely for bears, but in which their needs are considered along with other uses. Currently, approximately 10

percent of female grizzly bears with cubs occupy habitat outside of the PCA (Schwartz 2005, unpublished data). The area of suitable habitat outside of the PCA is roughly 82.3 percent federally owned and administered by one of the six National Forests in the region, the BLM, the NPS, or the Service; 9.5 percent privately owned; 6.0 percent tribally owned; 0.7 percent State-owned land; and 2 percent in other ownership (such as private conservation trusts or other Federal ownership). State grizzly bear management plans, Forest Plans, and other appropriate planning documents provide specific management direction for areas outside of the PCA.

This differential management standard (one standard inside the PCA and another standard for suitable habitat outside the PCA) has been successful in the past (see USFS 2004, p. 19). Lands within the PCA/Recovery Zone are currently managed primarily to maintain grizzly bear habitat, whereas lands outside of the PCA/Recovery Zone boundaries are managed with more consideration for human uses (Service 1993). Such flexible management promotes communication and tolerance for grizzly bear recovery. As grizzly bear populations within the Recovery Zone have rebounded in response to recovery efforts, there has been a gradual natural recolonization of suitable habitat outside of the PCA/Recovery Zone. Today, most suitable habitat outside of the Recovery Zone is occupied by grizzly bears (68 percent).

The Strategy is an adaptive, dynamic document that establishes a framework to incorporate new and better scientific information as it becomes available or as necessary in response to environmental changes. Ongoing review and evaluation of the effectiveness of the Strategy is the responsibility of the State and Federal managers and will be updated by the management agencies every 5 years or as necessary, allowing public comment in the updating process.

Previous Federal Actions

On July 28, 1975, the grizzly bear was designated as threatened in the conterminous (lower 48) United States (40 FR 31734). On November 5, 1976, the Service proposed critical habitat for the grizzly bear (41 FR 48757). This proposed rule was never finalized and we withdrew this proposed designation in 1979 because the 1978 amendments to the ESA (16 U.S.C. 1531 *et seq.*) imposed additional obligations on the Service, such as economic analysis, that had not been adequately addressed in the proposal.

At the time of listing, special regulations were issued in conjunction with the listing determination, and were incorporated into 50 CFR 17.40(b). These rules provided general protection to the species, but allowed take under certain conditions to defend human life, to eliminate nuisance animals, and to carry out research. Legal grizzly bear mortality has been almost entirely due to removal of chronic nuisance bears by government bear managers due to repeated human/bear conflicts or to killing by humans in self-defense or defense of others (Gunther *et al.* 2004; Servheen *et al.* 2004). In addition, a limited sport hunting season was authorized in a specified portion of northwestern Montana; these rules were modified in 1985 (50 FR 35086; August 29, 1985) and 1986 (51 FR 33753; September 23, 1986). A similar, limited hunt was proposed for the Yellowstone Ecosystem in October of 1989 (54 FR 42524; October 17, 1989), but this rule was never finalized. The Service withdrew the hunt provisions of 50 CFR 17.40(b) (see 57 FR 37478) in response to a court decision that declared 50 CFR 17.40(b)(1)(i)(E) invalid and enjoined the Service from authorizing a grizzly bear hunt (*Fund for Animals, Inc.*, v. *Turner*, Civil No. 91–2201 (MB), September 27, 1991) (57 FR 37478; August 19, 1992).

According to the Grizzly Bear Recovery Plan (Service 1982, 1993), individual populations could be delisted as recovery goals were achieved (Service 1982, 1993). In the 1990s, the Service received a number of petitions to change the status of several grizzly bear populations. The Service issued warranted-but-precluded petition findings to reclassify the grizzly bear in the North Cascade Ecosystems as endangered in 1991 and 1998 (56 FR 33892, July 24, 1991; 63 FR 30453, June 4, 1998). The Service also issued warranted-but-precluded petition findings to reclassify the grizzly bear in the Cabinet-Yaak Ecosystems as endangered in 1993 and 1999 (58 FR 8250, February 12, 1993; 64 FR 26725, May 17, 1999). Finally, the Service issued a not warranted petition finding to uplist the Selkirk Ecosystem bears in 1993 (58 FR 8250; February 12, 1993), followed by a warranted-but-precluded petition finding in 1999 (64 FR 26725; May 17, 1999). The Service reviewed these warranted-but-precluded findings in the 1999 (64 FR 57533; October 25, 1999), 2001 (66 FR 54808; October 30, 2001), 2002 (67 FR 40657; June 13, 2002), 2003 (69 FR 24876; May 4, 2004), and 2004 (70 FR 24870; May 11, 2005) Candidate Notices of Review. These actions remain precluded by higher priority actions. The Service's decision to manage each population separately, including each population's listing status, predated our DPS policy (61 FR 4722; February 7, 1996). None of the above decisions included formal DPS analysis, although the warranted uplisting petition finding in 1999 (64 FR 26725; May 17, 1999) included a preliminary DPS analysis. In preparation for future application of the DPS policy, beyond this action, including that required to implement warranted-but-precluded uplistings or any additional reclassification proposals, we are currently collecting additional genetic and bear movement information. The Service expects that this information will be available within the next few years. In anticipation of this information, the Service intends to initiate a 5-year review of all listed grizzly bear populations in the conterminous States, including an evaluation of the appropriate application of the DPS policy and the threats facing each listable entity should this proposed rule be finalized. Adequate information of this type already exists for the Yellowstone grizzly bear population.

This proposed delisting action was not prompted by a petition. However, there was a March 31, 2004, petition from the Wyoming Farm Bureau Federation requesting that we declare the grizzly bear in the GYA as a DPS (Hamilton *et al.* in litt. 2004). This petition did not seek to change the status of grizzly bears as a threatened species in any or all of the species' range. On May 17, 2004, the Service responded that section 4 of the ESA limits petitionable actions to listing, delisting, designation or modification of critical habitat, or reclassification of the status of a species (meaning whether a species is classified as endangered or threatened) and that this petition did not fit any of these categories (Blankenship in litt. 2004). Instead, petitioners were informed that the requested action falls within the authority of the Administrative Procedures Act; that the Service was currently considering the Yellowstone population for delisting; and that an evaluation of the Yellowstone grizzly bear recovery area as a potential DPS was a part of this process. The Administrative Procedures Act provides no statutory time periods for processing petitions, but this action, if finalized, will address this petition.

Distinct Vertebrate Population Segment Policy Overview

Pursuant to the ESA, we shall consider for listing any species, subspecies, or, for vertebrates, any DPS of these taxa if there is sufficient information to indicate that such action may be warranted. To interpret and implement the DPS provision of the ESA and congressional guidance, the Service and the National Marine Fisheries Service published, on December 21, 1994, a draft Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA and invited public comments on it (59 FR 65884). After review of comments and further consideration, the Services adopted the interagency policy as issued in draft form, and published it in the **Federal Register** on February 7, 1996 (61 FR 4722). This policy addresses the establishment of DPSs for potential listing actions.

Under our DPS policy, three factors are considered in a decision regarding the establishment of a possible DPS. These are applied similarly for additions to the list of endangered and threatened species, reclassification, and removal from the list. They are—(1) discreteness of the population segment in relation to the remainder of the taxon (*i.e., U. a. horribilis);* (2) the significance of the population segment to the taxon to which it belongs (*i.e., U. a. horribilis);* and (3) the population segment's conservation status in relation to the ESA's standards for listing (*i.e.*, is the population segment, when treated as if it were a species, endangered or threatened).

Application of the Distinct Population Segment Policy

Although the Vertebrate Population Policy does not allow State or other intra-national governmental boundaries to be used in determining the discreteness of a potential DPS, an artificial or manmade boundary may be used as a boundary of convenience in order to clearly identify the geographic area included within a DPS designation. Easily identifiable manmade projects, such as interstate highways, Federal highways, and State highways, also can serve as a boundary of convenience for delineating a DPS. Thus, the proposed Yellowstone DPS consists of: That portion of Idaho that is east of Interstate Highway 15 and north of U.S. Highway 30; and that portion of Montana that is east of Interstate Highway 15 and south of Interstate Highway 90; that portion of Wyoming south of Interstate Highway 90, west of Interstate Highway 25, Wyoming State Highway 220, and U.S. Highway 287 south of Three Forks (at the 220 and 287 intersection), and north of Interstate Highway 80 and U.S. Highway 30 (Figure 1, below).

The core of the proposed Yellowstone DPS is the Yellowstone Recovery Zone (24,000 sq km (9,200 sq mi)) (Service 1982, 1993). The Yellowstone Recovery Zone includes Yellowstone National Park; Grand Teton National Park; John D. Rockefeller Memorial Parkway; sizable contiguous portions of the Shoshone, Bridger-Teton, Targhee, Gallatin, Beaverhead-Deerlodge, and Custer National Forests; BLM lands; and surrounding State and private lands (Service 1993). As grizzly bear populations have rebounded and densities have increased, bears have expanded their range beyond the Recovery Zone, into other suitable habitat. Grizzly bears in this area now occupy about 36,940 sq km (14,260 sq mi) in and around the Yellowstone Recovery Zone (Schwartz *et al.* 2002; Schwartz 2005, unpublished data). No grizzly bears originating from the Yellowstone Recovery Zone have been suspected or confirmed beyond the borders of the proposed Yellowstone DPS.

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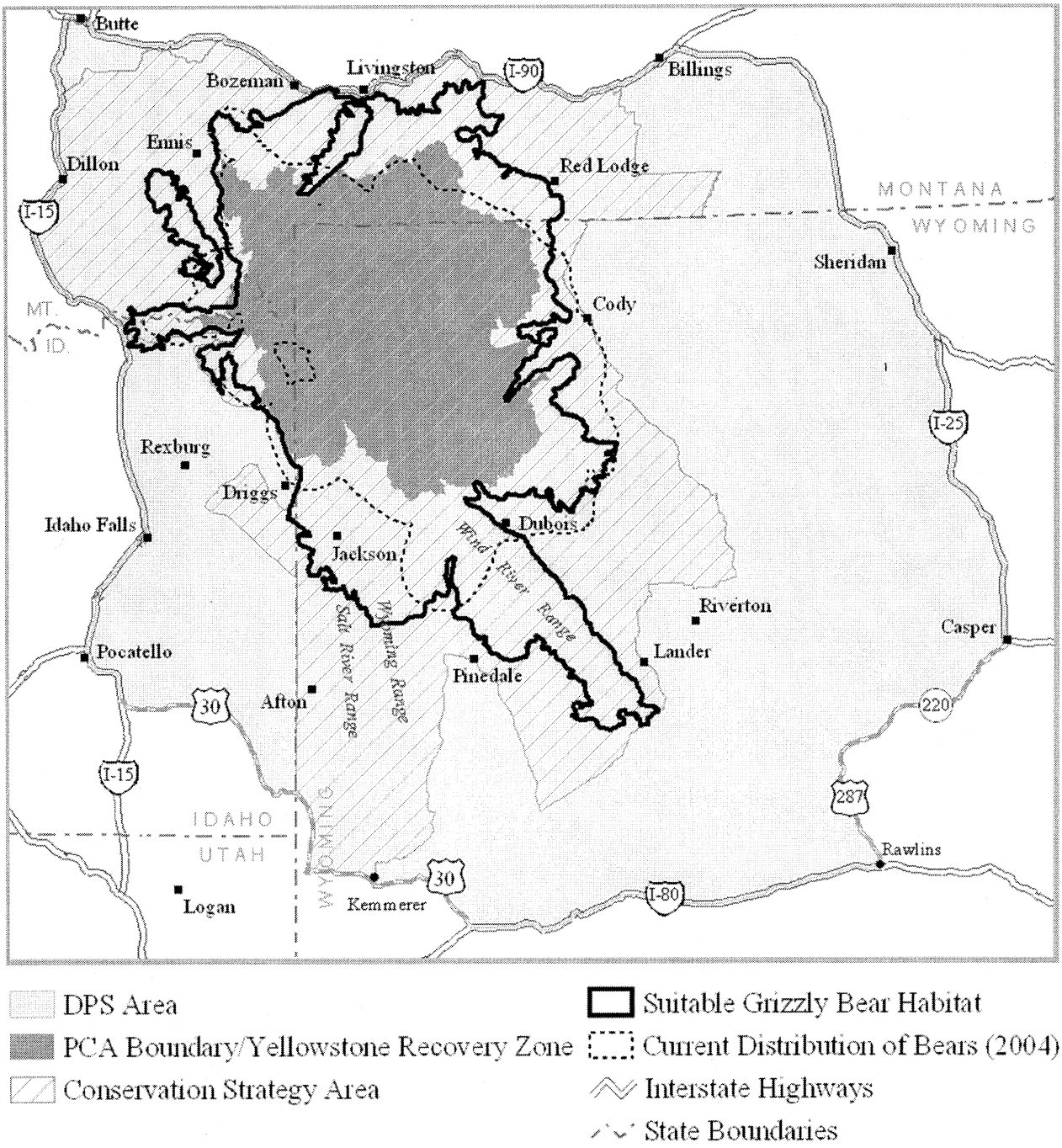

Figure 1. Proposed boundaries for: (1) DPS Area—the Yellowstone distinct population segment of grizzly bears; (2) Primary Conservation Area (PCA) Boundary—area within which the habitat standards in the Conservation Strategy apply. The boundaries of the PCA correspond to those of the Yellowstone Recovery Zone; (3) Conservation Strategy Area—the area in which all population and mortality standards will be monitored and calculated; (4) Current Distribution of Grizzly Bears, using Schwartz et al. (2002) methodology and revised 2005 unpublished data; and (5) Suitable Habitat—the area of suitable grizzly habitat in this DPS as defined in this proposed rule.

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Analysis for Discreteness

Under our Policy Regarding the Recognition of Distinct Vertebrate Population Segments, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions—(1) It is markedly separated from other populations of the same taxon (*i.e., U. a. horribilis*) as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation); or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) (''the inadequacy of existing regulatory mechanisms'') of the ESA.

The Yellowstone grizzly bear population is the southernmost population remaining in the conterminous States and has been physically separated from other areas where grizzly bears occur for at least 100 years (Merriam 1922; Miller and Waits 2003). The nearest population of grizzly bears is found in the NCDE. These populations are separated by land ownership, vegetation, and topographic patterns which have promoted human occupation, development, and land uses in the intervening valleys between large blocks of mountainous, public lands (Servheen *et al.* 2003). These human activities increase grizzly bear mortality risk by increasing the frequency of encounters with humans, which increases the chances for grizzly bear/human conflicts (Mattson *et al.* 1996). The end result of this increased mortality risk in the intervening valleys is a functional barrier to grizzly bear movement across the landscape and connectivity between the GYA and the NCDE.

As of 2005, grizzly bears from the Yellowstone area have not migrated north across Interstate 90 (the northern boundary of the proposed DPS), probably for at least the last century (Miller and Waits 2003). Meanwhile, during the last decade, there have been occasional anecdotal reports of grizzly bears from the NCDE as far south as Highway 12 near Helena, Montana. These unverified reports are approximately 130 km (80 mi) north of the most northerly Yellowstone grizzly bears. This distance is too far for normal grizzly bear dispersal distances of roughly 10 to 40 km (6 to 25 mi) (McLellan and Hovey 2001; Proctor *et al.* 2004) to effectively connect the NCDE population with the proposed Yellowstone DPS. There is currently no connectivity, nor are there any resident grizzly bears in the area, between these two separate grizzly bear populations. Although future connectivity through this area may be possible as grizzly bear populations expand, grizzly bears in the Yellowstone area remain an island population separated from other grizzly bears further north by about 210 km (130 mi).

Because the Yellowstone Ecosystem represents the most southerly population of grizzly bears, connectivity further south is not an issue. Additionally, connectivity east also is irrelevant to this action as grizzly bears in the lower 48 States no longer exist east of the Yellowstone area, and most of the habitat is unsuitable for grizzly bears. Finally, connectivity west into the Bitterroot Mountains is irrelevant to this action because no bears have been documented in this ecosystem in the past 30 years (Service 1993; 65 FR 69624, November 17, 2000; Service 2000).

Genetic data also support the conclusion that grizzly bears from the Yellowstone area are markedly separated from other grizzly bears. Genetic studies involving heterozygosity (provides a measure of genetic variation in either a population or individual) estimates at 8 microsatellite loci show 55 percent heterozygosity in the Yellowstone area grizzly bears compared to 69 percent in the NCDE bears (Paetkau *et al.* 1998). Heterozygosity is a useful measure of genetic diversity with higher values indicative of greater genetic variation and evolutionary potential. High levels of genetic variation are indicative of high levels of connectivity among populations or high numbers of breeding animals. By comparing heterozygosity of extant bears to samples from Yellowstone grizzlies of the early 1900s, Miller and Waits (2003) concluded that gene flow and therefore population connectivity, between the Yellowstone area grizzly population and populations to the north was very low historically, even prior to the arrival of settlers. The reasons for this historic limitation of gene flow are unclear. Increasing levels of human activity and settlement in this intervening area over the last century further limited grizzly bear movements into and out of the Yellowstone area, resulting in even less connectivity than in the past.

Based on our analysis of the best available scientific information, we find that the Yellowstone area grizzly population and other remaining grizzly bears populations are markedly separated from each other. This contention is supported by evidence of physical separation between populations and evidence of genetic discontinuity. Therefore, the proposed Yellowstone DPS meets the criterion of discreteness under our Policy Regarding the Recognition of Distinct Vertebrate Population Segments.

Analysis for Significance

If we determine a population segment is discrete, we next consider available scientific evidence of its significance to the taxon (*i.e., U. a. horribilis*) to which it belongs. Our DPS policy states that this consideration may include, but is not limited to, the following—(1) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon; (2) Evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon; (3) Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; and/or (4) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics. Below we address Factors 1, 2, and 4. Factor 3 does not apply to the Yellowstone grizzly bear population because it is not the only surviving wild population of the species and, therefore, this factor is not included in our analysis for significance.

Unusual or Unique Ecological Setting. Grizzly bears in the Yellowstone area exist in a unique ecosystem that has greater access to large-bodied ungulates such as bison (*Bison bison*), elk (*Cervus elaphus*), and moose (*Alces alces*) and less access to fall berries than any other interior North American, European, or Asian grizzly bear population (Stroganov 1969; Mattson *et al.* 1991a; Jacoby *et al.* 1999; Schwartz *et al.* 2003). Unlike most other areas in the world where brown or grizzly bears still exist, the Yellowstone area ecosystem contains extensive populations of ungulates with an estimated 100,000 elk, 29,500 mule (*Odocoileus hemionus*) and white-tailed deer (*O. virginianus*), 5,800 moose, 4,000 bison and relatively smaller population of pronghorn antelope (*Antilocapra americana*) (Service 1994; Toman *et al.* 1997; Smith *et al.* 2003). Although grizzly bears are successful omnivores, grizzlies in the rest of the conterminous States (Jacoby *et al.* 1999), most of Europe (Berducou *et al.* 1983; Clevenger *et al.* 1992; Dahle *et al.* 1998), and in Siberia (Stroganov 1969) rely on plant and insect materials

for the majority of their diet. In contrast, grizzlies in the Yellowstone area rely on terrestrial mammals as their primary source of nutrition, as indicated by bear scats (Mattson 1997), feed site analysis (Mattson 1997), and bear hair isotope analysis (Jacoby *et al.* 1999). Concentration of isotopic nitrogen (^{15}N) in grizzly bear hair from Yellowstone grizzly bears suggests that meat constitutes 45 percent and 79 percent of the annual diet for females and males, respectively (Jacoby *et al.* 1999). These high percentages of meat in the diet for Yellowstone grizzly bears are in contrast to the 0 to 33 percent of meat in the diet of bears in the NCDE and 0 to 17 percent of meat in the diet in bears from the Cabinet-Yaak Ecosystem (Jacoby *et al.* 1999). Furthermore, the source of this animal meat is primarily large-bodied ungulates, not fish, as in other populations of brown bears in Alaska and Siberia (Stroganov 1969; Hilderbrand *et al.* 1996). Of particular relevance is grizzly bear use of wild bison, a species endemic to North America, but eradicated in most of the 48 States except the GYA by the end of the 19th century (Steelquist 1998). Although bison numbers have increased since this time, the vast majority of bison are found in managed or ranched herds (Steelquist 1998). Their habitat, bunchgrass prairie (tallgrass, mixed-grass, and shortgrass prairie), has been almost entirely converted to agricultural lands (Steelquist 1998), leaving little opportunity for existence in areas outside of the isolated refuges and ranches they are commonly found today. Mattson (1997) found that wild bison comprised the second largest source of ungulate meat (24 percent) consumed by Yellowstone grizzly bears, second only to elk (53 percent).

The Yellowstone grizzly population also exists in a unique ecological setting because it is able to use whitebark pine seeds as a major food source. Whitebark pine, a tree species found only in North America (Schmidt 1994), exhibits annual variation in seed crops with high seed production in some years and very low seed production in other years (Weaver and Forcella 1986; Morgan and Bunting 1992). During these years of high seed production, Yellowstone grizzly bears derive as much as 51 percent of their protein from pine nuts (Felicetti *et al.* 2003). In fact, grizzly bear consumption of ungulates decreases during years of high whitebark pine seed production (Mattson 1997). In most areas of North America where whitebark pine distribution overlaps with grizzly bear populations, bears do not consistently use this potential food source (Mattson and Reinhart 1994). This may be due to different climatic regimes which sustain berry-producing shrubs or simply the scarcity of whitebark pines in some areas of its range (Mattson and Reinhart 1994). Dependence of Yellowstone grizzly bears on whitebark pine is unique because in most areas of its range, whitebark pine has been significantly reduced in numbers and distribution due to the introduced pathogen whitepine blister rust (*Cronartium ribicola*) (Kendall and Keane 2001). While there is evidence of blister rust in whitebark pines in the Yellowstone area, the pathogen has been present for more than 50 years (McDonald and Hoff 2001) but very few trees have been infected (see Factor E). Due to this dependency of Yellowstone grizzly bears on animal and plant species endemic to North America and currently limited to the GYA, the population is significant to the taxon because of its unique ecological setting.

Significant Gap in the Range of the Taxon. Loss of the proposed Yellowstone DPS would represent a significant gap in the range of the taxon. As noted above, grizzly bears once lived throughout the North American Rockies from Alaska and Canada, and south into central Mexico. Grizzly bears have been extirpated from most of the southern portions of their historic range. Today, the proposed Yellowstone DPS represents the southernmost reach of the grizzly bear. The loss of this population would be significant because it would substantially curtail the range of the grizzly bear by moving the range approximately 4 degrees of latitude to the north. Thus, the loss of this population would result in a significant gap in the current range of the taxon.

Given the grizzly bear's historic occupancy of the conterminous States and the portion of the historic range the conterminous States represent, recovery in the lower 48 States where the grizzly bear existed in 1975 when it was listed has long been viewed as important to the taxon (40 FR 31734). The proposed Yellowstone DPS is significant in achieving this objective as it is 1 of only 5 known occupied areas and constitutes approximately half of the remaining grizzly bears in the conterminous 48 States. Finally, the proposed Yellowstone DPS represents the only grizzly bear population not connected to bears in Canada.

Marked Genetic Differences. Several genetics studies have confirmed the uniqueness of grizzly bears in the Yellowstone area. The Yellowstone area population has been isolated from other grizzly bear populations for approximately 100 years or more (Miller and Waits 2003). Yellowstone grizzly bears have the lowest relative heterozygosity of any continental grizzly population yet investigated (Paetkau *et al.* 1998; Waits *et al.* 1998b). Only Kodiak Island grizzly bears, a different subspecies (*Ursus arctos middendorfi*), have lower heterozygosity scores (26.5 percent), reflecting as much as 12,000 years of separation from mainland populations (Paetkau *et al.* 1998; Waits *et al.* 1998b). Miller and Waits (2003) conclude that gene flow between the Yellowstone area and the closest remaining population was limited prior to the arrival of European settlers but could only speculate as to the reasons behind this historical separation. The apparent long-term difference in heterozygosity between Yellowstone and other Montana populations indicates a unique set of circumstances in which limited movement between these areas has resulted in a markedly different genetic situation for the Yellowstone population.

We conclude that the Yellowstone grizzly population is significant because it exists in a unique ecological setting; the loss of this population would result in a significant gap in the range of the taxon; and this population's genetic characteristics differ markedly from other grizzly bear populations.

Conclusion of Distinct Population Segment Review

Based on the best available scientific information, as described above, we find that the Yellowstone grizzly bear population is discrete from other grizzly populations and significant to the remainder of the taxon (*i.e.*, *U. a. horribilis*). Because the Yellowstone grizzly bear population is discrete and significant, it warrants recognition as a DPS under the ESA. Therefore, the remainder of this proposed rule will focus on the Yellowstone DPS.

Summary of Factors Affecting the Species

Section 4 of the ESA and regulations promulgated to implement the listing provisions of the ESA (50 CFR part 424) set forth the procedures for listing, reclassifying, and delisting species. A species may be delisted, according to 50 CFR 424.11(d), if the best scientific and commercial data available demonstrate that the species is no longer endangered or threatened because of (1) Extinction; (2) recovery; or (3) error in the original data used for classification of the species. The analysis for a delisting due to recovery must be based on the five factors outlined in section 4(a)(1) of the ESA. This analysis must include an

evaluation of threats that existed at the time of listing and those that currently exist or that could potentially affect the species in the foreseeable future once the protections of the ESA are removed.

A recovered population is one that no longer meets the ESA's definition of threatened or endangered. The ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range.

The ESA defines ''species'' to also include any subspecies or, for vertebrates, any DPS. Because the Yellowstone grizzly bear population is discrete and significant, as defined above, it warrants recognition as a DPS under the ESA and our policy (61 FR 4722). Therefore, our analysis only covers the DPS.

For the purposes of this proposed rule, ''foreseeable future'' shall refer to approximately 100 years. This definition is based on 10 grizzly bear generations where a single female may take 10 years to replace herself in a population. This time period is also commonly used in population viability analyses of grizzly bear populations (Boyce 1995; Saether *et al.* 1998; Boyce *et al.* 2001).

For the purposes of this proposed rule, the ''range'' of this grizzly bear DPS is the area within the DPS boundaries where viable populations of the species now exist. As previously noted, we have defined the overall DPS boundary by existing roads for ease in determining its location. Bears occupy or can occupy all suitable habitat within the DPS boundary and a few individual bears occasionally occupy or pass through the areas we define as unsuitable habitat. Suitable habitat provides food, seasonal foraging opportunities, cover, denning areas, and security. We have defined suitable habitat for grizzly bears as areas having three characteristics—(1) being of adequate habitat quality and quantity to support grizzly bear reproduction and survival; (2) contiguous with the current distribution of Yellowstone grizzly bears such that natural re-colonization is possible; and (3) having low mortality risk as indicated through reasonable and manageable levels of grizzly bear/human conflicts. Unsuitable habitat consists of those areas within the DPS boundary that cannot support viable populations of grizzly bears.

The Statutory standard is whether the species is threatened in ''all or a significant portion'' of its range. Because the grizzly bear occupies all of its range within this DPS, we conducted the following threats assessment over the entire current range of the grizzly bear and throughout all suitable habitat within the DPS.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Habitat destruction and modification were major contributing factors leading to the 'listing of the grizzly bear as a threatened species under the ESA in 1975 (40 FR 1734). Both the dramatic decreases in historical range and land management practices in formerly secure grizzly bear habitat lead to the 1975 listing (40 FR 1734). To address this source of population decline, the Study Team was created in 1973 to collect, manage, analyze, and distribute science-based information regarding habitat and demographic parameters upon which to base management and recovery. Then, in 1983, the Interagency Grizzly Bear Committee was created to coordinate management efforts across multiple Federal lands and different States within the various Recovery Zones ultimately working to achieve recovery of the grizzly bear in the lower 48 States. Its objective was to change land management practices on Federal lands that supported grizzly bear populations at the time of listing to provide security and maintain or improve habitat conditions for the grizzly bear. Since 1986, National Forest and National Park plans have incorporated the Guidelines for Management Involving Grizzly Bears in the Yellowstone area (USDA 1986) to manage grizzly bear habitat in the Yellowstone Recovery Zone. The Service considers implementation of these Guidelines to be a primary factor contributing to the Yellowstone grizzly bear population's recovery in the last 2 decades.

Management improvements made as a result of the Guidelines include, but are not limited to—(1) Federal and State agency coordination to produce nuisance bear guidelines that allow a quick response to resolve and minimize grizzly bear/human confrontations; (2) reduced motorized access route densities through restrictions, decommissioning, and closures; (3) highway design considerations to facilitate population connectivity; (4) closure of some important habitat areas to all human access in National Parks during certain seasons that are particularly important to grizzlies; (5) closure of many areas in the GYA to oil and gas leasing or implementing restrictions such as no surface occupancy; (6) elimination of two sheep allotments on the Caribou-Targhee National Forest in 1998, resulting in a 46 percent decrease in total sheep animal months inside the Yellowstone Recovery Area; and (7) expanded Information and Education (IE) programs in the Yellowstone Recovery Area to help reduce the number of grizzly mortalities caused by big-game hunters. Overall, adherence to the Guidelines has changed land management practices on Federal lands to provide security and to maintain or improve habitat conditions for the grizzly bear. Implementation of these Guidelines has led to the successful rebound of the Yellowstone grizzly bear population, allowing it to significantly increase in size and distribution since its listing in 1975.

In 2002, an interagency group representing pertinent State and Federal parties released the draft Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area to guide management and monitoring of the habitat and population of Yellowstone grizzly bears after delisting. The Strategy identifies and provides a framework for managing two areas, the PCA and adjacent areas of suitable habitat where occupancy by grizzly bears is anticipated. What follows is an assessment of present or threatened destruction, modification, or curtailment of current suitable habitat, or range, in both of these areas.

Habitat Management within the Primary Conservation Area: As per the Strategy and the habitat-based recovery criteria discussed above, the PCA will be a core security area for grizzlies where human impacts on habitat conditions will be maintained at or below levels that existed in 1998 (Service 2003). The 1998 baseline for habitat standards was chosen because several studies (Boyce *et al.* 2001; Schwartz *et al.* 2005) showed that the Yellowstone grizzly bear population was increasing at a rate of 4 to 7 percent per year between 1983 and 2001, and 1998 was within the time that this rate of increase was occurring. Because levels of secure habitat and developed sites remained relatively constant in the 10 years preceding 1998 (USFS 2004), the selection of 1998 assured that the habitat conditions that allowed this rate of population increase would be maintained. For each of the 40 bear management subunits, the 1998 baseline was determined through a GIS analysis of the amount of secure habitat, open and closed road densities, the number and capacity of livestock allotments, the number of developed sites on public lands, and habitat effectiveness.

Secure habitat refers to those areas with no motorized access that are at least 4 hectares (10 acres) in size and more than 500 meters (550 yards) from a motorized access route or reoccurring helicopter flight line (USFS 2004). Grizzly bear habitat security is primarily achieved by managing motorized access which—(1) minimizes human interaction and reduces potential grizzly bear mortality risk, (2) minimizes displacement from important habitat, (3) minimizes habituation to humans, and (4) provides habitat where energetic requirements can be met with limited disturbance from humans (Mattson *et al.* 1987; McLellan and Shackleton 1988; McLellan 1989; Mace *et al.* 1996; Mattson *et al.* 1996). Secure habitat is especially important to the survival and reproductive success of grizzly bears, especially adult female grizzly bears (Mattson *et al.* 1987; Interagency Grizzly Bear Committee 1994). In the 1998 baseline, secure habitat comprised 45.4 to 100 percent of the total area within a given subunit with an average of 86.2 percent throughout the entire PCA (Table 2 in Appendix F of the Strategy). These levels of secure habitat have been successfully maintained and will continue to be maintained and improved, where possible, as directed by the Conservation Strategy (Service 2003).

Open road densities of more than 1.6 km/2.6 sq km (1 mi/sq mi) were calculated for two seasons to account for seasonal road closures. The percentage of land within each subunit containing road density values higher than 1.6 km/2.6 sq km (1 mi/sq mi) in 1998 ranged from 0 to 46.1 percent, although the average for all subunits was only 10.7 percent. Lands containing total road density values of more than 3.2 km/2.6 sq km (2 mi/sq mi) in 1998 comprised 0 to 28.1 percent of the total area within each subunit, with the average for all subunits of 5.3 percent (Table 2 in Appendix F of the Strategy). These levels of motorized access have been effectively maintained or improved from 1998 levels, as per the habitat-based recovery criteria. The Conservation Strategy assures that they will continue to be managed at 1998 levels if this proposed delisting action is finalized (Service 2003).

Several subunits within the boundaries of the Gallatin National Forest (Henry's Lake No. 2, Gallatin No. 3, and Madison No. 2) within the PCA have been identified as needing improvement in access parameters. However, the high road density values and subsequently low levels of secure habitat in these subunits is primarily due to motorized access on private land (Appendix G in the Strategy). The Gallatin National Forest is working on several land exchange efforts with private parties in these subunits. These land exchanges allow management of the roads on these private parcels and increase the secure habitat in these subunits.

All the above-mentioned subunits on the Gallatin National Forest have the potential for improvement in the long term. The timing and amount of improvement will be determined through the Gallatin National Forest travel management planning process. The Travel Plan will amend the Gallatin Forest Plan and set a 1998 baseline for access values in these subunits. This travel Plan for the Gallatin National Forest is in revision as of 2005.

The Gallatin Range Consolidation and Protection Act of 1993 (Pub. L. 103–91) and the Gallatin Range Consolidation Act of 1998 (Pub. L. 105–267) will result in trading timber for land in the Gallatin No. 3 and Hilgard No. 1 subunits. The private land involved will become public land under the jurisdiction of the Gallatin National Forest. In order to complete the exchange, access values in these two subunits will temporarily decline below 1998 values. However, upon completion of this sale and land exchange, secure habitat and motorized access route density in these subunits will improve from the 1998 baseline (see Appendix F in the Strategy).

The Strategy identified several subunits within the boundaries of the Targhee National Forest within the PCA in need of improvement in terms of motorized access (Plateau No. 1, Plateau No. 2, and Henry's Lake No. 1). The Strategy states that upon full implementation of the access management changes in the revised 1997 Targhee Forest Plan, those subunits will have acceptable levels of road densities and secure habitat due to the decommissioning of roughly 433 miles of roads within the PCA (Service 2003). As of June 2005, the Targhee National Forest has completed approximately 80 percent of this decommissioning work with the remaining 20 percent likely to be completed in 2005, after site-specific National Environmental Policy Act analyses are completed (USDA Forest Service 2005). The 1998 baseline (see Appendix F in the Strategy) for these subunits was modified to reflect increased road closures with the full implementation of the 1997 Targhee Forest Plan. Henry's Lake subunit No. 1 still has high levels of motorized access density and a low secure habitat level due to motorized access routes on private lands (see Appendix F of the Strategy).

Habitat standards described in the Strategy regarding livestock require that the number of commercial livestock allotments and permitted sheep animal months within the PCA not increase above 1998 levels (Service 2003). Livestock allotments, particularly sheep allotments, decrease habitat security (*i.e.*, habitat effectiveness) as grizzly bears occupying lands with sheep are more likely to come into conflict with these sheep. This increase in encounters between bears and livestock or their human owners decreases survival rates of grizzly bears in areas of active sheep allotments as repeat depredators are removed from the population. Additionally, sheep and cattle can compete directly to some degree with grizzly bears during late spring and early summer for desired foods such as grasses, sedges, and forbs (Jonkel 1980). Due to the higher prevalence of grizzly bear conflicts associated with sheep grazing, existing sheep allotments will be phased out as the opportunity arises with willing permittees.

A total of 88 livestock allotments existed inside the PCA in 1998. Of these 1998 allotments within the PCA, there were 71 active and 2 vacant cattle allotments and 11 active and 4 vacant sheep allotments with a total of 17,279 animal months for sheep (Service 2003). Sheep animal months are calculated by multiplying the permitted number of animals by the permitted number of months. Any use of vacant allotments will only be permitted after an analysis is completed to evaluate impacts on grizzly bears. Since 1998, the Caribou-Targhee National Forest has closed five sheep allotments within the PCA while the Shoshone National Forest has closed two sheep allotments (USDA Forest Service 2005). This has resulted in a reduction of 7,889 sheep animal months under the total calculated for 1998 within the PCA and is a testament to the commitment land management agencies have to the ongoing success of the grizzly bear population in the Yellowstone area. As of 2005, there are a total of four active sheep allotments within the PCA: Two on Targhee National Forest and two on the Gallatin National Forest. The permittee of the two allotments on the Gallatin National Forest has agreed to waive the grazing permit back to the Gallatin National Forest without preference. The Gallatin National Forest plans to close these two allotments along with three other vacant allotments when they revise their current Forest Plan. This Forest Plan revision process is scheduled to be

completed by 2010 (USDA Forest Service 2005).

The National Parks and National Forests within the PCA will manage developed sites at 1998 levels within each bear management subunit, with some exceptions for administrative and maintenance needs. Developed sites refer to sites on public land developed or improved for human use or resource development. Examples include campgrounds, trailheads, lodges, summer homes, restaurants, visitor centers, oil and gas exploratory wells, production wells, and work camps. The primary concerns related to developed sites are direct mortality from bear/human encounters, food conditioning, and habituation of bears to humans (Mattson *et al.* 1987). Habituation occurs when grizzly bears encounter humans or developed sites frequently, and without negative consequences, so that the bears no longer avoid humans and areas of human activity. Habituation does not necessarily involve human-related food sources. Food conditioning occurs when grizzly bears receive human-related sources of food and thereafter seek out humans and human use areas as feeding sites. In areas of suitable habitat inside the PCA, the NPS and the USFS enforce food storage rules aimed at decreasing grizzly bear access to human foods. These regulations will continue to be enforced and will be applied to all suitable habitat within the Yellowstone DPS boundaries.

Gunther (1994) noted that grizzly bear management in Yellowstone National Park has shifted from problems involving food-conditioned bears to problems involving habituated (but not food-conditioned) bears seeking natural foods within developed areas or along roadsides. New or expanded developed sites can impact bears through temporary or permanent habitat loss and displacement, increased length of time of human use, increased human disturbance to surrounding areas, and, potentially unsecured bear attractants.

Developed sites on public lands are currently inventoried in existing GIS databases and are input in the Yellowstone Grizzly Bear Cumulative Effects Model. As of 1998, there were 598 developed sites on public land within the PCA (USDA Forest Service 2005). All changes in developed sites since 1998 have been evaluated against the baseline and have been determined acceptable under the standard for developed sites identified in the Strategy (Service 2003). For a new developed site to be determined acceptable, it must be demonstrated that it will have no effect on grizzly bears. For example, a cell phone tower would fit this criteria because there is no human occupancy, nor human attractants such as garbage or other potential food sources. However, campgrounds, trailheads, lodges, summer homes, restaurants, visitor centers, oil and gas exploratory wells, production wells, and work camps would not be considered acceptable. No changes in the 1998 baseline have occurred in terms of site developments.

Management of oil, gas, mining, and timber development also are tracked as part of the developed site monitoring effort. There were no oil and gas leases inside the PCA as of 1998. There are approximately 552 sq km (213 sq mi) of secure habitat potentially available for oil, gas, or timber projects within the PCA. This comprises only 2 percent of all suitable habitat within the PCA. Additionally, 1,354 mining claims existed in 10 of the subunits inside the PCA (Table 1 in Appendix F of the Strategy), but only 27 of these mining claims had operating plans. These operating plans are included in the 1998 developed site baseline. Under the conditions of the Strategy, any new project will be approved only if it conforms to secure habitat and developed site standards (Service 2003). For instance, any project that reduces the amount of secure habitat permanently will have to provide replacement secure habitat of equivalent habitat quality (as measured by the Cumulative Effects Model or equivalent technology) and any change in developed sites will require mitigation equivalent to the type and extent of the impact. For projects that temporarily change the amount of secure habitat, only one project is allowed in any subunit at any time. Mitigation of any project will occur within the same subunit and will be proportional to the type and extent of the project.

Finally, the Service established a habitat effectiveness baseline by documenting habitat effectiveness values using the Cumulative Effects Model and 1998 habitat data (Service 2003). Habitat effectiveness values reflect the relative amount of energy (derived from natural foods) that is available to grizzly bears given their response to human activities. Important foods are key habitat-based criteria. The inverse relationship between whitebark pine cone production and grizzly conflicts in the Yellowstone Ecosystem has been documented (Mattson *et al.* 1992; Knight and Blanchard 1995; Gunther *et al.* 1997, 2004). However, the relationship between other important foods such as spring ungulate carcasses, cutworm moths, and cutthroat trout is not as clear cut. Therefore, it is important to monitor foods and continue to relate major food abundance to demographics and human/bear conflicts. Monitoring habitat effectiveness using the Cumulative Effects Model is valuable in understanding and maintaining important habitats for grizzly bears. Should we finalize delisting, the Study Team would continue coordinating with the National Forests and National Parks within the PCA to update and evaluate habitat effectiveness against the 1998 baseline.

To establish the 1998 baseline for habitat effectiveness values, the Forest Service calculated habitat effectiveness within each subunit for four important bear seasons: Spring (March 1–May 15); estrus (May 16–July 15); early hyperphagia (July 16–August 31); and late hyperphagia (September 1–November 30) (Table 6 in Appendix F of the Strategy). High habitat effectiveness values during estrus are associated with cutthroat trout spawning streams. Similarly, high habitat effectiveness values during early hyperphagia and late hyperphagia are associated with moth aggregation sites and whitebark pine, respectively. Habitat effectiveness values also are directly influenced by the amount of secure habitat in a subunit. This combination of the distribution and abundance of natural foods and the distribution and abundance of human activities produces relative values indicative of how effective a certain subunit is at supporting grizzly bear growth, reproduction, and survival. As such, values varied widely among seasons and across seasons within subunits (Table 6 in Appendix F of the Strategy). Because the National Park Service and the Forest Service have not changed levels of road densities, secure habitat, developed sites, or livestock allotments except to improve upon the 1998 baseline, the 1998 habitat effectiveness values remain applicable. At this point, habitat effectiveness values have remained at sufficient levels to support grizzly bears since other more frequently measured and monitored habitat baseline (such as road densities, secure habitat, site development, and livestock allotments) have not changed. If this rule is finalized and the Strategy is implemented, the USFS could measure changes in seasonal habitat effectiveness values in each Bear Management Unit and subunit by regular application of the Cumulative Effects Model or best available system and compare outputs with the 1998 baseline values (Service

2003). The Cumulative Effects Model databases would be reviewed annually and updated as needed (Service 2003).

The Strategy calls for maintaining or improving the existing habitat effectiveness values in secure habitat in each subunit (Service 2003). Private land development would also be monitored and linked to numbers of human/bear conflicts, causes of human/bear conflicts, and distribution of human/bear conflicts so as to direct management efforts to improve food supply and minimize bear/human conflicts in such areas.

Within the PCA, each National Forest and National Park would monitor adherence to the secure habitat, developed site, and livestock standards inside the PCA, as established by the Strategy (Service 2003). If we finalize delisting, the Study Team would monitor habitat effectiveness and track any changes to the habitat from fire, insects, and disease, and other human activities not measured by the habitat standard monitoring efforts. The agencies will measure changes in seasonal habitat value and effectiveness in each bear management unit and subunit by regular application of the Cumulative Effects Model or the best available system, and compare outputs to the 1998 baseline. These databases incorporate information regarding vegetation, the abundance and distribution of the four major bear foods, location, duration, and intensity of use for motorized access routes, non-motorized access routes, developed sites, and front-country and back-country dispersed uses. The Study Team would review Cumulative Effects Model databases annually to refine and verify Cumulative Effects Model assumptions and update them as needed to reflect changes in intensity or duration of human use. The multi-agency Yellowstone Grizzly Coordinating Committee (hereafter referred to as the Coordinating Committee) may review and revise habitat standards based on the best available science after appropriate public processes have been conducted by the affected land management agencies.

To prevent habitat fragmentation and degradation, the Strategy requires that all road construction projects in suitable habitat throughout the entire GYA (both inside and outside of the PCA) evaluate the impacts of the project on grizzly habitat connectivity during the NEPA analysis process (Service 2003). By identifying areas used by grizzly bears, officials can mitigate potential impacts from road construction both during and after a project. Federal agencies would identify important crossing areas by collecting information about known bear crossings, bear sightings, ungulate road mortality data, bear home range analyses, and locations of game trails. Potential advantages of this requirement include reduction of grizzly bear mortality due to vehicle collisions, access to seasonal habitats, maintenance of traditional dispersal routes, and decreased fragmentation of individual home ranges. For example, work crews would place temporary work camps in areas with lower risk of displacing grizzly bears and food and garbage will be kept in bear-proof containers. Highway planners would incorporate warning signs and crossing structures such as culverts or underpasses into projects when possible to facilitate safe highway crossings by wildlife.

Suitable Habitat: Because we used easily recognized boundaries to delineate the Yellowstone DPS, the DPS includes both suitable and unsuitable habitat (Figure 1, above). For the purposes of this proposed rule, suitable habitat is considered the area within the DPS boundaries where viable populations of the species now exist or are capable of being supported in the foreseeable future. Suitable habitat provides food, seasonal foraging opportunities, cover, denning areas, and security. We have defined suitable habitat for grizzly bears as areas having three characteristics—(1) being of adequate habitat quality and quantity to support grizzly bear reproduction and survival; (2) contiguous with the current distribution of Yellowstone grizzly bears such that natural re-colonization is possible; and (3) having low mortality risk as indicated through reasonable and manageable levels of grizzly bear mortality.

Our definition and delineation of suitable habitat is built on the widely recognized conclusions of extensive research (Craighead 1980; Knight 1980; Peek *et al.* 1987; Merrill *et al.* 1999; Pease and Mattson 1999) that grizzly bear reproduction and survival is a function of both the biological needs of grizzly bears and remoteness from human activities which minimizes mortality risk for grizzly bears. Mountainous areas provide hiding cover and the topographic variation necessary to ensure a wide variety of seasonal foods and the steep slopes required for denning (Judd *et al.* 1986; Aune and Kasworm 1989; Linnell *et al.* 2000). Higher elevation, mountainous regions in the GYA (Omernik 1987, 1995; Woods *et al.* 1999; McGrath *et al.* 2002; Chapman *et al.* 2004) contain high-energy foods such as whitebark pine seeds (Mattson and Jonkel 1990; Mattson *et al.* 1991a) and army cutworm moths (Mattson *et al.* 1991b; French *et al.* 1994).

For our analysis of suitable habitat, we considered the Middle Rockies ecoregion (Omernik 1987; Woods *et al.* 1999; McGrath *et al.* 2002; Chapman *et al.* 2004) to meet grizzly bear biological needs providing food, seasonal foraging opportunities, cover, and denning areas (Mattson and Merrill 2002). The Middle Rockies ecoregion has Douglas-fir, subalpine fir, and Engelmann spruce forests and alpine areas. Forests can be open. Foothills are partly wooded or shrub- and grass-covered. Intermontane valleys are grass- and/or shrub-covered and contain a mosaic of terrestrial and aquatic fauna that is distinct from the nearby mountains. Many mountain-fed, perennial streams occur and differentiate the intermontane valleys from the Northwestern Great Plains. Recreation, logging, mining, and summer livestock grazing are common land uses in this ecoregion.

Although grizzly bears historically occurred throughout the area of the Yellowstone DPS (Stebler 1972), many of these habitats are not, today, biologically suitable for grizzly bears. There are records of grizzly bears in eastern Wyoming near present-day Sheridan, Casper, and Wheatland, but even in the early 19th century, indirect evidence suggests that grizzly bears were less common in these eastern prairie habitats than in mountainous areas to the west and south (see Rollins 1935; Wade 1947). Grizzly bear presence in these drier, grassland habitats was associated with rivers and streams where grizzlies used buffalo carcasses as a major food source (Burroughs 1961; Herrero 1972; Stebler 1972; Mattson and Merrill 2002). Wild buffalo herds no longer exist in these areas. Thus, we did not include drier sagebrush, prairie, or agricultural lands because these land types no longer contain adequate food resources (*i.e.*, bison) to support grizzly bears.

The negative impacts of humans on grizzly bear survival and habitat use are well documented (Harding and Nagy 1980; McLellan and Shackleton 1988; Aune and Kasworm 1989; McLellan 1989; McLellan and Shackleton 1989a; Mattson 1990; Mattson and Knight 1991; Mattson *et al.* 1992; Mace *et al.* 1996; McLellan *et al.* 1999; White *et al.* 1999; Woodroffe 2000; Boyce *et al.* 2001; Johnson *et al.* 2004). These effects range from temporary displacement to actual mortality. Mattson and Merrill (2002) found that grizzly bear persistence in the contiguous United States between 1920 and 2000 was negatively associated with human and livestock

densities. As human population densities increase, the frequency of encounters between humans and grizzly bears also increases, resulting in more human-caused grizzly bear mortalities due to a perceived or real threat to human life or property (Mattson *et al.* 1996). Similarly, as livestock densities increase in habitat occupied by grizzly bears, depredations follow. Although grizzly bears frequently coexist with cattle without depredating them, when grizzly bears encounter domestic sheep, they usually are attracted to such flocks and depredate the sheep (Jonkel 1980; Knight and Judd 1983; Orme and Williams 1986; Anderson *et al.* 2002). If repeated depredations occur, managers either relocate the bear or remove it from the population, resulting in such domestic sheep areas becoming population sinks (Knight *et al.* 1988).

Because urban sites and sheep allotments possess high mortality risks for grizzly bears, we did not include cities or large contiguous blocks of active sheep allotments as suitable habitat (Knight *et al.* 1988). Our elimination of domestic sheep grazing areas on public lands from suitable habitat is based on current conditions. Should the grazing management of these areas change in the future it is possible that such areas could become suitable grizzly bear habitat. Based on 2000 Census data, we defined urban areas as census blocks with human population densities of more than 50 people/sq km (129 people/sq mi). Cities within the Middle Rockies ecoregion such as West Yellowstone, Gardiner, Big Sky, and Cooke City, Montana, and Jackson, Wyoming, were not included as suitable habitat. There are large, contiguous blocks of sheep allotments in peripheral areas of the ecosystem in the Wyoming Salt River and Wind River Mountain Ranges on the Bridger-Teton and the Targhee National Forests (Figure 1, above). This spatial distribution of sheep allotments on the periphery of suitable habitat results in areas of high mortality risk to bears within these allotments and a few small, isolated patches or strips of suitable habitat adjacent to or within sheep allotments. These strips and patches of land possess higher mortality risks for grizzly bears because of their enclosure by and proximity to areas of high mortality risk. This phenomenon in which the quantity and quality of suitable habitat is diminished because of interactions with surrounding less suitable habitat is known as an ''edge effect'' (Lande 1988; Yahner 1988; Mills 1995). Edge effects are exacerbated in small habitat patches with high perimeter to area ratios (*i.e.*, those that are longer and narrower) and in wide-ranging species such as grizzly bears because they are more likely to encounter surrounding, unsuitable habitat (Woodroffe and Ginsberg 1998). Due to the negative edge effects of this distribution of sheep allotments on the periphery of grizzly range, our analysis did not classify linear strips and isolated patches of habitat as suitable habitat.

Although the Bighorn Mountains west of I–90 near Sheridan, Wyoming, are grouped within the Middle Rockies ecoregion, they are not connected to the current distribution of grizzly bears via suitable habitat or linkage zones, nor are there opportunities for such linkage. The Bighorn Mountains are separated from the current grizzly bear distribution by approximately 100 km (60 mi) of a mosaic of private and BLM lands primarily used for agriculture, livestock grazing, and oil and gas production (Chapman *et al.* 2004). Although there is a possibility that individual bears may emigrate from the Yellowstone area to the Bighorns occasionally, without constant emigrants from suitable habitat, the Bighorns will not support a self-sustaining grizzly bear population. Therefore, due to the fact that this mountain range is disjunct from other suitable habitat and current grizzly bear distribution, our analysis did not classify the Bighorns as suitable habitat within the Yellowstone DPS boundaries.

Some areas that are not considered suitable habitat by our definition are occasionally used by grizzly bears (4,635 sq km (1,787 sq mi)) (see Figure 1, above) (Schwartz *et al.* 2002; Schwartz 2005, unpublished data). The records of grizzly bears in these unsuitable habitat areas are generally due to recorded grizzly bear/human conflicts or to transient animals. These areas are defined as unsuitable due to the high risk of mortality resulting from these grizzly bear/human conflicts. These unsuitable habitat areas do not permit grizzly bear reproduction or survival because bears that repeatedly come into conflict with humans or livestock are usually either relocated or removed from these areas.

Based on these factors and subsequent Geographic Information System (GIS) analysis, we found there are 46,035 sq km (17,774 sq mi) of suitable grizzly bear habitat within the DPS boundaries; or roughly 24 percent of the total area within the DPS boundaries (Figure 1, above). Grizzly bears currently occupy about 68 percent of that suitable habitat (31,481 sq km (12,155 sq mi)) (Schwartz *et al.* 2002; Schwartz 2005, unpublished data). It is important to note that the current grizzly bear distribution shown in Figure 1 does not mean that equal densities of grizzly bears are found throughout the region. Instead, most grizzly bears (approximately 90 percent of females with cubs-of-the-year) are found within the PCA (Schwartz 2005, unpublished data). Grizzly bear use of suitable habitat may vary seasonally and annually with different areas being more important than others in some seasons or years (Aune and Kasworm 1989). An additional 14,554 sq km (5,619 sq mi) of suitable habitat is currently unoccupied by grizzly bears (Figure 1, above) (Schwartz *et al.* 2002; Schwartz 2005, unpublished data). These areas would allow for the continued growth and expansion of the population within the proposed Yellowstone DPS as grizzly bears naturally recolonize them in the next few decades (Pyare *et al.* 2004).

Habitat Management Outside the Primary Conservation Area: In suitable habitat outside of the PCA within the DPS, the USFS, BLM, and State wildlife agencies will monitor habitat and population criteria to prevent potential threats to habitat from inhibiting the population's viability. Factors impacting suitable habitat outside of the PCA in the future may include increased road densities, livestock allotments, developed sites, human presence, and habitat fragmentation. Both Federal and State agencies are committed to managing habitat so that a viable Yellowstone grizzly bear population is maintained (see also Factor D—Inadequacy of Regulatory Mechanisms). In suitable habitat outside of the PCA, restrictions on human activities are more flexible but still the USFS, BLM, and State wildlife agencies will carefully manage these lands, monitor bear/human conflicts in these areas, and respond with management as necessary to reduce such conflicts to account for the complex needs of both grizzly bears and humans.

Currently, there are 22,783 sq km (8,797 sq mi) of suitable habitat outside of the PCA within the DPS. About 10 percent of the population of female grizzly bears with cubs occurs outside the PCA (Schwartz 2005, unpublished data). Of this, 17,292 sq km (6,676 sq mi) are on National Forest lands. Management decisions on USFS lands will continue to consider potential impacts on grizzly bear habitat and will be managed so as to allow grizzly bear expansion in terms of numbers and distribution. Approximately 79 percent of USFS suitable habitat outside the PCA within the DPS is currently designated a wilderness area (6,799 sq km (2,625 sq mi)), a wilderness study area (708 sq km (273 sq mi)), or an

inventoried roadless area (6,179 sq km (2,386 sq mi)) (USFS 2004). The amount of designated wilderness area, wilderness study area, and inventoried roadless area within each National Forest ranges from 56 to 90 percent, depending upon the forest.

Wilderness areas outside of the PCA are considered secure because they are protected from new road construction by federal legislation. In addition to restrictions on road construction, the Wilderness Act of 1964 (Pub. L. 88–577) also protects designated wilderness from permanent human habitation and increases in developed sites. The Wilderness Act allows livestock allotments existing before the passage of the Wilderness Act and mining claims staked before January 1, 1984, to persist within wilderness areas, but no new grazing permits or mining claims can be established after these dates. If pre-existing mining claims are pursued, the plans of operation are subject to Wilderness Act restrictions on road construction, permanent human habitation, and developed sites.

Wilderness study areas are designated by federal land management agencies as those having wilderness characteristics and being worthy of congressional designation as a wilderness area. Individual National Forests that designate wilderness study areas manage these areas to maintain their wilderness characteristics until Congress decides whether to designate them as a permanent wilderness area. This means that individual wilderness study areas are protected from new road construction by Forest Plans. As such, they are safeguarded from decreases in grizzly bear security. Furthermore, activities such as timber harvest, mining, and oil and gas development are much less likely to occur because the road networks required for these activities are unavailable. However, because these lands are not congressionally protected, they could experience changes in management prescription with Forest Plan revisions.

Inventoried roadless areas are currently secure habitat for grizzly bears outside of the PCA within the DPS. A USFS Interim Directive (69 FR 42648; July 16, 2004) which instructs National Forests to preserve the ''roadless characteristics'' of roadless areas will remain in effect until at least November 2006. State governors have the option to submit petitions with management recommendations to individual National Forests in their State by November 2006 (70 FR 25653; May 13, 2005). If no petitions are received by this time, individual National Forests will continue operating under the Interim Directive until they revise their Forest Plans to include direction on managing roadless areas. Technically, the only management direction given in roadless areas is that no new roads may be constructed. However, this restriction makes mining activities, oil and gas production, and timber harvest much less likely because access to these resources becomes cost-prohibitive or impossible without new roads. Potential changes in the management of these areas are not anticipated, but are discussed further under Factor D.

An estimated 7,195 sq km (2,778 sq mi) of suitable habitat outside the PCA on Forest Service lands within the DPS could experience permanent or temporary changes in road densities. Because grizzly bears would remain a sensitive species on the USFS Sensitive Species list if we finalize this proposed delisting, any increases in roads on National Forests would have to comply with National Forest Management Act and be subject to environmental assessment considering potential impacts to grizzly bears.

Importantly, all three State grizzly bear management plans recognize the importance of areas that provide security for grizzly bears in suitable habitat outside of the PCA within the DPS on Federal lands. Although State management plans apply to all suitable habitat outside of the PCA, habitat management on public lands is directed by Federal land management plans, not State management plans. The Montana and Wyoming plans recommend maintaining average road densities of <1.6 km/2.6 sq km (<1 mi/sq mi) in these areas (MTFWP 2002; WGFD 2002). Both States have similar standards for elk habitat on State lands and note that these levels of motorized access benefit a variety of wildlife species while maintaining reasonable public access. Similarly, the Idaho State plan recognizes that management of motorized access outside the PCA should focus on areas that have road densities of <1.6 km/2.6 sq km (<1 mi/sq mi). The area most likely to be occupied by grizzly bears outside the PCA in Idaho is on the Caribou-Targhee National Forest. The 1997 Targhee Forest Plan includes motorized access standards and prescriptions outside the PCA with management prescriptions that provide for long-term security in 61 percent of existing secure habitat outside of the PCA (USFS 2004).

In suitable habitat outside the PCA within the DPS, there are roughly 150 active cattle allotments and 12 active sheep allotments (USFS 2004). The Targhee Forest Plan calls for the closing of two of these sheep allotments while the others are likely to remain active (Jerry Reese, USFS, pers. comm. 2005). The USFS will allow these allotments within suitable habitat to persist along with other existing livestock allotments outside of suitable habitat. Although conflicts with livestock have the potential to result in significant mortality for grizzly bears, with population-level impacts if established sustainable mortality limits are exceeded in several consecutive years, the Strategy should prevent this. The Strategy directs the Study Team to monitor and spatially map all grizzly bear mortalities (both inside and outside the PCA) and their causes of death, identify the source of the problem, and alter management to maintain a recovered population and prevent the need to relist the population under the ESA (Service 2003).

There are over 500 developed sites on the 6 National Forests in the areas identified as suitable habitat outside the PCA within the DPS (USFS 2004). Grizzly bear/human conflicts at developed sites are the most frequent reason for management removals (Servheen *et al.* 2004). Existing USFS food storage regulations for these areas will continue to minimize the potential for grizzly bear/human conflicts through food storage requirements, outreach, and education. The number and capacity of developed sites will be subject to management direction established in Forest Plans. Should the Study Team determine developed sites are related to increases in mortality beyond the sustainable limits discussed above, they may recommend closing specific developed sites or otherwise altering management in the area in order to maintain a recovered population and prevent the need to relist the population under the ESA. Due to the USFS's commitment to managing National Forest lands in the GYA such that a viable grizzly bear population is maintained (Service 2003), the Service does not expect livestock allotments or developed sites in suitable habitat outside of the PCA to reach densities that are detrimental to the long-term persistence of the Yellowstone grizzly bear population.

Less than 19 percent (3,213 sq km (1,240 sq mi)) of suitable habitat outside the PCA within the DPS on USFS land allows surface occupancy for oil and gas development and 11 percent (1,926 sq km (744 sq mi)) has both suitable timber and a management prescription that allows scheduled timber harvest. The primary impacts to grizzly bears associated with timber harvest and oil and gas development are increases in road densities, with subsequent

increases in human access, grizzly bear/human encounters, and human-caused grizzly bear mortalities (McLellan and Shackleton 1988, 1989; Mace *et al.* 1996). Although seismic exploration associated with oil and gas development or mining may disturb denning grizzly bears (Harding and Nagy 1980, Reynolds *et al.* 1987), actual den abandonment is rarely observed, and there has been no documentation of such abandonment by grizzly bears in the Yellowstone area. Additionally, only a small portion of this total land area will contain active projects at any given time, if at all. For example, among the roughly 1,926 sq km (744 sq mi) identified as having both suitable timber and a management prescription that allows timber harvest, from 2000 to 2002, an average of only 5 sq km (2 sq mi) was actually logged annually (USFS 2004). Similarly, although nearly 3,213 sq km (1,240 sq mi) of suitable habitat on National Forest lands allow surface occupancy for oil and gas development, there currently are no active wells inside these areas (USFS 2004).

Ultimately, the six affected National Forests (the Beaverhead-Deerlodge, Bridger-Teton, Caribou-Targhee, Custer, Gallatin, and Shoshone) will manage the number of roads, livestock allotments, developed sites, timber harvest projects, and oil and gas wells outside of the PCA in suitable habitat to allow for a viable grizzly bear population. Because the grizzly bear will be classified as a sensitive species, under Forest Service Manual direction, land management activities will be managed so as not to contribute to a trend for listing or loss of viability for the grizzly bear. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat, and the viability of the species (USFS 2004). Any road construction, timber harvest, or oil and gas projects would require compliance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321–4331) and the National Forest Management Act of 1976 (15 U.S.C. 1600), considering all potential impacts to the Yellowstone grizzly bear population and its habitat.

Rapidly accelerating growth of human populations in some areas in grizzly bear habitat within the DPS boundaries but outside of the PCA continues to define the limits of grizzly habitat and will likely limit the expansion of the Yellowstone grizzly bear population onto private lands in some areas outside the PCA. Urban and rural sprawl (low-density housing and associated businesses) has resulted in increasing numbers of grizzly bear/human conflicts with subsequent increases in grizzly bear mortality rates. Private lands account for a disproportionate number of bear deaths and conflicts (see Figures 15 and 16 in the Strategy). Nearly 9 percent of all suitable habitat outside of the PCA is privately owned. As private lands are developed and as secure habitat on private lands declines, State and Federal agencies will work together to balance impacts from private land development (Service 2003). Outside the PCA, State agencies will assist NGOs and other entities to identify and prioritize potential lands suitable for permanent conservation through easements and other means as possible (Service 2003).

In summary, the primary factors related to past habitat destruction and modification have been directly addressed through changes in management practices. Within the PCA, the Service and the Study Team have developed objective and measurable habitat criteria concerning secure habitat, road densities, human site developments, and livestock allotments which will be standards on public lands should we finalize delisting. In addition, the Study Team, State wildlife agencies, NPS biologists, and USFS biologists and technicians will monitor the availability and abundance of the four major foods, and of habitat value and habitat effectiveness using the Cumulative Effects Model. The Coordinating Committee will respond to these monitoring data with adaptive management as per the Strategy (Service 2003). Accordingly, the PCA, which comprises 51 percent of the suitable habitat within the DPS boundaries and is occupied by approximately 90 percent of all females with cubs (Schwartz 2005, unpublished data), will be a highly secure area for grizzlies should we finalize delisting with habitat conditions maintained at or above levels documented in 1998. Maintenance of this area as described above is sufficient to support a recovered grizzly bear population.

In suitable habitat outside the PCA on Forest Service lands, 74 percent (12,860 sq km or 4965 sq mi) is currently secure habitat, 68 percent of which (8,737 sq km or 3,373 sq mi) is likely to remain secure. Areas outside the PCA contain about 10 percent of GYA's females with cubs (Schwartz 2005, unpublished data). Management of public land outside the PCA administered by State and Federal agencies also will continue to consider potential impacts of management decisions on grizzly bear habitat. Efforts by NGOs and State and county agencies will seek to minimize bear/human conflicts on private lands.

A total of 88 percent of all suitable habitat within the DPS boundaries (40,293 sq km (15,557 sq mi)) is managed by the USFS or NPS. These public lands are already managed and will continue to be managed such that adequate habitat for the Yellowstone grizzly bear population is maintained. Habitat and population standards described in the Strategy must be incorporated into National Parks and National Forests management plans before the Service makes a final determination on this proposed action (see Factor D—The Inadequacy of Existing Regulatory Mechanisms). We conclude that the combination of these actions regarding habitat will allow for adequate habitat to continue supporting a viable grizzly bear population with continued expansion into adjacent areas of public land in the GYA.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

No grizzly bears have been legally removed from the GYA in the last 30 years for commercial, recreational, or educational purposes. The only commercial or recreational take potentially anticipated post-delisting, if this action is finalized, is a limited, controlled hunt. The States will manage grizzly bears as a game animal, potentially with a carefully regulated hunt (for a more detailed discussion, see the State Management Plans section under Factor D—The Inadequacy of Existing Regulatory Mechanisms). Should such a season be implemented, all hunting mortalities will be counted toward the mortality limits for the population and will be strictly controlled to assure that mortality limits are not exceeded by this discretionary mortality source. Significant take for educational purposes is not anticipated. Mortality due to illegal poaching, defense of life and property, mistaken identity or other accidental take, and management removals are discussed under Factor C—Human Predation section.

Since 1980, three accidental trap mortalities were associated with scientific research (Servheen *et al.* 2004). All three mortalities occurred between 1980 and 1982. Since 1982, there has not been a single capture mortality associated with research trapping in the Yellowstone area spanning more than 468 grizzly bear captures (Servheen *et al.* 2004). Because of rigorous protocols dictating proper bear capture, handling, and drugging techniques used today, this type of scientific overutilization is not a threat to the Yellowstone grizzly bear

population. The Study Team, bear biologists, and researchers will continue implementing these protocols should we delist. Therefore, mortalities associated with scientific research will not be a threat to the Yellowstone grizzly bear population in the foreseeable future.

C. Disease or Predation

Disease: Although grizzly bears have been documented with a variety of bacteria and other pathogens, parasites, and disease, fatalities are uncommon (LeFranc *et al.* 1987) and do not appear to have population-level impacts on grizzly bears (Jonkel and Cowan 1971; Kistchinskii 1972; Mundy and Flook 1973; Rogers and Rogers 1976). Researchers have demonstrated that some grizzly bears have been documented with brucellosis (type 4), clostridium, toxoplasmosis, canine distemper, canine parvovirus, canine hepatitis, and rabies (LeFranc *et al.* 1987; Zarnke and Evans 1989; Marsilio *et al.* 1997; Zarnke *et al.* 1997). However, based on 30 years of research by the Study Team, mortalities in the wild due to any of these bacteria or pathogens are negligible components of total mortality in the GYA (Study Team 2005). Disease is not common in grizzly bears, has only very rarely been documented in Yellowstone grizzly bears (Craighead *et al.* 1988), and is not considered a threat to long-term viability of the Yellowstone grizzly bear population.

Natural Predation: Grizzly bears are killed by other wildlife on occasion. Adult grizzly bears kill cubs, sub-adults, or other adults (Stringham 1980; Dean *et al.* 1986; Hessing and Aumiller 1994; McLellan 1994; Schwartz *et al.* 2003). This type of intraspecific killing seems to occur rarely (Stringham 1980) and has only been observed among Yellowstone grizzly bears in the GYA 14 times between 1986 and 2004 (Mark Haroldson, USGS 2005, unpublished data). Wolves and grizzly bears often scavenge similar types of carrion and, sometimes, will interact with each other in an aggressive manner. From 1995 through 2003, Gunther and Smith (2004) documented 96 wolf-grizzly bear interactions and 2 incidents in which wolf packs likely killed grizzly bear cubs. Overall, these types of aggressive interactions among grizzly bears or with other wildlife are rare and negligible to population dynamics.

Human Predation: Humans have historically been the most effective predators of grizzly bears. Excessive human-caused mortality is one of the major contributing factors to grizzly bear decline during the 19th and 20th centuries (Leopold 1967; Koford 1969; Servheen 1990; Servheen 1999; Mattson and Merrill 2002; Schwartz *et al.* 2003), eventually leading to their listing as a threatened species in 1975. Grizzlies were seen as a threat to livestock and to humans and, therefore, an impediment to westward expansion. Many of the early settlers in grizzly bear country were dedicated to eradicating large predators, and grizzly bears were shot, poisoned, and killed wherever humans encountered them (Servheen 1999). By the time grizzlies were listed under the ESA in 1975, there were only a few hundred grizzly bears remaining in the lower 48 States in less than 2 percent of their former range.

From 1973 to 2002, a total of 372 known grizzly bear deaths occurred in the GYA (Haroldson and Frey 2003). Of these, 272 (73 percent of total) were human-caused (Haroldson and Frey 2003). Since 1975, levels of human-caused mortality have remained relatively constant (see Figure 4 in Servheen *et al.* 2004). Although humans have been and remain the single greatest cause of mortality for grizzly bears (McLellan *et al.* 1999; Servheen *et al.* 2004), rates of human-caused mortality are low enough to allow Yellowstone bear population growth and range expansion (Schwartz *et al.* 2005). Implementation of the revised mortality limits ensure that mortality will be managed at sustainable levels. Below we consider human predation impacts including illegal poaching, defense of life and property; accidental mortality, and management removals.

Vandal killing, or poaching, is defined as malicious, illegal killing of a grizzly bear. People may kill grizzly bears for several reasons, including a general perception that grizzly bears in the area may be dangerous, frustration over depredations of livestock, or to protest land use and road use restrictions associated with grizzly bear habitat management (Servheen *et al.* 2004). Regardless of the reason, poaching continues to occur. We are aware of at least 27 vandal killings between 1980 and 2002 (Servheen *et al.* 2004). Although this level of take occurred during a period where poaching was enforceable by Federal prosecution, we do not expect vandal killing to significantly increase should we finalize this delisting.

State and Federal law enforcement agents have cooperated to ensure consistent enforcement of laws protecting grizzly bears. State and Federal prosecutors and enforcement personnel from each State and Federal jurisdiction work together to make recommendations to all jurisdictions, counties, and States, on uniform enforcement, prosecution, and sentencing relating to illegal grizzly bear kills. If this proposed action is finalized, all three affected States will classify grizzly bears of the Yellowstone population as game animals which cannot be taken without authorization by State wildlife agencies (see Chapter 7 of the Strategy). In other words, it will still be illegal for private citizens to kill grizzly bears unless it is in self defense or they have a hunting license issued by State wildlife agencies. States will continue to enforce, prosecute, and sentence poachers just as they do for any game animal such as elk, black bears, and cougars. Although it is widely recognized that poaching still occurs, this illegal source of mortality is not significant enough to hinder the continuing growth and range expansion of the Yellowstone grizzly bear population (Pyare *et al.* 2004; Schwartz *et al.* 2002).

One way to address vandal killing is to change human values, perceptions, and beliefs about grizzly bears and Federal regulation of public lands (Servheen *et al.* 2004). To address the concerns of user groups who have objections to land use restrictions that accommodate grizzly bears, Federal and State agencies market the benefits of restricting motorized access to multiple species. For example, both Montana and Wyoming have recommendations for elk habitat security similar to those for grizzly bears (less than 1.6 km/2.6 sq km (1 mi/sq mi)) and this level of motorized access meets the needs of a variety of wildlife species while maintaining reasonable opportunities for public access. To address the concerns of citizens who feel that grizzly bears are a threat to their safety or their lifestyle, IE programs aim to change perspectives on the danger and behavior of grizzly bears (for a detailed discussion of IE programs, see Factor E—Other Natural or Manmade Factors Affecting Its Continued Existence). Another option is a limited hunt to foster a sense of ownership and obligation toward the grizzly bear. Areas with grizzly bear hunting seasons experience lower levels of poaching (McLellan *et al.* 1999). Hunting is further discussed under Factors B and D.

From 1980 to 2002, humans killed 49 grizzly bears in self-defense or defense of others. This constituted nearly 17 percent of known grizzly bear mortalities during this time period (Servheen *et al.* 2004). These grizzly bear/human conflicts occurred primarily over livestock or hunter-killed carcasses, but also at camp and home sites. Federal and State agencies have

many options to potentially reduce these conflicts by modifying human behavior (Servheen *et al.* 2004). By promoting the use of pepper spray and continuing current IE programs, many of these grizzly bear deaths may be avoided (for a detailed discussion of IE programs, see Factor E—Other Natural or Manmade Factors Affecting Its Continued Existence).

Humans kill grizzly bears unintentionally with vehicles or by mistaking them for other species when hunting. From 1980 to 2002, the Yellowstone grizzly bear population incurred 9 mortalities from roadkills and 13 mortalities associated with mistaken identification. Accidental human-caused mortality accounts for a total of 9 percent of known mortality for this time period (Servheen *et al.* 2004). Measures to reduce vehicle collisions with grizzly bears include removing roadkill carcasses from the road so that grizzly bears are not attracted to the roadside (see Servheen *et al.* 2004). Cost-effective mitigation efforts to facilitate safe crossings by wildlife will be voluntarily incorporated in road construction or reconstruction projects on Federal lands within suitable grizzly bear habitat.

Mistaken identification of grizzly bears by black bear hunters is a manageable source of mortality. The Strategy identifies IE programs targeted at hunters that emphasize patience, awareness, and correct identification of targets help reduce grizzly bear mortalities from inexperienced black bear and ungulate hunters (Service 2003). Beginning in license year 2002, the State of Montana required that all black bear hunters pass a Bear Identification Test before receiving a black bear hunting license (see *http://fwp.state.mt.us/bearid/* for more information and details). Since implementation, no grizzly bears have been mistakenly killed by black bear hunters in Montana's portion of the GYA (Study Team 2005, unpublished data). In addition, Montana and Wyoming include grizzly bear encounter management as a core subject in basic hunter education courses.

The last source of human predation on grizzly bears is associated with management removal of nuisance bears following grizzly bear/human conflicts. Effective nuisance bear management benefits the conservation of the Yellowstone grizzly bear population by promoting tolerance of grizzly bears and minimizing illegal killing of bears by citizens. The Strategy and the State grizzly bear management plans are the regulatory documents that would guide nuisance bear management if we delisted. The Strategy is consistent with current protocol as described in the Interagency Grizzly Bear Committee Guidelines (USDA 1986), emphasizing the individual's importance to the entire population, with females continuing to receive a higher level of protection than males. Location, cause of incident, severity of incident, history of bear, health/age/sex of bear, and demographic characteristics are all considered in any relocation or removal action. If we delisted, State and Park Service bear managers would continue to consult with each other and other relevant federal agencies (*i.e.*, USFS, BLM) before any nuisance bear management decision is made but consultation with the Service would no longer be required. The Strategy emphasizes removal of the human cause of the conflict when possible, or management and education actions to limit such conflicts (Service 2003). In addition, an IE team would continue to coordinate the development, implementation, and dissemination of programs and materials to aid in preventative management of human/bear conflicts. The Strategy recognizes that successful management of grizzly bear/human conflicts will require an integrated, multiple-agency approach to continue to reduce human-caused grizzly bear mortality.

The largest increase in grizzly bear mortalities since 1994 is related to grizzly bear/human conflicts at or near developed sites (Servheen *et al.* 2004). In fact, 20 percent (59 of 290) of known mortalities between 1980 and 2002 were related to site conflicts. These conflicts involved food-conditioned bears actively seeking out human sources of food or bears that are habituated to human presence seeking natural sources of food in areas that are near human structures or roads. The increase in site conflicts during the last decade is likely due to a combination of encroaching human presence coinciding with an increasing and expanding grizzly bear population. These conflicts usually involve attractants such as garbage, human foods, pet/livestock/wildlife foods, livestock carcasses, and wildlife carcasses, but also are related to attitudes and personal levels of knowledge and tolerance toward grizzly bears. Both State and Federal IE programs are aimed primarily at reducing grizzly bear/human conflicts proactively by educating the public about potential grizzly bear attractants. To address public attitudes and knowledge levels, IE programs will present grizzly bears as a valuable public resource while acknowledging the potential dangers associated with them (for a detailed discussion of IE programs, see Factor E—Other Natural or Manmade Factors Affecting Its Continued Existence).

Management removals due to grizzly bear conflicts with livestock accounted for nearly 4 percent of known mortalities between 1980 and 2002 (Servheen *et al.* 2004). Several steps to reduce livestock conflicts are currently underway. The USFS and NPS are phasing out sheep allotments within the PCA as opportunities arise. The USFS also has closed sheep allotments outside the PCA to resolve conflicts with species such as bighorn sheep as well as grizzly bears. Livestock grazing permits include special provisions regarding reporting of conflicts, proper food and attractant storage procedures, and carcass removal. The USFS monitors compliance to these special provisions associated with livestock allotments annually (Servheen *et al.* 2004). If we delist, the USFS would continue to implement these measures that minimize grizzly bear conflicts with livestock. The Strategy also recognizes that active management of individual nuisance bears is required. Removal of repeat depredators of livestock has been an effective tool for managing grizzly bear/livestock conflicts as most depredations are done by a few individuals (Jonkel 1980; Judd and Knight 1983; Anderson *et al.* 2002).

The Study Team coordinates an annual analysis of the causes of conflicts, known and probable mortalities, and proposed management solutions (see Servheen *et al.* 2004 for an example of the form such reports will take). The Yellowstone Ecosystem Subcommittee reviews these reports and initiates appropriate action if improvements in Federal or State management actions can minimize conflicts. As directed by the Strategy, if we delist, the Study Team would continue to summarize nuisance bear control actions in their Annual Reports and the Coordinating Committee will continue with their review (Service 2003). The Study Team also would continue preparing annual spatial distribution maps of conflicts so that managers can identify where problems occur and compare trends in locations, sources, land ownership, and types of conflicts. This will facilitate proactive management of grizzly/human conflicts.

Overall, from 1980 to 2002, the Yellowstone grizzly bear population incurred an average of 12.6 grizzly bear mortalities per year. Despite these natural and human-caused mortalities, the Yellowstone grizzly bear population has continued to increase in size and

expand its distribution in the last 2 decades. Disease and natural predation are not a threat to the long-term persistence of the Yellowstone grizzly bear population. Although humans are still directly or indirectly responsible for the majority of grizzly bear deaths in suitable habitat within the DPS boundaries, we have learned that this source of mortality can be effectively controlled through management and IE.

We have institutionalized careful management and monitoring of human-caused mortality in the Strategy, Forest Plans, National Park management plans, and State grizzly bear management plans (see Factor D—The Inadequacy of Existing Regulatory Mechanisms). In addition, we revised our methodology for calculating the total allowable mortality limits (see the Recovery; Population and Demographic Management section above) to include natural mortalities and estimates of unreported/undetected deaths, so that mortality in the Yellowstone grizzly bear population can be managed at sustainable levels. Because of these actions, human sources of mortality are no longer considered a threat to the future viability of the Yellowstone grizzly bear population.

D. The Inadequacy of Existing Regulatory Mechanisms

The lack of regulatory mechanisms to control take and protect habitat was a contributing factor to grizzly bear population declines (40 FR 31734; July 28, 1975). Upon listing under the ESA, the grizzly bear immediately benefited from a Federal regulatory framework that included prohibition of take, which is defined broadly under the ESA to include killing, injuring, or attempting to kill or injure; prohibition of habitat destruction or degradation if such activities harm individuals of the species; the requirement that Federal agencies ensure their actions will not likely jeopardize the continued existence of the species; and the requirement to develop and implement a recovery program for the species. These protective measures have improved the status of the Yellowstone grizzly bear population to the point where delisting can now be proposed.

The management of grizzly bears and their habitat draws from the laws and regulations of the Federal and State agencies in the Yellowstone DPS boundaries (Chapter 7 of the Strategy). Forty Federal laws, rules, guidelines, strategies, and reports and 33 State laws, statutes, and regulations in place apply to management of the Yellowstone grizzly bear population (Appendix J in the Strategy). These laws and regulations provide the legal authority for controlling mortality, providing secure habitats, managing grizzly bear/human conflicts, controlling hunters, limiting access where necessary, controlling livestock grazing, maintaining education and outreach programs to control conflicts, monitoring populations and habitats, and requesting management and petitions for re-listing if necessary.

Recovery of the Yellowstone grizzly bear population is the result of partnerships between Federal and State agencies, the governors of these States, county and city governments, educational institutions, numerous NGOs, private landowners, and the public who live, work, and recreate in the Yellowstone area. Just as recovery of the Yellowstone grizzly bear population could not have occurred without these excellent working relationships, maintenance of a recovered grizzly population depends on continuation of these partnerships.

The Strategy is the management plan which will guide the management and monitoring of the Yellowstone grizzly bear population and its habitat after delisting. It establishes a regulatory framework and authority for Federal and State agencies to take over management of the Yellowstone grizzly bear population from the Service. The Strategy also identifies, defines, and requires adequate post-delisting monitoring to maintain a healthy Yellowstone grizzly bear population (see the Post-Delisting Monitoring Plan) (Service 2003). The Strategy is an adaptive and dynamic document that allows for continuous updating based on new scientific information. The Strategy also has a clear response protocol that requires the agencies to respond with active management changes to deviations from the habitat and population standards in a timely and publicly accessible manner. It represents a decade-long collaborative effort among the USFS, NPS, BLM, USGS, the Service, the Study Team, IDFG, MTFWP, and WGFD. State grizzly bear management plans were developed, reviewed, opened for public comment, revised, and completed in all three affected States (Idaho, Montana, and Wyoming). These State plans were then incorporated into the Strategy to ensure that the plans and the Strategy are consistent and complementary (accessible at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*). The Strategy then went through a separate public comment process before being revised (65 FR 11340; March 2, 2000). With the exception of the Service, all the other State and Federal agencies which are party to the agreement have signed a memo of understanding (MOU) in which they have agreed to implement the Strategy. If this proposed action is adopted, the Service will sign the MOU prior to finalization.

The Strategy and the State plans describe and summarize the coordinated efforts required to manage the Yellowstone grizzly bear population and its habitat such that its continued conservation is ensured. The Strategy will direct management of grizzly bears inside the PCA, whereas the State plans will cover all suitable habitat outside of the PCA. These documents specify the population, habitat, and nuisance bear standards to maintain a recovered grizzly bear population for the foreseeable future. The plans also document the regulatory mechanisms and legal authorities, policies, management, and post-delisting monitoring plans that exist to maintain the recovered grizzly bear population. Overall, the Conservation Strategy and the State grizzly bear management plans provide assurances to the Service that adequate regulatory mechanisms exist to maintain the Yellowstone grizzly bear population after delisting.

In areas of suitable habitat outside of the PCA, individual National Forest Plans and State grizzly bear management plans apply. Should we delist, the USFS would place grizzly bears on its Sensitive Wildlife Species list. This requires the USFS to conduct a biological evaluation for any project which may ''result in loss of species viability or create significant trends toward Federal listing'' (USFS Manual 2600). Under the revised Forest Planning Regulations (70 FR 1023; January 5, 2005), Yellowstone grizzly bears will be classified as a ''species-of-concern'' or a ''species-of-interest''. This designation provides protections similar to those received when classified as a sensitive species and requires that Forest Plans include additional provisions to accommodate these species.

The USFS conducted a NEPA analysis and produced a Draft Environmental Impact Statement (Draft EIS) regarding the potential options available and the effects of implementing the Strategy (USFS 2004). This analysis was undertaken by all six affected National Forests in suitable habitat (Beaverhead, Bridger-Teton, Custer, Gallatin, Shoshone, and Targhee) and was completed in July 2004 (accessible at *http://mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*). The overall purpose of the Draft EIS is to analyze the impacts of incorporating the

habitat standards outlined in the Conservation Strategy and other relevant provisions into the Forest Plans of the six affected forests to ensure conservation of habitat to sustain the recovered Yellowstone grizzly bear population.

The USFS Final EIS is scheduled to be released in 2005. The preferred alternative in the Draft EIS is to amend the Forest Plans to include all the habitat standards described in the Strategy. If the preferred alternative is selected, the minimum standards in these Forest Plan amendments will be the habitat standards required in the Strategy. These habitat standards must be appended to current Forest Plans before the Service would finalize this rule.

Under the revised Forest Planning Regulation (70 FR 1023; January 5, 2005), revisions to Forest Plans will be based upon a ''need for change'' approach. Therefore, it is highly unlikely that any changes relating to the Yellowstone grizzly bear amendments will be identified during the revision process (Aus and Steering Team, in litt. 2005). ''This means that the management direction developed in the amendment(s) will be transferred to the new planning format and will not change. The bottom line is that any potential changes to management direction in either the current plans or during the revision effort will be guided by the agreements reached in the Conservation Strategy and its adaptive provisions (Aus, in litt. 2005).

Roughly 29 percent of all suitable habitat outside of the PCA is within a designated Wilderness Area (6,799 of 23,091 sq km (2,625 of 8,915 sq mi) while another 27 percent is within an Inventoried Roadless Area (6,179 of 23,091 sq km (2,386 of 8,915 sq mi)). Another three percent of all suitable habitat outside the PCA is considered wilderness study area. The Wilderness Act of 1964 does not allow road construction, new livestock allotments, or new oil, gas, and mining developments in designated Wilderness Areas; therefore, about 6,799 sq km (2,625 sq mi) of secure habitat outside of the PCA will remain secure habitat protected by adequate regulatory mechanisms.

The USDA recently published a rule in the **Federal Register** regarding management direction of Inventoried Roadless Areas (70 FR 25653; May 13, 2005). This new rule replaces the former Roadless Rule (66 FR 3244; January 12, 2001) and establishes a formal petitioning process that allows governors of affected States until November 2006 to petition for changes in the management of Inventoried Roadless Areas. Any petitions received will be reviewed by the Roadless Area Conservation National Advisory Committee (70 FR 25653, May 13, 2005; 70 FR 25663, May 13, 2005). If the Advisory Committee approves the petition, the affected National Forest must use the NEPA process and public involvement to consider the impacts any changes in Roadless Area management may have on other resources and management goals. The USFS will monitor any impacts these changes may have on habitat effectiveness while the Study Team will monitor any increases in grizzly bear mortality these changes may cause. In the meantime, the USDA-USFS Interim Directive 1920–2004–1 that became effective July 16, 2004, will continue to regulate activities in Inventoried Roadless Areas (69 FR 42648; July 16, 2004). Under this directive, little road building or timber harvest can be done in Inventoried Roadless Areas until Forest Plans are revised or amended to specifically address activities in roadless areas. The Targhee National Forest is exempt from this interim directive because it operates under a Revised Forest Plan, which addresses the management of roadless areas. Motorized access and other management activities are addressed by specific Management Prescription direction in the Revised Forest Plan. In general, this Management Prescription directs that roadless areas in the Targhee National Forest remain roadless. Similarly, a 1994 amendment to the Shoshone National Forest Plan implemented a standard for no net increase in roads (USFS 2004).

The NPS also is incorporating the habitat, population, monitoring, and nuisance bear standards described in the Strategy into their Superintendent's Compendium for each affected National Park. This would be completed prior to the final rule should the Yellowstone DPS be delisted. Because the BLM manages less than 2 percent of all suitable habitats, they are not modifying existing management plans. Instead, the BLM expressed their commitment to the long-term conservation of the Yellowstone grizzly bear population by signing the MOU in the Strategy.

The three State grizzly bear management plans direct State land management agencies to maintain or improve habitats that are important to grizzly bears and to monitor population criteria outside the PCA. Idaho, Montana, and Wyoming have developed management plans for areas outside the PCA to: (1) Ensure the long-term viability of grizzly bears and preclude re-listing, (2) support expansion of grizzly bears beyond the PCA, into areas of suitable habitat, and (3) manage grizzly bears as a game animal, including allowing regulated hunting when and where appropriate. The plans for all three States were completed in 2002, and grizzly bears within the Yellowstone DPS would be incorporated into existing game species management plans after delisting.

The Eastern Shoshone Tribe of the Wind River Reservation has participated at the Yellowstone Ecosystem Subcommittee meetings. At the 2002 Annual Tribal Consultation organized by Yellowstone National Park, the Service formally briefed the Tribe about the Conservation Strategy, but the Tribe did not provide input or feedback about the Strategy, nor did they sign the MOU in the Strategy. In addition, the Eastern Shoshone Tribe has not designed its own Grizzly Bear Management Plan as of 2005. However, less than 3 percent of all suitable habitats (1,360 sq km (525 sq mi)) are potentially affected by Tribal decisions. This does not constitute a threat to the long-term viability of the Yellowstone grizzly bear population.

Should the Yellowstone DPS be delisted, the Conservation Strategy would be implemented, and the Coordinating Committee would replace the Yellowstone Ecosystem Subcommittee as the leading entity coordinating implementation of the habitat and population standards and monitoring (Service 2003). Similar to the Yellowstone Ecosystem Subcommittee, the Coordinating Committee members include representatives from Yellowstone and Grand Teton National Parks, the six affected National Forests, BLM, USGS, IDFG, MTFWP, the WGFD, one member from local county governments within each State, and one member from each Native American Tribe within suitable habitat. All meetings will be open to the public. Besides coordinating management, research, and financial needs for successful conservation of the Yellowstone grizzly bear population, the Coordinating Committee will review the Study Team's Annual Reports and review and respond to any deviations from habitat or population standards, by implementing management actions to rectify problems and to assure that these standards will be met and maintained.

The Conservation Strategy's habitat standards are the 1998 levels of secure habitat, developed sites, livestock allotments, and habitat effectiveness (Service 2003). The Strategy signatories have agreed that if there are deviations from any population goal or habitat standard, the Coordinating Committee

will implement a Biology and Monitoring Review to be carried out by the Study Team. A Biology and Monitoring Review will be triggered by any of the following causes: (1) A total population estimate of less than 500, as indicated by a $Chao_2$ estimate (Keating *et al.* 2002) of less than 48 females with cubs-of-the-year, for 2 consecutive years; (2) exceedance of the 9 percent total mortality limit for independent females for 2 consecutive years; (3) exceedance of the total mortality limits for independent males or dependent young for 3 consecutive years; or (4) failure to meet any of the habitat standards described in the Conservation Strategy pertaining to road densities, levels of secure habitat, new developed sites, and number of livestock allotments.

A Biology and Monitoring Review will examine habitat management, population management, or monitoring efforts of participating agencies with an objective of identifying the source or cause of failing to meet a habitat or demographic goal. The Study Team will give management recommendations to address the deviation. This Review will be completed and made available to the public within 6 months of initiation. The Coordinating Committee will respond with actions to address deviations from habitat standards or, if the desired population and habitat standards specified in the Strategy cannot be met in the opinion of the Coordinating Committee, then the Coordinating Committee will petition the Service for relisting (Service 2003). Although anyone can petition the Service for relisting, the Coordinating Committee's petition is important because it is requested by the actual management agencies in charge of the Yellowstone grizzly bear population. Additionally, the Coordinating Committee possesses the resources, data, and experience to provide the Service with a strong argument for the petition. Once a potential petition is received, the Service will determine if the petition presents substantial information. If so, we conduct a full status review to determine if relisting is warranted, warranted-but-precluded by higher priority actions, or not warranted. The Service could also consider emergency listing, in accordance with section 4(b)(7) of the ESA, if the threat were severe and immediate. Such an emergency relisting would be effective the day the proposed regulation is published in the **Federal Register** and would be effective for 240 days. During this time, a conventional rule regarding the listing of a species based on the five factors of section 4(a)(1) of the ESA could be drafted and take effect after the 240-day limit on the emergency relisting has expired.

The management of nuisance bears within the Yellowstone DPS boundaries will be based upon existing laws and authorities of State wildlife agencies and Federal land management agencies and guided by protocols established in the Strategy and State management plans. Inside the National Parks, Yellowstone or Grand Teton National Park grizzly bear biologists will continue to respond to grizzly bear/human conflicts. In all areas outside of the National Parks, State wildlife agencies will coordinate and carry out any management actions in response to grizzly bear/human conflicts. In areas within the Yellowstone DPS boundaries that are outside of the PCA, State grizzly bear management plans will apply and State wildlife agencies will respond to and manage all grizzly bear/human conflicts. The focus and intent of nuisance grizzly bear management inside and outside the PCA will be predicated on strategies and actions to prevent grizzly bear/human conflicts. Active management aimed at individual nuisance bears will be required in both areas.

The Idaho, Montana, and Wyoming plans recognize that measures to reduce grizzly bear/human conflicts are paramount to successfully and completely address the issue. The State of Idaho Yellowstone Grizzly Bear Management Plan states that such measures must be given priority, as they are more effective than simply responding to problems as they occur. Similarly, the Grizzly Bear Management Plan for Southwestern Montana maintains that the key to dealing with all nuisance situations is prevention rather than responding after damage has occurred. The Wyoming Grizzly Bear Management Plan also mandates the WGFD to emphasize long-term, non-lethal solutions, but relocation and lethal removal may occur to resolve some conflicts (all three State management plans are accessible at *http:// mountain-prairie.fws.gov/species/mammals/grizzly/yellowstone.htm*). The ways in which the Strategy and the State plans intend to address preventative measures are described in detail in the ''Information and Education'' section in Factor E—Other Natural or Manmade Factors Affecting Its Continued Existence. All three State plans allow for preemptive relocation of grizzly bears out of areas with a high probability of conflicting with humans or their property, including livestock. In general, humans will be given greater consideration outside of the PCA so long as human sources of conflicts are not intentional. The States are committed to responding to grizzly bear/human conflicts in an efficient, timely manner.

The killing of grizzly bears in self-defense by humans will continue to be allowed under both Federal and State management plans. State management plans do not allow for legal take of grizzly bears by humans unless it is within the designated seasons and limits for grizzly mortality. Hunting seasons will not be instituted in any of the States until adequate scientific information exists to ensure that any such hunting take is within the sustainable mortality limits and the impact to the Yellowstone grizzly bear population is negligible. The goal of such a hunting season is to reduce grizzly density in areas of high grizzly bear/human conflicts so that future management actions would be reduced. Outside of the National Parks, individual nuisance bears deemed appropriate for removal may be taken by a licensed hunter in compliance with rules and regulations promulgated by the appropriate State wildlife agency commission. A hunt would only occur if annual mortality limits specified for the Yellowstone grizzly bear population are not exceeded.

In summary, these State management plans provide the necessary regulatory framework and guidelines to State wildlife agencies for the continued expansion of the Yellowstone grizzly bear population into suitable habitat outside of the PCA. By identifying the agencies responsible for nuisance bear management and responding to grizzly bear/human conflicts using a clearly orchestrated protocol, these State plans create a framework within which grizzly bears and people can coexist. Effective nuisance bear management benefits the conservation of the Yellowstone grizzly bear population and State management plans adequately address this issue.

In addition to the Conservation Strategy, National Park Superintendent's Plans, USFS Plans, and State grizzly bear management plans, more than 70 State and Federal laws, regulations, rules, and guidelines are currently in place. We are confident that these documents provide an adequate regulatory framework within which the Yellowstone grizzly bear population will continue to experience population stability, as well as protocols for future management, IE programs, and monitoring. In summary, these documents provide reasonable assurance to the Service and regulatory certainty that potential future threats to

the Yellowstone grizzly bear population will not jeopardize its long-term viability.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Three other considerations have the potential to affect long-term grizzly bear persistence in the Yellowstone including: (1) Genetic concerns; (2) invasive species, disease, and other impacts to food supply; and (3) human attitudes toward grizzly bear recovery and IE efforts to improve these attitudes.

Genetic Management: Levels of genetic diversity in the Yellowstone grizzly bear population are not as low as previously feared, and the need for novel genetic material is not urgent (Miller and Waits 2003). Because the Yellowstone grizzly bear population is an isolated population, declines in genetic diversity over time due to inbreeding are expected (Allendorf *et al.* 1991; Burgman *et al.* 1993), but will occur gradually over decades (Miller and Waits 2003). Experimental and theoretical data suggest that one to two effective migrants per generation is an appropriate level of gene flow to maintain or increase the level of genetic diversity in isolated populations (Mills and Allendorf 1996; Newman and Tallmon 2001; Miller and Waits 2003). An effective migrant is defined as an individual that emigrates into an isolated population from an outside area, survives, and breeds. Based on Miller and Waits (2003), the Strategy recommends that two bears from the NCDE be introduced into the Yellowstone grizzly bear population every 10 years (*i.e.*, one generation) to maintain current levels of genetic diversity (Service 2003).

Federal and State agencies will continue to monitor bears on the northern periphery of the Yellowstone DPS boundaries and the southern edges of the NCDE and collect genetic samples from captured or dead bears in these areas to document gene flow between these two ecosystems. To monitor genetic isolation, the Service will establish a repository for all samples from the Yellowstone population to document any bears moving from the NCDE into the Yellowstone area. Such movement will be detected by using an ''assignment test'' which identifies the area from which individuals are most likely to have originated based on their unique genetic signature (Waser and Strobeck 1998). The Strategy dictates that if no movements are detected by 2020, one to two grizzlies will be transplanted from the NCDE by 2022 to ensure that genetic diversity in the Yellowstone area does not decline below existing levels (Service 2003).

As long as adequate measures to address genetic concerns are continued, these issues will not adversely impact the long-term conservation of the Yellowstone grizzly bear population or its expansion into suitable habitat. Through careful monitoring of movements and levels of genetic diversity, the geographic isolation of the Yellowstone grizzly bear population will not be a threat to population persistence.

Invasive Species, Disease, and Other Impacts to Food Supply: Four food items have been identified as major components of the Yellowstone grizzly bear population's diet (Mattson *et al.* 1991). These are seeds of the whitebark pine, army cutworm moths, ungulates, and spawning cutthroat trout. These food sources may exert a positive influence on grizzly bear fecundity and survival (Mattson *et al.* 2002) and are some of the highest sources of digestible energy available to grizzly bears in the Yellowstone area (Mealey 1975; Pritchard and Robbins 1990; Mattson *et al.* 1992; Craighead *et al.* 1995). Each of these food sources is limited in distribution and subject to natural annual fluctuations in abundance and availability. Because of this natural variability, threshold values of abundance for each food have not been established. However, whitebark pine, ungulates, cutthroat trout, and army cutworm moths are all monitored either directly or indirectly on an annual basis (see Post-Delisting Monitoring Plan section below). Monitoring these important foods provides managers with some ability to predict annual seasonal bear habitat use, and estimate, prepare for, and avoid grizzly bear/human conflicts due to a shortage of one or more foods. In response to normal changes in food supplies due to plant phenology and responses to weather (*e.g.*, frost, rainfall), grizzly bear annual home ranges change in size and extent. By expanding the distribution and range of bears into currently unoccupied suitable habitat within the DPS boundaries, additional areas with additional food resources will be available. These additional habitats will provide habitat flexibility for bears to respond to these normal changes in annual food supplies and distribution.

Several factors have the potential to impact Yellowstone Lake cutthroat trout populations. In 1994, nonnative lake trout (*Salvelinus naymaycush*) were discovered in Yellowstone Lake (Reinhart *et al.* 2001). Lake trout are efficient predators of juvenile cutthroat trout and, on average, consume 41 cutthroat trout per year (Ruzycki *et al.* 2003). In 1998, *Myxobolus cerebralis*, the parasite that causes whirling disease, was found in juvenile and adult cutthroat trout collected from Yellowstone Lake. The Intermountain West has experienced drought conditions for the past 6 years, which has resulted in increased water temperatures, lowered lake levels, and a reduction in peak stream flows; all of which negatively affect cutthroat trout spawning success (Koel *et al.* 2005). This combination of lake trout, whirling disease, and drought conditions has resulted in declines in the Yellowstone cutthroat trout population with subsequent decreases in grizzly bear fishing activity (Koel *et al.* 2005). In fact, bear activity (includes black bear and grizzly bear use) at spawning streams decreased 87 percent between 1989 and 2004 (Koel *et al.* 2005). This decrease corresponds temporally with cutthroat trout declines but may not have a significant effect on the grizzly bear population because adult grizzlies that fish in spawning streams only consume, on average, between 8 and 55 trout per year (Felicetti *et al.* 2004).

In 2001, several environmental and legal organizations petitioned the Service to list the Yellowstone cutthroat trout as a threatened subspecies of cutthroat trout (66 FR 11244; February 23, 2001). A 12-month status review is currently underway and the Service will publish its findings when completed. We will consider the results of the status review fully when making a final decision on this proposed delisting.

Efforts to reduce introduced lake trout populations have been somewhat successful. The Yellowstone National Park managers have removed more than 100,000 lake trout since 1994, and the average size of lake trout caught has decreased, indicating that gillnetting efforts may be effective. The Yellowstone National Park managers will continue to monitor the Yellowstone Lake cutthroat trout population using fish weirs, spawning stream surveys, and hydroacoustic techniques and continue attempts to suppress nonnative lake trout in Yellowstone Lake through gillnetting, capturing on spawning grounds, and fishing regulations which target lake trout (Yellowstone National Park 2003). The Yellowstone National Park biologists will continue to assess the impacts of nonnative lake trout on cutthroat trout populations and will provide an annual summary to the Study Team regarding the abundance of both cutthroat and lake trout.

Currently, there are two noteworthy threats to whitebark pine communities

in North America. These are mountain pine beetle infestation and the introduction of exotic species (Tomback *et al.* 2001). Fire suppression and exclusion throughout most of the western United States during the 20th century has allowed shade tolerant tree species to dominate some whitebark pine communities thereby inhibiting natural regeneration by whitebark pine (Arno 1986; Tomback *et al.* 2001). These later successional whitebark pine communities are more susceptible to infestations of the native mountain pine beetle (*Dendroctonus ponderosae*) (Tomback *et al.* 2001). Their larvae feed on the inner bark, which can eventually girdle and kill trees on a landscape scale (Amman and Cole 1983).

The introduction of white pine blister rust from Europe in the early 1900s also contributes to whitebark pine declines (Kendall and Arno 1990; Tomback *et al.* 2001). While there is evidence of blister rust in whitebark pines in the Yellowstone area, the blister rust has been present for more than 50 years (McDonald and Hoff 2001), and only 2 to 13 percent of whitebark pine trees display signs of infection (Kendall and Keane 2001). This proportion of infected trees is much lower than in whitebark pine communities found in the nearby Bob Marshall Wilderness (83 percent) or in communities of other 5-needled pines in Colorado in which 50 percent of pines exposed to the fungus are infected (McDonald and Hoff 2001).

Both mountain pine beetle (Logan and Powell 2001; Williams and Liebhold 2002) and white pine blister rust (Koteen 2002) outbreaks are predicted to increase with increasing temperatures associated with global climate change. However, the ultimate impacts of climate change on whitebark pine communities are unclear (Kendall and Keane 2001).

Although tree mortality due to white pine blister rust and mountain pine beetles has been low to date in the PCA, some whitebark pine stands are infected with blister rust. The extent of the blister rust infection and the future effects it will have on whitebark pine on the Yellowstone grizzly bear population are unknown. The USFS formed a Whitebark Pine Task Group to gather information on the status of this tree. Current work on whitebark pine includes planting in several areas, cone collection from healthy trees, silvicultural treatments to improve growth and establishment, prescribed burning to encourage natural whitebark pine seedling establishment, and surveys for healthy trees that may possess blister rust resistant genes. Currently, there are 19 whitebark pine cone production transects within the PCA, 9 of which have been monitored on an annual basis since 1980 (Knight *et al.* 1997). Under the Strategy, the Study Team will continue monitoring whitebark pine cone production and the prevalence of white pine blister rust using current methods (Service 2003).

In general, grizzly bears are notoriously resourceful omnivores that will make behavioral adaptations regarding food acquisition (Weaver *et al.* 1996). Diets of grizzly bears vary among individuals and years (Mattson *et al.* 1991; Felicetti *et al.* 2004; Koel *et al.* 2005) reflecting their flexibility in finding adequate food resources as necessary. Mattson *et al.* (1991) hypothesized that grizzly bears are always sampling new foods in small quantities so that they have alternative options in years when preferred foods are scarce. In other areas such as the NCDE, where grizzly bears historically relied heavily on whitebark pine seeds, distributions and sighting records on the periphery of this ecosystem indicate that the population, at least in those areas, has continued to increase and thrive since the 1980s (Servheen, pers. comm. 2005) despite severe declines in whitebark pine communities in the last 50 years (Kendall and Keane 2001). Also, grizzly bear use of cutthroat trout has varied dramatically in the last three decades (Reinhart and Mattson 1990; Felicetti *et al.* 2004), most likely corresponding to fluctuations in the trout population, but the Yellowstone grizzly bear population has continued to increase and expand.

Although there is no way to guarantee how the Yellowstone grizzly bear population will respond to decreases in whitebark pine crops or cutthroat trout, should they occur, we anticipate that they will compensate by shifting their foraging strategies to other foods such as forbs, fungi, ungulates, and small mammals. If there are reductions in any of these foods, they will likely be gradual reductions over decades, spanning generations of grizzly bears, thereby making adjustments to other foods gradual.

The Study Team monitors grizzly bear mortality in relation to the abundance and distribution of all four of the major foods using measurable criteria. For instance, increases in mortality rates of radio-collared independent females are measurable criteria that could reflect decreases in food availability. Because there were no known natural mortalities of independent adult females from 1983 to 2001 (Study Team 2005), any change in this value will be noteworthy and will be investigated thoroughly by the Study Team to determine whether it is reflective of a landscape-scale trend or simply an isolated event. Significant declines in important foods also could result in reductions in cub production and increases in cub mortality over current rates of 0.362. Because human-caused mortality, natural mortality of radio-collared bears, and numbers of cubs, and cub survival rates are all measurable criteria monitored annually by the Study Team, any significant decline in important foods also would be reflected in changes in these measurable population parameters. In summary, if declines in any of the four major foods occur and, using the best available scientific data and techniques, the Study Team concludes these are related to significant increases in known and probable bear mortalities and that such increases could threaten the grizzly population, the Study Team would recommend to the Coordinating Committee that they submit a petition for relisting to the Service (see Chapter 6 of the Strategy—Implementation and Evaluation, for details on this process).

Human Attitudes and Societal Acceptance: Public support is paramount to any successful large carnivore conservation program (Servheen 1996). Historically, human attitudes played a primary role in grizzly bear population declines through excessive human-caused mortality. Through government-endorsed eradication programs and perceived threats to human life and economic livelihood, humans settling the West were able to effectively eliminate most known grizzly populations after only 100 years of westward expansion.

We have seen a change in public perceptions and attitudes toward the grizzly bear in the last several decades. The same government that once financially supported active extermination of the bear now uses its resources to protect the great symbol of American wildness. This change in government policy and practice is a product of changing public attitudes about the grizzly bear. Although attitudes about grizzlies vary geographically and demographically, there has been a revival of positive attitudes toward the grizzly bear and its conservation (Kellert *et al.* 1996).

Public outreach presents a unique opportunity to effectively integrate human and ecological concerns into comprehensive programs that can modify societal beliefs about, perceptions of, and behaviors toward grizzly bears. Attitudes toward wildlife are shaped by numerous factors including basic wildlife values, biological and ecological understanding of species, perceptions of individual

species, and specific interactions or experiences with species (Kellert 1994; Kellert *et al.* 1996). The IE programs to teach visitors and residents about grizzly bear biology, ecology, and behavior enhance appreciation for this large predator while dispelling myths about its temperament and feeding habits. Effective IE programs have been an essential factor contributing to the recovery of the Yellowstone grizzly bear population since its listing in 1975. Being aware of specific values common to certain user groups will allow the IE working group to disseminate appropriate materials and provide workshops that address particular values and concerns most adequately. By providing general information to visitors and targeting specific user groups about living and working in grizzly country, we believe continued coexistence between grizzly bears and humans will be accomplished.

Traditionally, residents of the GYA involved in resource extraction industries such as loggers, miners, livestock operators, and hunting guides, are the largest opponents to land-use restrictions which place the needs of the grizzly bear above human needs (Kellert 1994; Kellert *et al.* 1996). Surveys of these user groups have shown that they tolerate large predators when they are not seen as direct threats to their economic stability or personal freedoms (Kellert *et al.* 1996). Delisting would increase acceptance of grizzly bears by giving lower levels of government and private citizens more discretion in decisions which affect them. Increased flexibility regarding depredating bears in areas outside of the PCA would increase tolerance for the grizzly bear by landowners and livestock operators. A future hunting season also may increase tolerance and local acceptance of grizzly bears and reduce poaching in the GYA (McLellan *et al.* 1999).

Overall, through expanded IE programs and continued monitoring of public opinion, human attitudes will not hinder the continued viability and success of the Yellowstone grizzly bear population.

Information and Education: The future of the grizzly bear will be based on the people who live, work, and recreate in grizzly habitat and the willingness and ability of these people to learn to coexist with the grizzly and to accept this animal as a cohabitant of the land. Other management strategies are unlikely to succeed without useful and innovative public IE programs. The primary objective of the expanded public outreach program will be to proactively address grizzly/human conflicts by educating the public as to the root causes of these conflicts. By increasing awareness of grizzly bear behavior and biology, we hope to enhance public involvement and appreciation of the grizzly bear.

Although many human-caused grizzly bear mortalities are unintentional (*e.g.*, vehicle collisions, trap mortality), intentional deaths in response to grizzly bear/human conflicts are responsible for the majority of known and probable human-caused mortalities. Fortunately, this source of mortality can be reduced significantly if adequate IE is provided to people who live, work, and recreate in occupied grizzly bear habitat. The current IE working group has been a major component contributing to the successful recovery of the Yellowstone grizzly bear population over the last 30 years. Both Federal and State management agencies are committed to working with citizens, landowners, and visitors within the Yellowstone DPS boundaries to address the human sources of conflicts.

From 1975 through 2002, as many as 59 percent (135 out of 230) of human-caused mortalities could have been avoided if adequate IE materials had been presented, understood, and used by involved parties. Educating back-country and front-country users about the importance of securing potential attractants can prevent bears from becoming food conditioned and displaying subsequent unnaturally aggressive behavior. Similarly, adhering to hiking recommendations, such as making noise, hiking with other people, and hiking during daylight hours, can further reduce back-country grizzly bear mortalities by decreasing the likelihood that hikers will encounter bears.

Hunter-related mortalities usually involve hunters defending their life or property because of carcasses that are left unattended or stored improperly. Grizzly bear mortalities also occur when hunters mistake grizzly bears for black bears. All of these circumstances will be further reduced with enhanced IE programs.

Outside the PCA, State wildlife agencies recognize that the key to preventing grizzly bear/human conflicts is providing IE to the public. State grizzly bear management plans also acknowledge that this is the most effective long-term solution to grizzly bear/human conflicts and that adequate public outreach programs are paramount to ongoing grizzly bear viability and successful coexistence with humans in the GYA. All three States have been actively involved in IE outreach for over a decade and management plans contain chapters detailing efforts to continue current programs and expand them when possible. State wildlife agencies have years of experience organizing and implementing effective public outreach programs. For example, WGFD created a formal human/grizzly bear conflict management program in July 1990 and has coordinated an extensive IE program since then. Similarly, since 1993, the MTFWP has implemented countless public outreach efforts to minimize bear/human conflicts, and the IDFG has organized and implemented education programs and workshops focused on private and public lands on the western edge of grizzly bear habitat.

Compensating ranchers for losses caused by grizzly bears is another approach to build support for coexistence between livestock operators and grizzly bears. In cases of grizzly bear livestock depredation that have been verified by USDA–APHIS–Wildlife Services, IDFG, MTFWP, or WYDGF, compensation to the affected livestock owners will continue to occur. Since 1997, this compensation has been provided primarily by private organizations, principally Defenders of Wildlife. The Defenders of Wildlife's Grizzly Bear Compensation Trust has paid over $112,000 to livestock operators within the Yellowstone DPS boundaries and in the northern Rockies for confirmed and probable livestock losses to grizzly bears. If this proposed rule to delist the Yellowstone grizzly bear population is adopted, both Idaho and Wyoming's grizzly bear management plans provide for State funding of compensation programs. In Idaho, compensation funds will come from the secondary depredation account, and the program will be administered by the appropriate IDFG Regional Landowner Sportsman Coordinators and Regional Supervisors. In Wyoming, the WYDGF will pay for all compensable damage to agricultural products as provided by State law and regulation. The WYDGF will continue efforts to establish a long-term funding mechanism to compensate property owners for livestock and apiary losses caused by grizzly bears. In Montana, MTFWP will continue to rely on Defenders of Wildlife and other private groups to compensate livestock operators for losses due to grizzly bears while MTFWP focuses on preventing such conflicts.

Overall, these natural and manmade factors—genetic concerns, declines in natural food sources, public acceptance, and lack of adequate IE programs, if unaddressed, have the potential to affect long-term grizzly bear persistence. Through careful monitoring and adaptive management practices, the

Study Team and the States will be able to identify and address these concerns before they become problems for the Yellowstone grizzly bear at a population level. All of these issues have been scientifically researched and adequately addressed so that removing the proposed Yellowstone grizzly bear population from the Federal List of Endangered and Threatened Wildlife would not adversely impact its long-term survival.

Conclusion of the 5-Factor Analysis

As demonstrated in our 5-factor analysis, threats to this population have been sufficiently minimized throughout all of the range and all suitable habitat within the DPS, and there is no significant portion of the range where the DPS remains threatened.

Our current knowledge of the health and condition of the Yellowstone grizzly bear DPS illustrates that the Yellowstone grizzly bear DPS is now a recovered population. Counts of unduplicated females with cubs-of-the-year have increased (Knight *et al.* 1995; Haroldson and Schwartz 2002; Schwartz *et al.* 2005a), indicating cub production has increased (Knight and Blanchard 1995, 1996; Knight *et al.* 1997; Haroldson *et al.* 1998; Haroldson 1999, 2000, 2001; Haroldson and Schwartz 2002; Haroldson 2003, 2004; Schwartz *et al.* 2005). Grizzly range and distribution has expanded (Basile 1982; Blanchard *et al.* 1992; Schwartz *et al.* 2002; Pyare *et al.* 2004). Calculations of population trajectory derived from radio-monitored female bears demonstrate an increasing population trend at a rate of 4 to 7 percent per year since the early 1990s (Eberhardt *et al.* 1994; Knight and Blanchard 1995; Boyce *et al.* 2001; Schwartz *et al.* 2005), due in large part to control of female mortality. In total, this population has increased from estimates ranging from 229 (Craighead *et al.* 1974) to 312 (Cowan *et al.* 1974; McCullough 1981) individuals when listed in 1975 to more than 580 animals as of 2004 (Study Team 2005).

At the end of 2004, the number of unduplicated females with cubs-of-the-year over a 6-year average both inside the Recovery Zone and within a 16-km (10-mi) area immediately surrounding the Recovery Zone was 40, more than double the Recovery Plan target of 15. The Recovery Plan target for the number of unduplicated females with cubs-of-the-year (15) has been exceeded since 1988. In 2004, the 1-year total of unduplicated females with cubs-of-the-year within this area was 46.

Within the Recovery Zone, the distribution of females with young, based on the most recent six years of observations in the ecosystem, was eighteen out of eighteen bear management units at the end of 2004. The range of this population also has increased dramatically, as evidenced by the 48 percent increase in occupied habitat since the 1970s (Schwartz *et al.* 2002; Pyare *et al.* 2004). Furthermore, the Yellowstone grizzly bear population continues to expand its range and distribution today. Currently, roughly 90 percent of females with cubs occupy the PCA and about 10 percent of females with cubs have expanded out beyond the PCA within the DPS (Schwartz 2005, unpublished data). Grizzly bears now occupy 68 percent of suitable habitat within the proposed DPS and may soon occupy the remainder of the suitable habitat within the proposed DPS. The Yellowstone DPS now represents a viable population that has sufficient numbers and distribution of reproductive individuals to provide a high likelihood that the species will continue to exist and be well-distributed throughout its range and additional suitable habitat for the foreseeable future. Both the threats of habitat destruction and modification, and low population levels, have been directly addressed through changes in management practices.

As per the criteria laid out in the 1993 Recovery Plan, the 4 percent mortality limit has not been exceeded for 2 consecutive years since 1987. The human-caused female grizzly bear mortality limit has not been exceeded for 2 consecutive years since the 1995–1997 period (Haroldson and Frey 2004). Due to the conservative nature of this standard designed to facilitate population recovery, even when human-caused adult female mortality was exceeded for consecutive years during the mid-1990s (1995, 1996, 1997), the population was increasing (Boyce *et al.* 2001; Schwartz *et al.* 2005) and expanding its distribution (Schwartz *et al.* 2002; Pyare *et al.* 2004). Applying the revised mortality limits to the 1999–2004 period, these criteria have not been exceeded for 3 consecutive years for males, for 3 consecutive years for dependent young, nor for 2 consecutive years for independent females. The main threat of human predation has been addressed through carefully monitored and controlled mortality limits through the State management plans. In addition, information and education is a main component of the program to reduce grizzly bear/human conflicts.

The State and Federal agencies' agreement to implement the extensive Conservation Strategy and State management plans will ensure that adequate regulatory mechanisms remain in place and that the Yellowstone grizzly bear population will not become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The threat of overutilization due to commercial, recreational, scientific, or education purposes has been removed due to the management of grizzly bears through State management plan mortality limits. This proposal mentions the possibility, in the future, of a carefully regulated hunt; however, should this hunt be formally proposed, all hunting mortalities would be counted toward the mortality limits for the population.

Based on the best scientific and commercial information available, we have determined that the proposed Yellowstone DPS is a recovered population no longer meeting the ESA's definition of threatened or endangered. Therefore, we are proposing to delist the Yellowstone grizzly bear DPS.

Post-Delisting Monitoring Plan

To further ensure the long-term conservation of adequate grizzly bear habitat and continued recovery of the Yellowstone grizzly bear population, several monitoring programs and protocols have been developed and integrated into land management agency planning documents. The Strategy and appended State grizzly bear management plans effectively satisfy the requirements for having a Post-Delisting Monitoring Plan for the Yellowstone DPS. Monitoring programs will focus on assessing whether demographic standards and habitat criteria described in the Strategy are being achieved. A suite of indices will be monitored simultaneously to provide a highly sensitive system to monitor the health of the population and its habitat and to provide a sound scientific basis to respond to any changes or needs with adaptive management actions (Lee and Lawrence 1986). More specifically, monitoring efforts will document population trends, distribution, survival and birth rates, and genetic variability. Throughout the DPS boundaries, locations of grizzly bear mortalities on private lands will be provided to the Study Team for incorporation into their Annual Report. Full implementation of the Strategy by State and Federal agencies will allow for a sustainable population by managing all suitable habitat.

Within the Primary Conservation Area—As discussed in previous sections, habitat criteria established for the Yellowstone grizzly bear population

will be monitored carefully and any deviations from these will be reported annually. The number and levels of secure habitat, road densities, developed sites, and livestock allotments will not be allowed to deviate from 1998 baseline measures in accordance with the implementation protocols in the Strategy.

The Study Team will prepare Annual Reports summarizing the habitat criteria and population statistics. The Study Team will be responsible for counting the number of unduplicated females with cubs-of-the-year and monitoring mortality, distribution, and genetic diversity (see Appendix I of the Strategy). To examine reproductive rates, survival rates, causes of death, and overall population trends, the Study Team will strive to radio collar and monitor a minimum of 25 adult female grizzly bears at all times. These bears will be spatially distributed throughout the ecosystem as determined by the Study Team.

The Study Team, with participation from Yellowstone National Park, the USFS, and State wildlife agencies, also will monitor grizzly bear habitats, foods, and impacts of humans. Documenting the abundance and distribution of the major foods will be an integral component of monitoring within the PCA as it allows managers some degree of predictive power to anticipate and avoid grizzly bear/human conflicts related to a shortage of one or more foods. Major foods, habitat value, and habitat effectiveness will be monitored according to Appendices E and I in the Strategy and as described in Factor A, ''The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range'' in this proposed rule.

Outside of the Primary Conservation Area—State wildlife agencies will be responsible for monitoring habitat and population parameters in areas outside of the PCA. The three State grizzly bear management plans detail what habitat and demographic criteria each State will monitor. All three States will document sightings of females with cubs and provide this information to the Study Team. Additionally, State wildlife agencies will provide known mortality information to the Study Team, which will annually summarize this data with respect to location, type, date of incident, and the sex and age of the bear for the DPS area.

In Idaho, the IDFG will be responsible for monitoring population trends and habitat parameters. Outside of the PCA, the IDFG will establish data analysis units to facilitate monitoring of grizzly bear distribution, abundance, and mortality. Habitat criteria will be monitored within each unit but will not be established strictly for grizzly bears. Instead, habitat standards will be incorporated into current management plans for other game species. However, the IDFG will monitor important food sources for grizzly bears including elk, deer, moose, Kokanee salmon, and cutthroat trout. The IDFG also will encourage and work with other land management agencies on public lands to monitor wetland and riparian habitats, whitebark pine production, important berry-producing plants, and changes in motorized access route density. On private lands, the IDFG will work with citizens, counties, and other agencies to monitor development activities and identify important spring habitat for grizzly bears, then work with landowners to minimize impacts to bears.

In Montana, the MTFWP will monitor populations using data from research, distribution changes, DNA samples, confirmed sightings, and known mortalities. The MTFWP will collect and analyze habitat data and monitor habitat changes pertaining to key grizzly bear foods, road densities, road construction and improvements, and coal bed methane activities. In addition, the MTFWP will continue to use Statewide habitat programs to conserve key wildlife habitats in southwestern Montana, working closely with private landowners to conserve private lands via lease, conservation easements, or fee title acquisition.

In Wyoming, the WGFD will establish grizzly bear management units to collect and analyze demographic and distributional data. The WGFD will monitor habitat changes, human activities, road densities, and construction. Habitat standards will be monitored in a manner consistent with those already in place for other wildlife and will not focus specifically on the habitat needs of grizzly bears.

Monitoring systems in the Strategy allow for adaptive management as environmental issues change (Lee and Lawrence 1986). The agencies have committed in the Strategy to be responsive to the needs of the grizzly bear through adaptive management actions based on the results of detailed annual population and habitat monitoring. These monitoring efforts would reflect the best scientific and commercial data and any new information that has become available since the delisting determination or most recent status review. The entire process would be dynamic so that when new science becomes available it will be incorporated into the management planning and monitoring systems outlined in the Strategy (Service 2003). The results of this extensive monitoring would allow wildlife and land managers to identify and address potential threats preemptively thereby allowing those managers and the Service to be certain that the Yellowstone grizzly bear population is not threatened with extinction in the foreseeable future.

Clarity of the Rule (E.O. 12866)

Executive Order 12866 requires agencies to write regulations that are easy to understand. We invite your comments on how to make this rule easier to understand including answers to the following: (1) Is the discussion in the **SUPPLEMENTARY INFORMATION** section of the preamble helpful in understanding the proposal?; (2) Does the proposal contain technical language or jargon that interferes with its clarity?; (3) Does the format of the proposal (grouping and order of sections, use of headings, etc.) aid or reduce its clarity; and (4) What else could we do to make the rule easier to understand?

Send a copy of any comments that concern how we could make this proposed rule easier to understand to the Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C St., NW., Washington, DC 20240.

Public Comments Solicited

We intend that any final action resulting from this proposed rule will be as accurate and as effective as possible. Therefore, we solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule. Generally, we seek information, data, and comments concerning the status of grizzly bears in the Yellowstone ecosystem. Specifically, we seek documented, biological data on the status of the Yellowstone ecosystem grizzly bears and their habitat, and the management of these bears and their habitat.

Submit comments as indicated under **ADDRESSES.** If you wish to submit comments by e-mail, please avoid the use of special characters and any form of encryption. Please also include your name and return address in your e-mail message.

Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the rulemaking record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the

rulemaking record a respondent's identity, as allowable by law. If you wish us to withhold your name or address, you must state this prominently at the beginning of your comment. However, we will not consider anonymous comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Comments and other information received, as well as supporting information used to write this rule, will be available for public inspection, by appointment, during normal business hours at our Missoula Office (see **ADDRESSES**). In making a final decision on this proposed rule, we will take into consideration the comments and any additional information we receive. Such communications may lead to a final rule that differs from this proposal.

Public Hearing

The ESA provides for public hearings on this proposed rule. We have scheduled one public hearing on this proposed rule as specified above in **DATES** and **ADDRESSES.**

Public hearings are designed to gather relevant information that the public may have that we should consider in our rulemaking. During the hearing, we will present information about the proposed action. We invite the public to submit information and comments at the hearing or in writing during the open public comment period. We encourage persons wishing to comment at the hearing to provide a written copy of their statement at the start of the hearing. This notice and public hearing will allow all interested parties to submit comments on the proposed rule for the grizzly bear. We are seeking comments from the public, other concerned governmental agencies, Tribes, the scientific community, industry, or any other interested parties concerning the proposal.

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we will solicit the expert opinions of at least three appropriate and independent specialists for peer review of this proposed rule. The purpose of such review is to ensure that decisions are based on scientifically sound data, assumptions, and analyses. We will send peer reviewers copies of this proposed rule immediately following publication in the **Federal Register**. We will invite peer reviewers to comment, during the public comment period, on the specific assumptions and conclusions regarding the proposed DPS and its delisting. We will summarize the opinions of these reviewers in the final decision document, and we will consider their input as part of our process of making a final decision on the proposal.

Paperwork Reduction Act

This rule does not contain any new collections of information other than those already approved under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*) and assigned Office of Management and Budget (OMB) control number 1018–0094, which expires on September 30, 2007. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. For additional information concerning permit and associated requirements for endangered species, see 50 CFR 17.21 and 17.22.

National Environmental Policy Act

The Service has determined that Environmental Assessments and Environmental Impact Statements, as defined under the authority of the NEPA of 1969, need not be prepared in connection with actions adopted pursuant to section 4(a) of the ESA. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited herein is available upon request from the Grizzly Bear Recovery Coordinator (see **ADDRESSES** above).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.11 [Amended]

2. Amend § 17.11(h) by revising the listing for ''Bear, grizzly'' under ''MAMMALS'' in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*	*	*	*	
Bear, grizzly	*Ursus arctos horribilis*.	North America	U.S.A., conterminous (lower 48) States, except: (1) Where listed as an experimental population; and (2) that portion of Idaho that is east of Interstate Highway 15 and north of U.S. Highway 30; that portion of Montana that is east of Interstate Highway 15 and south of Interstate Highway 90; that portion of Wyoming South of Interstate Highway 90, west of Interstate Highway 25, Wyoming State Highway 220, and U.S. Highway 287 south of Three Forks (at the 220 and 287 intersection), and north of Interstate Highway 80 and U.S. Highway 30.	T	1, 2D, 9	NA	17.40(b)
Do	.....do	.....do	U.S.A. (portions of ID and MT, see 17.84(l)).	XN	706	NA	17.84(l)
*	*	*	*	*	*	*	

Dated: November 9, 2005.

H. Dale Hall,

Director, U.S. Fish and Wildlife Service.

[FR Doc. 05–22784 Filed 11–15–05; 1:00 pm]

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