Petition for a Recovery Plan for the Grizzly Bear (*Ursus arctos horribilis*) Across Its Native Range in the Conterminous United States

PETITIONER

CENTER FOR BIOLOGICAL DIVERSITY

"There seems to be a tacit assumption that if grizzlies survive in Canada and Alaska, that is good enough. It is not good enough for me…. Relegating grizzlies to Alaska is about like relegating happiness to heaven; one may never get there." Aldo Leopold, *A Sand County Almanac*.

Photo: Terry Tollefsbol, U.S. Fish and Wildlife Service

June 18, 2014

The Honorable Sally Jewell
Secretary
Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

The Honorable Dan Ashe
Director
U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, D.C. 20240

Re: Petition to the U.S. Department of Interior and U.S. Fish and Wildlife Service, for Development of a Recovery Plan for the Grizzly Bear (*Ursus arctos horribilis*) across its Native Range in the Conterminous United States.

Dear Secretary Jewell and Director Ashe:

Pursuant to 16 U.S.C. § 1533(f) of the Endangered Species Act and section 5 U.S.C. § 553(e) of the Administrative Procedure Act, the Center for Biological Diversity ("Center") hereby petitions the U.S. Department of the Interior ("DOI"), by and through the U.S. Fish and Wildlife Service ("Service"), to meet its mandatory duty to develop a recovery plan for the grizzly bear, 16 U.S.C. § 1533(f) by revising and updating its 1993 recovery plan for the grizzly bear (*Ursus arctos horribilis*) for the populations that were identified at the time the species was listed, and by identifying all additional geographic areas where recovery strategies are needed, to ensure full recovery of the species across its native range in the United States.

Since the grizzly bear was listed as a threatened species under the Endangered Species Act (ESA) in 1975, the Service has pursued a fragmented approach to grizzly bear recovery that does not adhere to the law's intention that listed species be recovered in all significant portions of their range. Instead, the Service has developed recovery strategies for six populations occupying a relatively small portion of the grizzly bear's historic range, including the Greater Yellowstone Ecosystem (GYE), the Northern Continental Divide Ecosystem (NCDE), the Cabinet-Yaak Ecosystem (CYE), the Selkirk Ecosystem (SE), North Cascades Ecosystem (NCE) and Selway-Bitterroot Ecosystem (SBE), and has, for the most part, only enacted protections or carried out on-the-ground recovery efforts for the first four.

The Service has failed to develop recovery strategies for ecosystems that still contain substantial and sufficient suitable habitat, which is not only an abdication of the Service's responsibilities under the Endangered Species Act as a legal matter, but leaves grizzly bears endangered across significant portions of their range as a biological fact. Hence, we hereby petition the Service to finally meet the full scope of its obligations under section 4 of the ESA by revising its 1993 recovery plan to include all significant remaining areas of suitable habitat across the grizzly bear's native range in the western U.S., in addition to those populations that are already covered in the 1993 plan, including at least the Gila/Mogollon complex in Arizona and New Mexico, the Grand Canyon in Arizona, the Sierra Nevada in California, the Uinta Mountains in Utah, and areas of southern Utah.

The Service's failure to develop a plan for recovery and conservation of the grizzly bear in other significant portions of the species' range ignores the important ecological role that grizzly bears played in numerous ecosystems across the western United States. This failure ignores the fundamental principles of conservation biology — the preservation of a species and its ecosystems over the long term depends upon numerous connected populations that can function as a larger meta-population across the landscape.

A comprehensive grizzly bear recovery plan would incorporate and guide species-recovery efforts at the proper landscape scale, would ensure that recovery targets are set at numeric levels that are sufficiently robust to sustain the species across its historic range, and would protect grizzly bear habitat in a holistic manner that would benefit grizzly bears, other endangered species, and ecosystem integrity. It would ensure a precautionary approach and the evolutionary potential of grizzly bears in a world that is rapidly changing due to climate change, nonnative species and human population growth. And it would maximize the potential to protect and restore diverse grizzly bear behaviors across a wider variety of ecosystems. In short, a comprehensive grizzly bear recovery plan is required to ensure the species has sufficient representation, resiliency and redundancy to persist for hundreds of years to come.

Precedents for development by the Service of successful recovery plans that include the entire range of species in the U.S. include plans for the bald eagle, brown pelican and peregrine falcon.[1] In these and other recovery plans, regional targets for numbers of animals combine to form a meta-population that better ensures a resilient, recovered distribution of the species as a whole.

The Center for Biological Diversity ("Center") is a non-profit conservation organization dedicated to the protection of native species and their habitats through science, policy and environmental law. The Center has more than 775,000 members and online activists dedicated to the protection and restoration of endangered species and wild places. The Center has worked for many years to protect imperiled plants and wildlife — including grizzly bears — as well as open space, air and water quality, and overall quality of life.

The Center and its members are "interested persons" within the meaning of the APA, and hence petition the Service for a comprehensive recovery strategy for the grizzly bear pursuant to the APA and in accordance with the ESA. *See* 5 U.S.C. § 553(e) (granting any "interested person the right to petition for the issuance, amendment, or repeal of a rule"); *id*. § 551(4) (a "rule" is "the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy"). For all of the reasons set forth in this petition and as a matter of law, the Service is required to respond to this petition by updating and completing the 1993 Grizzly Bear Recovery Plan to incorporate new recovery strategies throughout the grizzly bear's historic range. *See* 16 U.S.C. § 1533(f).

Should it fail to comply with these mandatory obligations, the Center may pursue relief from a federal district court. 5 U.S.C. § 702 ("A person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof."); *id*. § 551(13) ("agency action" includes "the whole or a part of an agency rule, … or the equivalent or denial thereof, or failure to act"); *id*. § 706(1) and (2)(A) (granting a reviewing court the authority to "compel agency action unlawfully withheld or unreasonably delayed" and/or to "hold unlawful and set aside agency action … found to be … arbitrary, capricious, an abuse of discretion"); *see also* 16 U.S.C. § 1540(g)(1)(C) ("any person may commence a civil suit on his own behalf" "against the Secretary where there is alleged a failure of the Secretary to perform any act or duty under section 4 which is not discretionary with the Secretary").

Accordingly, we ask you to respond to this petition expeditiously to inform us that you are commencing a process to complete the recovery plan for the entire grizzly bear species, and moreover, that you include a timeline by which you will conduct and complete this process and commence implementation of all necessary recovery strategies for the grizzly bear species with all deliberate speed.

Sincerely,

Noah Greenwald
Endangered Species Director
Center for Biological Diversity

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Executive Summary

Grizzly bears once ranged throughout most of western North America, from the high Arctic to the Sierra Madre Occidental of Mexico, and from the coast of California across most of the Great Plains. On the West Coast, this adaptable omnivore likely fed alongside California condors on salmon and marine mammal carcasses, while on the Great Plains they fed on the great herds of plains bison. No one knows how many grizzly bears used to live in North America, but an estimated 50,000 to 100,000 likely roamed the American West prior to European settlement.[2] Within 200 years, excessive killing had reduced grizzly bear populations to perhaps several hundred bears, mostly found in Yellowstone National Park in Wyoming and the northern Rocky Mountains of Montana and Idaho. As a result of its precipitous decline, the grizzly bear was listed as a threatened species under the Endangered Species Act in 1975.

Today there are only 1,500 to 1,800 grizzly bears left in the lower 48 states — around 700 bears in the isolated Greater Yellowstone Ecosystem (GYE); approximately 800 bears in the Northern Continental Divide Ecosystem (NCDE); perhaps 25 to 50 bears in the Selkirk Ecosystem (SE) of Washington and Idaho; about 45 bears in the Cabinet-Yaak Ecosystem (CYE) of Montana and Idaho; and possibly a couple of bears in the North Cascades Ecosystem (NCE) of Washington. The current population represents less than 4 percent of the historic abundance of grizzly bears in the western United States. More importantly, outside of the GYE and NCDE, very little progress has been made recovering grizzly bears. At best, the populations in the Selkirk and Cabinet-Yaak Ecosystems have remained stable. Grizzly bears have been functionally extirpated from the North Cascades, and are now extirpated from the Selway-Bitterroot and San Juan Mountains. The two areas where bears have seen considerable recovery, the GYE and NCDE, include an area that is a mere 4 percent of the bear's historic range and 22 percent of potentially suitable habitat identified through modeling.

To determine recovery potential for grizzly bears, we compiled information from all available studies of grizzly bear habitat within their historic range in the western conterminous U.S., and determined that there is roughly 110,000 square miles of additional habitat that could support recovery of the grizzly bear, which is more than triple the habitat found in the GYE and NCDE. The Mogollon Rim and Gila Wilderness complex in Arizona and New Mexico, Sierra Nevada in California, Grand Canyon in Arizona, Uinta Mountains in northern Utah and potentially other areas appear to harbor sufficiently large blocks of habitat to anchor grizzly bear recovery areas, and warrant further analysis by the U.S. Fish and Wildlife Service.

This additional habitat has the potential to greatly increase grizzly bear numbers and thereby ensure the species' long-term survival. Studies show that additional habitat in the northern Rockies and North Cascades alone could support another 1,500 bears, nearly doubling the population. There are not estimates for how many bears might be able to live in the several other areas in the western U.S. that have the potential to support populations, but given that the total area of available habitat is greater than the GYE and NCDE combined, it is likely that there is habitat for a substantial number of bears. Based on available habitat and studies of population viability, we recommend an overall recovery goal of 4,000 to 6,000 bears spread across recovery areas with sufficient habitat to support populations. Such a goal would restore these magnificent animals to a closer proximity of their historic range in the western conterminous U.S.

This petition requests that the U.S. Fish and Wildlife Service revise the 1993 Grizzly Bear Recovery Plan to consider the entire historic range of the species. The petition echoes most of the recommendations in the Service's own status review for the grizzly bear that was completed in 2011, which concluded that the 1993 Recovery Plan "no longer reflects the best available and most up-to-date information on the biology of the species and its habitat."[3] Such a revision would satisfy the Service's mandatory obligation to develop and implement a plan for the recovery and conservation of the grizzly bear as a threatened species. 16 U.S.C. § 1533(f). A revised recovery plan should:

1. Develop recovery strategies for all significant remaining areas of suitable habitat across the grizzly bear's native range in the western U.S., including those populations that are already covered in the 1993 plan, as well as the Mogollon Rim and Gila Wilderness complex in Arizona and New Mexico, Sierra Nevada in California, Grand Canyon in Arizona, Uinta Mountains in northern Utah and potentially other areas.

2. Develop population targets for each recovery area that ensure population viability with a goal of obtaining a total population of at least 4,000 to 6,000 bears in a meta-population of interconnected habitat.

3. Develop recovery criteria to secure and restore grizzly bear habitat and to address the full spectrum of threats to bears, particularly on public lands.

4. Develop recovery criteria to reduce human-caused mortality across the species' range.

If included in a revised recovery plan, the population and recovery area recommendations included in this petition meet the requirements of the Endangered Species Act to recover endangered species in all significant portions of range and to follow best available science, are precautionary, which is especially important for addressing climate change and increasing human intrusions on grizzly bear habitat, and will recover bears to a representative spectrum of the unique historic habitats they once occupied, helping maintain their adaptability and ability to weather the changing world we live in.

I. Introduction

With one of the largest home ranges of any mammal species and a strong dependence on wild, unfragmented landscapes, the grizzly bear is an excellent "umbrella species" for intact ecosystems in the western United States.[4] Moreover, grizzly bears are considered a strongly interacting species that exert a substantial influence on the ecosystems they occupy.[5] The conservation and recovery of the grizzly bear would thus benefit ecosystems across the western United States, as well as the many plant and animal species that depend on these ecosystems. Accordingly, this petition seeks the recovery of grizzly bears to remaining suitable habitat in their native range in the conterminous U.S.

The Endangered Species Act is broadly purposed "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." In accordance with this expansive purpose, Congress, in passing the Endangered Species Act, added a novel geographic aspect to conserving species that was not present in precursor laws, requiring that a species be protected in each "significant portion of its range," even if the species was secure in other portions of its range. This makes clear that the Act is about more than merely preventing extinction, but rather about recovering species to as much of their historic range as possible. Indeed, Congress explained that the change marked "a significant shift" in how the Fish and Wildlife Services should evaluate whether a species is threatened or endangered.[6] For the first time, a species like the grizzly bear, although common in Alaska and Canada, could receive protections based solely on its status in the lower 48 States.

The need to revise the recovery plan was recently recognized by the Service itself in a 2011 five-year review, which recommended: "Revise the recovery plan for grizzly bears in the lower 48 States so that it reflects the best scientific and commercial information available."[7] The 2011 review and this petition make abundantly clear that the 1993 plan is no longer supported by the best-available science or the most current research in the field of conservation

The Grizzly Bear in Ancient Cultures

Grizzly bears have fascinated humans wherever their paths crossed. The grizzly bear — known to many Native Americans as the Great Bear — is an animal with many human-like traits. Grizzly bears are resourceful, intelligent, they can eat a wide variety of foods, stand on their hind legs, and nurture their young for long periods. By hibernating, the grizzly bear is also a symbol of transformation – seeming to die in winter, and then emerging with new life.

There are countless mythical stories of bears changing into humans and humans into bears. And, since bears have the unique ability to hibernate and bear young in the den, they have long symbolized transformation – the alchemical process of bringing forth new life out of seeming death. With ancient remains found of carved cave bear bones in caves in Europe over 30,000 years ago, it is surmised that worship of bears may predate Christian beliefs of life after death.

Grizzly bears have been seen as healers, physicians and guides. The grizzly bears' ferocity and danger to man also added to its power; the Kutenai tribe in the Northern Rockies, for example, had rituals that attempted to utilize the malevolent aspects of grizzly bears towards its enemies through the use of magic. One of the most widespread ancient bear ceremonies reflect the bear's role as healer, probably through the result of human observations of bears' picking and choosing which plants to eat, and in some cases, using plants and mud as poultices.

biology, especially regarding the need to rescue populations that are on the verge of extirpation and to maintain a meta-population that is viable over the long term. A vast amount of science has been assembled since 1993 that has not been incorporated into the existing grizzly bear management and recovery actions. For all of these reasons and more, we call on the Service to develop a new recovery plan for the grizzly bear within its native range in the conterminous U.S.

II. The Grizzly Bear Can and Should be Restored to More of Its Historic Range

A. The Decline of Grizzly Bears in the Western U.S.

Grizzly bears have proven to be particularly vulnerable to human persecution. Between 1800 and 1975 grizzly bear populations in the lower 48 States declined from an estimated 50,000 to 100,000 to perhaps fewer than 1,000 bears.[8] As the mountainous areas of the western U.S. were settled, the burgeoning mining and logging industries contributed to the increase in human-caused mortality of grizzly bears. Livestock depredation control, habitat deterioration, commercial trapping, unregulated hunting, and protection of human life were leading causes of decline.[9] Professional hunters/trappers hired by federal and state agencies also greatly contributed to grizzly bear population exterminations as a matter of formal government policy.[10]

By 1922 only about 37 populations of grizzly bears remained in the lower 48 States (Figure 1).[11] Between the 1920s and 1970s, grizzly bears tended to survive only where human densities were low and in mountainous areas where rough terrain and widely distributed food resources tended to keep bears out of harm's way.[12] Where food sources overlapped with human settlements, bears tended to disappear more quickly than in remote areas, in which high-elevation foods such as whitebark pine seeds kept bears away from people.

Populations of grizzly bears in the lower 48 states are currently relegated to areas of much lower human densities than typifies the joint distribution of brown bears and humans in Eurasia, largely as an artifact of levels of lethal control by people between 1850 and 1950 in the U.S.[13] And indeed, people can coexist with grizzly bears, using proven successful measures to reduce conflicts. Good sanitation practices that make human food sources less attractive to bears is of foremost importance.[14] Careful management of human-bear interactions, especially in national parks, allows bears to be consistently much closer to people without harmful consequences.[15] Deterrents such as bear pepper spray have been shown to be a viable alternative to firearms for protection during close encounters with bears.[16] Finally, proven management of agricultural attractants such as dead livestock, sheep and cow calves can substantially reduce conflicts.[17]

At the time of passage of the ESA and the listing of the grizzly bear as a threatened species in 1975, bears were known to still be present in Montana, Idaho and Wyoming.[18] Small numbers of grizzly bears may also have been present in remote areas of the North Cascades, and there are continued reports up to the present time that grizzly bears occasionally disperse from the Canadian side of the Cascades into the U.S. A grizzly bear was shot in the San Juan National Forest in Colorado in 1979, but none have been found in that ecosystem since then. No resident grizzly bears have been found in the Selway-Bitterroot ecosystem since the time of listing, although the Service considers it to be one of the seven populations where bears persisted and could be recovered.

Figure 1. Historic grizzly bear range *circa* 1850 (light green), remaining range *circa* 1920 (dark green), and approximate dates of local extirpations, where known. (*D. Mattson, unpublished data.)*

B. Current distribution and population status of grizzly bears and opportunities for additional recovery

As noted above, grizzly bears survive in just five areas. These areas harbor at most between 1,500 and 1,800 bears, occupying roughly 93,000 square miles or less than 1 percent of the species' historic range in the conterminous U.S. (Table 1, Figure 1). The vast majority of remaining bears are confined to the Greater Yellowstone and North Continental Divide Ecosystems. Yet the other recovery areas identified in the 1993 recovery plan are 50 percent larger than Greater Yellowstone and North Continental Divide combined, and at least across the northern Rockies have the potential to create an interconnected meta-population that provides greater security for the species as a whole and a buffer against the projected adverse effects of climate change and nonnative species.

Table 1. Modeled area of suitable habitat and estimated grizzly populations for the grizzly bear recovery areas identified by the 1993 recovery plan.

Recovery Zone	States	Habitat Area (sq mi)	Abundance	Trend Since Listing
Greater Yellowstone	MT, WY, ID	27,599	718 (640-797)[19]	Increased
North Continental Divide	MT	8,836	765 (715-831)[20]	Increased
Selkirk Mountains	ID, WA	1,739	30-50	Unchanged
Cabinet-Yaak	ID, MT	2,747	38-48	Unchanged
North Cascades	WA	8,638	~6	Unchanged
Selway-Bitterroot	ID, MT	41,403	0	Unchanged

A number of studies confirm extensive recovery potential in recovery zones other than Greater Yellowstone and the North Continental Divide. Recent research shows the North Cascades has the potential to support a population of over 700 grizzly bears.[21] There is similarly extensive potential in the Selway Bitterroot with several rigorous studies showing the area could support a robust population ranging from 300 to more than 600 bears, depending on the extent of the area considered.[22] The smaller Cabinet-Yaak could support roughly an additional 100 bears[23], and the Selkirks could support roughly an additional 80 to 90 bears, including the portion of the recovery zone in Canada.[24] In sum, these studies indicate that even just considering those areas where the Service has developed recovery strategies, grizzly bear numbers could be nearly doubled. Clearly, this is but a small part of the potential for recovering grizzly bears within the conterminous U.S.

C. Additional Potential Grizzly Bear Recovery Areas within Their Historic Range

In 1975, the grizzly bear was protected under the Endangered Species Act across its entire range in the "conterminous United States." It remains protected across this range today. Yet, the Service has never assessed recovery potential within this range. The need to assess the potential for additional recovery areas was recently acknowledged by the Service in a 2011 status review of the grizzly bear, in which the agency identified a need to conduct studies of habitat suitability in Colorado, New Mexico, Arizona, Utah, California, Nevada, Oregon and southern Washington.[25] To facilitate such an assessment, we have compiled all available studies of suitable grizzly bear habitat and compiled them into a single map (Figure 2).[26]

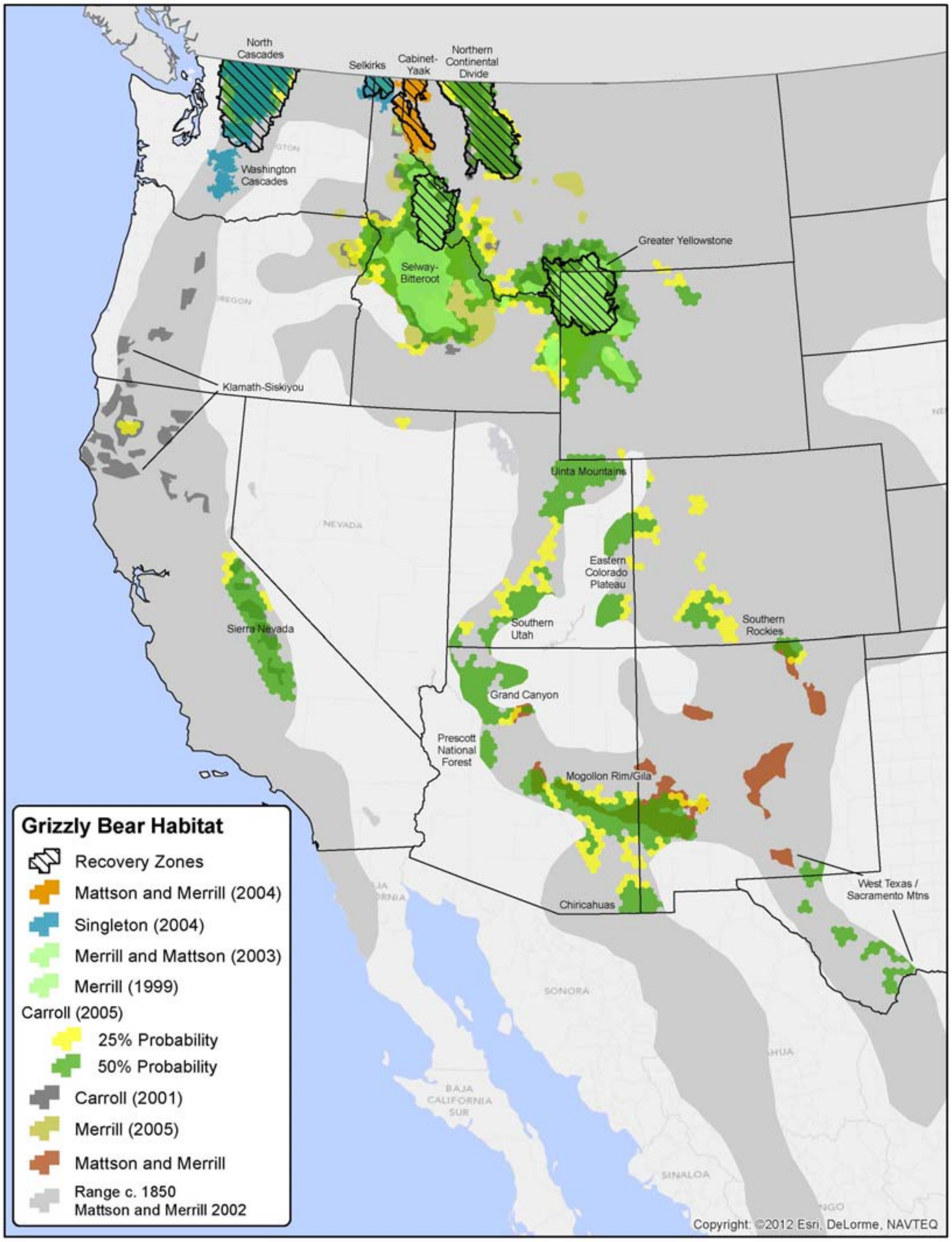

Figure 2. Compilation of analyses of potential grizzly bear habitat in the lower 48 States within the historic range of the grizzly bear.[27]

Based on available studies, there are several areas that have a high likelihood of having sufficient suitable habitat to act as grizzly bear recovery areas, including the Mogollon Rim and Gila Wilderness complex, Sierra Nevada, Grand Canyon and Uinta Mountains (Table 2). All of these areas have more modeled suitable habitat than both the Cabinet-Yaak and Selkirk recovery zones and appear to contain habitat that is remote enough and productive enough to support a grizzly bear population. In addition, several of the areas have large blocks of suitable habitat nearby that with management of linkage areas could provide additional space for bears and further buttress populations. Those areas include portions of the Prescott National Forest south of the Grand Canyon, the Chiricahua and surrounding Sky Islands south of the Mogollon Rim and Gila Complex, and the Washington Cascades just south of the North Cascades.

Table 2. Potential grizzly bear recovery areas according to available studies.

High Likelihood Recovery Areas	States	Habitat Area (sq mi)
Mogollon Rim and Gila Complex	AZ, NM	14,488
Sierra Nevada	CA	7,747
Grand Canyon	AZ	6,180
Uinta Mountains	UT	6,067

In addition to the above potential core recovery areas, there are several areas of smaller blocks of habitat that considered together may have the potential to support grizzly bear populations, including the Klamath-Siskiyou, southern Rocky Mountains and the eastern Colorado Plateau on the Utah and Colorado border (Table 3). A revised recovery plan should further evaluate the recovery potential of all of these areas.

Table 3. Additional potential grizzly bear recovery areas pending further study.

Additional Potential Recovery Areas	States	Habitat Area (sq mi)
Klamath-Siskiyou	CA, OR	6,861
Southern Rocky Mountains	CO, NM	4,004
Eastern Colorado Plateau	UT, CO	3,856
Southern Utah	UT	3,028

In order to ensure the grizzly bear is recovered to all significant portions of its range, this petition requests that the Service move expeditiously to revise the 1993 recovery plan to include recovery strategies for all additional areas that are found to support sufficient core habitat to support a population. Greater Yellowstone and North Continental Divide – the two areas where substantial recovery has occurred and where removal of protections are being considered – represent a mere 22 percent of the suitable habitat identified in available studies and less than 4 percent of the species' historic range, meaning the bear is not yet recovered.

Restoring grizzly bears to additional areas would restore diverse behaviors that have been lost and increase opportunities for the overall adaptability of the species to the changing world we now live in. It would also benefit the many ecosystems that once harbored these great animals.

E. The Role of Grizzly Bears in the Ecosystem

Grizzly bears are both an umbrella species for the ecosystems in which they are found and a strongly interacting species that can impact the composition and abundance of other species within the ecosystem.[28] Grizzly bears can play a central role in the function of ecosystem through a complex web of ecological relations.[29] Figure 3 depicts a simplified version of such an ecosystem food web in the Greater Yellowstone ecosystem, wherein energy flows from diverse sources to, and through, bears. Through their activities they can enhance and regulate ecosystem function.

Grizzlies accelerate geomorphic processes, enrich soils, enhance biodiversity, regulate prey populations and transport nutrients from marine to terrestrial systems.[30] A large body of research has established the key role that grizzly bears play in enriching upland environments through extraction of salmon from spawning streams and the re-deposition of salmon biomass in the form of carcasses and bear feces.[31] Bear excavations of roots and rodents have been shown to increase the diversity of plant communities and elevate soil nitrogen levels.[32] Grizzly bear predation on calves also regulates, and even limits, boreal moose populations, and has the potential to do the same with interior elk populations.[33]

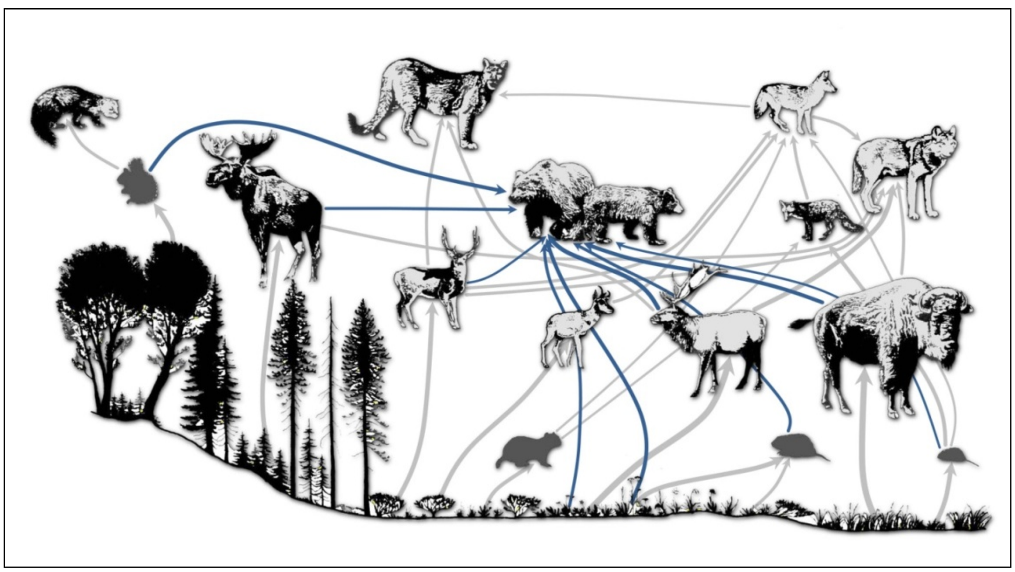

Figure 3. A simplified representation of energy flows from vegetation to herbivores to carnivores in the Yellowstone ecosystem. Flows to grizzly and black bears are shown by blue arrows. (*D. Mattson, unpublished.)*

The implications of this ecological uniqueness are clear for grizzly bear conservation. First and foremost, the role of grizzlies in ecosystems and the related services they provide are a benefit that should be recognized and considered in conservation planning.[34] Second, ecologically functional and otherwise healthy grizzly bear populations need to be a part of conservation goals.[35] Finally, grizzlies can provide extraordinary amounts of information about the overall health of ecosystems. Because of the important roles grizzlies play and their grandeur, we should continue to work to recover grizzlies to more of their former range in the lower 48 States.

III. The Need for a Revised Recovery Plan

As demonstrated above, recovery efforts, to date, have focused on just two small portions of the grizzly bear's range centered on Yellowstone and Glacier National Parks. Little action has been taken to recover either the other identified recovery areas, where the status of bears has remained virtually unchanged, or additional areas identified by the Service as potential targets for recovery in Arizona, California, Colorado, New Mexico, Oregon or Utah. As such, the grizzly bear remains unrecovered over significant portions of its range. This, alone, necessitates a new recovery plan that seeks to recover the bear across suitable portions of its historic range. Additional support for a new recovery plan is provided by failings in the existing recovery plan, new science concerning the conservation of grizzly bears – which is presented throughout the petition – and new threats that were not considered in 1993, namely climate change, nonnative species and an ever-growing human population.

A. Existing efforts have not successfully recovered grizzly bears

Grizzly bear recovery efforts in the lower 48 States have had mixed results. The most significant gains have been made by protecting the grizzly bear under the Endangered Species Act and thereby reducing human-caused mortalities.[36] One of the primary reasons grizzly bears were protected under the Act was due to excessive killing that extirpated the species from most of its range and continued high levels of human-caused mortality in its remaining range in Idaho, Montana and Wyoming. Human-caused mortality came from hunting, poaching, conflicts with livestock and hunters, and conflicts from poor garbage storage practices resulting in bears being attracted to human developments.

Legal protection ended sport hunting, established penalties for poaching, provided a management framework that reduced conditioning of grizzly bears to human foods and attractants, and reduced other forms of conflict on public lands.[37] With endangered species protection, significant resources were appropriated to federal and state agencies that helped to address threats and resulted in significant conservation gains in parts of the species' range in the northern Rocky Mountains.

These recovery gains, however, have primarily been limited to the Greater Yellowstone and North Continental Divide ecosystems, where grizzly bears were most abundant at the time of listing in 1975. Substantially less effort has been dedicated to the other five areas identified in the 1993 recovery plan as having potential for recovery, and no effort has been made to assess the potential for recovery in additional areas or to develop recovery strategies for any areas identified.

By failing to step back and consider the needs of the species as a whole and pursuing a piecemeal approach the Service has failed to develop a recovery plan that fully restores grizzly bears to the wider landscapes of the western United States. For example, even though the Service recognized the importance of a meta-population approach to recovery and stated in the 1993 plan that it would complete an assessment of linkage zones between ecosystems within five years of plan finalization, this has never occurred.[38] Similarly, despite the known negative impacts of increasing roads density on grizzly bear populations, the Forest Service has adopted substantially different standards for managing roads in different grizzly bear ecosystems across the northern Rocky Mountains. The lack of a coordinated and unified recovery strategy has also hindered efforts to address major connectivity barriers such as highways, which are currently mitigated only in a haphazard manner by state, federal and tribal agencies.

The lack of a range-wide recovery plan has also reduced the effectiveness of strategies to address continuing sources of human-caused mortality. While significant improvements in sanitation practices have been made in Glacier, Yellowstone and Grand Teton national parks, efforts to address sanitation standards in communities on the periphery of these ecosystems has been haphazard. Inconsistent management approaches have limited expansion of grizzly bears into suitable habitat beyond the core areas of these ecosystems and has resulted in nearly complete isolation of remaining grizzly bear populations. A comprehensive assessment of human-caused mortalities would enhance efforts to reduce conflicts and improve prospects for connectivity.

How Yellowstone Park Resolved Problems with Grizzly Bears

Yellowstone National Park forms the core of Greater Yellowstone grizzly bear's population. At more than 2 million acres of largely wild country, Yellowstone provides an essential sanctuary for one of the largest remaining populations in the lower 48.

But Yellowstone was historically a center of human-bear conflicts as well. Human attractants were once abundant, and property damage and injuries were common prior to the institution of more rigorous regulations and bear management, especially after grizzly bears were listed under the Endangered Species Act.

Following abrupt closure of garbage dumps in 1969 in the park, where viewing bears feeding had been a popular tourist attraction, hundreds of habituated grizzly bears were killed – so many that the future of Yellowstone's grizzly bears was in doubt. (There was a fierce debate over whether a wiser course would have been to close the dumps more gradually). The Park Service also initiated new rules to reduce the influence of human foods on grizzly bears and return the population to a more natural diet. It made enforcement of, and public education about, keeping food out of the bear's reach a top priority. And, it placed greater emphasis on habitat protection, closing about 18 percent of the park to overnight camping.

Since the time the bear management programs were initiated, the number of human injuries caused by bears has plummeted from an average of 45 per year to far less than 1 per year. Conflicts today are rare occurrences, despite continuing increases in human visitation to over 3 million people per year.

Today, Yellowstone Park is a shining example of effective management of people in the interest of recovering the grizzly bear.

There is an immediate need to augment existing populations in the Selkirks and North Cascades, to continue augmenting the Cabinet-Yaak population, and to begin the process of creating new populations in the Selway-Bitterroot and elsewhere. To date, efforts in this regard have been sporadic. The Cabinet–Yaak is the only one of these populations to have received any augmentation of bears with the translocation of 13 grizzly bears from the NCDE since the early 1990's.[39] Many of the grizzly bears known from this ecosystem are descendants from one of these reintroduced females. Without these translocated grizzly bears, the population would likely have been extirpated during the last several decades.[40]

In 2000, a final environmental impact statement and a proposed 10(j) rule were issued to reintroduce bears to the Selway-Bitterroot, but the proposed rule was never finalized and the Service failed to move forward with reintroduction.[41] The Preferred Alternative set forth a program to reintroduce a minimum of 25 grizzly bears of both sexes over a 5-year period to the Bitterroot ecosystem. The Service anticipated that a grizzly bear population could reach the tentative recovery goal of 280 grizzly bears occupying all suitable habitat within 50 years (assuming an optimal 4 percent growth rate); but more realistically this process would probably take closer to 110 years (2 percent growth rate).[42] Other experts maintain that a population of 300 to 600 bears could be sustained if the definition of "suitable" habitat were based on biological factors rather than political/societal factors.[43] Following the change of presidential administrations in 2001, the Service published a notice of intent to reevaluate the reintroduction and published a proposed rule to remove the existing nonessential experimental rule.[44] This regulation and the associated nonessential experimental rule putatively remain in effect as the proposed reevaluation and associated removal were never finalized. Thus, even though the final regulations remain in effect, they were never implemented.

The Service completed a revised grizzly bear recovery strategy for the North Cascades in 1997.[45] The plan called for completing an environmental impact statement on augmentation of the very small, existing grizzly bear population with bears from Canada. Despite this plan, to date the Service has not completed an environmental analysis to conduct much-needed augmentation of the population. This failure is despite the fact that substantial outreach to educate the public about grizzly bear recovery in the area has been completed and that this effective outreach is reflected in significant public support for grizzly bear recovery.[46]

The other immediate action that is needed to further grizzly bear recovery is to protect habitats for existing and potential populations, particularly in the Cabinet-Yaak, Selkirks and Selway-Bitterroot. The greatest needs are to protect remaining secure habitat by limiting road densities, making existing roads more permeable for bears, and ensuring proper storage of trash, all to avoid conflicts between people and bears. In the North Continental Divide, restrictions on road densities adopted on the Flathead National Forest and construction of wildlife underpasses and overpasses on highway U.S. 93 have improved habitat security and connectivity for grizzly bears and other wildlife, demonstrating that such actions can work.[47] Similar action is needed to ameliorate the negative impacts of U.S. highways 3 and 95 and other highways as shown in Figure 4 below, which is limiting connectivity between populations in the northern Rockies.[48]

The Cabinet-Yaak population is also threatened by isolation, human attractants on the periphery of the ecosystem, high road densities and two proposed hard rock mines.[49] The lethality of people in this ecosystem is much higher relative to human population size of any population in the lower 48 states.[50] Similarly, the Selkirk population is threatened with imminent extinction by high densities of roads and fragmentation, small population size and isolation. For either of these populations to recover immediate action is needed to address these issues.

Even in Greater Yellowstone, where there has been extensive effort toward recovery, several habitat management measures are still needed. Habitat protections do not extend outside of an outdated recovery zone boundary, drawn when bears were at all time low numbers, even though grizzly bears use about 1.7 million acres of additional habitat, 75 percent of which is vulnerable to development.[51] And the population has remained isolated from all other grizzly bear populations. This isolation is not surprising given that the nearest grizzly bear recovery area is 240 miles away in central Idaho where restoration of grizzlies has not yet occurred. Isolation is confirmed by a lack of genetic interchange with any other grizzly bear population during the last 100 years.[52] As a result, GYE grizzly bears have the lowest genetic heterozygosity of any continental population yet investigated.[53] Addressing this problem will require restoring and ensuring linkages to other populations.

The Miracle of Hibernation

Grizzly bears survive the cold winter months, when foods are scarce, by hibernating in dens. During this time, they do not eat, drink, urinate or defecate. Amazingly, they also do not lose bone or muscle mass, or kidney function. Iin January, the females bear young – usually a single cub or twins. At less than a pound in weight at birth, a bear cub is the smallest of any mammalian young compared to its size as an adult (400 to 700 pounds or so). In a groggy state, the mother nurses her young until they emerge together in the springtime. Family groups move considerable distances from high, snow-covered elevations to lower landscapes to reach palatable, emerging vegetation, or to feed on winter-killed or weakened big game on foothill winter ranges.

In preparation for hibernation, grizzly bears increase their food intake dramatically during hyperphagia, during which excess food is stored as fat. Grizzly bears must have access to foods rich in protein and carbohydrates in order to build up sufficient fat reserves to survive denning and postdenning periods. Bears can eat 50,000 calories or more a day during hyperphagia.

Grizzly bears have been the subject of intense interest among medical researchers, because of their ability to survive such long periods without eating or eliminating waste.

In addition to habitat loss and isolation, killing of grizzly bears by people continues to be a serious threat to the survival and recovery of grizzly bears, with roughly 80 percent of all mortality of adult bears caused by people.[54] The rate at which humans kill grizzlies can be usefully understood as a function of how often bears encounter people (i.e., frequency of contact) and the likelihood, given an encounter, that the bear will be killed (i.e., lethality of encounter).[55] Some degree of intractable conflict follows from the fact that grizzly bears are large carnivores that pose a threat to human safety and to domesticated animals and agricultural crops.[56] Because of that, the successful conservation of grizzly bears will always depend on wild areas with limited human activity and access. This unavoidable reality requires that restrictions on human access and activity be an integral part of grizzly bear management, including management of backcountry human travel and limits on density of open roads on public lands.[57] Numerous studies have shown that mortality risk for grizzly bears is dramatically higher near roads or, more generally, in areas with greater road access.[58] The extent of restrictions on human activity and access will necessarily be determined in part by the tolerance of involved people.[59]

In sum, recovery efforts, to date, have been limited in extent and have failed to recover grizzly bears to the majority of areas where recovery potential has been identified. There is an immediate need to take action to recover additional populations through reintroduction, augmentation and protection, restoration of habitat, and reduction of human-caused mortalities.

B. New threats to grizzly bears have arisen since 1993

Climate Change

Like most recovery plans developed in the 1990s, the recovery plan for the grizzly bear did not consider or mitigate for the potential impacts of climate change.[60] There is little doubt that dramatic climate change is happening at a rapid pace, largely due to anthropogenic forcing.[61] Increases in temperature have accelerated during the last 40 years and are projected to increase in virtually all regions globally. Projections regarding precipitation, especially at a regional level, have remained more uncertain than projections regarding temperatures. Nonetheless, regional climate models have proliferated and improved to the point where researchers have been able to reach increasingly robust conclusions about not only precipitation, but also drought and related effects on vegetation. In North America much of this advance has been driven by the North American Regional Climate Change Assessment Program (NARCCAP) consortium.[62]

Of great relevance to grizzly bears in the conterminous U.S. is the fact that regional models are in consensus that summertime temperatures will increase substantially in the northern Rocky Mountains over the next 100 years.[63] Moreover, even though projections of growing season (June-August) precipitation vary, there is consensus about the incidence of drought, largely driven by increases in growing season temperatures and earlier snow-melt. Recent multi-model forecasts project a substantial increase in drought frequency and severity throughout the northern Rockies,[64] with demonstrable and projected effects on productivity and ecosystems accentuated by potentially dramatic changes in fire, insect and disease regimes affecting already drought-stressed vegetation.[65]

The effects of climate change are already being seen in the Greater Yellowstone Ecosystem, where one of the grizzly bear's most important foods, whitebark pine seeds, have seen catastrophic declines.[66] An estimated 80 percent to 90 percent of current whitebark pine range is expected to be lost over the next 100 years due to climate change, with further losses catalyzed by disease, insects, fire and failed recruitment.[67] Whitebark pine forests have already undergone major declines during the last decade due primarily to an unprecedented climate-driven outbreak of native mountain pine beetles,[68] exacerbated by an on-going warming-enhanced epidemic of a non-native fungal pathogen called white pine blister rust.[69] These two agents synergistically contribute to tree mortality, with blister rust more immediately lethal to small trees and beetles lethal to trees greater than 6 inches in diameter.[70] Loss of whitebark pine is consequential because of its demonstrable effects on the reproduction and survival of Yellowstone grizzly bears. Female bears eat twice as many pine seeds as do males,[71] and produce more cubs following good, compared to poor, whitebark pine seed crops.[72] All bears also tend to survive at a higher rate during good seed crops because they are less exposed to human-related risks while exploiting this food, which occurs in remote high-elevation areas.[73]

In the wake of loss of whitebark pine and other food sources, GYE bears have been turning to eating more meat, including both livestock and elk, leading to increased human conflicts and mortalities.[74] There is some evidence to suggest that the same phenomena occurred in NCDE in eastern parts of this ecosystem after whitebark pine was decimated by blister rust during the 1980s and 1990s.[75] There are potentially effective responses to this problem,[76] but additional resources and skilled agency personnel are needed.

There is little doubt that grizzly bears in the northern Rocky Mountains will be subjected to increasing warming and drying during the next century, with concomitant declines in overall productivity, and that we are seeing just the beginning of climate impacts on grizzly bears and their habitat. The question is not whether grizzly bear densities will decline, but to what extent, which increases the imperative to establish and maintain many large connected populations as a buffer against these climate-forced changes. A new recovery plan would provide a path forward for a viable bear population in a warming world.

Expanded Human Population

Since 1993, when the recovery plan for grizzly bears was developed, the human population of the western United States has seen extensive growth. In Montana, for example, the population grew from 799,065 people in 1990 to 1,015,165 in 2013, a 27 percent increase. Every other western state in the grizzly bear's range has seen similar growth. Such population growth is a substantial impediment to grizzly bear recovery, but it can be addressed by recovery actions like building wildlife-friendly road crossings, improving sanitation measures around core recovery areas and linkage zones, and generally building greater tolerance of bears and understanding of bear needs. Areas of particular concern are Island Park/Henry's Lake in the GYE, the Flathead Valley in the NCDE, and the CYE and SE.

IV. Recommendations for a Revised Range-Wide Recovery Plan

As previously noted, the Service itself identified a need to update the recovery plan for the grizzly bear in their 2011 five-year review of the species, concluding that the 1993 plan "no longer reflects the best-available and most up-to-date information on the biology of the species and its habitat." We echo the call for an updated recovery plan and in so doing recommend the following revised recovery criteria, all of which are necessary to ensure a comprehensive and unified framework for achieving recovery.

Revised Recovery Criterion 1: Develop recovery strategies for all significant areas of suitable habitat in the grizzly bear's historic range

The Service should develop a revised recovery plan that includes recovery strategies for additional areas that are found to contain sufficient habitat to support populations, such as the Mogollon Rim and Gila Wilderness Complex, Sierra Nevada, Uinta Mountains and elsewhere, to ensure the grizzly bear is recovered to all significant portions of range. Such an approach is consistent with the Service's own recovery planning guidance, which calls for using the conservation biology principles of representation, resilience and redundancy.[77] Representation requires the protection of populations across the full range of ecological settings of a species' range. Resiliency encompasses population-specific attributes that increase long-term persistence and integrity in the face of disturbance. And redundancy requires establishing multiple populations in each ecological setting to spread extinction risk and increase species' viability.

Reducing Grizzly Bear Conflicts Along the Rocky Mountain Front

The foothills grasslands of the Rocky Mountain Front east of Glacier National Park is the last remaining place in the lower 48 states where grizzly bears have continuously occupied prairie grasslands. Under the protection of the Endangered Species Act, grizzly bears have expanded their use of this habitat to the east, roaming today as far as 80 miles east of the front. This expansion has been facilitated by a concerted effort among livestock operators, managers and local landowners to reduce human-bear conflicts. Most of these conflicts have been livestock oriented, and focused in areas of concentrated attractants, such as boneyards, calving and lambing areas, beehives, and riparian areas, especially in the spring and fall.

Conflicts between grizzly bears and residents increased in the 1980's and peaked in the late 1990's. Recovery of the bear in this agricultural area was, for years, highly controversial. With the leadership of the state of Montana, the cooperation among livestock operators, and the efforts of a graduate student named Seth Wilson, a redoubled effort was initiated in the late 1990s to improve the practice of coexistence with grizzly bears. The effort started with in-person interviews and GIS technology to map specific attractants. The state shared its data on conflicts and locations.

Through this collaboration, a model was developed that quantified patterns of conflicts and identified landscape locations that were at highest risk of experiencing conflicts. A productive local discussion ensued about these patterns and what might be done to reduce conflicts. Through extensive dialogue, a local watershed group began to utilize this information; it raised funds for fencing calving and riparian areas, reducing boneyards, developing off site water sources using solar pumps, and placing electric fencing around beehives.

The process built trust and social capital among participants. It improved awareness of the causes and locations of conflicts, which in turn led to solutions. Political support for grizzly bears improved, as agriculturalists found common ground to reduce conflicts and benefit their livelihood. Because of improved local tolerance and fewer conflicts, grizzly bears have considerably expanded their range since the time of listing. The Rocky Mountain Front is an example of what can be done proactively to conserve grizzly bears while maintaining local ways of life.

Recovering grizzly bears to additional habitat areas will clearly meet the goals of these principles. Restoring grizzly bears to the Southwest, for example, would increase representation by reintroducing bears into an area where they forage on Gambell's oak acorns and pinyon pine seeds. Overall, recovery to additional areas would increase redundancy by creating more populations and foster greater resilience by buffering grizzly bears against the uncertainties posed by climate change, invasive species and human population growth.

As previously discussed, reintroductions of grizzly bears from other ecosystems will be needed for all of these additional areas. Any reintroduction efforts must entail introducing enough bears to achieve reasonable prospects of achieving recovery. The Service must take special precautions to prevent poaching and other human-caused mortality, which have plagued recovery efforts in the CYE.

To that end, the Service should work with the states and Forest Service to reduce attractants and other sources of potential conflict. And it must undertake an extensive outreach effort such has been done in the NCE. It is critical for the public to be sufficiently supportive to limit mortality. As was done with wolves prior to reintroduction, bringing in people from occupied grizzly bear habitat to meet with landowners and others in an area where reintroduction is being proposed can be an effective means of raising awareness about what it is like to live in the company of grizzly bears and how to avoid conflicts. There is enormous opportunity to build on the skill, experience and tools that have proven effective in reducing bear-human conflicts in areas suitable for grizzly recovery.

Revised Recovery Criterion 2: Develop Population Goals for all Grizzly Bear Populations and for the Species Across its Range

In developing a revised recovery plan, the Service should develop population goals for all of the individual recovery areas, as well as for the entire population across its range, in order to ensure the resiliency of the species. Population goals for individual recovery areas will depend on the size and productivity of habitat and proximity to other populations, but as a general rule a minimum goal of 200 to 500 grizzly bears per population should buffer against inbreeding depression and demographic and environmental stochasticity, particularly if populations are interconnected.[78]

For an overall population goal, we recommend the Service set a minimum goal of 4,000 to 6,000 bears and to the maximum extent practical ensure these bears occur in an interconnected meta-population. Two comprehensive reviews of minimum viable populations found that populations within this range across a broad range of species, including grizzly bears, have a high likelihood of long-term persistence.[79] In an analysis of 102 species, including the grizzly bear, Reed et al., (2003) estimated a mean and median minimum viable population of 7,316 and 5,816 individuals, respectively. Likewise, Traill et al., (2007) combined results from studies on 212 species, including the grizzly bear, finding that the median minimum viable population was 4,169 individuals. These studies strongly suggest that an interconnected meta-population of 4,000 to 6,000 grizzly bears will have a high likelihood of survival.

We are recommending a meta-population approach in which populations across the historic range of grizzly bears are interconnected, where possible, through habitat linkages because numerous studies have determined that this is the best way to ensure the long-term survival of species, including the grizzly bear.[80] To date, existing populations remain largely isolated. In particular, the GYE grizzly bear population is totally isolated from all other populations. The three other main surviving populations are also largely isolated. There have been just a few grizzly bears known to disperse from the NCDE to other grizzly bear areas, including the Cabinet-Yaak and Selway-Bitterroot. Thus, any revised recovery plan should seek to address connectivity between both existing and any newly created populations.

The Service has embraced a meta-population approach before for recovery planning. For example, in devising a recovery plan for the Sierra Nevada Distinct Segment (DPS) of Bighorn Sheep, the Service developed a range-wide delisting criterion of 750 individuals across nine geographic regions that comprised the Sierra Nevada DPS meta-population.[81] This meta-population approach recognized that each of the nine sub-populations may increase or decrease over short periods of time, but that the overall meta-population would fluctuate between 600 and 1,000 sheep, while averaging about 750 sheep, or approximately 75 percent of estimated carrying capacity. Importantly, this criterion was separate from demographic delisting criterion that applied to each of the nine geographic sub-units.

As the Service explained for the Sierra Nevada DPS, the meta-population approach is "an important biological principle for long-term survival of bighorn sheep populations, it is equally important as a management concept that prioritizes regional coordination … and habitat management." The same is true for grizzly bears. A meta-population recovery criterion is an important biological goal for the long-term persistence of grizzly bears in the lower 48 states. Recovering a meta-population across all of the identified grizzly bear ecosystems and beyond will require improved land-management practices across millions of acres of public lands; this in turn will benefit numerous other species.

Revised Recovery Criterion 3: Protect, maintain and restore grizzly bear habitat across the species' range by limiting new development and road densities in existing suitable habitat and restoring degraded habitat.

In order to recover the grizzly bear to significant portions of its historic range such that it is secure from extinction and fulfilling its ecological role the Service will need to protect secure habitat by limiting road densities and other development. Grizzly bears do best in large, relatively road-free landscapes. Indeed, road density is a key variable in models of grizzly bear habitat.[82] Existing roadless areas, however, are not sufficient to support a recovered grizzly bear population and thus bears have no choice but to live in areas with roads and people.

To ensure the recovery of the grizzly bear, a revised recovery plan must develop consistent road density standards for public lands, and restore degraded lands through closing and decommissioning roads. Indeed, in the 1993 plan, the Service stated that roads were the biggest threat facing grizzly bears today.

There is an enormous body of scientific information on the amount of secure habitat that is needed at the scale of a bear's home range and the limits that are required on roads and access. Yet, this information has been applied haphazardly. And there is new research on roads since the 1993 when the recovery plan was developed that should be incorporated in a revised plan.

Revised Recovery Criterion 4: Protect habitat in areas that link grizzly bear recovery areas.

The Service must identify areas that link recovery areas and develop habitat standards to protect these areas. Since 1993 scientific research and management practice have amply demonstrated that new techniques make it possible to reconnect grizzly bear recovery areas, with prospects of establishing connected populations large enough to ensure demographic and evolutionary resilience.

Given the slow dispersal rates and philopatry of female grizzly bears, linkage habitat should not be thought of as a corridor, but more as contiguous occupied habitat. Addressing the problem of fragmentation associated with highways and the continued human development of low-elevation areas is important. Major highway-related fracture zones between grizzly bear recovery areas in the northern Rockies have been identified (Figure 4),[83] but little systematic work on a comprehensive scale has been done with this information to improve prospects for bear movement across highways.

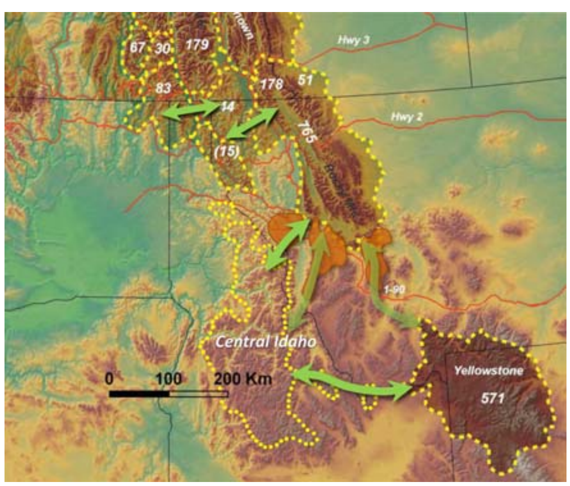

Figure 4. Grizzly bear population fragments identified by Proctor et al. (2012) and potential linkages shown in green together with potential grizzly bear habitat in central Idaho.

There are however, a number of individual projects that have enhanced connectivity. For example, along U.S. 93 north of Missoula, Mont., a collaboration that began in 2001 has resulted in the construction of numerous highway-crossing structures that facilitate east-west movement by grizzly bears and other wildlife within the NCDE. The Confederated Kootenai Salish tribes, Montana Department of Transportation and Federal Highway Administration have been working together to improve opportunities for grizzly bears and other wildlife to cross the highway. Today, there are 40 underpasses and one overpass designed to allow safe wildlife passage. Using remote cameras, sand track beds placed near the highway, and road kill data, researchers identified the places used most heavily by wildlife, including grizzly bears. They used this information to locate the crossing structures, which have reduced road-killed wildlife by 40 percent, and are being used by bears.

In addition, new federal funding is available for highway road projects designed to increase connectivity. Section 1103(a)(13) of the Moving Ahead for Progress in the 21st Century Act allows for federal funding of environmental mitigation activities designed to "reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats."[84] This provides additional means whereby land management agencies and the Department of Transportation can work together to address grizzly bear connectivity during road construction projects.

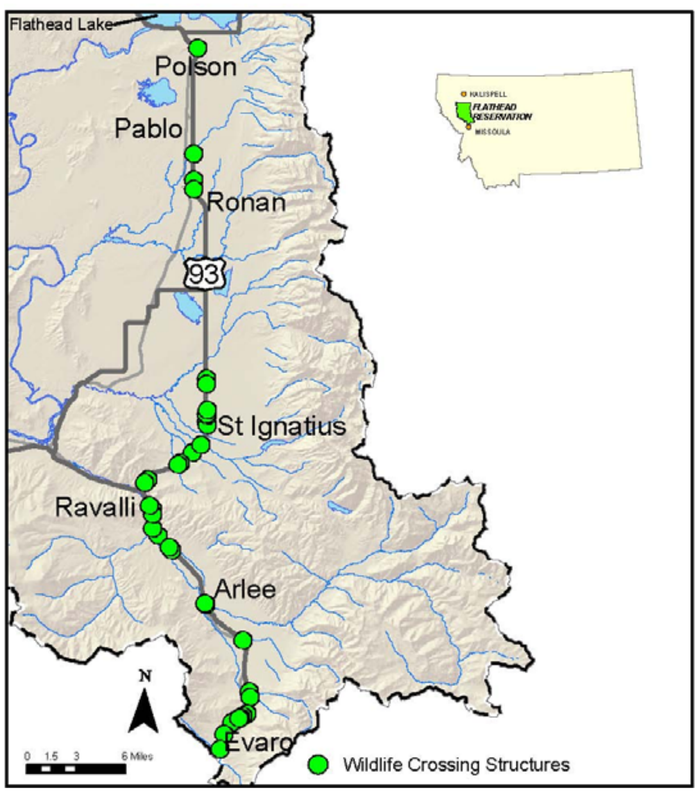

Figure 5. Highway 93 crossing structure locations.
Courtesy of CSKT,MDT, and WTI-MSU

A recovery criterion to address habitat linkages and barriers to connectivity is the best approach to addressing the recommendations in the 2011 status review which identified the following key steps to overcoming connectivity barriers:

- Identify key linkage areas using a data-based approach using GPS collars and modeling.
- Deliver effective linkage conservation in the Northern Rockies on public and private lands found in intervening valleys, and major transportation routes.
- Conserve private lands using easements and acquisitions, sanitation assistance to landowners, and intensive outreach in order for animals to live within, and pass through, areas of low human densities.
- Develop partnerships with the Federal Highway Administration to construct approximately 28 high-priority highway underpasses and appropriate wildlife fencing at crossing areas to guide animals to these underpasses across all seven paved highways between the Canadian border and the GYA.

Figure 6. Grizzly Bear using underpass on Highway 93 north of Missoula

Revised Recovery Criterion 5: Integrated climate change mitigation and adaptation strategy for grizzly bears

The effect of climate change on grizzly bears was not considered in the 1993 recovery plan despite reasonably foreseeable adverse effects on grizzly bear populations. To address these challenges, the Service must work with and provide guidance to federal land-management agencies in developing integrated mitigation strategies (i.e., actions that reduce causes of stress) and adaptation strategies (i.e., actions that help ecosystems accommodate change).

Again, a policy that improves prospects for maintaining larger, connected ecosystems enhances the ability of grizzly bear to adapt to climate change and invasive species and disease.

A comprehensive and integrated climate adaptation and mitigation approach would be consistent with the Service's National Climate Adaptation Strategy and the best scientific information relating to adaptation strategies for wildlife management.[85] The Great Northern Landscape Cooperative, a partnership of agencies involved in assessing and mitigating the effects of climate change, could also be called upon to address the impacts of climate change, as is being done with sage grouse.[86] Adopting a criterion that evaluates and institutionalizes climate change adaptation mechanisms would help to ensure that there are adequate regulatory mechanisms on the landscape that will protect the grizzly bear over the next several centuries as climate change intensifies and worsens.

Revised Criteria Criterion 6: Strategies for reducing human-caused mortality

The 1993 Recovery Plan does not explicitly nor comprehensively address the proximal drivers of human-caused mortality. This is a critically important omission because humans have been, and continue to be, the primary cause of premature death for adult grizzly bears. More than anything else, assurance of grizzly bear recovery comes down to decreasing the odds that bears are killed by people, either as a function of how often grizzly bears and people encounter each other or, given that an encounter has happened, the odds that the person will kill the bear. And the problem of human-caused mortality will very likely get worse before it gets better as climate warming affects bear distribution and behavior, especially if bears range more widely and spend more time in habitats near people.[87]

Although the Service has developed some standards that address habitat management — habitat security in particular — little has been done to develop standards or protocols that address specific human behaviors known to increase the risks of fatal conflicts. And much is known about human behaviors leading to conflicts with grizzly bears. Hunter-killed ungulate carcasses, unsecured human-associated attractants, high-risk livestock husbandry practices, and risky backcountry behaviors are all problematic. These human behaviors are all amenable to being changed in ways that can considerably reduce conflicts and related risks of bears dying. But to do so requires well-thought-out, well-resourced and well-tested programs of outreach, education and engagement targeting the people most directly involved in risky situations and behaviors.

The Recovery Plan did identify and describe some people-focused measures to promote recovery, including certain outreach activities. However, the coverage of this issue was far from complete and lacked strategic context or guidance. Given its resources and authority, there is an imperative for the Service to play a much larger role in managing human behaviors that directly drive conflicts, including establishing standards, providing comprehensive strategic planning, partnering with people and organizations that have expertise in outreach and education, and providing resources for costly projects.

Much is known about how to prevent conflicts between grizzly bears and people. There is a large body of experience with bear-proofing communities, enacting food storage orders, building the infrastructure needed to reduce availability of attractants on national forest lands, changing husbandry practices, using electric fencing around beehives and calving areas, and deploying livestock guard dogs.[88] Furthermore, much has been written about the components of successful community-based efforts which could be replicated and scaled up.[89]

Just as the Service must develop uniform habitat standards, the revised recovery plan must develop standards for addressing human behaviors that drive conflict with grizzly bears. As a first step, the Service must analyze the types, locations, trends and proximal causes of conflicts.[90] The Service has all of the data needed for such an undertaking. In the revised plan, the Service can then provide a comprehensive assessment of conflicts and mortalities and outline specific strategies and related standards needed to address the human-related drivers of conflict.

Conclusion

The Center hereby petitions the Service to revise its 1993 Grizzly Bear Recovery Plan and develop recovery strategies for all significant portions of the species' historic range that still contain sufficient suitable habitat, including but not limited to the Mogollon Rim and Gila Wilderness complex, Sierra Nevada, Grand Canyon and Uinta Mountains. Such a recovery plan must include revised recovery criteria for population size and distribution, habitat quality and connectivity, and regulatory mechanisms for all identified recovery areas.

Restoring grizzly bears in additional areas across their native range in the western U.S. meets the Endangered Species Act's mandate to recover threatened or endangered species throughout all significant portions of their ranges and to conserve the ecosystems upon which they depend. And it would also allow for additional grizzly bear conservation efforts by states and other partners to further recover the species in suitable areas of the western United States, Canada and Mexico where the species has been extirpated. Only with robust populations occupying protected and connected landscapes across the species' historic range can recovery be achieved in the face of the adverse effects of climate change and other human pressures.

Endnotes

[1] See Appendix 1 hereafter for scientific names of taxa mentioned by common name in the text.
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