

U.S. FISH AND WILDLIFE SERVICE SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Ursus arctos horribilis*

COMMON NAME: grizzly bear (North Cascades ecosystem population)

LEAD REGION: Mountain Prairie, Region 6

DATE INFORMATION CURRENT AS OF: February 24, 2016

STATUS/ACTION:

Species assessment - determined either we do not have sufficient information on threats or the information on the threats does not support a proposal to list the species and, therefore, it was not elevated to Candidate status

Listed species petitioned for uplisting for which we have made a warranted-but-precluded finding for uplisting (this is part of the annual resubmitted petition finding)

Candidate that received funding for a proposed listing determination; assessment not updated

New candidate

Continuing candidate

Listing priority number change

Former LPN:

New LPN:

Candidate removal: Former LPN:

A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

F – Range is no longer a U.S. territory.

I – Insufficient information exists on biological vulnerability and threats to support listing.

M – Taxon mistakenly included in past notice of review.

N – Taxon does not meet the Act’s definition of “species.”

X – Taxon believed to be extinct.

Date when the species first became a Candidate (as currently defined): 07/24/1991

Petition Information:

Non-petitioned

Petitioned; Date petition received:

03/13/1990; 01/28/1991;

X 90-day positive - FR date: 08/07/1990

X 12-month warranted but precluded - FR date: 07/24/1991

FOR PETITIONED CANDIDATE SPECIES:

- a. Is uplisting warranted (if yes, see summary of threats below)? YES
- b. To date, has publication of a proposal to uplist been precluded by other higher priority listing actions? YES
- c. Why is listing precluded? Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for this population. We continue to monitor the population and will change its status or implement an emergency listing if necessary. The "Progress on Revising the Lists" section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

ANIMAL/PLANT GROUP AND FAMILY: Mammal, *Ursidae*, Bears

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Western United States, Alaska, Canada, and Mexico

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:
Washington

LAND OWNERSHIP:

A recovery zone has been delineated around each grizzly bear population in the lower 48 states. Recovery zones are defined as "...the area in each grizzly bear ecosystem within which the population and habitat criteria for achievement of recovery will be measured" (USFWS 1993, p. 17). Each recovery zone is capable of providing the habitat necessary to accommodate a recovered grizzly bear population.

The North Cascades recovery zone is one of the largest contiguous blocks of Federal land in the lower 48 states. The recovery zone is composed of about 88 percent Federal lands with approximately 11 percent (2,751 sq km / 1,062 sq mi) managed by North Cascades National Park, 28 percent (7,080 sq km / 2,734 sq mi) by the Mount Baker-Snoqualmie National Forest, 47 percent (11,939 sq km / 4,610 sq mi) by the Wenatchee and Okanogan National Forests; 6 percent managed by State agencies; and 6 percent are private lands (FWS 1997).

LEAD REGION CONTACT: Seth Willey, (303) 236-4257

LEAD FIELD OFFICE CONTACT: Jennifer Fortin-Noreus, (406) 243-4903

BIOLOGICAL INFORMATION:

Species Description – Grizzly bears are generally larger and more heavily built than other bears (Craighead and Mitchell 1982; Schwartz *et al.* 2003b). 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, coarse 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 200-300 kilograms (kg) (400-600 pounds (lb)) for males and 110-160 kg (250-350 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 in Alaska and *U. a. horribilis* in the rest of North America (Rausch 1963). The two North American subspecies approach of Rausch (1963) is generally accepted by taxonomists today, and is the approach we use.

Habitat and Life History –

In general, a grizzly bear’s daily movements are largely driven by the search for food, mates, cover, security, and/or den sites. They are long-lived opportunistic omnivores whose food and space requirements vary depending on a multitude of environmental and behavioral factors and on the experience and knowledge of each individual bear. As such, grizzly bears use a variety of habitats, their home ranges frequently overlap, and home range size changes seasonally, annually, and with reproductive status. Avalanche chutes are important to bears during spring, summer, and autumn (Mace *et al.* 1997; Waller and Mace 1997). Other open-canopied habitats such as shrub lands and places where timber has been harvested are also frequented by bears throughout the year. Mid- to high-elevation slabrock and meadow habitats possess many foods dug by bears. Grizzly bears use closed canopy forests less than expected during all seasons. Grizzly bears use riparian zones during all seasons. Shrub lands are important during autumn, when berries are a highly sought after food source.

The available habitat for bears is determined largely by people and their activities. Human activities are the primary factor impacting habitat security and grizzly bear habitat selection is negatively influenced by vehicular traffic (Mace *et al.* 1996; Waller and Servheen 2005).

Although adult grizzly bears are normally solitary (Nowak and Paradiso 1983), home ranges of adult bears frequently overlap and bears are not considered territorial (Schwartz *et al.* 2003b). Home range size is affected by resource availability, sex, age, and reproductive status (LeFranc *et al.* 1987; Blanchard and Knight 1991). The *annual* home range of adult male grizzly bears in the lower 48 States is typically 2-3 times the size of an adult female’s annual home range whereas the *lifetime* home range of an adult male grizzly bear is typically 3-5 times that of an adult female (LeFranc *et al.* 1987). Generally, females with cubs-of-the-year have the smallest

home range sizes (Blanchard and Knight 1991). In the lower 48 States, annual home range sizes for female grizzly bears are approximately 400 sq km (150 sq mi) (LeFranc *et al.* 1987). For males, *annual* home ranges vary from 286-1,398 sq km (110-540 sq mi), but average approximately 800 sq km (309 sq mi) (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.* 1998).

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.* 2003b). This type of movement makes dispersal across landscapes a slow process. Females establish home ranges an average of 9.8-14.3 km (6.1-8.9 mi) away from the center of their mother's home range, whereas males generally disperse further, establishing home ranges roughly 29.9-42.0 km (18.6-26.0 mi) away from the center of their mother's (McLellan and Hovey 2001; Proctor *et al.* 2004).

Grizzly bears have a promiscuous mating system (Hornocker 1962; Craighead and Mitchell 1982; Schwartz *et al.* 2003b) with genetic studies confirming that cubs from the same litter can have different fathers (Craighead *et al.* 1998). Mating occurs from May-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; Mattson 2000). Although females mate from mid-May through early July, their fertilized embryos are not implanted into the uterus until late fall, once enough nutrition is attained to survive the winter and nurse cubs for 2-3 months inside the den (Schwartz *et al.* 2003a, 2003b, 2006). Age of first reproduction varies from 3-8 years of age, and litter size varies from 1-4 cubs (Schwartz *et al.* 2003b). Cubs are born in the den in late January or early February and remain with the female for 2-3 years before the mother will again mate and produce another litter (Schwartz *et al.* 2003b). 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.* 2003b). Given the above factors and natural mortality, it may take a single female 10 years to replace herself in a population (FWS 1993). Grizzly bear females cease breeding successfully some time in their mid- to late 20s (Schwartz *et al.* 2003a).

For 3-6 months during winter, grizzly bears 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 between 4 and 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 to hibernate 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 (Craighead and Mitchell 1982). Hyperphagia is defined simply as overeating (in excess of daily metabolic demands) and occurs throughout the 2-4 months prior to den entry (i.e., August–November). 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 (Craighead and Mitchell 1982).

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.* 2003b). Grizzly bears are opportunistic omnivores with high diet variability among individuals, seasons, and years (Mattson *et al.* 1991a; Mattson *et al.* 1991b; Schwartz *et al.* 2003b; LeFranc *et al.* 1987; Felicetti *et al.* 2003; Felicetti *et al.* 2004). Grizzly bears will consume almost any food available including living or dead mammals or fish, insects, and garbage (Knight *et al.* 1988; Mattson *et al.* 1991a; Mattson *et al.* 1991b; Schwartz *et al.* 2003b). In areas where animal matter is less available, berries, grasses, roots, bulbs, tubers, seeds, and fungi may be important in meeting protein requirements (LeFranc *et al.* 1987; Schwartz *et al.* 2003b).

Grizzly bears display great diet plasticity and switch food habits according to which foods are available. Mattson *et al.* (1991a) 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 the GYA, Blanchard and Knight (1991) noted that, “After 10 years of food habits data collection, new feeding strategies continued to appear annually in this population.” Mattson (1997) found that grizzlies in the GYA “... used ungulates the most during years when they used pine seeds the least.” Similarly, Felicetti *et al.* (2003) documented that in years of poor pine nut production, “72 percent of GYA grizzly bears make minimal use of pine nuts while consuming more ungulate meat.”

Historical Range/Distribution – Prior to the arrival of Europeans, the grizzly bear occurred throughout much of the western half of the contiguous U.S., 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; Mattson and Merrill 2002; Schwartz *et al.* 2003b). The range and numbers of grizzlies were reduced to less than 2% of their historical levels by the 1930s, approximately 125 years after first contact with European settlers (FWS 1993; Mattson *et al.* 1995; Servheen 1999).

Current Range/Distribution –

The North Cascades recovery zone is approximately 25,108 sq km (9,694 sq mi) in north-central Washington State. The distribution of grizzly bears within the North Cascades recovery zone is unknown. Very few recent credible sightings and reports exist (see Population Estimates/Status, below).

Population Estimates/Status

No more than three grizzly bears in the North Cascades Ecosystem have been observed in the last 20 years, one confirmed observation in the U.S. (1996) and two more recent confirmed observations in B.C., Canada (Anne Braaten, *in litt.* 2016).

DISTINCT POPULATION SEGMENT (DPS)

Prior to the development of the DPS policy, we envisioned recovering and delisting individual populations as they achieved recovery (FWS 1993, pp. 16, 33). There are currently six different grizzly bear recovery zones, one of which is the North Cascades recovery zone. While we believe it is possible to identify grizzly bears within each of these recovery zones as a separate listable entity within the current lower 48-state listing (either as DPSs or experimental populations), we are not recommending a formal revision to the current listing at this time. This decision will be re-evaluated as populations near the point where a rulemaking is considered (e.g., when recovery is achieved and delisting is considered; when listing funds become available to address those populations that are warranted-but-precluded for uplisting to endangered status; or if a decision is made to restore grizzly bears into a recovery zone as an experimental population).

THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

For a detailed threats analysis, please refer to the 2011 Status Review (USFWS 2011). We have no new information on Factor A since that time.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

For a detailed threats analysis, please refer to the 2011 Status Review (USFWS 2011). We have no new information on Factor B since that time.

C. Disease or predation.

For a detailed threats analysis, please refer to the 2011 Status Review (USFWS 2011). We have no new information on Factor C since that time.

D. The inadequacy of existing regulatory mechanisms.

For a detailed threats analysis, please refer to the 2011 Status Review (USFWS 2011). We have no new information on Factor D since that time.

E. Other natural or manmade factors affecting its continued existence.

For a detailed threats analysis, please refer to the 2011 Status Review (USFWS 2011). We have no new information on Factor E since that time.

SUMMARY OF THREATS

As described in detail in the 2011 Status Review (USFWS 2011), threats to grizzly bears in the North Cascades recovery zone include very small population size, incomplete habitat protection measures (motorized access management), and population fragmentation resulting in genetic isolation. We have insufficient data regarding current population size, trend, survival, and reproductive rates within this recovery zone. Data indicating that grizzly bears in B.C. portion of this recovery zone are isolated from other populations limits the chance of natural recovery within the State of Washington. Restoration may be the only way to recover grizzly bears in this recovery zone. We have no new information on threats to the North Cascades recovery zone.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED:

The following measures are currently underway or planned:

1. On February 19, 2015, in partnership with the National Park Service, we issued a notice of intent to jointly prepare a North Cascades Ecosystem Grizzly Bear Restoration Plan and Environmental Impact Statement to determine how to restore the grizzly bear to the North Cascades ecosystem (80 FR 8894; February 19, 2015). It is expected to take up to 3 years to complete and evaluate a variety of alternatives, including population restoration.
2. Delivering sanitation enhancement assistance to private residents in grizzly habitat particularly on the periphery of grizzly habitat where grizzly conflicts and mortalities are increasing as bears expand their range. Assistance in the form of bear-resistant garbage containers and electric fencing along with more people to work on increased outreach and education will reduce these conflict and mortality levels.
3. Evaluating the ramifications of natural recovery versus reintroduction.
4. Incorporating motorized access management standards into National Forest Land Resource Management Plans.
5. Evaluating the demographic and habitat criteria, the role of each ecosystem in a metapopulation framework, and new scientific data, then revising the recovery plan accordingly.
6. DNA sampling and genetic analysis on management and research captured bears.
7. DNA sampling, genetic analysis, and camera surveys in peripheral areas adjacent to recovery zones to document presence and origin of any bear(s) detected between grizzly bear recovery zones.
8. Monitoring location and status of radio-collared animals, using GPS collars when possible.
9. Funding the annual monitoring of the population size and trend, and the habitat condition of the recovery zone.

10. Identifying areas where movement opportunities still exist in each of the mountain valleys between recovery ecosystems.
11. Targeting the most important linkage areas on private lands for conservation delivery through easements and acquisition to secure movement opportunities for wildlife.
12. Completing stable isotope analysis annually for hair and tissue samples for all bears with known histories in order to document food habits in relation to management status and geographic location.
13. Using bioimpedance meters and load cells to measure fat levels and body condition for every bear captured.

RECOMMENDED CONSERVATION MEASURES:

Administrative Actions

- Revise the recovery plan for grizzly bears in the lower 48 states so that it reflects the best scientific and commercial information available. The revised recovery plan should include objective, measurable criteria which, when met, will result in a determination that the species be removed from the Federal List of Endangered and Threatened Wildlife. These criteria should continue to be updated to reflect new science and techniques. Specifically, a team will be created for each recovery plan chapter to evaluate the demographic and habitat criteria, the role of each ecosystem in a metapopulation framework, and any new scientific data available. The recovery plans also should include estimates of the time required and the cost to carry out those measures needed to achieve the goals for recovery and delisting.

Threats Abatements

- Implement standardized sanitation regulations on public and private lands in grizzly habitat as a basic conservation measure for multiple wildlife species across the landscape.
- Encourage an annual requirement for bear identification tests for black bear hunters in all States.
- Obtain funding to enhance the research and monitoring program in the Cascades ecosystem.
- Target the most important linkage areas on private lands for conservation delivery through easements, securing attractants, and possible acquisition with willing landowners.
- Deliver sanitation enhancement assistance to private residents in grizzly habitat particularly on the periphery of grizzly habitat where grizzly conflicts and mortalities are increasing as bears expand their range. Assistance in the form of bear-resistant garbage containers and electric fencing along with more people to work on increased outreach and education will reduce these conflict and mortality levels.
- Hire more law enforcement personnel to control current levels of illegal motorized access and prevent grizzly bear poaching on public lands.
- Establish a grizzly bear conservation fund to provide a secure funding source for ongoing and future management and monitoring actions.
- Establish a grizzly bear compensation fund that would continue to compensate livestock operators when grizzlies depredate on their livestock post-delisting.

Research and Monitoring

- Continue to follow-up on credible sighting data and continue surveys using cameras and DNA hair snares in areas where occupancy is probable.
- Assess the impacts of climate change on vegetative food sources, the distribution and extent of important vegetation communities, and the ability of alpine plant communities and insect communities to continue to exist as these areas are important grizzly bear habitat use areas that will be subject to amplified climate change effects.
- Continue genetic monitoring to document range expansion and population exchange by obtaining DNA samples from all management and research captured bears.
- Monitor location and status of radio-collared animals, using GPS collars when possible.
- To avoid potential conflicts between snowmobiles and denning grizzlies, National Forests should conduct analyses of suitable denning habitat and spring foraging areas that may overlap with snowmobile use then direct snowmobile use accordingly to minimize conflicts.
- Obtain habitat data for all public lands outside recovery zones (i.e., road densities, amount of Secure Habitat, number of developed sites, number and type of livestock allotments, etc.).

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

The uplisting of grizzly bears in the North Cascades recovery zone has a listing priority number of 3. This priority number indicates the magnitude of threat is high and those threats are imminent. However, proposed rules to reclassify threatened species to endangered are a lower priority than listing currently unprotected species (i.e., candidate species), since species currently listed as threatened are already afforded the protection of the ESA and implementing regulations.

Magnitude: The magnitude of threats is considered high because this population has not experienced the same increases in numbers and distribution as other, healthier grizzly bear populations in the lower 48 States even though similar management actions have been implemented.

Imminence: Imminence is considered high because the limiting factor for this population is human-caused mortality and extremely small population size. As human populations continue to grow, it is inevitable that this will put additional pressures on grizzly bear populations.

Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? **Yes**

Is Emergency Listing Warranted? **No**

DESCRIPTION OF MONITORING:

Through the Interagency Grizzly Bear Committee (IGBC) and other contacts the Service receives and disseminates information on the status of the population in the Cascades and its habitat. The North Cascades subcommittee for the IGBC has appointed a technical team to collect, inventory, and evaluate sightings of bears, sanitation issues, access management mapping, and several other management issues affecting bears in the recovery zone. The Service is represented on this committee and technical team. Through consultation, the Service monitors and regulates Federal activities that may affect grizzly bears or their habitat. The small number of animals, low population density of the species, large annual home ranges, wary nature of the species, dense habitat in which it occurs, and the controversial human aspects of recovering this species require an active monitoring program.

COORDINATION WITH STATES:

The North Cascades recovery zone lies in north central Washington. The State of Washington provides information on any sightings of bears. The State of Washington participates in the IGBC subcommittee and the technical team. The State of Washington has listed grizzly bears as a species of greatest conservation need in the State Wildlife Action Plan (WDFW 2005, p. 620).

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.



Approve: _____
Regional Director, Fish and Wildlife Service

June 2, 2016
Date



Concur: _____
Acting Director, Fish and Wildlife Service

11/14/2016
Date

Do not concur: _____
Director, Fish and Wildlife Service

Date

Director's Remarks: _____

