

Grizzly Bear Population Restoration in the North Cascades Ecosystem

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Background:

The grizzly bear was listed as a U.S. threatened species in 1975. The original recovery plan, completed in 1982, did not identify the North Cascades Ecosystem (NCE) as a recovery area because little information was available about the population status and habitat quality (USFWS 1982). Instead, the NCE was identified as an evaluation area, and in 1986 a study was initiated to gather information on the area's grizzly bear population, important habitats, and human influences on bear habitat. Completed in 1991, this investigation provided evidence that a small number of grizzly bears resided in the US portion of the NCE, and that sufficient habitat was available for the recovery of a viable population (Almack et al. 1993, Gaines et al. 1994). The NCE evaluation study results were reviewed by a panel of grizzly bear experts who drew similar conclusions to those described in the final report (Servheen et al. 1991). As a result of these findings, the NCE was designated a "recovery area" and a recovery chapter specific to the NCE was developed and added to the overall grizzly bear recovery plan (USFWS 1997). A status review of grizzly bears in the NCE was completed in 2011 and determined that grizzly bears were "warranted for Endangered Status in the NCE" but that uplisting was precluded due to "other listing priorities" (USFWS 2011).

North Cascades Ecosystem:

The North Cascades Ecosystem encompasses nearly 24,800 km² (9,600 mi²) in Washington and about 10,350 km² (4,000 mi²) in British Columbia. Within the US

portion of the ecosystem is one of the largest remaining contiguous blocks of federal land in the lower 48 states. The US portion of the ecosystem is comprised of 85% federal lands, 5% state lands, and 10% private lands (Gaines et al. 1994, USFWS 1997). A considerable portion of the NCE is in some type of protected status: approximately 40% of the US portion is in designated wilderness or National Park and approximately 16% of the Canadian portion is Provincial Park, ecological reserve, or recreation area. The NCE provides one of the largest contiguous blocks of public lands in the lower 48 states, creating a relatively unique opportunity to enhance the long-term survival of grizzly bears by restoring an additional population.

Population Status:

Historical records indicate that grizzly bears once occurred throughout the NCE (Bjorkland 1980, Sullivan 1983, Almack et al. 1993, Rine et al. 2018). The decline of grizzly bears in the NCE likely resulted from intensive hunting/trapping for the fur trade followed by human encroachment into grizzly bear habitat (Sullivan 1983, Almack et al. 1993, Gaines et al. 2000, Gaines et al. In review). The activities of these trappers likely rapidly reduced the grizzly bear and other carnivore populations in the North Cascades. Between the years of 1827 to 1859 Hudson's Bay Company records show that 3,788 grizzly bear hides were shipped from three forts in or near the North Cascades (Sullivan 1983, USFWS 1997). While not all of these hides likely came from the NCE, this level of human caused mortality had a considerable impact on the grizzly bear population (Almack et al. 1993, Gaines et al. 2000, Gaines et al. In review).

Previous studies have documented reports of grizzly bears in the NCE and provided estimates of grizzly bear numbers. Sullivan (1983) summarized 233 contemporary and historic reports of grizzly bears. Almack et al. (1993) documented an additional 33 reports of grizzly bear from 1859–1982 and 153 reports from 1983–1991, and classified 20 of these reports as “highly reliable.”. They attempted to further document the presence of grizzly bears through the use of remote cameras and live-trapping in locations where there were recent and relatively reliable sightings. While their efforts were unsuccessful, sighting records suggested that a small number of grizzly bears still persisted in the Washington portion of the North Cascades (Almack et al. 1993). In the BC portion of the NCE, sightings information and transplants of grizzly bears from other areas led biologists to estimate the number of grizzly bears to be 17–23 individuals (Gyug 1998).

During 1998–2000 a noninvasive DNA hair-sampling survey was conducted in both the BC and US portions of the ecosystem (Romain-Bondi et al. 2004). This project surveyed approximately 11% of the entire NCE, and 10% of the US portion. One grizzly bear was detected in the BC portion of the study. Using known relationships between catch-per-unit-effort and bear abundance in other ecosystems with small populations of grizzly bears (i.e., Cabinet-Yaak, Selkirk Ecosystems), Romain-Bondi et al (2016) estimated grizzly bear density (0.15 bears/100 km²) and mean

population size ($N=6$) for the NCE.

Gaines et al. (In review) evaluated recent information on grizzly bear reports from the US portion of the NCE (as reviewed by A. Braaten, pers.comm.). There was only a single Class 1 (highly reliable) report of a grizzly bear during 2007–2012, and no reports that provided evidence of reproduction.

Gaines et al. (In review) summarized a multi-year effort to detect a grizzly bear in the NCE using hair snag and genetic techniques along with remote cameras. They did not detect a grizzly bear via remote camera or hair snare at any of their sample sites. While their efforts, especially in 2010–2012, were focused largely on remote locations and high quality bear habitat (as indicated by a 70% success in detecting black bears with cameras and at hair snares) they still only managed to survey about 25% of the US portion of the NCE. Based on their success in detecting black bears and success others have experienced with grizzly bears using similar methods (Poole et al. 2001, Romain-Bondi et al. 2004, Sawaya et al. 2012), their methods afforded a reasonably high probability of detecting a grizzly bear if it was present in the sampled area.

The failure of the surveys conducted by Gaines et al. (In review) to detect grizzly bears despite considerable survey effort does not mean that grizzly bears are absent from the NCE, as demonstrating the absence of such a species from a large landscape with limited access is extremely difficult. While their efforts are the most extensive and intensive yet conducted in the NCE, they pale in comparison to more rigorous and expensive efforts designed to estimate population size (e.g. Poole et al. 2001, Sawaya et al. 2012). They did sample extensive areas of high quality bear habitat, however, there are other areas in the NCE that are extremely remote and which they were not able to access (e.g., Devils Backbone in the Pasayten Wilderness, upper Goodell Creek and Green Lakes in North Cascades National Park, West Fork Agnes Creek in the Glacier Peak Wilderness). Therefore, there still remains the possibility that a small number of grizzly bears may still exist in these remote locations.

A key question that influences potential recovery actions is whether a “population” of grizzly bears currently exists within the US portion of the North Cascades recovery area, or if one exists when data are considered from the entire North Cascades Ecosystem (US and Canadian portions). The USFWS developed a definition of a “population” for grizzly bears (USFWS 2000): *“A minimum grizzly bear population is defined by verified evidence within the previous six years, consisting of photos within the area, verified tracks and/or sightings by reputable scientists or agency personnel, of at least two different female grizzly bears with young or one female seen with different litters in two different years in an area geographically distinct from other grizzly bear populations. Verifiable evidence of females with young, to be geographically distinct, would have to occur at least 20 miles from the nearest non-experimental grizzly bear population recovery zone boundary.”*

The sighting information along with the results of the surveys, fails to support the hypothesis that a population (as defined above) of grizzly bears currently exists within the US portion of the NCE. The available evidence suggests that the small number of bears that may exist does not constitute a population, and, given the limited ability of small populations of grizzly bears to recover (Bunnell and Tait 1981, Shaffer and Samson 1985, Wielgus 2002, Kasworm et al. 2007), population restoration will be required to ensure their persistence and conserve any unique genetic information these bears may retain (Allendorf and Servheen 1986, USFWS 1997).

Why Population Restoration is Needed:

Grizzly bears, along with other carnivores, play key roles in how ecosystems function, often having effects that cascade through many parts of the system (Miller et al. 2001, Ripple et al. 2014). Scientists are only just beginning to understand how important top-level carnivores are to healthy, functioning ecosystems. However, the opportunity to recover a full compliment of native carnivores is extremely rare in both the United States and globally (Ripple et al. 2014). Such an opportunity exists in the NCE because of a large contiguous area of public lands of which much is protected in wilderness and national park (Gaines et al. 2000). However, the grizzly bear population in the NCE cannot recover in its own.

Several studies have assessed the viability of small populations of grizzly bear (Shaffer 1978, Bunnell and Tait 1981, Shaffer and Sampson 1985, Wielgus 2002, Kasworm et al. 2007, Lyons et al. 2018). The results of these studies show that when grizzly bear populations are small (generally <50 animals) they are in decline and are particularly vulnerable when isolated, which is the case for the entire NCE. The number of grizzly bears in the NCE is very low, not even reaching the criteria to be defined as a population, meaning that they no longer have the ability to recover without human assistance in the form of population restoration that includes adding bears to the system. Thus, selection of a “no action” or “natural recovery” alternative to population restoration would result in the extirpation of grizzly bears from the NCE, which would be contrary to the intent and purpose of the Endangered Species Act.

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