

Summary of Scientific Peer Review for Delisting of Greater Yellowstone Ecosystem Grizzly Bears

The peer reviewers were in agreement that the Greater Yellowstone Ecosystem grizzly bear is biologically recovered and they were largely supportive of the Service's proposed rule to delist grizzly bears in the Greater Yellowstone Ecosystem (GYE). In addition, the peer reviewers agreed that the 2016 Conservation Strategy as the post-delisting management plan is sufficient to maintain a recovered population.

The peer reviewers included scientific experts with large carnivore expertise in one or more of the following: population ecology, management, demographics, conservation, and population genetics for large carnivores. The peer reviewers were: Jerrold Belant, PhD, Mississippi State University; Mark Boyce, PhD, University of Alberta; John Cox, PhD, University of Kentucky; Andrew Derocher, PhD, University of Alberta; and Dwayne Etter, PhD, Michigan Department of Natural Resources.

The peer reviewers generally provided comments in the following areas:

- The GYE as a unique ecological setting
- The Chao2 estimator – provide additional details and clarity
- Monitoring of population vital rates (i.e., sex-age class distribution, fecundity, etc.)
- The limiting of monitoring to the demographic monitoring area (DMA)
- The PCA as a core, protected area
- Definition of suitable habitat
- Need to define “biologically” suitable habitat (i.e. “what makes up biological grizzly bear habitat in the GYE”)
- Definition of secure habitat
- Management of competing land uses
- Juxtaposition of secure habitat to fine scale facilitate movement
- Forest Service designation of grizzly bears as a species of conservation concern (or its equivalent)
- No mortality limits outside the DMA
- Sustainability of the proposed mortality limits
- Implementation of a new population estimator would require calibration
- Population objective unclear
- Climate change
- Potential natural disasters (i.e., the fire of 1988)
- Illegal poaching – quantify and provide citation/supporting information for claim that “authorized hunting through designating the grizzly bear as a game animal may reduce the amount of illegal poaching” (Reviewer 1, p. 14; Reviewer 2, p. 7)
- Effectiveness of actions to reduce human-caused mortalities
- Adequacy of state plans
- Connectivity – sampling to determine monitor connectivity; and facilitation of connectivity
- Broader diet analysis

Comment [AEK1]: I think these topics may be missing from the list below (or they may not be major enough to mention!):

REVIEWER 1

- “Primary factor affecting grizzly bears at individual and population level is excessive human-caused mortality” → unsubstantiated statement (7)
- Minimize overlap between snowmobiles and grizzly bear habitat (11)
- Concern with scientific basis for total allowable mortality limits (Reviewer 1, p. 13)
- Update citations (p. 19)
- Address issues of bear baiting in the conservation strategy (p. 19)
- More emphasis on management of developed sites in the conservation strategy (p. 22)
- Include discussion of “modern media” in conservation strategy (p. 22)

REVIEWER 2

- Provide review of social aspects of managing large predators (p.1)
- “There should be additional review and consideration of how factors used to regulate human-caused mortality...might be modified in response to changes in human activity in the GYE” (p. 1)
- “When bears are out of dens, all motorized traffic should be limited” (i.e. snowmobiles) (Reviewer 2, p. 5)

REVIEWER 4

- Concerns about effectively monitoring population trends (p. 4-5)
- Eliminate vacant livestock allotments if chronic grizzly bear conflicts have occurred on these allotments in the past (Reviewer 2, p. 5)
- Lack of monitoring outside the DMA and impacts of that (Reviewer 2, p. 7)

REVIEWER 5

- Misuse of the word “cause” (p. 2)
- Effects of honoring existing oil, gas, and other mineral leases is unclear (p. 3)
- Livestock allotments --> describe the analyses agencies will conduct to evaluate allotments and their effect on grizzlies and the desired outcomes of this process relative to grizzly bears (p. 3)
- Suggest periodic assessments of population goals in the context of dynamic processes (p. 4)

Comment [AEK2]: Did you mean that reviewers mentioned how only monitoring mortality within the DMA is potentially problematic? (See Reviewer 4 p. 7 or Reviewer 5 p. 5)

Comment [AEK3]: Perhaps break this out into a bit more detail. It comes up in the following places: Reviewer 1, p. 14: Monitor for new or emerging diseases (likely to change with climate change)

Reviewer 1, p. 16
Reviewer 4, p. 1 and p. 2 and p. 4

Comment [AEK4]: Many reviewers highlighted the narrow emphasis on road construction in this section and suggested broadening to address other issues of connectivity

- Whitebark pine – future declines, further analysis of vital rates with decline
- Army cutworm moths – quantify availability and potential impacts of climate change
- Actively spread more calories across the landscape
- Declining carrying capacity with change in food availability
- Conclusions of density dependence (van Manen et al. 2015)
- More frequent demographic review by the IGBST (every 5 years)
- Firm thresholds for Service review
- Continuation of adequate funding
- Monitoring relocation success

The most substantive comments which we are considering at this time included:

- Need to quantitatively assess habitats selected by grizzly bears (Proctor et al. 2015)
- Need to model the higher mortality limits for rate of population decline and power to detect that decline.
- Additional analysis and monitoring of grizzly bear diets beyond the four high-calorie foods.
- Analysis of vital rates for grizzly bears that feed on whitebark pine compared to those that do not have access.
- Facilitation of connectivity should be a management objective

Internal issues:

- The interpretation of the PCA as core, protected area (i.e., no hunting).
- State plans may allow for overharvest, potential lag in management response could drive population below desired minimum.
- Discretionary hunting levels do not consider shifts in age-sex classes and annual environmental conditions such as drought, fire, or berry crop failures, which may be used to refine and temper harvest levels.
- There is no scientific basis for the lower limit of 500 bears. We have no evidence that this is the number of bears required for genetic integrity, and the theory behind this estimate is almost entirely irrelevant, referencing an old reference by Franklin (1980)...The 500 bears guidelines might be the right number, but it is not based in sound science. A critical assessment of the use of effective population size in conservation is found in Ewens (1990) and a reassessment of the old 50/500 rule was published by Frankham et al. (2014).
- What is the population objective? Unclear if it's a minimum population size of 500 or 600 bears or to manage to the average of 674 bears.
- State plans appear to disfavor dispersal and recolonization of areas outside the DMA (especially Idaho and Wyoming). Montana's plan to reconnect bear populations is non-committal.
- There is a lag in decision-making response to population declines that drop below 600. This may especially true in high mortality years.