

Dear USFWS

I oppose the delisting of the Greater Yellowstone Ecosystem (GYE) population of Grizzly Bears (GB) from the Federal List of Endangered & Threatened Wildlife. There are many justifications for my opposition to the proposal, which are summarized below

While the GB population in the GYE has increased markedly since 1975 to approximately 700 individuals, this population is still in jeopardy due to a number of factors, many of which were not adequately addressed in the proposed rule

- 1) **Mortalities:** The number of GB mortalities is very high, especially as many mortalities are of breeding age females essential for population growth & recovery. Data provided by USGS (<https://www.usgs.gov>) indicate 61 GB mortalities in 2015 & 39 thus far in 2016. Those mortalities are very high for GB, which have extremely low population growth rates (PGR). Total level of mortality is approximately 15% of the population in less than 2 years! Moreover, annual levels mortality are likely much higher than recognized in the proposed rule & in population viability analyses that have been computed for the GYE GB population. That is because killing a GB is federal crime so that many people do not report them, & because road-kills can be hard to find & document in such a large remote region. Thus, the actually mortality rate could be >2x data published by USGS.
- 2) **Changes in Food Resources:** Data gathered by D. Mattson & others indicate the 2 highest-quality foods for GB in the GYE (White-bark pine seeds, & cutthroat trout) have declined to markedly low levels & thus GB are relying on foods of lesser quality. In the case of white-bark pine, those changes are due likely to climate change, drought, & invasion of non-native pathogens. In the case of cut-throat trout, those changes are due to declines in native fish due to invasion of lake trout & other non-natives. Those 2 foods are of higher quality to GB, and bears that consume them have greater reproductive output leading to higher PGRs. With declines of those 2 foods, more GB are using meat of large animals for food, which is more dangerous to acquire, is of lower quality, & exposes females with young to large male GB that may kill them. Moreover, dependence on meat, even despite its lower food quality, also exposes GB to conflicts with humans, which are a huge threat; such conflicts increased markedly since the loss of whitebark pine. As a likely result of those changes, the mortality rate of GB increased. Another food recently used in large quality is Cutworm Moths in the alpine, but they do not compensate for loss of other prey & their center of abundance is located to the southeast where GB are more exposed to human conflicts. Because GB are long lived & changes in whitebark pine food has been recent, there will be lag effects on PGRs. More time is required to observe these effects & evaluate jeopardy to GB population.
- 3) **Changes in Distribution, Abundance, Habitat Quality:** Recent data indicate that distribution of GB in the GYE has expanded markedly by as much as 40%. While that suggests a positive trend, other data suggest abundance has been largely stable or slightly decreasing since ~year 2000. The only way distribution can increase without a concomitant increase in abundance, is for density to decline. Evidence of negative changes in density suggests quality of habitat for GB is declining in the GYE, because density is linked to carrying capacity & areas with larger carrying capacities per unit area are higher quality habitats. Such changes are likely due to the loss of whitebark pine &

trout as major foods. Moreover, the directions of population expansion are largely to the south & east where the only remaining good stands of whitebark pine occur & where Cutworm Moths are found in abundance. These alterations in distribution are alarming because they also place GB at greater risk to humans, because land uses are higher in those areas

- 4) **Climate Change:** Climate change constitutes a major threat to the GYE population of GB. There is major uncertainty associated with climate change predictions. The prospects of climate change are not adequately addressed in the proposed rule.
- 5) **Connectivity & larger-scale conservation:** The best way to recover GB in a regional sense is to approach conservation from a larger continental scale. If the GB population in the GYE is in fact saturated, surplus animals from the GYE should be trans-located to new ranges in ID, MT, WA, OR, & CA where there is available habitat. Surplus animals should be used to advance broader conservation goals on continental scales, & repatriate GB to the other 98% of their range in the western U.S. where they have been extirpated.
- 6) **Inadequacy of State plans:** Recent data & what were intended to be confidential statements made by wildlife officials that were leaked & reported in newspapers, indicate the true motives of state agencies, & their inability to effectively manage GB populations. Hunting GB is the main agenda of the states so as to sell hunting permits & reduce conflicts with livestock. The states cannot be trusted to manage GB responsibly. Trophy hunting will reduce population connectivity, & prospects that GB reach new ranges in unoccupied habitat to the south & west.

Sincerely

Aaron D. Flesch, Ph.D.

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I oppose the delisting of the Greater Yellowstone Ecosystem (GYE) population of Grizzly Bears (GB) from the Federal List of Endangered & Threatened Wildlife. There are many justifications for my opposition to the proposal, which are summarized below

While the GB population in the GYE has increased markedly since 1975 to approximately 700 individuals, this population is still in jeopardy due to a number of factors, many of which were not adequately addressed in the proposed rule.

My comments are in the attached uploaded file and a shortened here to fit the 5000 character limit.

1)The number of GB mortalities (M) is very high, especially as many M are of breeding age females essential for population growth & recovery. Data provided by USGS indicate 61 GB M in 2015 & 39 thus far in 2016. Those M are very high for GB, which have extremely low population growth rates (PGR). Total level of mortality is approximately 15% of the population in less than 2 yrs! Moreover, annual levels mortality are likely much higher than recognized in the proposed rule & in population viability analyses that have been computed for the GYE GB population. That is because killing a GB is crime so many people do not report them, & because road-kills can be hard to document in remote regions. Thus, the actual M rate could be >2x larger.

2)Data gathered by D. Mattson indicate the 2 highest-quality foods for GB in the GYE (White-bark pine seeds, & cutthroat trout) have declined to markedly low levels & thus GB are relying on foods of lesser quality. In the case of white-bark pine (WBP), those changes are due likely to climate change, drought, & invasion of non-native pathogens. In the case of cut-throat trout, those changes are due to declines in native fish due to invasion of lake trout & other non-natives. Those 2 foods are of higher quality to GB, and bears that consume them have greater reproductive output leading to higher PGRs. With declines of those 2 foods, more GB are using meat of large animals for food, which is more dangerous to acquire, is of lower quality, & exposes females with young to large male GB that may kill them. Moreover, dependence on meat, even despite its lower food quality, also exposes GB to conflicts with humans, which are a huge threat; such conflicts increased markedly since the loss of WBP. As a likely result of those changes, the mortality rate of GB increased.

Another food recently used in large quality is Cutworm Moths in the alpine, but they do not compensate for loss of other prey & their center of abundance is located to the southeast where GB are more exposed to human conflicts. Because GB are long lived & changes in WBPfood has been recent, there will be lag effects on PGRs. More time is required to observe these effects & evaluate jeopardy to GB population.

3)Recent data indicate that distribution of GB in the GYE has expanded markedly by as much as 40%. While that suggests a positive trend, other data suggest abundance has been largely stable or slightly decreasing since ~year 2000. The only way distribution can increase without a concomitant increase in abundance, is for density to decline. Evidence of negative changes in density suggests quality of habitat for GB is declining in the GYE, because density is linked to carrying capacity & areas with larger carrying capacities per unit area are higher quality habitats. Such changes are likely due to the loss of WBP & trout as major foods. Moreover, the directions of population expansion are largely to the south & east where the only remaining good stands of WBP occur & where Moths are found in abundance. These alterations in distribution are alarming because they also place GB at greater risk to humans, because land uses are higher in those areas

4)Climate change constitutes a major threat to the GYE population of GB. There is major uncertainty associated with climate change predictions. The prospects of climate change are not adequately addressed in the proposed rule.

5)The best way to recover GB in a regional sense is to approach conservation from a larger continental scale. If the GB population in the GYE is in fact saturated, surplus animals from the GYE should be trans-located to new ranges in ID, MT, WA, OR, & CA where there is available habitat. Surplus animals should be used to advance conservation goals on continental scales & repatriate GB to the other 98% of their range in the West where they have been extirpated.

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