100 General comments

- Don't trust the science
  - Raw data not available for independent review
  - Monopoly on the data/research, leads to "groupthink"
  - Peer review does not detect error and bias more than random chance
  - Never 1 correct model, model building most bias prone analysis
- Need to "guard against Type II errors in data interpretation, when one falsely concludes there is no effect because statistical analyses fail to detect one" (IBA)
- The propose rule concludes that because threats can be managed they do not constitute a threat at all (i.e., genetic health).
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- The Food Synthesis Report does the minimum to satisfy the requirement of the Ninth Circuit ruling when they should have done a robust assessment of at least all four of the key food sources to detect diet changes.
- If the four foods are not so important why does the IGBST continue to monitor them and only them.
- The boundaries of the GYE are unclear in the sentence "while there are no distinct boundary to the GYE, it is generally defined as those lands surrounding Yellowstone National Park with elevations greater than 1,500 meters (m) (4,900 feet (ft))."
- Against trophy hunting – iconic bears that seasonally travel outside of NPS boundaries for hibernation, etc. would be susceptible to be hunted – 68% of the American public does not think GYE grizzly bears should be hunted http://www.humanesociety.org/news/press_releases/2016/04/opposition-yellowstone-grizzlydelisting-041216.html?credit=web_id65489811_web_globalfooter
- DMA boundary
  - should be reconsidered to not include habitat such as Upper Green allotments
  - should be expanded to include all designated wilderness lands adjacent to the proposed DMA
- The Service should manage for a metapopulation with net positive growth to allow for natural reocolonization of unoccupied suitable habitat
- "The Service fails to use the best available science in describing the taxonomy and evolutionary biogeography" of GYE grizzly bears (Mattson). GYE grizzly bears are "part of a clade (Clade 4) with an ancient and unique history, a restricted distribution, and warranting consideration as an evolutionarily unique and threatened genetic lineage". And therefore needs to address recovery of the whole lower 48 listing, including connectivity.
- The rule needs to update its taxonomic reference for Yellowstone grizzly bears
- "The ESA represents the conscience of the broader public when it comes to grizzly bears and other imperiled species. By contrast, our state wildlife management agencies in the Northern Rockies represent the views of a politically influential minority whose interests focus on extractive uses of the natural world." Willcox 2016
- Process surrounding the proposed rule is flawed because it relies heavily on the CS and state management plans that are either not finalized or outdated.
- Inadequacy of public involvement: Public comment period not sufficient and not enough public hearings. No provisions for the visually impaired or communities without internet access to comment on the rule.
- Under Section 7 of the ESA, the PR and the CS must consider connectivity as a threat to other recovery areas
- The GYE grizzly bear exceeds the social carrying capacity

- The Service fails to consider threats outside of the DMA as threats to grizzly bears in the GYE. Invisible boundaries cannot be used to classify the health of a population. The Service must reanalyze the five factor analysis to include areas outside the DMA.
- Excluding mortalities outside the DMA fails to fairly estimate the threats to the population.

200 DPS comments

- The USFWS cannot create a DPS to remove that DPS from the list of threatened and endangered spcecies. *Humane Society of the United States v. Jewell*, 2014 WL 7237702 (D.D.C., Dec 19, 2014). One-way ratchet. There cannot be a DPS without an endangered or threatened status.
- Because grizzly bears were listed as a threatened species as a single unit in the lower 48 states, they must be delisted the same way.
- The Service erroneously interprets range as meaning the range in which the species currently exists.
- SPR analysis: the Service fails to explain that current range is a sufficient fraction of its larger, historical range. "it is on the record apparent that the area in which the [species] is expected to survive is much smaller than its historical range, the Secretary must at least explain her conclusion that the area in which the species can no longer live is not a 'significant portion of its range." The proposed rule only focuses on the GYE itself and dismisses areas outside of the 5 currently occupied zones as "likely to never contribute meaningfully" to the population of GYE grizzly bears. The SPR document 16 USC §§ 1532 is currently subject to litigation.
- The Service must not consider whether expansion into historic range would be "socially acceptable" or politically popular or economically disadvantageous.
- The Service must analyze SPR to include the grizzly bear's historic range and analyze where lost historical range qualifies as a "significant portion"
- And if the DPS is legal, then must consider if the lost historic range of the proposed DPS is significant. "The Service failed to adequately analyze other threats to the grizzly bear within portions of the proposed DPS, including, but not limited to, trophy hunting of grizzly bears, incidental take from hunting and trapping activities (both state regulated hunting and trapping as well as hunting and trapping by federal entities such as the U.S. Department of Agriculture's Wildlife Services), lack of connectivity to other populations and genetic diversity issues, increased road densities in parts of the proposed DPS, intense increased human development within the proposed DPS, and other discussed at length in these comments." (Wild Ear Guardians)
- The Service's July 1, 2014 policy defining SPR is contrary to the intention of Congress. Congress was clear "The term 'range' [in the ESA] is used in the general sense, and refers to the historical range of the species."
- The SPR analysis fails to analyze whether any threats to any portion of the entire grizzly bear range constitute a significant portion of the grizzly bear's range. (Wild Earth Guardians)
- "The Service failed to consider whether other threats found elsewhere in the range of the currently listed entity are significant, including, for example, incidental take from hunting and trapping activities (both state regulated hunting and trapping as well as hunting and trapping by federal entities such as the U.S. Department of Agriculture's Wildlife Services), lack of connectivity to other populations and genetic diversity issues, increased road densities, and others discussed at length in these comments." (Wild Earth Guardians) (i.e., do threats to bears outside of the DMA constitute a threat to a significant portion of the DPS)
- The areas outside of the DPS which will remain protected by the Act must be clearly identified by name and location (i.e., the Bitterroot Ecosystem).
- DPS justification "affirms an abandonment of grizzly bear restoration beyond the currently occupied range"

- The Service fails to evaluate the third factor for declaration of a DPS: the population segment's conservation status (cannot designate a DPS to remove protections from the covered species designation).
- The Service attempts to evaluate the status of the "DPS" under Section 4 and finds it does not quality as either endangered or threatened and therefore it does not meet the definition of a "species" under the act.
- The GYE does not meet the DPS policy's significance, discreteness, or status factors.
  - The Service argues for "markedly separated" for discreteness – acknowledges that future connectivity with the NCDE is desirable but that occasional movement does not undermine discreteness as absolute separation is not necessary. This argument is nonsensical. The roads which define the DPS are permeable to grizzly bears.
  - Genetic data of 60% heterzygosity is an unconvincing argument. The Service's later analysis finds that genetic differences do not support a find that that the population is significant: "Because we do not know the biological significance (if any) of the observed differences, we cannot say with certainty that the GYE grizzly bear population's genetics differ 'markedly' from other grizzly bear populations." Low heterozygosity is evidence that linkage is necessary.
  - Basis for significance is that "loss would represent a significant gap in the range of the taxon". The argument only makes sense if you're moving to protect the GYE bears further, not delist them. Undermines duty to recovery the species as a whole.
  - None of the DPS examples justify the Service's approach because federal courts have rendered the Service's interpretation as arbitrary and capricious.
  - The 2008 solicitor's opinion does not give the Service legally binding support to proceed.
- The Service concludes that because the grizzly bear is not in danger of extinction in the GYE it is no longer threatened but even if only current range is analyzed the grizzly bear is in danger of extinction in other parts of their range.
- Even if the Service was correct in its appeal of the western great lake wolves DPS ruling, the Service cannot designate the GYE as a DPS because you cannot have a DPS of a DPS. The listing of the lower-48 portion of the species is already a DPS.
- Request that the Service publish an Advance Notice of Proposed Rulemaking that explains how the Service will address the remainder of the grizzly bear listed unit, sets forth a timeline for initiation and completion of such actions, and solicits public comment on possible ways under which the grizzly bear could be reclassified.
- The Service must first designate multiple grizzly bear DPSs that encompass the entire range of the subspecies, set recovery goals for each DPS, and evaluate the status of each DPS for listing.

300 Delisting

- Pro delisting
  - State management will increase funding for grizzly bear habitat conservation and management
  - Grizzly bear recovery in Yellowstone is one of the biggest conservation success stories for the ESA.
- Anti-delisting
  - The recovery of the GYE "is a success story…but still one in the making."
  - Undo political influence in the decision to delist (FOIA documents – Robert Aland)
  - Premature
  - The Service should withdraw this proposed rule
  - In contradiction to the precautionary approach to wildlife management mandated under the ESA

- They will decline without ESA protection with a recurrence of history (i.e., considered a predator and shot, poisoned, and killed wherever found)
- Delisting is a federalism issue
- FOIA documents revealed undue political influence in the setting of mortality limits (Robert Aland)
- Section 4(a)(1) analysis should not be limited to suitable habitat

400 Recovery

- The grizzly bear is recovered because:
  - Range is fully occupied and young or transient bears encounter difficulty establishing their own home ranges.
  - The recovery criteria have been met for several years
  - Bears are adaptable to their habitat
- The grizzly bear is not recovered because:
  - Less than 3% of the species historic abundance
  - Occupy less than 2% of their historic range
  - Population estimate is questionable
  - Population has not increases since early 2000s
  - No connectivity between ecosystems
  - Do not occupy all suitable habitat in the DMA
  - Total population of grizzly bears in lower 48 is 1200-1800, 5 times too few individuals to assure a long-term persistence of the species. Frankham, R., B.W. Brook, C.J.A. Bradshaw, L.W. Traill, and D. Spielman. 2013. 50/500 rule and minimum viable populations: response to Jamieson and Allendorf. Trends in Ecology and Evolution 28(4):187-188 http://izt.ciens.ucv.ve/ecologia/Archivos/ECO_POB%202013/ECOPO2_2013/Frankham%20et%20al%202013.pdf
  - Need a metapopulation of 2500-5000 bears to meet recovery (National Acadamy of Sciences 1995, Reichman et al. 2000, Allendorf and Ryman 2003, Reed et al. 2003, Traill et al. 2010)
- Demographic recovery criteria
  - Criterion #1
    - The Service selected 500 as a minimum to maintain short-term genetic fitness. Adjust the minimum number upwards to ensure long-term genetic fitness.
    - No trigger until 500 grizzlies bears, which too low
    - The trigger for Criterion 1 is inadequate. Explain why the 3-year trigger and not a 1 or 2-year trigger.
    - For 48 FCOY, the method needs to be consistent using Chao2 or a new method needs to be calibrated.
    - Discrepancy between the RP and the CS in whether the criterion has not been met if it was two or three consecutive years and if it will be changed the Service needs to justify why three years is appropriate. Should be 2 years.
    - The population objective of 500 bears and maintenance of 48 females with cubs within the DMA are at odds. 48 FCOY equates to ~600 bears. The 500 objective was based on genetic health and is a buffer above the 400 needed to maintain genetic viability for this population. Given that the rule and state management plans establish objectives within the DMA of 600 or more bears, consistent with 48 FCOY, eliminate the 500 objective to reduce confusion or discuss it in its historical context of genetic viability.
  - Criterion #2
    - Explain why this trigger is appropriate and based on the best available science.

        - ""[Three] consecutive 6-year sums" seems to require at least 18 years to pass before it might be found that this criterion is not being met."
        - How will the 16 of 18 BMUs occupied for three consecutive 6-year sums be calculated? "For example, if less than 16 of 18 bear management units are occupied by females from 2016 to 2023, will the criterion not be met because there was not sufficient occupancy from 2016-2021, 2017-2022, and 2018-2023?" (Center for Biological Diversity)
        - Explain why a 6-year sum of observations is adequate. This is a long time for a criterion of this importance to be met if female occupancy is insufficient.
        - The criteria for 48 FCOY or FCOY in 16 of 18 BMUs will restrict future adaptive management. Mortality limits will ensure total population size.
        - Occupancy needs to apply to all areas of the DMA and not just the PCA, stratified on what are currently called 'Flight areas' or BMUs
    - Criterion #3
        - The average around which the population is maintained should be increased to be more precautionary.
        - The trigger should be higher than the lower 95% CI (600) and should be the average itself (674) or higher
        - The Service does not specify the method by which the population will be calculated. Does the population estimate rely on Chao2 or does the Service retain the discretion to change the calculation method?
        - The mortality limits should not be tied to a population minimum but should be a criterion on their own if the limits are exceeded.
        - If the population limit drops below 612, the Service should not wait 3 years before determining the criterion is not met
        - Should be made easier to interpret, such as an annual index of observed females with cubs to total observed mortality
        - Mortality limit for dependent young is unnecessary because it is not currently being measured.
        -
- Additional Recovery Criteria recommended:
    - An additional criterion should be added to include monitoring of changes in food resources
    - Add a trend criterion: "if a pattern of three or more years of consecutive declining model-averaged total population for lower CI bounds occur (even if the decreasing metrics are not as low as the proposed single-year trigger), then discretionary mortality should decrease/end and assessment protocols should begin.
- Current population size still qualifies as "vulnerable" under IUCN Red List criteria, meaning that it is threatened of becoming endangered. If the population fell below 533 it would be categorized as endangered by IUCN.
- The rule does not evaluate the connectivity needs of the other grizzly bear populations or how this rule will affect their recovery
- It is not appropriate to equate reaching carrying capacity with recovery, not a metric included in the recovery criteria
- This is a "piecemeal approach, in which a fragment of a species' current range is declared "recovered" before the species is recovered at the larger, regional scale." This approach ignores the responsibility of long-term recovery and significant portions of the range of unoccupied suitable habitat.

- Recovery must include permanent populations of bears in the Gravelly-Snowcrest-Centennial Mountains, in the Selway-Bitterroot Wilderness, and along the connecting crest of the Bitterroot Range. Alternative connected landscapes include the Madison, Tobacco Root, Highland Mountains, continental divide north of Butte, and the Sapphire Range, however, these alternatives have more interspersed private land that would make human-bear conflicts more common.
- "Forty years of ESA protection has still failed to recover the GYE grizzly bears, so the Service needs to increase, rather than remove, federal protections"

500 Population parameters

- Issues regarding Chao2:
  - Not the best available science for monitoring population trend
  - Fails to account for bias associated with the method or disagreements in the scientific community about the population estimate of ~700 (Doak and Cutler 2014a, 2014b)
  - No accounting for factors that might influence sightings of FCOY
  - Total population size is strongly influenced by the multipliers used for dependent young, pre-reproductive independent females, and independent males, introducing more bias
  - The survival rate (and the multiplier) was increased for independent males in 2012 but survival rates actually decreased (Mattson)
  - Currently use the Knight rule to distinguish unique females with cubs. Ordiz et al. 2007 proposed a different rule set for counts of FCOY in Europe.
  - The Chao2 estimate becomes increasingly negatively-biased with increasing density, so "the Chao2 estimates could level off while the population continues to increase, give a false sense of the population reaching carrying capacity (K). Likewise, once the population has exceeded the density threshold of FCOY that precludes further differentiation of distinct individuals, a decline also would not be detectable until dropping below this threshold." (IBA)
  - The Chao2 is only conservative if the population is indeed increasing. If the vital rates or mortalities are mis-estimated the population could decline, undetected. (IBA)
  - Chao2 could become more unreliable with increased cub mortality because of more difficulty in distinguishing FOCY (i.e., litter sizes are changing). (IBA)
  - Need to acknowledge the risk and bias associated with Chao2.
  - The IGBST workshops concluded that it is not possible to rely on FCOY observations as a trend indicator at the current high densities (IGBST 2012).
  - Need to specify that population monitoring will continue indefinitely at the same intensity (neither more nor less) and distribution and under the same design given potential biases in the Chao2 method.
- Population trend:
  - Annual uncertainty in the population estimate should be compared to long-term averages to give more insight into the population trend
  - Negative trend may not be detected with current statistical rigor until too late
  - 2015 population estimate was down 6% from the 2014 estimate
  - Decline due to increased mortalities as a result of conflicts with hunters and livestock and lower cub survival
  - The population has not increased since the early 2000s
  - Increased population trend due to biases from increased search effort (i.e. number of hours flown) and sightability (increased use and flights of moth sites). Search effort doubled even if standardized to grizzly bear distribution. Increased FCOY mirror increased search time and moths site use.
  - The model-averaged approach to estimate population size and trend is insensitive to rapidly changing conditions. The "smoothing" approach should not include data from before 2000 when

drastic changes occurred in the GYE. The results, both population size and trend, are highly dependent on the time period being modeled. The more data included, the more optimistically the result is biased. Since 2007, the population trend has declined significantly to 0.8%.
    - "The Service employs linear and quadratic models, without statistical or theoretical justification."
    - The population growth rate has been over-estimated because it does not account for senescence in both birth and death rates of female grizzly bears (Doak & Cutler 2014a, 2014b).
    - Given the low end of the 2015 population estimate of 642 bears and the loss of up to 90 bears in 2015 (59 deaths plus unrecorded deaths which could be another 30 bears), the current population estimate could be as low as 552 bears (Thuermer 2015).
    - Survival rates have changed and the population may be "higher" when adjusted for the higher number of males and slightly lower number of females (Haroldson and van Manen 2014).
    - Population size is inflated by inflation of survival rates male and female bears 2+ years old and is insensitive to rapidly changing conditions.
    - More older bears and fewer cubs and young bears is not a good trend to maintain a healthy population.
    - Van Manen et al. (2016) and Bjornlie et al. (2014) use trapping-effort data instead of reliable capture-recapture population count method.
    - "The density index directly based on the number of bears trapped and radio-marked in a given area during a given year" – is not validated and contradicts the straight-forward calculation made by Mattson that the population has not increased and occupy a wider range so density is decreasing
- New population estimator
    - Mark-resight method has promise because it has data back to 1997 and is unbiased with respect to bear density. However the data are sparse and the sample of collared bears and/or more search flights is needed. Data from Mark-resight, a less biased estimator than Chao2, shows that the total population size has actually declined.
    - The Service should abandon the model-based average approach and instead use a model based on a running average of annual growth rate over the 6 preceding years.
    - The Service fails to explain how a new population estimator would be applied, how will deviations between the new population estimate and estimates from Chao2 be reconciled? For example, because of corrections for low bias, corresponding mortality limits may represent a significantly greater number of bears compared to previous years.
    - If a new population estimator is used, the number of recovered bears for future management actions should not be re-defined. (Park County Commissioners)
    - The current calculations for total mortality limits are highly sensitive to total population size. Therefore, all aspects of the method used to monitor trend, calculate allowable total mortality, and trigger outside reviews needs to be recalibrated should new methods be adopted for estimating population size. A new method also needs to be made available for public comment.
- Carrying capacity:
    - Fluctuates (i.e. figure 1), as a function of environmental factors (i.e., food availability), emigration in search of food, mates, or territory should be included in the description
    - Carrying capacity has declined in the 1-2 decades with the decline in the four major food sources
    - Figure 1 is an oversimplification of carrying capacity, would be better to present a figure of Chao2 estimates leveling off
    - No analysis to indicate that carrying capacity is limiting the population throughout the GYE.
    - Loss of food sources is actually the main driver of the significantly slower growth rate in the GYE DPS census that has been observed over the years, not carrying capacity.

    - Why does the Service believe that the GYE has a carrying capacity for grizzly bears? Grizzlies occupy less than 25% of the GYE. In the CS the Service admits it cannot calculate carrying capacity.
- Mortality:
    - Mortalities from all causes in 2015 was 61 bears. Reported mortality is about half of actual dead bears "Start adding in the bears that will be shot in the trophy hunt and you could easily approach 200 dead grizzlies in a single year."
    - Female mortality limit was exceeded in 2015.
    - Mortality limits for males and/or females have been violated during 5 out of the last 7 years
    - Known fate monitoring to monitor death rates is biased because it uses large datasets over long periods that will reduce chances of detecting short-term trends. Death rates calculated from known fate monitoring is in disagreement with the death rates actually occurring.
    - The Service uses Cherry et al. (2002) as its method for estimating total mortalities and then this is used to calculate death rate. This method tends to under-estimate mortality and bias is created by changes in cause of death and changes in capture and radio-collaring efforts (e.g., larger portion of the population is being marked). Probability of a death being reported may depend on cause of death.
    - All mortality outside the DMA should be assumed to be emigrants from the DMA and be counted as losses for the DMA.
- Vital rates
    - Negative trend may not be detected with current statistical rigor until too late
    - Uncertainty on the driving forces behind the declining vital rates
    - Lower cub and yearling survival since the early 2000s
- Density:
    - Core density has decreased. Mark-resight population estimates show the population was stable since the early 2000s and even possibly declining since 2006-2007. At the same time distribution has increased ~40% (Bjornlie et al. 2013). The same number of bears is occupying a larger range as evidenced by a stable population and larger occupied range.
    - Density did not increase during the 2000s and after.
    - Temporal changes in abundance of key foods and habitat were not accounted for in the index of bear density by van Manen et al. 2016. No basis to isolate any density effect.
    - Only 1 factor (home range size) of the 4 factors is different for density-dependence and density-independence. Decreased cub and yearling survival, increased age of first reproduction, and decreased reproduction cannot be distinguished between food and density as a cause.
    - What is the causal link between density dependence and vital rate declines? Only cub survival through male infanticide has been explained.
- Population management objective:
    - The Service references a management objective of 674 bears within the DMA. The states have agreed to a "management objective for the DMA of at least a range between 600 and 747 (based on the 95% confidence interval of the estimated average population size between 2002-2014) and upon mortality rates to keep the population within this range".
    - Unrealistic to manage a population to a single number when the confidence intervals are large and do not account for all sources of variation so are actually even larger than reported.
    - The population should be managed for stable to increasing because some lands within the DMA are currently unoccupied. Should not be managed to the lower end of the population estimate confidence interval of 600 bears.
- Include figures or tables showing estimated population of females with cubs-of-the-year, estimated total population, and mortality patterns over time

600 Factor A - habitat

- Suitable habitat definition:
  - The suitable habitat definition excludes consideration of sheep allotments and other livestock operations, which are present and increase human-bear conflicts. Instead of excluding sheep allotments from suitable habitat, they should have been considered as a potential threat to GYE grizzly bears under Section 4(a)(1).
  - The analysis for suitable habitat leaves out important potential habitat, such as the Wind River Range, the Palisades WSA into Idaho, and other public lands that lie just outside the DMA and some habitat outside the DMA that is already occupied.
  - To exclude anywhere grizzly bear populations are not currently present from suitable habitat due to social intolerance is not a science-based conclusion. Public intolerance is not a rationale for lowering recovery objectives below what is biologically necessary for long-term persistence.
  -
- Secure habitat (inside the PCA):
  - Projects inside the PCA should not be allowed that temporarily change the amount of secure habitat.
  - The Service cites the US Forest Service 2006 EIS for secure habitat definition but it contains no justification for the definition. Mattson (1993) recommends that "microscale" security areas contain a core roughly 290 ha in size, 2-4 km from the nearest road or other human facility, resulting in an area 28.3 km^2 in size.
  - Increase minimum core security areas to allow for dietary flexibility, "typically set at approximately 10 km^2, because that size takes into account the size of average daily movements of an adult female grizzly bear (Gibeau et al. 2001). It should be at least 500 m from high human use defined as >100 human visits/month, not just an "open or gated motorized access route"" .(IBA)
  - Reconsider allowing recurring low-level helicopter flights and temporary road construction during denning season.
  - Habitat cannot be considered secure if hunting is allowed.
  - Mortality risk is not static within "secure" habitat. Social and dietary changes since 1998 have resulted in increased exposure to human hazards with no net change (or increase) in livestock allotments and human infrastructure.
  - Road densities in the PCA are currently limited but will not be limited upon delisting and will increase mortality risk and logging.
  -
- Secure habitat (outside the PCA):
  - What is the scientific basis for creating 2 management zones, the PCA and outside the PCA. What evidence is there that these are 2 distinct grizzly bear populations and that bears don't overlap the boundary to justify different management proposals for what is likely one population?
  - It is disingenuous to say that suitable habitat outside the PCA will provide additional ecological resiliency and habitat redundancy to respond to environmental changes, however, the same habitat protections do not occur outside of the PCA as inside the PCA.
  - It is insufficient that 60% of suitable habitat outside of the PCA is protected by other binding regulatory mechanisms. That means 40% remains unprotected.
  - The Service is effectively writing off the 25% of the independent females that occur outside of the PCA because there is inadequate habitat protections outside the PCA, this exceeds the mortality limit for this cohort under all circumstances.

- Habitat outside of the PCA has become a sink for human-caused mortalities
-
- 1998 baseline
  - It is unlikely that the habitat remains in the same condition as it was in 1998 (i.e., whitebark pine decline) even if "security" is unchanged.
  - Population growth was overstated for the 1998-1998 period for which the 1998 baseline was established and has also been associated with the recent decline in population trend.
  - The 1998 baseline was developed under a different population estimator than currently used (nonparametric Chao2 estimator v. model-averaged Chao2 estimator), is it valid?
  - Does not account for increasing use on, off, and nearby the mapped features, increasing encounter rates.
  - How will the 1998 baseline be achieved? "What will happen to roads and developments that were constructed between 1998 and the present date?" (Wild Earth Guardians)
  - The 1998 habitat baseline fails to account for the distinction between frequency of contact and lethality of encounter in determining risk of human-bear mortalities to grizzly bears. This is a dynamic phenomenon influenced by human attitudes and behaviors and habitat management needs to change to account for social and dietary changes since 1998.
  - The moving window analysis results from Mace and Waller (1997) should be implemented and is the best available science. Set open motorized route densities, total motorized route densities, and core amounts for every BMU. Not the 1998 baseline.
  - The Service does not address the improvements made or if they meet the level of improvement originally identified in the three subunits that were in need of improved and have since been improved.
- Connectivity:
  - No connectivity or plans to provide connection between the 6 recovery zones in the lower 48
  - Create zones or demographic connectivity areas (similar to the NCDE) between the GYE and the NCDE and the GYE and the Bitterroots to allow for female occupancy.
  - Only Montana's plan discusses connectivity and is non-committal. Idaho and Wyoming's plans do not discuss connectivity and are not mentioned in the rule.
  - The Service states that it does not consider connectivity to the east, west, or south a relevant issue although the Service recognizes that the GYE could be a source population to re-colonize the Bitterroot Ecosystem to the west. Idaho should allow for connectivity to the BE.
  - Failure to provide connectivity zones would undermine the NCDE Conservation Strategy
  - Connectivity zones should have the same habitat standards as inside the PCA.
  - Reduce the DPs boundaries to be the same as the DMA to allow for connectivity
  - Demographic connectivity needs to be addressed in addition to genetic exchange
  - Connectivity between the GYE and the NCDE should not be a requirement of delisting. MT has committed to allow bears to occur where they are tolerated and expect the populations to intermingle in the future.
  - Even where there isn't suitable habitat there can still be travel corridors for emigration/immigration of male bears.
- Grizzly bears need to be recognized as a keystone species in the ecosystem
- Doak (1995) published that there's a 8-13 year lag between habitat decline and population decline, McLellan (2015) recently demonstrated lag effects for grizzly bears in the North Fork of the Flathead River drainage of BC and MT.
- "There is precedent for federal managers undertaking mitigation on public lands for harm arising from activities on nearby private holdings (e.g., the 1997 Swan Valley Grizzly Bear Conservation Agreement).

- Livestock allotments
  - livestock allotments within the DMA and the DPS exclude it from being suitable habitat, cause habitat fragmentation, and are a barrier to grizzly bear movements
  - Prior to delisting, the US Sheep Experiment Station must be closed, the only sheep grazing operation in the PCA and on federal land. It is in an important connectivity area between the GYE and the Salmon-Selway Ecosystem.
  - Cattle allotments also cause population sinks (i.e., Upper Green Allotment)
  - Livestock conflicts still account for 14% of human-caused mortalities from 2002-2014. On private lands in the PCA there is no requirement to securely store and/or remove attractants, including livestock carcasses and feed.
  - Require that non-lethal techniques (i.e., removal of attractants, construction of barriers, guard animals, etc.) be used before removal when conflicts occur with livestock o federal land.
  - Livestock allotment permits should require conflict prevention/reduction measures to reduce grizzly bear conflicts and mortalities
  - Phasing out of allotments: include stronger language for mandatory phase-out; work with third parties to buy out allotments where possible
  - "Voluntary relinquishments" of livestock allotments is "driven by the inability to withstand the pressure of predation by bears and/or wolves or regulatory constraints imposed by the federal land agencies"
  - The payment of some compensation by the "NGOs does not negate the severe impacts of relinquishments on these ranchers and our industry"
  - Holders of livestock allotments in the PCA should expect and accept losses for predator-caused mortalities without expecting aggressive action toward the grizzly bear.
  - The Service must undertake Biological Opinion for livestock operations on federal lands and has failed to require conflict prevention measures.
  -
- Oil, gas, or mineral projects
  - Not restricted inside the PCA. Do projects that reduce the amount of secure habitat have to replace secure habitat of similar habitat quality?
  - No new oil, gas, or mineral projects should be allowed in the PCA.
  - No means to limit the number of mines because of the 1872 General Mining Law.
  - Currently there are 2 mining operations in the process of development in and near the PCA (the Crevice Mine and the Emigrant Mine). These threats need to be acknowledged in the rule.
  - Delisting will lift some of the restrictions on oil, gas, or mineral leases
- Snowmobiling
  - Lack of evidence does not allow for the conclusion of no impact.
  - Monitoring alone is insufficient.
  - Impacts from associated activities (i.e., artillery to control avalanches) were not adequately considered.
- Human recreation
  - Should be assessed as take (section 9) as it harasses wildlife and causes displacement from food sources.
  - What is the potential impact to bears feeding on army cutworm moth sites of increased human visitation?
  - The number of visitors to national parks has steadily increased since 2005 to the present (YNP 2.9 to 4.1 million and GTNP 2.5 to 3.1 million), increasing risk without a change in infrastructure.
  - Grizzly bears are twice as likely to use an area when the managements were restricted or people were inactive (Coleman et al. 2013).

- Longer-term exposure to humans can cause habituation and higher mortality risks.
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- Habitat fragmentation
  - No prevention of habitat fragmentation inside the GYE DPS outside of the DMA.
  - The Service does not consider energy development, timber harvest, off-road vehicle use, etc. in potential habitat fragmentation.
  - Private lands contribute to habitat fragmentation of grizzly bear habitat outside of the PCA
  - There is a high degree of fragmentation in "suitable habitat" within the PCA and to a greater degree in the DMA (Forest Service 2006, Schwartz et al. 2010).
  -
- The Service should use spatially dynamic boundaries to allow for shifts in habitat distributions and migrations of grizzly food sources.
- Upon delisting, protections that have occurred in conjunction with the 1998 baseline and that will disappear include: the ESA Section 9 "take" prohibition; the ESA Section 7 consultation requirement; the 1986 Interagency Grizzly Bear Guidelines; and the ESA citizen suit provision. Without these will the 1998 baseline be sufficient habitat protection?
- Managed motorized access is the most effective habitat management tool to reduce grizzly bear mortality risk (Nielson et al. 2006; Schwart et al. 2010). Federal plans to address reducing motorized access on public land located in and around suitable habitat areas.
- Why would the Service proceed with delisting without establishing connectivity between the GYE and other subpopulations when the Service acknowledges the importance of connectivity?
- Natural dispersal should be facilitated over transfer of animals between core populations (Carroll et al. 2014; Rohlf et al. 2014).
- Impression that most of the GYE is designated as critical habitat for the grizzly bear
- Logging
  - Timber harvest will increase post-delisting because road densities will not be controlled in most grizzly bear habitat. Increased road densities will also increase mortality risk.
  - Grizzly bears avoid recently logged forests (McLellan and Hovey 2001; Apps et al. 2004). Habitat values will likely decrease under short-rotation management regimes (Mattson and Knight 1991). Food availability does not increase in early successional forests in Yellowstone as it does in some other ecosystems.
  - Designation of secure areas for grizzly bears during logging should include previously disturbed areas as areas already providing security is not mitigation for increased disturbance.
  - Need to analyze impacts from logging between 2002 and the present to determine real impacts. If there was no logging after 2002 the Service should clarify that. (Currently we only discuss logging from 2000-2002).
  - Logging will degrade red squirrel habitat, which are essential to making WBP nuts available to grizzly bears. Most red squirrel populations are at lower elevations than the WBP zone.
  - Aside from the increased risk from roads, there is not enough science to determine the impacts of logging on bears (i.e., displacement, habitat quality, mortality, etc.).
- Displacement from roads is well documented and may result in higher mortality rates and lower fecundity (Mattson et al. 1987; Apps et al. 2004; Chruszcz et al. 2003; Wielgus et al. 2002).
- The CS only limits densities of permanent roads and the distinction between a permanent and temporary road is unclear. Temporary logging roads may have higher traffic than a permanent road.
- Private lands
  - More closely analyze the impacts of private lands and what actions, if any, can be taken to minimize grizzly bear deaths and conflicts.

- Increasing rural development has negative impacts on grizzly bear population trends (Doak and Cutler 2013)
- The 1998 baseline does not account for edge effects with residential and recreational developments on private lands, with development occurring at an accelerated pace
- Potential privatization of federal land is a threat to habitat maintenance and it is easier to transfer land if there are no listed species on the land

- Food storage orders should be in effect for all habitat within the DPS boundaries, especially within the DMA, within extent of the law.
- Forest Service issues:
  - Provide specific statutory and regulatory definitions for "conservation reliant species" and the authority that accompanies such a designation.
  - Revise "sensitive species" and "conservation reliant species" language
  - Wilderness, wilderness study areas, and roadless area designations are not restrictive enough to assume that no impact on grizzly bears exist in those areas. In Roadless areas, energy development or road construction in conjunction with oil and gas leases that pre-date the effective date of the rule, off-road vehicle use, and human recreation may impact habitat. In Wilderness and wilderness study areas, mining claims that pre-date the Wilderness Act may be pursued. Livestock grazing is also permitted on these lands.
  - Cannot assume that changes in the management of roadless areas under the Roadless Rule will not occur as it is currently under judicial review.
  - The PR inaccurately describes some aspects of the FS management of Wilderness Study Areas and Roadless Areas (FS will help edit)"The Service states that the Gallatin National Forest determined that gains in secure habitat resulting from full implementation of the 2006 Gravel Management Plan will constitute a new baseline, but it is unclear why the Service is not enforcing the Gallatin National Forest to decommission motorized routes and develop sites to comply with the 1998 baselines as all other forests have done." See draft CS. 2006 Gallatin Travel Management Plan not approved?

700 Factor B – overutilization, hunting

- Pro-hunting arguments:
- Anti-hunting arguments:
  - Hunting could orphan newly born grizzly bear cubs
  - Hunting is unethical and unjustifiable and goes against the will of the American people (Humane Society of America April 2016 poll) and the citizens of the three states themselves.
  - Hunting significantly increases the risk that the GYE grizzly bear population would drastically decline again.
  - Hunting is destructive to the healthy function of an ecosystem (i.e., trophic cascades).
  - No plausible scientific argument to allow hunting.
  - No evidence that hunting increases fear of humans.
  - "Introducing hunting negatively impacts sustainable ecotourism, as visitors typically perceive they cannot safely visit to observe or hike trails shared by armed hunting enthusiasts." (Animal Defenders International)
  - Hunting will have a behavioral impact on grizzly bears.
  - Hunting is an ineffective management tool as hunters will not be hunting "nuisance" bears
  - Against trophy hunting on principle
  - Hunting may decrease genetic resilience by removing the biggest and strongest males from the population.

- The theory that humans can "fill in" for predators to maintain a ecosystem's prey base at appropriate levels is not valid.
- Hunting may increase reproductive suppression among females and the phenomenon of inverse density dependence will further depress the population of these animals.
- Grizzly bear hunting is contrary to the reverence that Native American Tribes have for them.
- Hunting has potential indirect negative effects on a population and can be "super additive". Removal of older males may lead to increased immigration and potentially increased infanticide by such immigrant males. Avoidance of these males by females may lead to less suitable habitat/less food and smaller litter sizes.
- Hunting can disrupt activity patterns during hyperphagia, which could be energetically costly.
- Does the economic benefit of trophy hunting outweigh the cost?
- Hunting can disrupt the sex and age structure of the population.
- Artificial selection (i.e., hunting) will replace or weaken natural selection.
- If there are surplus grizzly bears then they should be used to augment/restore populations in other recovery zones rather than be hunted.
- Hunting of the GYE population is a threat to the recovery of other populations, including the NCDE and the Selway-Bitterroot populations. The population must be growing, not stable, to provide a source for the BE.

- Hunting boundaries:
  - There should be no hunting inside the PCA or other densely populated grizzly areas
  - Create a buffer of no hunting or focus hunting away from NPS boundaries
  - Only allow hunting outside the DMA, away from "secure habitat"
  - No hunting on state and private inholdings within GTNP
  - There should be no hunting in the JDR. A grizzly bear hunt within the JDR would have a negative impact on public safety and public use and enjoyment. Pub. L. 92-404, Sect 3(b)
  - Hunting should occur in conflict areas, like the Upper Green, to potentially address individual bears
  - It is difficult to identify boundaries of the PCA or other "secure habitat", need to limit hunting to readily defined zones
  - There should be no hunting in the connectivity areas (e.g., the Gravelly Mountains, the Centennial Range, the Tobacco Root Mountains, the Highland Mountains, etc.)
  - Grizzly bear hunting in GTNP must be prohibited
  - No hunting should be allowed at food aggregate sites (i.e., moth sites and a 10 mile buffer anywhere in the DPS) as these would be "easy killing fields for trophy hunters to wipe out large numbers of bears at one time and place" (Wild Earth Guardians)
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- Proposed mortality limits:
  - If 7.6% is the sustainable rate at 674, any drop below should result in a mortality rate less than, not equal to 7.6%.
  - Where it says <7.6% at <674 it does not specify how much lower the limit should actually be.
  - A >7.6% female mortality limit will not maintain population growth
  - For mortality limits >7.6% for independent females: What is the biological basis? Unsustainable, especially with increasing density dependent forces. Need scientific justification for the mortality limits and models used to derive these thresholds, available for independent peer review. Population may continue downward even after reducing mortality to ≤7.6%.
  - Given the large CIs on the survival estimates of each sex-age group and non-age-specific reproductive rate (IGBST 2012), the estimated mortality limit must have wide uncertainty.(IBA)

- The 7.6% sustainable mortality rate assumes that all females aged 4-30 maintain an average reproductive rate (0.336), this estimation may have been based on transitions of immature animals and old bears in reproductive senescence but provides great uncertainty in the estimation. Average age of first reproduction may increase with carrying capacity.
- Using "best estimates" for population size, vital rates, unknown human-caused mortality, and natural deaths as proposed in the rule means there would be a 50% change that mortality limits are unsustainable. (IBA) Should set the mortality limits based on the lower confidence limits. Other larger, connected populations (i.e., BC) have a total HCM annual limit of 4-6% and only 30% can be female and are even lower in areas with higher uncertainty around population estimates.
- "Having spatially explicit targets for this population would be better, we believe, than exact numerical targets. For example, mortality limits could be higher in the southern and eastern portions of the GYE than to the west and north. Moreover, habitat to the north and west of the DMA should be managed in such a way as to encourage population expansion." (IBA)
- Risk of overharvest would decrease if mortality limits were calculated/assessed using the lower bounds of Cis
- Calculation of mortality limits and setting of availability for discretionary mortality without a description of the uncertainty (i.e, confidence intervals) gives the false impression of the precision of the population estimates and the presented mortality limit table
- A total mortality limit for a population level of ≤600 should be set to produce population growth. Simply dropping discretionary mortality is not enough.
- Proportional harvest can lead to overharvest and even population collapses when there is uncertainty in population projections. Proportional threshold harvesting, where only a fraction of the excess in estimated population above the threshold is removed, minimizes the risk of overharvest where there is uncertainty in population size.
- The mortality limits should be more conservative
- All of the tables must contain the footnotes in Table 1 of the rule, so that at a population <674 the mortality limit cannot be 7.6%, which would cause population decline. Additionally, to be clear that the mortality limits apply to total mortality as defined in the rule.
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- Proposed regulations:
  - Suggestion that a 5-year (3-year) moratorium on recreational and commercial harvest be in place upon delisting to determine how well recovery is maintained post-delisting first.
  - Should be a ban on baiting, trapping, and the use of hounds for grizzly bears in the GYE DPS as a state requirement before delisting
  - Normal licensing and hunting procedures should apply, open to the public and non-resident hunters, Limited and controlled hunts should not be permitted
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- Timing the hunt to minimize female mortality is (1) not a legally binding requirement and (2) timing and location of hunts cannot be reliably manipulated to avoid the take of mature females (i.e., denning times are highly variable with weather and food conditions). Although males usually emerge from dens earlier than females, the difference is usually only 2-3 weeks.
- Bear mortalities have significantly increased in "secure habitat" where they encounter elk hunters and may increase as bears move to a more meat-based diet.
- Difficult of the common public to identify males vs. females in the field, outlined strategy to protect females is not adequate
- The Service should provide funds to the states to encourage proactive and non-lethal management tools.

- Question the rationale behind trophy hunting given the slow reproductive rate of grizzly bears
- Calculation of total and background mortality
  - Background mortality fails to account for unknown-unreported grizzly bears deaths.
  - Need to discuss the uncertainty in the number of bears that die from natural causes or unreported human-caused mortality, broad credible intervals depending on priors and how unexplained an unresolved cases are dealt with (Cheery et al. 2002). IGBST reports do not show credible intervals and natural deaths are not included in the estimation.
  - The method used to calculate total deaths is biased (biased low – IGBST 2012, Table 2.1) and the degree of that bias is not consistent (e.g., effort expended to locate dead bears) and is unknown.
  - The period over which the moving average of background mortality should be defined and account for uncertainty
  - Fails to address loss by emigration out of the DMA and is not counted towards total mortality limits or background mortality when calculating allowable discretionary mortality
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- There is no provision for the NPS in the allocation of 'discretionary' mortality. The NPS should be allocated their fraction for foreseeable mortality under NPS jurisdictions.
- Difficult to plan to close hunting seasons when total mortality reaches threshold levels when up to half of individual grizzly bear mortalities are never discovered in non-telemetered bears (McLellan et al. 1999).
- Allowable annual total mortality should be calculated as a % of the Chao2 estimate and give a range based on the lower and upper CIs
- The mortality limits are limit by virtue of being based on inflated estimates of population growth. Mortality limits should be adjusted downward to account for liberal bias.
- Cumulative annual mortality should be analyzed on a month-to-month or seasonal basis to be used a better predictor to alert managers if annual mortality is progressing in a "normal" pattern or if it is likely to be exceeded. An additional trigger could be added to stop discretionary mortality for the current year in light of this information.
- The states should not be able to decrease the population by more than 100 bears from the 2015 population estimate of 717 bears to 600 before discretionary mortality is stopped.
- If a minimum population goal is 500 animals then states may envision an immediate surplus of 274 animals
- Bears that seasonally travel outside of NPS boundaries to hibernate, forage, etc. would be exposed to hunting
- Not enough data to state "commercial and recreational hunting will not constitute a substantial threat"
- Governor Mead requests the removal of language following Table 3 explaining mortality allocation beginning with "[t]here are mortalities that occur…" through the sentence, "[t]these examples serve to explain the process…"
- "Lack of bear trapping is not a foundation for grizzly bear delisting and this should be made clear." (Governor Mead) The rule reads "….we do not expect grizzly bear trapping to occur due to public safety considerations and the precendent that there has never been public grizzly bear trapping in the modern era."
- Hunting is not required to manage bear conflicts, the state fish and game departments already handle these without a hunting season.
- There are discrepancies between the mortality limits in the proposed rule and the CS.

- The rule provides definitions and calculations not included in the CS (i.e., total mortality, background mortality, Table 3 and subsequent 3 paragrraphs)
- It is unclear that the mortality limits are total and what that means in the CS without the explanations in the Rule, leaving open for misinterpretation how many bears are available for discretionary mortality
- If the goal is a stable population at 674 then it seems logical that all discretionary mortality would cease if the population falls below 674 rather than 600. If mortality is allowed below 674 then it should be at the threshold proposed in 2007, "known human-caused mortality not to exceed 4% of the conservative, minimum population size index based on the most recent 3-year sum of unduplicated FOCY. Mortality limits were set at 4% of Nmin, with no more than 30% of this 4% (1.2% of the population) to be females."
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800 Factor C – disease and predation

- The frequency of diseases and parasites will increase with climate change.
- Human-caused mortality
  - Should limit/eliminate ungulate hunting to minimize conflicts
  - Increase in human-caused mortalities in 2015, 59 known and additional 30+ more unknown
  - Increase in hunter caused mortality in the past 11 years from 3.7 to 10.2 bears/year
  - Trapping is allowed in Wyoming and the rule does not address non-target trapping incidents of bears and how this will be managed. (i.e., incidence of cub caught in a trap near Cody in October 2015 leading to agitated sow nearby). Trapping should be banned within the PCA and the DMA.
  - States should prohibit black bear hunting within the DMA, or at the very least the PCA, to reduce mistaken identity kills of grizzly bears.
  - Idaho and WY should have a mandatory bear ID test for hunters to reduce mistake id mortalities
  - Need to change the attitudes and behavior of people living in grizzly bear habitat to reduce mortalities
  - Defense of life and property kills, especially from ungulate hunters, still a major contribution to human-caused mortality. Hunters only required to carry bear spray inside GTNP and JDRP.
  - Coordinate and fund programs on public and private lands to reduce attractants: deadstock removal, electric fencing, and bear-resistant garbage and feed bins.
  - A ban on trapping should be a requirement prior to delisting. Even if trapping is banned for grizzly bears, without ESA protection trapping of other animals could be allowed without Section 9 liability for injury and death of grizzly bears as incidental take.
  - Total human caused mortality has risen steadily since ~1994 (8.9% per year) and drastically since 2007 (7.0% per year)(Mattson). If the population has stabilized since between 2002 and the present then these rates of increased mortality mean the population is actually declining.
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- Poaching
  - Delisting and hunting may increase poaching despite designation as a game species and state regulations (i.e., gray wolves – Treves et al. 2015)
  - "Blood does not buy goodwill: allowing culling increases poaching of a large carnivore" Chapron and Treves (2016)
  - Poaching will remain a threat to GYE grizzly bears
  - Post-delisting there would not be enough resources to investigate and prosecute poaching without the USFWS special agents

- Provide references to substantiate the theory that designating the grizzly bear as a game animal may reduce poaching.
- Poaching is rarely investigated or prosecuted. Detailed information on mortalities "under investigation" is not available to the public, it is impossible to know if the Service's claims of effective law enforcement is true
- Allowing a trophy hunt will create an atmosphere of acceptability to kill a grizzly for any reason.
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- Natural predation:
  - Difficult to document. The majority of cub and yearlings disappearing is most likely predation.
  - Most natural deaths are cubs and yearling and undocumented. When these are considered then this triples the estimated natural deaths from 1 per year from 1986-2015 (as stated in the Rule) to 3 per year. And the annual medium has jumped to 6 per year since 2010.
  -
- Does the Service have the discretion to classify the grizzly bear as "non-game"?
- Selling of grizzly bear parts not addressed in the proposed rule, how common is trafficking in the US?
- Disagree that conflict removals encourages people to use means to avoid conflicts in the future. Lethal control does not increase tolerance (Browne-Nunez et al. 2015).
- The Service incorrectly concludes that the reduction of human-mortality is no longer a threat because of reduction through I&E programs. Mortalities have continued to rise despite the heavy implementation of I&E in 2008.
- If discretionary mortality is suspended, except for human safety purposes, when the population estimate is below 600, how is "human safety purposes" defined? There are blurred lines between human conflict and human safety.
- The IGBST 2009 Yellowstone Mortality and Conflicts Reduction Report recommended the creation of a database for all bear encounters and mortalities and that it be available to the public. This has not been acted upon.

900 Factor D – adequate regulatory mechanisms

- All language should firm: remove will, anticipated, expect, etc.
- The state manage plans will actively discourage occupancy of areas outside of the DMA by grizzly bears which is in direct contradiction to the rule.
- The Service must analyze Factor D based on <u>existing</u> regulatory mechanisms and they must be in state laws, statutes, and regulations, not just plans, to have enforcement mechanisms.
- Implementation of the CS is dependent on funding and is not enforceable so cannot be considered a regulatory mechanism.
- The MOA is not a legally binding document (no means of enforcing compliance) and therefore cannot be relied upon by the Service.
- States are given too much discretion: manner of take (e.g., baiting, hounding, trapping, stalking), bag limits, seasons, sex ratios and age limits for grizzly bear hunting.
- Triggers:
  - Lack of funding should be added as a trigger for a status review with potential for relisting as well as a Biology and Monitoring review trigger
  - There should be triggers related to habitat standards, they are all population standards
- Funding will be an issue because hunting licenses will not be sufficient to cover state costs. The Service should assist the state to continue field biologists to minimize and manage bear conflicts.
- Montana and Idaho do not plan on revising their existing, inadequate grizzly bear management plans

- WGFD compensation program has been instrumental in supporting the recovery – increased depredation from 20 in 2010 to 80 in 2015 (Upper Green River Valley Cattle Association)
- "Since 1975, Wyoming has spent more than $40 million on grizzly bear management. Wyoming remains committed to robust grizzly bears population and ensuring they never warrant protection under the ESA again." (Governor Mead)
- The CS and state plans "provide for the take of nuisance bears regardless of the current mortality quota upon consultation among all involved agencies". Therefore, discretionary mortality limits are only applicable to hunting.
- The states have not implemented regulatory mechanisms yet: number available, methods available to hunters, detailed age limits, sex ratios, or bag limits.
- The Service cannot simultaneously insist that certain regulations be adopted before a final rule and argue that the existing regulatory mechanisms are adequate
- State plans need to manage for "enhancing grizzly connectivity, population size, and diversity across the three state area" not towards a minimum population level as they currently do
- Concern that the states will be swayed by political pressure in their management plans as they must go in front of state legislatures for approval, disapproval, or admentments
- Heavy fines and hunting license revocation should be in state regs to incentivize compliance with carrying bear spray
- Wyoming and Idaho plans state that they will prevent the GYE grizzly bear from re-occupying its historic range.
- Without state implementation of regulatory mechanisms the conservation strategy is a voluntary commitment and cannot be the basis of delisting.
- Even if the states implement plans and regulations, they cannot be considered because they are promises of future action and not present obligations.
- The 2006 FS plan no longer represents the best available science and the rule says "the amendments to the GYE National Forest Land Management Plans would become effective if, and when, delisting is finalized". Therefore, the FS doesn't currently have regulatory mechanisms to exhibit adequate regulatory mechanisms.
- The 2006 Amendment cannot "simply be resurrected" once a new delisting is finalized. The FS has to do a new planning process and public review to amend their plans because the new CS changes the habitat protection provided by existing forest plans.
- The rule says the FS *will* designate the grizzly bear as a "species of conservation concern", a promise is not an adequate reg mech
- The new designtation of "species of conservation concern" under the 2012 Planning Rule, which does not provide the same protections as the older "sensitive species" classification. The same project-level prohibitions do not apply.
- As the 5 national forests revise their forest plans, the "sensitive species" designation will no longer exist. Should meet the new definition of "species of conservation concern".
- Forest Service plans are not regulatory documents because of the 2012 Planning Rule? [Tyson is checking on this]
- Inventoried Roadless Areas prohibit roads but don't prohibit motorized ATV "trails"
- YNP incorporated the 2007 CS into it's compendium and do not reflect the revised CS and are therefore insufficient.
- No mention of BLM's sensitive species program, its requirements, and how grizzly bears will be classified for planning and management purposes on those lands post-delisting
- GTNP "will incorporate grizzly bear management standards into their 2016 Superintendent's Compendium" reads as if it'll include the 2007 CS and not the revised CS.

- Bears outside the PCA do not have adequate protection
- Even if states are cautious during the first five years of federal oversight that follows delisting, over time management will reverse gains made over the last 40 years of endangered species protection.
- Land use plans do not prescribe agency actions and therefore are not legally enforceable (*Norton v. Southern Utah Wilderness Alliance*) and therefore cannot be considered adequate regulatory mechanisms.
- The three states "have shown little if any ability to be in agreement when it comes to managing wolves or other species". "I see grizzly bear management from these states no different. There needs to be uniformity, consistency, and communication among these three states to prevent elimination of the bear from certain landscapes."
- Forest plans to implement HBRC may not be implemented once listed status, which provides tools and incentives, is removed
- State plans need to be available to review concurrent with proposed rule to delist to ensure critical management strategies and regulatory framework are in place to maintain recovery
- The rule relies on habitat management plans and standards that have yet to be finalized (the CS) and therefore the public cannot adequately comment on the proposed rules. The Service must allow another comment period once the CS is finalized.
- Adequate state plans, regulations, and the MOA must be finalized to a final rule
- The state legislation needs to pass appropriate laws to make it illegal to sell bear parts, the rule needs to discuss the current state laws or lack thereof
- Complications of multiple state management: "allocation among states and tribes, feasibility of enforcement, prevention of exceedance of limits (including gender limits), and subsequent implementation of mitigation (reducing discretionary mortality) in a following year"
- MT, WY, and ID have agreed to collectively manage the GYE population at the ecosystem scale to maintain recovery through the MOA and all three states Fish and Wildlife Commissions
- At least 2 of the states have "clearly demonstrated non-precautionary management of large carnivores, as exemplified by unsustainable harvest levels of the NRM gray wolf (Creel and Rotella 2010; Ausband et al. 2015)."
- State plans do not require that grizzly bears being caught in traps (as a non-target animal) be reported to the fish and game departments
- WGFD has not identified all threats grizzlies will face outside of the NP boundaries.
- Who will be the watchdog for the State fish and game departments if grizzly bear management falls to them?
- If the states list grizzly bears as predators at some point in the future then grizzly bears should be relisted immediately.
- Regulatory mechanisms are too lax
- No statement that the states have committed funding to fully implement the CS and no consequence if agencies fail to procure the necessary funding.
- Is there any commitment by the Service to continue funding monitoring or conflict prevention, etc?
- What measures have been put into place to ensure that grizzlies within the DMA but outside the PCA will be managed in a consistent method between the three states ensuring that nuisance bears do not exceed mortality thresholds, Criterions 1-3 are met, and facilitates genetic connectivity?
- The 2005 guidelines for habitat outside the PCA are not legally enforceable. Standards should include road density, secure habitat, and no surface occupancy stipulations for all federal lands within the DMA.

- The 2012 Planning Rule requires the Forest Service to consider connectivity, including roads (permanent or temporary, open or closed) and site development in light of how they may increase human-bear conflicts and grizzly bear mortality.
- Cooperation needs to occur with the State Highway Departments of Transportation to ensure that new roads or highway improvement projects include consideration for highway crossings.

1000 Factor E

- Genetics
  - Effective population size of 100 and a population of 400 (Miller and Waits 2003) is the minimum for short-term not long-term fitness and not a population goal.
  - Population size of 500-5000 is the minimum for long-term genetic viability, not 100
  - The Service picked the high end of the effective population estimate of 469 rather than the more conservative estimates discussed by Kamath et al. (2015).
  - Kamath et al. (2015) also state that N_e is approaching, but hasn't reached, the long-term viable population criterion of >500 defined be Franklin (1980). And that restoration of gene flow would increase fitness.
  - If the effective population size is ~25-27% of total population size (Allendorf et al. 1991; Miller and Waits 2003; Groom et al. 2006) then Kamath et al. (2015) finding of an effective population size of 469 would mean a population of 1876 grizzly bears. In reality, the current population estimate of 717 corresponds to an effective population size of 179.
  - The current metapopulation of 1800 animals is 5-11 times too few to assure long-term persistence (Frankham et al. 2013).
  - All five grizzly bear populations in the lower 48 are genetically isolated from each other
  - The need for periodic influx of new genetic material is dismissed with a promise from the State of Montana that it will ""manage discretionary mortality in [connectivity] area[s] in order to retain the opportunity for natural movements of bears between ecosystems".
  - Justify why 1-2 immigrants or transplants per generation (~10 years) into the GYE will provide adequate gene flow (Miller and Waits 2003).
  - Declines in the GYE population would deplete genetic diversity
  - Genome changes are slow and take decades to detect
  - Should model the rate of allele loss due to genetic drift at given population sizes
  - The long-term fitness implications of changes in alleles is not understood. Genetic health is based on heterozygocity, allelic diversity, and effective populations size, which are only indcies of what may be occurring across generations of microevolution in populations.
  - Reintroduction into other ecosystems is the best option to expand the gene pool
- Food
  - Increased mortalities as bears increase home range or disperse farther to find food, especially with the decline of whitebark pine and cutthroat trout
  - Grizzly bear foraging is temperature and moisture dependent.
  - The Service needs to employ a matrix that distinguishes high-quality foods with high versus low hazards associated with them and if the hazards are primarily to dependent young, independent bears, or both.
  - Demographic implications of food sources have been seen at a population level by effects on both birth (i.e., the condition of reproductive females) and death rates (i.e., hazards associated with a given food – "ecological traps"). Analysis of food resources has been done independent of these potential "ecological traps".
  - Need to continue monitoring the relationship between availability and use of the four main foods and the vital rates and body condition of grizzly bears.

- Alternative foods to the 4 major foods must be of comparative nutritional value (i.e., fat, protein, and gross energy), risk of obtaining, energetic cost of obtaining (i.e. foraging efficiency), and seasonal abundance.
- The IGBST and the Service "fail to account for potential interactions between spatial distributions of and temporal trends in key food resources".
- Fat is especially important and uniquely abundant in army cutworm moths, whitebark pine seeds, and late-season ungulates (Mattson et al. 2004, Erlenback et al. 2014).
- The Service argues that grizzly bears the ultimate omnivore, however, historically bears have relied on the 4 main foods for the majority of their nutritional and energy intake and only fed on the other foods opportunistically.
- The list of "greater than 200 different foods" in Gunther et al. 2014 inflated because to a bear "a grass is a grass"
- The increase in consumption of false truffles in poor WBP years was only documented for bears in the core of the ecosystem with no indication of its nutritional values.
- Although the Service claims that grizzly bears are resilient because they are extremely omnivorous, bear densities vary widely depending on habitat productivity (Mowat et al. 2013)
- The decrease in food sources is the cause of the population trend from 4-7 percent decreasing to 0.3-2.2 percent.
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- The three IGBST papers (Bjorn et al. 2014, Costello et al. 2014, and van Manen et al. 2015) failed to account for long-term trends in weather and for major changes in abundance of other key foods (army cutworm moths, cutthroat trout, elk, and bison) besides WBP.
- Long-term evolutionary future is not considered (projected), demographic recovery of bear numbers is not adequate for recovery
- Synergistic effects of climate change and changing food availability are unknown and may not be detectable for decades
- Climate change
  - The future impacts of climate change must be considered before delisting even if the exact extent of those impacts on the species are currently unknown.
  - The Service reviews the literature forecasts for climate change but does not link the effects to grizzly bears or their habitat.
  - May reduce snowpack and winter length which may impact the time, season, and success of grizzly bear denning
  - Climate change will increase the fire regime (frequency and extent) and alter the composition of plants and animals (Westerling et al. 2011)
  - Climate change may shift the abundance and distribution of all bear foods, especially the four main ones (i.e., spring carrion availability, vegetation). Commit to monitoring the effects of climate change on the loss, redistribution, and potential changes in grizzly bear foods and associated effects on bears.
  - Servheen and Cross' publication is inaccurately summarized as it states "however, climate change may play a significant role in driving grizzly bear/human interactions and conflicts." Why do boliogists not believe climate change will threaten grizzly bears and why it "may even make habitat more suitable and food sources more abundant".
  - Less snowpack could mean fewer avalanche chutes
  - Shortened or shifting denning seasons may impact reproductive success and increase the frequency of conflicts
  - A "downscaled" projection was used to analyze climate change, which may underestimate the impacts.

  - Changing hydrological regime, less snow pack, increased drought that may be partially mitigated by increased rain
  - Drought has affected the death rates
- All data has been collected as part of an observational study, making it difficult to isolate the effects of individual variables. Are the models developed by the IGBST defensible (i.e., have all factors been accounted for)?
- The IGBST has failed to deal with the high degree of spatial and temporal correlation in its models and has failed to address a number of potential drivers of birth and death rates
- Schwartz et al. (2013) found a decline in body fat among females.
- Study that body condition of females did not decline inadequate because it "included bears that were not captured specifically for monitoring change in body fat levels" and "included female grizzly fat level data from spring and summer". Carry-over assumption flawed – females could reach satisfactory fat levels in the spring or summer but still be fat deficient in the fall.
- Possibly Type II error, just because did not detect a statistical correlation between declining WBP and body mass and composition does not mean there isn't one. Used pooled data (i.e., differences in reproductive status) and small sample size. "Nearly 20% of females handled during 2008-2013 had season-specific body fat levels low enough to put them at risk for reproductive failure, whereas prior to 2004, no females assessed were so clearly deficient in body fat." (IBA)
- The Service says that lag effect is only a concern if the sole method of detecting changes in habitat but that a suite of other indices are being monitored. However, the suite of indices is not detailed or explained why it enables us to detect the consequences of significant habitat change. This type of adaptive management was rejected by the Ninth Circuit court in the 2007 delisting rule. Need more specific management responses tied to more specific triggering criteria. Population objectives/triggers do not necessarily reflect the health of the habitat.
- Army cutworm moths
  - May be reduced by pesticides and new farming technologies
  - Depend on tundra flowers in the alpine that are disappearing with temperature increases
  - 90% of alpine and high subalpine environments will be potentially lost. How moths will respond is unknown.
  - All documented moth feeding sights are alpine fellfields
  - High fat food
  - Increased use from almost zero during the mid-1980s to high, sustained levels since the late 1990s, that has not been accounted for in its effects on birth (fatter females leads to greater fecundity) and death rates (remote locations means less potential for conflict with people)
  - Moth sites are spatially correlated with livestock allotments, a major cause of human-caused mortality.
  - Moths are a source of concentrated fat and are located in remote locations away from people, an important factor affecting survival.
- Cutthroat trout
  - Have declined with decreased winter snowfalls and reduction in stream flow, which is likely to continue
  - Cutthroat trout has stopped spawning in all tributaries of Yellowstone Lake
  - The Service asserts that only a small portion of GYE bears used cutthroat trout when it's actually ~15%, and that data is outdated (Haroldson et al. 2005).
  - The loss of cutthroat trout has left a seasonal nutritional hole that has been filled by elk calves and lower-quality vegetation (Fortin et al. 2013, Middleton et al. 2013, Ebinger et al. 2016).

- Questions about the disparity in the use of cutthroat trout in quantity and between males versus females by Haroldson et al. 2005 and Felicetti et al. 2004 in contrast to Mattson & Reinhard 1995.
- The decline has disproportionately impacted females, resulting in them eating more terrestrial meat (esp calves) and leading to a probable increase in cub and yearling death rates.
- Warmer waters may mean faster growing trout but also means higher incidents of whirling disease and potentially blocked stream outlets with seasonal drought.
- Carrying capacity has almost certainly declined in the core of YNP with the decline in trougt.

- Huckleberries
  - Huckleberries are less abundant as a result of warming temperatures and a persistent drought pattern. Bjornlie et al. 2014
  - McLellan (2015) did not see a decline in the grizzly bear population in Canada and northern MT until 11 years after the huckleberry decline.
- Whitebark pine
  - Will eventually regenerate and help ameliorate the losses that have occurred
  - The IGBST inadequately represensts the extent of whitebark pine loss by using remote sensing and thus wrongly claims that 23-33% of historic bear ranges contained little or no WBP and was unimportant to a corresponding percentage of bears.
  - Climate projections predict the terminal loss of whitebark pine from the Yellowstone ecoregion from climate change, increased fires, white pine blister rust, bark beetles, and competition from lower-elevation species
  - Whitebark pine cannot adapt rapidly enough to the changing environmental conditions given its long generation length even if climate-adapted and blister rust reistant trees were engineered and planted
  - Cannot conclude that the GYE will adapt to the loss of whitebark because the NCDE grizzly bear population has continued to increase in the absence of whitebark
  - Need to address the impact of higher human-caused mortalities during years of low WBP use with an increased use of low elevations and meat (i.e., hunters and livestock)
  - WBP pine preference only declined at the end of the study (Costello et al. 2015), too short of a time to recognize any population-level feedback in modeled estimates. The worse of the WBP crash is too recent to detect long-term impacts to the population.
  - Delisting should consider fungi that is symbiotic with WBP as its health and survival is connected to the tree.
  - Should use an index of cone availability in analysis by multiplying the percentage of surviving trees by cones per tree.
  - There has been a 2-fold increase in cone production on surviving trees, probably driven by warmer climates but some believe this is temporary (i.e., masking).
  - The Service needs to account for loss to the 1988 fire and the lack of regeneration after the loss in their analysis of availability.
  - Concern over the degree of decline in whitebark pine due to mountain pine beetles and potential future loss due to disease, insects, fire, and reproductive failure.
  - The Service overlooks that WBP die-off and vital rate decline occurred simultaneously.
  - Positive lambda does not mean a healthy population or that the threat is not substantial
  - The declining vital rates have not been fully realized because of the slow reproductive rate.
  - If the whitebark decline that has been occurring since 2001 had a negative impact on the grizzly bears then the population wouldn't have continued to increase
  - Provide a citation for for monitoring items "trends in the location and availability of whitebark pine", if old monitoring protocol is what will be continued then it is inadequate

- Ungulates
  - Agencies should manage for higher populations of ungulates to decrease livestock predation.
  - The Service fails to present its own data that shows a decline in availability of spring carrion.
  - All of the elk herds, but the Upper Madison, have declined because of increased depredation of calves, drought, chronic wasting disease, and human hunters. Hunters are "super-additive" because prime-age breeding animals are taken (Vucetich et al. 2005, Wright et al. 2006, Mallonee 2011).
  - Bison have probably become more important to grizzly bears with the increase in meat in their diets but the Service fails to present trends in the bison herds (bison plan and brucellosis) and falsely extends the findings that grizzly bears made little use of bison (Fortin et al. 2013) from the Central herd (which is declining) to the Northern Range herd (which is increasing).
  - The Interagency Bison Management Plan and the new bison management plan developed by YNP and MT aim to reduce the migratory bison herd, removing this important food source for grizzly bears in YNP and SW MT.
  - Summer forage conditions (i.e., drought) affects female pregnancy and calf survival in ungulates with unknown effects on herd numbers.
  -
- Meat:
  - More conflicts occurring with ranchers and hunters and bears eat more meat (livestock and hunter-killed carcasses) to replace traditional food sources.
  - Climate change has reduced winter severity and length and the availability of winter-killed carrion in the spring.
  - Meat consumption has increased for females with the decline of WBP and trout leading to a decline in cub and yearling survival rates. The difference in consumption of meat between the sexes has diminished. Although the switch to meat is not nutritionally detrimental it has other hazards (i.e., decreased cub and yearling survival rates, hunter-caused mortalities).
  - Food monitoring needs to be expanded to add numbers of elk and bison in various ecosystem herds
- Wolves
  - Have decreased the availability of spring carrion since their reintroduction, disproportionately affecting females, and decreasing elk populations
  - Wolves have been known to kill grizzly bear cubs but this is difficult to detect
  - Females very rarely usurp wolf kills, mostly males (Gunther & Smith 2004).
- I&E
  - Need increased I&E to teach people how to live with bears and visitors on bear safety
  - Has failed to alter hunter behavior (i.e. bear id training) as evidenced by the loss of 11 grizzlies from 2009-2015. Bear spray needs to be required and education to use it.
- Social acceptance will not increase because of more discretion in decisions to manage grizzly bears. Rigid enforcement laws will increase acceptance. Tourism will increase acceptance.
- Effective counter measures (i.e., livestock protection dogs, electric fences, etc.) should be deployed to reduce livestock losses.

1100 Post-delisting monitoring and management

- All language should firm: remove will, may, etc. (i.e., triggers to initiate a status review)
- Treatment of conflict bears will likely be less conservative upon delisting.
- Since the three demographic recovery criteria have been met, post-delisting should not require management but only monitoring. Management drives up costs and depletes state resources without a biological or scientific need.

Comment [FJK1]: The increase in elk calf consumption in place of trout is not likely to be a source of cub mortality. Is the diminished difference a result of females increasing meat intake or males decreasing?

Comment [FJK2]: Males were the primary users of spring carrion anyway so the fact that its mostly males usurping wolf kills isn't impacting females?

- "The Service has fiercely maintained that even if problems arise [under state management], it will not relist the population." (Willcox 2016)
- What is the post-delisting role of the federal government?
- There should be a commitment to continue robust monitoring and research post-delisting
- The rule compromises the states management authority (i.e., requiring the state to establish a hunting season before delisting can occur)
- The Service is overstepping their authority in requiring the states to implement specific hunting regulations prior to a final rule.
- "Management should continue to be the responsibility of the USFWS."
- The Conservation Strategy must be implemented beyond the minimum 5-years of the ESA
- A Grizzly Bear Management Relocation Plan must be prepared prior to any delisting (i.e., pre-agreed upon relocation sites)
- CS should only be in affect for the 5 years required by the ESA and then management should become the full responsibility of the states
- rule and CS should not use the language "indefinitely" or "in perpetuity" in reference to the implementation of the CS. Instead use the language "the 2016 Conservation Strategy will remain in effect beyond the 5-year monitoring period.
- Tone and specific comments "indicate a level of continued FWS engagement that WSGA believes exceeds your authority under the ESA."
- Congress does not give the Service that authority to direction provisions of the monitoring plan but that it should be done in cooperation by the state.
- Standardize agency responses in the rule and other management plans (CS and state plans)
- The Strategy "includes every possible safety net, including triggers for relisting"
- Although the Service recognizes the lag effects, there are no habitat-based standards (i.e., trends in foods) that would trigger a IGBST or Service review, triggers are based solely on changes in population size.
- Management approaches should be reviewed if mortality limits are exceeded for two consecutive years rather than three consecutive years as is currently proposed. Currently, states could exceed mortality limits in 7 out of 10 years, which would likely mean a declining population with no check until the population dropped below 600.
- Status review triggers are inconsistent between the documents. Use of "will" and "may". Need to use "will" to provide certainty.
- Initiate a status review if the Chao2 population estimate falls below 600 rather than 500.
- The Service fails to define "significant" in the statement "if…[t]here are any changes in Federal, State, or Tribal laws, rules, regulations, or management plans that depart significantly from the specifics of population or habitat management detailed in this proposed rule and significantly increase the threat to the population".
- There should be a status review if failure to demonstrate at least once during each 6 year period of observation, natural connectivity between the GYE and the NCDE.
- There should be a status review for failure to meet one or more of the habitat standards (Ch. 3 of the CS) or the monitoring protocols and commitments (Ch. 2-4 of the CS and state plans)

1200 Comments on concurrent documents

- What is the role of the YGCC in sponsoring and approving changes to the 2016 CS? Discrepancy in language between the PR and the CS.
- The Conservation Strategy should be evaluated and reviewed every 5 years (currently every 5 years or as necessary)

- CS should only be in effect for the 5 years required by the ESA and then management should become the full responsibility of the states
- The CS should be in effect for at least 18 years. The post-delisting monitoring for the peregrine falcon was every 3 years for 15 years and every 5 years for 20 years for the Hawaiian hawk.
- rule and CS should not use the language "indefinitely" or "in perpetuity" in reference to the implementation of the CS. Instead use the language "the 2016 Conservation Strategy will remain in effect beyond the 5-year monitoring period.
- Agencies should have predetermined relocation sites to ensure appropriate habitat
- Add the requirement that "funding fully procured" for the CS to go into effect
- What happens if the YGCC fails to obtain the necessary funding to ensure implementation of the CS? Does this trigger a status review or emergency relisting by the Service?
- Change "could" to "will" in "A Biology and Monitoring Review could occur if funding becomes inadequate to the implementation of the draft 2016 Conservation Strategy…"
- Is the IGBC still working to set up a Grizzly Bear Conservation Fund through National Fish and Wildlife Foundation to commit funding to implement the CS?
- Definition for MFWP not in CS
- The CS needs to mandatory and not "voluntary"
- Details in the Rule missing in the CS including details on definitions of total, background, and discretionary mortalities, clarifying example on how mortality will be calculated, details regarding the process for determining how many bears would be available for hunting (Table 3 and subsequent 3 paragraphs)
- MOA missing from draft CS, essential details necessary to evaluate the rule and CS
- Discrepancy between the mortality limit tables between rule and CS, footnote in rule of rule to Dan Ashe's letter – should restructure table for 2 columns – 1 for 674 and 1 for <674, allowing the mortality limit to remain at 7.6% at populations <674 would allow the population to be driven down.
- Multiple population targets: 500 to ensure genetic health in one place and then the sliding mortality limits in another. What is the population target?
- Post delisting allows for managed population decline
- Managing to a target population size is counter to the goal of continued population expansion into all suitable habitat and connectivity with the NCDE and possibly the Bitterroots. Is the goal to prevent further increase even if it is increasing now or to maintain the current numbers because the population is believed to be relatively stable? The current growth rate is estimated to be 0-2%.
- Concern that the CS sets a minimum population size of 500 animals and at least 48 females with cubs – not a science based limit.
- Object to the CS objective to maintain grizzly bears "inside and outside the PCA in biologically and *socially acceptable* habitats" Social acceptance will change with time, people, and location
- The CS fails to include necessary management protections to allow connectivity with other ecosystems.
- The CS states that "500 bears" will "assure the genetic health of the population", an oversimplification of Franklin 1980 published 36 years ago. See more recent literature Traill et al. 2009 and Willoughby et al. 2015.
- "USFWSF should manage to maintain a level that is represented in the Greater Yellowstone Ecosystem today (at least 700 individuals) while also focusing the strategy on expanding bear populations into suitable habitat and connected areas."
- No timeline driven and location specific strategies to address the regulation of human-caused mortality through habitat management. Needs to be addressed prior to delisting.

- "It is not acceptable to simply state: "standards and provisions not yet incorporated into management plans will be integrated into future land management plan amendments or revisions.""
- The final Strategy and state plans need to be available for public review and critique prior to a final delisting rule. YES is currently in the process of making "substantive changes" to the Strategy.
- Population genetics and evolutionary biology of grizzly bears are not adequately reflected in the CS – significance of allele losses, changing genetic compositions, effects of future random and selective processes.
- The CS should include a requirement that all hunters carry bear spray to reduce grizzly bear mortalities as a result of encounters with hunters.
- The CS, rule, and MOA need to reflect Recovery Criterion 1 that 500 is not a population target but a minimum to maintain short-term genetic fitness. Likewise, Criterion 1 should have the same population trigger of 600 that is included in Criterion 3 instead of setting two separate population floors.
- RP: Criterion 3 states the mortality rates are adjustable, when will these rates be adjusted? They are the foundation of the regulatory mechanisms.
- RP: Trigger for Criterion 3 should be OR and not AND. The trigger should not be "appropriate" management response but trigger a status review.
- RP: Criterion 3's objective should be described as maintaining a stable population.
- The CS should provide management requirements, activities, and educational programs to reduce attractants and use proactive and non-lethal means to avoid conflicts from occurring.
- Continue using and expanding programs that prevent grizzly bear depredation on livestock (i.e., carcass removal, range riders, electric fencing around chickens, etc.)
- The nuisance bear standards should be applied throughout the DMA… within the entire GYE DPS
- The nuisance bear standards differ between the NCDE and the GYE with no biology reason. The standards in the NCDE must be included in the GYE CS to include:
    - "State, Federal, and Tribal agencies will retain Grizzly Bear Management Specialists and law enforcement officers to rapidly respond to conflicts, perform public education, implement proactive sanitation measures such as fencing and livestock carcass redistribution, and assist with grizzly bear reolcations and remavals."
    - "Preemptive moves will not be used to stop distribution increases (Dood et al. 2006)."
- State drafts and MOA appended to draft strategy is not available at this time
- Question the functionality of YES/YGCC
- There is no formal outline for budgetary needs to carry out the CS post-delisting
- The MOA is focused on maintaining a minimum number of grizzly bears in the DMA and does not adequately address genetic concerns or connectivity. "Viability" is not the same as genetic quality.
- The MOA does not recognize the loss of genetic material without immigrants or tansplants or commit to provide for immigrants or transplants.
- The MOA does not address the impacts of hunting on population generation interval.
- The MOA misuses Miller and Waits (2003)
- The MOA does not commit to transplanting bears or allowing for interconnection for natural gene flow between the GYE and the NCDE.
- MOA: the NPS must be invited/formally consulted to participate in the annual meeting to review population monitoring data
- MOA: "The parties may agree to adjust the allocation of discretionary mortality based on management objectives and spatial and temporal circumstances". The states should not be allowed to move around the percentage of mortality allowed annually as this could lead to population sinks.

- MOA: inconsistent with the rule, must say that hunting will be suspended within the DMA if mortality limits are reached and not within one state or hunting unit.
- MOA: says background mortality will be used from the previous year to calculate hunting whereas the rule says most recent 4-year period, only using 1 year could have a significant negative impact if it was below average.
- CS: if the population is increasing by 3-4% per year and harvest have to be adjusted to maintain total adult mortalities up to 10-22% in order to limit the population then this is not characteristic of biological carrying capacity.
- The CS does not consider the affects that artificial selection in the place of natural selection will have on genetic drift.
- The livestock allotment standard only applies within the PCA and not the entire DMA. No standards for the entire DMA where a population is to be maintained or in linkage corridors.
- Allowing private interests to control the phase out of allotments (i.e., willing permittees) may violate Section 7 of the ESA and other laws.
- Standardized tables across the 3 documents.
- The WY draft management plan does not commit to the MOU agreeing to terms of the Revised CS.
- The WY draft management plan does not address the review process by the IGBST or a commitment to remain a part of it.
- WY state plan does not commit to maintain a specific number of radio-collared females or other data collection addressed in the rule. States alone cannot manage all of the data collection and analysis.
- The Forest Service plan needs to address the issue of human activity at moth aggregation sites.
- The description of calculation for background mortality and availability of discretionary mortality in the MOA is not in agreement with the Rule.
- Because the CS is not final, the rule cannot adequately assess its adequacy to guide management and monitoring post-delisting
- Request to reopen the public comment period once YES releases a final draft of the CS.
- CS: revise Figure #3, currently shows actual FCOY but the criterion is the model-averaged FOCY. Recommend showing the Chao2 estimate and the trend line on the same graph as actual FCOY.
- Request to reopen the public comment period once state plans and regulations are finalized
- There has been no analysis of the Conservation Strategy under NEPA, NFMA, or the ESA. A draft EIS needs to be completed as this is a change from current management on public lands. What is the expected increase in grizzly bear mortality and habitat reduction upon delisting?
- CS: pg. 21 says current entire population was 58 but does not discuss FCOY in the DMA
- Since grizzly bears have expanded their range and increased in numbers, habitat management should be more flexible and not held to the 1998 baseline.
- “Since bears have successfully recovered based on current conditions of habitat, a much more effective and understandable standard would be to use “current conditions”.” (Park County Commissioners) Or any changes since 1998 should be “grand fathered”.
- CS: The 3 standards listed on p.6 are problematic, especially “with some exceptions for administrative and maintenance needs”. P.56 does not discuss those exceptions.
- CS: P.7 identifies four habitat criteria to be measured and reported but p.57 only discusses 3 in detail. Who assembles the information, when is it due and to whom is it reported?
- CS: p.48 provide a more thorough explanation of the mortality definitions for “annual unknown and unreported”

- CS: p. 51 to “strive to maintain” a minimum of 25 adult female grizzly bears with radio collars at all times throughout the ecosystem is expensive and difficult to continue into perpetuity. If not achievable will it lead to unnecessary litigation? What happens if it is not achieved?
- Cs: p. 57, last sentence first paragraph: “habitat standards in this document are subject to revision…reviewed and updated as necessary” should be defined. Who will review and update and what is the process?
- CS: p.59, second paragraph “levels of secure habitat and motorized route density are monitored on federal lands outside the PCA to identify and prevent potential habitat threats”. Who will define, monitor, decide and pursue amelioration of the threat? What if that process is inconsistent with the current forest service plan?
- CS: p. 63, temporary reductions in secure habitat mentions only federal projects. Has any consideration been given to road projects that may be state or county, especially if emergency or large projects may impact more than one BMU are involved?
- CS: p. 76, monitoring protocols mention that IGBST will monitor “as budgetary constraints allow”. Certainly all the agencies will face similar circumstances but yet it appears that monitoring the four foods is the only protocol with this caveat. What justification can be used to justify this option and why does it apply only to the IGBST and not other agencies?
- CS: monitoring of high caloric foods should not be budget dependent and be considered part of adequate funding for the whole strategy and trigger a review
- CS: p. 84 first line indicates that there is little evidence of a relationship between hunter numbers and grizzly bear mortality. The next paragraph indicated that the greatest source of mortality is due to interaction with hunters. If the number of hunters has been shown as not relevant, why does the State have to collect the number of hunters for this CS?
- CS: Ch.4 – no discussion of confliction resolutions within tribal lands.
- CS: p.8 and 92 discuss removal. Why are removals only allowed to be placed in “public research institutions or public zoological parks”? Why limit flexibility for future decisions or only certain recipients?
- CS: Ch.5 – suggest adding language that bears around roads, campgrounds structures, within city limits or around landfills should not be rewarded or encouraged to remain. These bears are not the ““norm” of what this species should be for their long-term management” (Park County Commissioners)
- CS: p. 105 – what would be the parameters of “warranted” for the Service to initiate a formal status review “3) if the Service determines a petition to re-list from an individual or organization including YGCC, is warranted”.
- CS: who is responsible for tasks, preparation, and what is the timetable for completion
- CS: update all tables, graphs, etc with the 2015 Annual Report Summary prior to a final rule making.
- CS: appendices were not available for public review. Consider reopening public comment for final draft CS, including all appendices and agreements.
- CS: Appendix C: concern about new population goals and mortality limits in the future are dictated through adoption of a new population estimator
- CS: consider how implementation and management of the CS will adversely impact private landowners within the DMA
- CS: Failure to obtain outside peer view by other scientists is not addressed.
- CS: needs to clarify when referring to the total grizzly bear population versus the population within the DMA
- CS: need to monitor the population outside of the DMA

- CS: update all of the data through 2015 (esp. population is increasing at 3-4% per year and increasing in distribution)
- CS: a precautionary approach should be taken when assigning sex to probably bear mortalities and assume all probable deaths are female. Service should use data from 2002-2015 not the data from 1975-1998 ratio of 59:41, male: female.
- The RP says "grizzly bear occupancy will not be actively discouraged outside the DMA and grizzly bears will not be persecuted just because they are present there" but this language is not in the CS or the state plans. The WY plans states "Grizzly bears occupying areas outside of the DMA contribute little to the population due to conflicts with humans and livestock."
- All documents need to reflect the same definition and language of total mortality and how unknown/unreported mortality will be accounted for.
- The Service's assignment of sex to orphaned cubs is not conservative enough in its use of random number assignments. In another statement the sex will be assigned at 50:50 ratio. The Service should be cautionary and assign all probably deaths as female.
- The MOA and CS need to be clear that the population will not be managed down to a minimum population size of 500, that this is not a population goal.
- The MOA and state plans need to clearly state how a new estimator will be calibrated as directed in Appendix C and undergo public review.
- RP: The criteria should not apply only to bears present in the DMA. Bears outside of the DMA may be important genetically or may be breeding females or even females with cubs.
- RP: The data needed to assess these criteria must be collected over a period of time longer than the normal 5-year post-monitoring period required by the ESA. If the Service only monitors for the minimum 5-year period they would never know if Criterion 2 is being met or not.
- Recovery Plan

Other

- Delisting would cause economic and cultural harm to the GYE communities. Visitation to the parks, especially to see grizzly bears, is a multi-million dollar industry that may decline once grizzly bears are allowed to be hunted on park boundaries.
- The Service should establish a population in the Bitterroots and should relocate bears that would otherwise be removed from the GYE
- The cultural and religious aspects of Native American tribes need to be evaluated
- The GYE overlays aboriginal territory and the tribes retain treaty rights in the area
- The grizzly bear is a species of great spiritual, cultural, and ecology significance to Native American tribes.
- Executive Order 13175, meaningful consultation must be held by all federal agencies when decisions that affect Native American tribes are being considered. The Service has failed to uphold this obligation. "The conduct of the Service in accommodating states' interests over those of federally recognized Indian Tribes in the matter of delisting and trophy hunting the grizzly bear on ancestral tribal and treaty lands threatens irreparable harm to tribal rights." (Kingman 2016)
- 60% of grizzly bear biologists "believe delisting would be an incorrect decision, or at the very least a violation of the precautionary principle" Szarek, Harmony. "Subjectivity in Expert Decision Making: Risk Assessment, Acceptability, and Cognitive Heuristics Affecting Endangered Species Act Listing Judgments for the Greater Yellowstone Ecosystem Grizzly Bear." Electronic Thesis or Dissertation. Ohio State University, 2015. Ohio LINK Electronic Theses and Dissertations Center. 11 Dec 2015.
- Grizzly bears contribute to the enjoyment of wild areas.
- MT committed to sound management practices into the future. "Montana has the expertise to conserve and manage grizzly bears, and we are committed to continuing our sound management

practices into the future. The Yellowstone area's wildlife is one of the region's great resources, and perhaps the most charismatic of all the species is the grizzly bear." (public comment from Steve Bullock)

- The grizzly bear should be delisted for the entire state of Montana (Environmental Quality Council)
- Bears are worth more alive than dead.
- The CS and proposed rule have expanded the DMA (the area within which the population is annually surveyed and estimated within which the total mortality limits apply, and is based on the suitable habitat area) to include significant areas outside the 2014 grizzly bear distribution boundary. (i.e., the Big Sandy and Popo Agie Management Units) (Wyoming Stockgrowers Assc)
- State wildlife agencies have spent millions to study and monitor grizzly bears and conserve their habitat. This revenue was generated by hunting and fishing licenses and will be significantly enhanced with the opportunity for grizzly bear hunting.
- Bear Trust International independently analyzed data and agrees that the demographic recovery criteria have all been met.
- The Service cannot conclude that the combined impacts of various threats to the GYE grizzly bears is not substantial simply because their population has not declined. This is a concerning conclusion given the record-breaking mortality levels in 2015.
- update all tables, graphs, etc with the 2015 Annual Report Summary prior to a final rule making.
- Problematic language on the mortality limits poster from the public hearing that says "managed decline". Would like the Service to ensure that there will not be "managed decline" (Center for Biological Diversity).
- The CS does not commit to and provide connectivity in its consideration for recovery and so is in direct conflict with other agency regulations, violating the National Forest Management Act (NFMA), National Environmental Policy Act (NEPA), and APA. Section 219.9 of the 2012 Forest Planning Rule.
- Discrepancies in FS maintenance of secure habitat outside of the PCA between the proposed rule and the CS
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Editorial

- The rule and CS is verbose, repetitive, and not organized in a way that lends itself to easy interpretation.
- Figure 2, is difficult to read and the gray shades are not easily distinguished
- Add GTNP boundary to Figure 2
- Upper CI is reported at both 757 and 747
- Unclear if carrying capacity has been reached inside the PCA or DMA
- Discretionary hunting mortality and discretionary mortality are used interchangeably though one is a sub-set of the other
- Correct references to JDR in elk reduction program. The elk reduction program and bear spray requirement only apply to GTNP, JDR is not a National Park and the language should be changed to reflect that.
- Executive summary, noted in the table of comments, not included in the CS?
- The FWS should cite the expert opinion of three appropriate and independent species specialists.
- CS p. 28 – the bear population is increasing by 3-4% per year
- Table 2, item 5 does not address YNP as a participant but they are listed in the text of the rule. Assume YNP will be involved in discussions related to allocating discretionary take.
- Terminology of 'discretionary' versus 'non-discretionary' is confusing – recommend management (hunting and management removals) and other instead.
- Remove the sentence from the RP "grizzly bears will not be persecuted just because they are present there" in reference to outside the DMA. Unnecessarily inflammatory and each state will manage as a trophy game animal. (Park County Commissioners)
- Criterion 2: will not drop below 48 females with cubs in 2 consecutive years in the CS and 3 consecutive years in the RP.
- CS: p. 76 typo second line: "d"