

My name is Michel Proctor, I am an independent research scientist in British Columbia Canada. I have a PhD in grizzly bear ecology and have been researching grizzly bears for 23 years. I have published 18 peer-reviewed scientific papers on grizzly bears. I currently run the Trans-border Grizzly Bear Project. My focal area is the Selkirk and Purcell Mountains of southeast BC. One of my focal areas of research is habitat quality and security in southern Canada.

The habitat plan for post de-listing for the NCDE is based on the assumption that because the population was increasing at 3% between 2004-2011 that the underlying habitat conditions during that period should be adequate for future health of the population. This is not so much a “science” conclusion as a logical conclusion that seems reasonable. I can only comment on the science that determined the population status at the time, Mace et al. (2012). Mace et al. (2012) was sound science and supports the conclusions of this document. Also Kendall et al. (2009) provides supporting evidence that this population was reasonably healthy within that time interval. The combination of Kendall et al. (2009) abundance estimate and Mace et al. (2012) trend estimate really tell the story a bit more thoroughly.

While this a reasonable argument that reflects the best available science for that region, it should not be construed as an argument to alleviate the need to further understand this population. In my view, habitat management should generally consider two realms, quality and security. Bears need a level of habitat quality to maintain a sustainable density, and security to reduce mortality risk and displacement from that habitat to insure habitat effectiveness or utilization.

Here ***bear condition and isotope patterns*** are used to monitor habitat quality. The US does not have its major hyperphagia foods modelled or mapped yet (at least I am not aware of it). This is not a problem, but something to be considered for future research. They would benefit by improving their understanding of seasonal foods, particularly hyperphagia foods, and their distribution spatially and temporally. Although bear condition is a useful surrogate to track adequate food utilization and allows for variation both temporally and spatially, it is still useful to know the hyperphagia foods and their distribution. If not, and they detect a decline in bear condition, it might be harder to manage for recovery without that knowledge. Therefore I would make sure that bottom up food research is undertaken focusing initially on hyperphagia foods spatially and temporally. Other non-limiting foods are also important, and they may be associated with habitats with a higher mortality risk – spring or late fall foods and their habitats, and are therefore important to know and spatialize as well (this may be know through past GPS telemetry-based spatial analyses). Research will also guard against a situation where condition is maintained but accompanied by a switch from natural foods to human foods (agriculture, livestock etc), although, it looks like this is being monitored at a coarse level through the use of isotopes. Detection of C4-based foods can be indicative of human-sources foods to some degree.

Also, other population characteristics may not be well understood, that might be useful. Density is typically non-uniform across space and understanding these patterns and their causes is useful, particularly as local areas within the population management may be required sometime in the future for a variety of reasons. Some of these ideas may be considered in the respective Conservation Strategies, which I am not reviewing here. Bear condition and isotope patterns are likely being sampled spatially across the ecosystem, allowing for detection of within population issues that might arise.

Another consideration that I will mention is habitat values related to habitat fragmentation that in its extreme form can become population level fragmentation. This of course is already an issue between the NCDE and Yellowstone populations. It also is a small concern for western portions of US Highway 2 just south of Glacier National Park (Kendall et al. 2009, Proctor et al. 2012). Hopefully connectivity across Highway 2 is a management priority for this region, therefore some level of monitoring to assess any changes, or decreases of bear movements across this human transportation corridor are considered and integrated with habitat management of the adjacent areas. I am not aware of the specific road densities, core habitat proportions, or livestock allotments on lands outside of Glacier National Park. But if they are frozen to 2011 levels and they are not conducive to reduced mortality risk for animals that might cross the highway, it might be worth a look and potential adjustment. This same argument could be made for areas at the southern end of the NCDE ecosystem to insure management that encourages inter-area movement toward the Yellowstone ecosystem is considered.

None of the above points are deal breakers for this habitat management plan, just suggestions for good habitat management over time.

In general, these past and proposed standards for habitat management have proven very effective at helping recover grizzly bears over the past decades. From my perspective, it is very commendable that they are maintaining these habitat protections into the future post-delisting. Combined with an effective monitoring program as to the condition, isotope patterns, and numbers and densities of grizzly bears across this ecosystem, this should prove an effective strategy. Integrating into these standards and management plans, future improvements (as mentioned above) in their understanding of habitat quality and security, spatially and temporally is encouraged. The literature referenced is not exhaustive, but represents the spectrum of knowledge in the relevant published literature.

What follows are some specific comments on each section.

Motorized access,

They use 2011 as a BASELINE as the population was expanding from 2004-2012 Mace et al. 2012. They mention that road density decreased during this time, so there was no abrupt change that might not have manifested itself, that is good.

Reporting of their monitoring will be every 2 years within BMU subunits and this seems reasonable. The Conservation Strategy details methods.

Motorized access will be managed at 2011 levels for each subunit, therefore if some subunits have relatively high road densities, that will be maintained. Same for subunits with low road densities. This should be examined for some sub-bear management units that are frozen with higher road densities to insure they don't interfere with connectivity management goals along the west end of US Hwy 2 and at the southern end of the NCDE.

Temporary changes are allowed if they are kept within a few, 3-5%, points depending on the metric, OMRD TMRD CORE, measured over a 10 year average. This is designed for some management flexibility

and is also reasonable and practical. Criteria will be returned to 2011 levels after temporary project is completed within 1 year after completion, and are not to exceed 5 years within 10.

Developed recreation sites

Developed recreation sites (overnight options) will be kept at 2011 levels AND be allowed to increase once each decade, because this occurred between 2004-2011 while the population increased. There might be a limit to this, but they say they will monitor that. Because increases to recreation sites did not appear to negatively affect the growing grizzly bear populations suggests to me that these developments were below an “impact threshold” of some level. That doesn’t mean increases can’t eventually increase to the point they create an impact. I agree that monitoring the effect is necessary.

Winter sites aren’t counted (denning season) – but what about ski area bed increases that might spill over into summer use? This is a common pattern in ski areas in Canada – to encourage summer use with expanded recreation outside the ski area. This effect is something to watch in the future.

Livestock allotments

Livestock including sheep allotments are to be kept at 2011 levels and will be retired when possible. Dead animals are to be reported within 24 hrs after discovery. Boneyards are **not** to be established on Forest Service Lands – a good component as long as they do not become bear attractants on private lands. Bears don’t care who owns the land when accessing a deadstock area.

A quote

“establish bone yards in areas that will minimize the risk of habituating grizzly bears to human presence”

MP response - Dead animals need to be transported to private lands, and not necessarily secured from bears, but to minimize habituation – this might be improved, seems a little loose, This policy might be here because it allows continued diversionary feeding in some locals. I understand that this practice appears successful, but there might be a limit to that success over time. On the one hand, the energy and protein from deadstock can be a bonus to bears and increase their size and reproductive rate eventually increasing the population in these locals. And an argument can be made that this food source may replace natural ungulate sources lost with human settlement, and has been useful in drawing bears away from settlements (to some degree there to access deadstock). However, it may be that these larger more abundant bears may come to rely on the deadstock, even that taken to “safe sites” where habituation to humans is minimized, and it may be an issue at some point. Bears are like many other species, more food, more bears. I bring this up just to be thorough. There might be a limit to the usefulness of this policy, or an adjustment necessary in the long run, so it might deserve further consideration and an adaptive approach through time.

Literature cited not in the Habitat Supplement

- Kendall, K. C., J. B. Stetz, J. Boulanger, A. C. MacLeod, D. Paetkau, and G. C. White. 2009. Demography and genetic structure of a recovering grizzly bear population. *Journal of Wildlife Management* 73:3–17.
- Proctor, M. F., D. Paetkau, B. N. McLellan, G. B. Stenhouse, K. C. Kendall, R. D. Mace, W. F. Kasworm, C. Servheen, C. L. Lausen, M. L. Gibeau, W. L. Wakkinen, M. A. Haroldson, G. Mowat, C. D. Apps, L. M. Ciarniello, R. M. R. Barclay, M. S. Boyce, C. C. Schwartz, and C. Strobeck. 2012. Population fragmentation and inter-ecosystem movements of grizzly bears in Western Canada and the Northern United States. *Wildlife Monographs* 180:1–46.