United States Department of the Interior

U.S. GEOLOGICAL SURVEY
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IN REPLY REFER TO:

8 May 2007

Ed Bangs, Wolf Recovery Coordinator
U.S. Fish and Wildlife Service
Ecological Services
Montana Field Office
585 Shepard Way
Helena, Montana 59601

Dear Ed,
As requested, here is my peer review of the proposal to designate the northern Rocky Mountain population of the gray wolf as a distinct population segment and remove it from the list of Endangered and Threatened Species (Federal Register [FR] 72:6106-6139, dated 2/8/2007). I appreciate the opportunity to take a brief break from my duties here in Alaska to ponder the details of wolf recovery in the Northern Rockies.

Overall, the proposal provides a complete and accurate assessment of the biology of gray wolves; the status, trends, and distribution of wolves in the northern Rockies; and a thorough and reasonable review of the factors influencing the species in the region. The discussion that defines the distinct population segment and assesses the availability of suitable habitat within was logical and reasonable. In particular, the proposal does an excellent job of drawing from 2 different assessments of habitat suitability (Oakleaf et al. 2006; Carroll et al. 2003, 2006), as well as field experience during wolf recovery, to deliver a rational and easily understandable evaluation of suitable habitat in the region. As far as I can tell, the proposal evaluated all the pertinent available literature to develop and support the conclusions reached. I have a few specific comments addressing aspects of the proposal and have provided them at the end of this letter for your consideration.

While the proposal provides a solid foundation of information on wolf ecology and population dynamics, I have a general concern regarding the recovery criteria. I have to admit I had some difficulty understanding what the recovery criteria really are, resulting from confusion and inconsistencies in this document and/or the interpretation of previous documents. It appears that either the evolution of the recovery criteria is not adequately documented in the proposal, or the recovery criteria have drifted over time. I suspect some of each. The specific issues are in regards to expected wolf numbers and distribution among the three recovery areas and whether the components of a recovered metapopulation are “recovery areas” or States.

The proposal starts off with stated recovery criteria of “Thirty or more breeding pairs comprising some 300+ wolves in a metapopulation with genetic exchange between

subpopulations..." (FR 6107, col. 3; parenthetical definitions removed) and purported to be the definition provided by the 1994 EIS (Service 1994, pp 6-75). However, in reviewing the 1994 EIS, the recovery goal is specifically defined as follows: "Recovery goals for the wolf in the Northern Rocky Mountains Wolf Recovery Plan and this EIS are 10 breeding pairs in each of 3 recovery areas for 3 successive years with some level of interchange between areas." (Service 1994, pp 6-8). Further, this recovery goal of 10 breeding pairs/3 areas/3 years is reaffirmed in the concluding paragraph of the EIS appendix (Service 1994, pp 6-75), while the 30 breeding pair metapopulation statement appears to be provided only to support the need for genetic exchange among the 3 areas (Service 1994, pp 6-75). Thus, it seems clear that the recovery criteria from the 1994 EIS is the same as the 1987 recovery plan (Service 1987) except for the addition of "…with some level of interchange between areas". When the Service reviewed recovery goals in 2001-2002, the 30 breeding pair metapopulation was also erroneously attributed to the 1994 EIS (Bangs 2002). While the 30 breeding pair metapopulation is defensible as a recovery goal (Bangs 2002) and provides some reasonable flexibility in the actual distribution of breeding pairs among the 3 recovery areas, there is nothing in this proposal to substantiate it as the replacement of the recovery goal specifically defined in the 1994 EIS on page 6-8.

The recovery criteria also seem to have mutated from being based on recovery areas to being based on States. The 1987 recovery plan and 1994 EIS clearly are based on 3 distinct recovery areas (FR 6107, col. 3) that are not defined by state boundaries. Further, the proposal states "We believe that a metapopulation of this size and distribution among the three areas of core suitable habitat in the NRM DPS would result in a wolf population that is representative, resilient, and redundant and would fully achieve our recovery objectives" (FR 6107, col. 3). The "three areas of core suitable habitat" clearly refer to recovery areas, not States. In the next paragraph, the proposal appears to attribute the decision to begin "using entire States, in addition to recovery areas, to measure progress toward recovery goals" (FR 6107, col. 3) to the 2001-2002 reevaluation of recovery criteria (Bangs 2002). However, that review concluded by endorsing the purported1994 EIS recovery criteria and rejecting a Service proposal that specifically mentioned States instead of recovery areas (Bangs 2002). While the proposal goes on to mention "We have determined that an essential part of achieving recovery is a well-distributed number of wolf packs and individual wolves among the three states and the three recovery zones" (FR 6107, col. 3), there is nothing to substantiate the emergence of wolf numbers within state boundaries as a recovery criteria. Further on in the proposal, the recovery goal is stated as "at least 30 breeding pairs and 300 wolves that are equitably distributed in potential suitable habitat in Montana, Idaho and Wyoming" (FR 6131, col. 3), and the "three areas of core suitable habitat" are no longer a consideration. Further, the implied recovery goals don't even fit that definition and have apparently become that, at a minimum, each of the 3 states will shoulder equal responsibility for maintaining 10 breeding pairs. Otherwise, the issues with proposed wolf management in Wyoming outside National Parks/Wilderness would not be a concern. The wolf current population in the NRM DPS is well beyond the 30 breeding pair, 300 wolf metapopulation goal, and exceeds a 10 breeding pair contribution to the metapopulation from the Greater Yellowstone Area, regardless of the management of wolves by the State of Wyoming.

Given that this is a proposal to delist an endangered species, I looked for a specific, crystal-clear statement of the recovery criteria. As described here, I couldn't find it. The solution is to clearly state the recovery goal (whether it is 10 breeding pairs in each of 3 areas with genetic interchange, or a 30 breeding pair metapopulation) with specific reference to the 3 States in place of the 3 recovery areas. Given the distribution of suitable habitat in the DPS, the 2 approaches are functionally equivalent. Further, referencing the States specifically establishes a clear link between the recovery criteria and the State management framework that is actually serving as the basis for delisting (FR 6131, col. 3). It is pretty confusing, and not truly accurate, to refer to States, recovery areas, or "three areas of core suitable habitat" interchangeably, or in combination, in the recovery criteria.

Specific comments (generally in the order they appear in the proposal):
Logistic regression and breeding pairs (referenced as "Ausband 2006" throughout): It was a little difficult to fully understand these analyses from the pdf file of a Powerpoint handout, but in general the approach of using logistic regression to evaluate the probabilities that packs of a given size constitute breeding pairs makes sense. It is not that the relationship between pack size and breeding status is logistic (FR 6130, col. 1), it is that logistic regression is the appropriate tool for evaluating relationships where the response variable is in a yes/no format (i.e. breeding pair/not a breeding pair). However, the results of Ausband's analysis seem pretty conservative. I conducted similar analyses on data I had in hand for wolves in the central Brooks Range and got higher probabilities (Ausband 2006, ≥ 90% probability reached at pack size of 9 wolves [FR 6108, col. 2]; Brooks Range ≥ 90% probability reached at 7 wolves). One possibility is that packs for which status as breeding pairs was unknown were included in the non-breeding pair category in Ausband's analysis and that has resulted in the lower estimates. Also, apparently Ausband detected "slightly different probabilities" among States (FR 6108, col. 2). Those differences can be easily evaluated within the logistic regression framework to determine whether they are important, but I didn't notice any indication that this had been happened. Given the importance of this work, particularly in regards to shortcomings in the Wyoming management plan, it would have been useful to have a more thorough description of the analyses.

"wolf numbers in northwestern Montana are likely to fluctuate around 100 wolves." (FR 6109, col. 3): There is no reasonable basis for that prediction. In 2005 and 2006, 126 and 171 wolves were accounted for, respectively. Further, immediately prior to the prediction, it is stated that the sharp increase in numbers may be due to increased monitoring efforts, thus implying the previous monitoring efforts may have been insufficient to adequately enumerate the wolves there.

"Maintaining wolf populations above recovery levels in the GYA segment of the NRM area will likely depend on wolf packs living outside the National Park/Wilderness portions of Wyoming" (FR 6110, col. 3): While this statement may be true, it seems like any contribution to recovery levels in the GYA from Montana and Idaho are not mentioned or considered in the discussion. At the end of 2006, Montana contributed 5 breeding pairs and the recovery level would have been met without any contribution of wolves in Wyoming outside National Parks and wilderness areas.

"occasional lone dispersing wolves" (FR 6114, col. 1): The dispersal of wolves from currently occupied habitats may be low now, but apparently those areas are not saturated given that the overall distribution of wolf packs has not changed much since 2000 (FR 6120, col. 1), but the wolf population continues to increase at an average of 20%/year, since 2000 (USFWS et al. 2007). Once the wolf population is saturated within the currently occupied range, it is reasonable to expect that the majority of the wolves that now account for the population increases will become dispersers, unless human take increases dramatically. Assuming that human take within the core occupied range remains the same, emigration from that region could easily be around 10% of autumn population annually. I recently estimated 19% annual emigration for wolves in the central Brooks Range where annual harvest is about 12%.

"Range" (FR 6115, col. 2): I have to admit I struggled with the logic of this section. If "range" is defined as "current range" is seems to preclude reestablishment of extirpated species within their historic range, such as the wolf reintroductions to central Idaho and Yellowstone. Enough said; I'll leave this one for the lawyers…

Susceptibility of wolves to harvest: In my opinion, the proposal generally overstates the susceptibility of wolves to human take (e.g. FR 6118, col. 2; FR 6125, col. 1; FR 6129, col. 1, FR 6131, col. 1). It is important to note that wolves were extirpated from most of their range in the lower-48 states in the early 1900s when native ungulate populations were reduced to very low levels, the indiscriminant use of poison by the general public was widespread, and government programs were charged with eliminating wolves. Those conditions do not exist today and will not return. While wolves currently may not seem wary of people in the NRM (FR 6125, col. 1), I expect that will change once public harvests begin and restrictions on livestock owners are loosened. Wolves are highly adaptable, and there are many examples of wolves utilizing strategies to inhabit populated areas while minimizing their contact with people (Fritts et al. 2002; 300-301). Further, in the published literature all cases of wolf populations that were reduced by human take involved directed government programs of poisoning or aerial shooting to reduce their numbers and there are no cases where wolves have been reduced in abundance solely by public take (Fuller et al. 2002; pg 182).

Idaho Management Plan (FR 6128, col. 1): While Idaho committed to "maintain a minimum of 15 packs of wolves to maintain a substantial margin of safety over the 10 breeding pair minimum;…" there is no explicit definition of a pack in their plan other than "Packs are formed when 2 wolves of opposite sex develop a pair bond, breed, and produce pups" (Idaho Wolf Conservation and Management Plan 2002: pg 8). The plan seems to imply that they will manage under the Service breeding pair definition, but that is not stated clearly in the plan.

Wyoming Management Plan (FR 6128, col. 3): It is clear the primary issues with the Wyoming plan are the discrepancies between the state law and the plan, and the regulatory framework under which wolves outside the National Parks/Wilderness Areas would shift back and forth between "trophy game" and "predatory animal" status. Those issues are enough to justify concerns about management of wolves in Wyoming. However, the lengthy description of why these management policies are a problem and the scenarios to illustrate the potential effects

are largely overly negative and not well substantiated, as noted in several of the following comments.

"…many southern and eastern YNP packs leave the National Park/Wilderness Areas in winter and regularly utilize habitats on non-wilderness public lands..." (FR 6129 col. 2): This statement is not supported by evidence from pack distribution maps in the annual reports of wolf recovery over the last 5 years. It seems clear from the maps that southern and eastern YNP packs largely stay within the park because of areas along the eastern boundary are "…rarely used by wolves because of their high elevation, deep snow, and low ungulate productivity", as stated in the proposal (FR 6129, col. 1).

"Wolf packs are highly territorial and are reluctant to trespass on other pack territories" (FR 6129, col. 2): This is an overstatement. Wolf territories commonly overlap with each other and wolves are known to occasionally make forays into home ranges of adjacent packs. Pack territory maps from the Service's annual reports show overlap, even though these territories are based on 95% minimum convex polygons that do not portray the 5% of locations most likely to represent the overlap.

"A distribution of wolf packs outside Yellowstone National Park may be necessary to act as a biological fence to reduce Park pack movements out of the Park." (FR 6129, col. 2): This is highly speculative and not supported by the movements and distribution information on radioed packs in the Park. As noted above, it appears that high elevation, low ungulate country along the eastern boundary already provides a firm limit on the distribution of Park wolf packs, whether neighboring packs exist or not.

"We believe the real potential for fluctuating between predatory animal and trophy game status…" (FR 6129, col. 3): This and the subsequent sentence are a solid description of concerns with the Wyoming plan.

"Wyoming State law defined a pack as simply 5 wolves traveling together regardless of the group's composition." (FR 6129, col. 3): Although this is presented as a concern with proposed Wyoming management, the Idaho plan was accepted with no definition of a pack at all. Further, the Service considered an option in the 2001/2002 review defining a pack as 4 or more wolves and that option was deemed essential equivalent to the option with the more stringent breeding pair definition (Bangs 2002).

"Consider the following examples." (FR 6130, col. 1): Why weren't similar scenarios provided in the section re: the Idaho Management Plan given that Idaho defined a pack as 2 wolves?

"The Attorney General's response stated that "the plain language of the Enrolled Act is in conflict and thus suffers from internal ambiguity." (FR 6130, col. 2): This presentation of the Attorney General's review outlines a key concern about proposed Wyoming wolf management.

"Future Service approval of a regulatory framework for wolf management in Wyoming" (FR 6131): This is a straightforward and understandable assessment of the steps required by the Service for Wyoming's management plan to be accepted.

"These two States plans have committed to using a definition of a wolf pack that would approximate the Service's current breeding pair definition." (FR 6134, col. 2): As noted previously, Idaho's plan does not provide a definition of a pack, other than "Packs are formed when 2 wolves of opposite sex develop a pair bond, breed, and produce pups" (Idaho Wolf Conservation and Management Plan 2002: pg 8). Based on the 2006 annual wolf conservation and management report for Idaho (Nadeau et al. 2007), packs are operationally defined as 5 or more wolves and breeding pairs are tallied separately.

"We believe the results are relatively accurate estimates of wolf population distribution and structure in the NRM DPS" (FR 6137, col. 1): While I agree that these methods are relatively accurate, it is important to recognize that estimates are conservative in that some resident packs are always missed and lone, transient wolves are not accounted for. Apparently Idaho is the only state in the NRM that uses a correction factor to attempt to account for lone wolves.

Well, there you have it. I'm pretty sure that any literature I have cited was included in the citations for the delisting proposal, so I have not included a separate list here. If you have any questions, or would like to discuss any of this, you know where to find me. Best of luck with keeping the delisting process moving forward.

Sincerely,

/s/ Layne G. Adams

Layne G. Adams
Research Wildlife Biologist