American Society of Mammalogists

Society for Conservation Biology

August 28, 2017

U.S. Fish and Wildlife Service
New Mexico Ecological Services Field Office
2105 Osuna Road N.E.
Albuquerque, NM 87113

Re: Comment on Mexican Wolf Draft Recovery Plan, First Revision
**   (Docket #: FWS–R2–ES–2017–0036)**

Dear Regional Director Tuggle,

On behalf of the Society for Conservation Biology North America ("SCBNA") and the
American Society of Mammalogists ("ASM") please accept these comments regarding the *Draft
Mexican Wolf Recovery Plan, First Revision* (hereafter "Draft Recovery Plan") for the Mexican
wolf that was recently released to the public by the U.S. Fish and Wildlife Service ("Service").
SCBNA is an independent affiliate of the Society for Conservation Biology, an international
professional organization of over 3,000 members dedicated to advancing the science and practice
of conserving the Earth's biological diversity. The American Society of Mammalogists (ASM)
was established in 1919 for the purpose of promoting interest in the study of mammals
worldwide. The ASM has long provided information for public policy, education and resource
management, and we strongly support the conservation and responsible use of wild mammals
based on current, sound, and accurate scientific knowledge. We write to express our concerns
that the Draft Recovery Plan is not based on best available science and thus will not ensure
recovery of this highly-imperiled species.

SCBNA and ASM have a long involvement in the conservation of the Mexican wolf and we are
concerned with several aspects of the Draft Recovery Plan. In 2007, ASM members passed a
resolution requesting that the Service expedite the process of revising the Mexican wolf recovery
plan to ensure the recovery and sustainability of populations of Mexican gray wolves, while
SCBNA submitted comments recommending alternative management approaches for the
Mexican wolf, focusing in particular on the urgent need for a revised recovery plan. In 2009, the
ASM followed up on its 2007 resolution by asking the Department of the Interior to expedite
revision of the 1982 recovery plan (USFWS 1982) and to identify additional recovery areas for
the Mexican wolf. In November 2010, SCB repeated its request to the agency to expedite
development of a recovery plan. In June 2012, SCBNA and two other scientific societies offered
to provide a scientific peer review of an unpublished draft recovery plan in order to expedite
progress on Mexican wolf conservation. And in 2014, SCBNA and the ASM provided
comments on the revised 10(j) rule for the non-essential, experimental population of Mexican
wolves in Arizona and New Mexico.

Having reviewed the Draft Recovery Plan, we note that this draft includes several positive
changes, such as discussion regarding connectivity of wolf populations and proposed methods
for ameliorating concerns related to the distance and habitat quality separating reintroduction

sites. Nevertheless, several problems remain that overshadow these positive elements, including: (1) limiting recovery to those areas south of Interstate 40 in Arizona and New Mexico; (2) using a disturbingly high threshold for acceptable extinction risk; (3) absence of objective and measurable recovery criteria at the downlisting and delisting stages to sufficiently address the threats facing the Mexican wolf; and (4) proposing to give Arizona and New Mexico's game management agencies—both of which demonstrate a long track record of opposing Mexican wolf conservation—veto power over releases and translocations necessary for long-term viability and maintaining genetic diversity.

If finalized without change, we are very concerned that the Mexican wolf will remain at significant risk of extinction even if the Service were to conclude—based on the recovery criteria set forth in the Draft Recovery Plan—that the species has met the standards for recovery under the Endangered Species Act. We appreciate the opportunity to offer our scientific assessment of the Draft Recovery Plan, with particular attention to the four significant concerns raised above.

I.   Limits on Recovery to Areas South of Interstate 40

The Draft Recovery Plan limits the potential recovery of the Mexican wolves to areas within the Section 10(j) experimental population boundary in the United States and to those adjacent areas of northern Mexico, despite the presence of substantial additional suitable habitat. There is no scientific support for the decision to limit recovery to an arbitrary geographic area bounded by a highway. As SCBNA has previously noted, genetic analysis of historic Mexican wolf specimens showed that the range of the subspecies likely extended beyond the initial range that was assumed by earlier scientists. Other research has identified areas well to the north of the current distribution as essential to the subspecies (Carroll et al. 2014). In earlier, unpublished drafts of this recovery plan, the science team commissioned by the Service identified extensive suitable habitat north of Interstate 40 that could support a large population of wolves. No explanation has been included as to why these scientific recommendations have not been considered.

In 2012, the Science and Planning Subgroup of the Mexican wolf recovery team cautioned:

> The US/Mexico border region is likely to serve as sink habitat for wolves under current conditions (Carroll et al. 2006) despite the presence of some potentially suitable habitat… Sites in this area that have previously been proposed as reintroduction locations …appear, based on the model of Carroll et al. (2005), to not be optimal choices for such efforts. However, the area's key role in facilitating dispersal between US and Mexican wolf populations suggests that it be given significant attention in recovery planning, through recovery actions which increase the likelihood of these sites being naturally recolonized by dispersers from the Blue Range or Mexican populations. The importance of binational population connectivity is further highlighted by the recent release of Mexican wolves in northern Sonora ~100 km south of the Arizona/New Mexico border (USFWS 2012:54).

As stated in the current plan, only two wolves have crossed between Mexico and the U.S. in the previous years of the Recovery Program and neither was incorporated into the receiving

population. If the fledgling population in northern Mexico increases, it may be reasonable to assume more dispersal of individuals that ultimately join the U.S. population. But to date there has been little dispersal, so relying on movement between these regions is a weak assumption to base the recovery plan upon. Furthermore, the proposed border wall dividing the U.S. and Mexico will almost certainly impede Mexican wolf movement between the two nations. Martínez-Meyer et al. (2017:75) report that there is still sufficient habitat remaining in the U.S. and Mexico to support viable populations of the Mexican wolf, however, information on ungulate density in Mexico is still quite poor (USFWS 2012:58) making it difficult to assess the prey base available to wolves in Mexico. In addition, most of the historic range of the Mexican wolf in Mexico is currently unsuitable for wolves due to human activity and the probability of anthropogenic wolf mortality is high (Araiza et al. 2012; Hendricks et al. 2016). Thus, maintenance of connectivity between wolves in Mexico and the U.S. is critical.

The Draft Recovery Plan states that only two populations of Mexican wolves—one in the United States and one in Mexico—would possess sufficient representation, resiliency, and redundancy to allow the subspecies to be considered recovered.   SCBNA and ASM are uncertain as to how sufficiency for these parameters is defined and characterized. In the current draft, representation is defined as "…the ability of a species to adapt to changing environmental conditions. Measured by the breadth of genetic or environmental diversity within and among populations…" It is unclear how representation in this context would be measured or how just two populations of Mexican wolves could possess "sufficient representation" even under this vague definition of the concept. Further, this view of representation is very different and much more limited than that proposed by Shaffer and Stein in 2000, who did not focus on an individual species but instead on the ecosystems upon which species depend:

> Consequently successful biodiversity conservation means saving more than the species themselves. It means saving the ecological and evolutionary patterns and processes that not only maintain but also generate those entities we call species. Because every species' genetic makeup is shaped, through natural selection, by the environments it has experienced, successful conservation also means saving populations of each species in the array of different environments in which it occurs. Take pumas (*Felis concolor*) as an example. Their historical distribution stretched from Canada to Tierra del Fuego---the widest natural distribution of any mammal in the Western Hemisphere, with the exception of humans…We can "save the puma" by maintaining them only in Canada and letting them disappear elsewhere. But this will not fully accomplish biodiversity conservation. For that, we need healthy populations of pumas in most or all of their environments.

Allowing the Mexican wolf to recover in additional places north of Interstate 40 (e.g., the north rim of the Grand Canyon, the San Juan Mountains, and southern Utah) would provide greater representation to ensure the recovery of the Mexican wolf in a variety of ecosystems across the likely historical range that was formerly occupied by either Mexican wolves or closely related, but now extirpated gray wolves. This broader geographic view of recovery is supported by scientific literature, and aligns well with the larger purpose of the Endangered Species Act to protect the ecosystems upon which endangered species depend (Carroll et al. 2006).

II.   High-thresholds for Acceptable Extinction Risk

The Draft Recovery Plan states that the Mexican wolf can be considered recovered at population levels where the species "has approximately a 90% probability of persistence over 100 years." SCBNA and ASM assert that a 10% risk of extinction within 100 years is significant and would not represent a recovered species. The Draft Recovery Plan does not present scientific support nor does it cite literature to support this threshold. Shaffer first discussed acceptable extinction risk in 1981, proposing what he acknowledged was an inherently arbitrary threshold for species persistence:

> A minimum viable population for any given species in any given habitat is the smallest isolated population having a 99% chance of remaining extant for 1000 years despite the foreseeable effects of demographic, environmental, and genetic stochasticity, and natural catastrophes. We must stress the tentative nature of this definition. The critical level for survival probabilities might be set at 95%, or 100%, or any other level. Similarly, the time frame of 1000 years might be lengthened to 10,000 or shortened to 100.

Even if a 100-year threshold is deemed appropriate for setting acceptable risks of extinction, it is important to note that using the threshold of 90% chance of persistence equates to a risk of extinction risk that the IUCN red list considers "vulnerable." At a minimum, the Draft Recovery Plan should include an explanation as to how the proposed level of extinction risk was determined and how it is consistent with the Endangered Species Act.

III.   Recovery Criteria for the Mexican Wolf

SCBNA and ASM are concerned that the recovery criteria for the Mexican wolf are not measurable. For example, to achieve recovery, the Draft Recovery Plan sets forth the following criteria:

> Effective State and Tribal regulations are in place in the MWEPA [Mexican Wolf Experimental Population Area] in those areas necessary for recovery to ensure that killing of Mexican wolves is prohibited or regulated such that viable populations of wolves can be maintained. In addition, Mexico has a proven track record protecting Mexican wolves. Based on these protections wolves are highly unlikely to need protection of the ESA again.

These criteria are not consistent with the requirements of the Endangered Species Act, which specifies that recovery criteria are to be measurable and objective.

The Draft Recovery Plan contains another problematic recovery criterion: regular introductions of wolves from captivity to the target U.S. and Mexican populations to maintain genetic diversity. SCBNA and ASM consider these demographic targets to be arbitrary, and the necessity of repeated reintroductions is indicative of a population that is not fully recovered. We believe that this proposed criterion represents the antithesis of a self-sustaining wild population.

Finally, the proposed population targets do not meet available scientific recommendations established by previous Mexican wolf recovery team science panels, which concluded that three subpopulations totaling 750 individuals was an acceptable goal for the Mexican wolf to be considered recovered. Proposed delisting in the current plan is based on the wolf population reaching 320 in the United States, which is less than half the population size proposed as minimum by the previous panels. Additionally, there are proposed reductions in wolf protections after a certain number of captive wolves are released, yet there are no requirements that the released wolves contribute genetically to the wild population via successful reproduction. The actual genetically effective size (N_e) of the population will nearly always be smaller than the overall census size of the population, raising questions as to what will happen if population targets are not attained. We believe the Draft Recovery Plan should include a clear strategy should the stated goals not be met.

IV.   Historical Range Concerns

Underestimation of historical distributions can limit the success of recovery programs, thereby prolonging risk to species as well as the financial cost of recovery efforts (Hendricks et al. 2016:53). Citing the threat of possible legal challenges and the "foundational" significance for developing a scientifically defensible recovery plan for the Mexican wolf, Heffelfinger et al. (2017) outlined concerns regarding recovery efforts outside of the historic range of the Mexican wolf. Due to alteration of the historic habitats of Mexican wolves resulting from human development and resource use, the Science and Planning Subgroup concluded that successful recovery was unlikely if the recovery area for the Mexican wolf focused solely on the historical range (USFWS 2012:72). This conclusion reflects the view of the authors of the earlier 1982 Mexican Wolf Recovery Plan: "In formulating a recovery plan objective for any subspecies of *C. lupus*, one must realistically view, not only the causes of the wolf's past endangerment, but also present trends toward ever-increasing human needs—whether real or perceived—for space and for the renewable and nonrenewable resources present or producible in wolf habitat" (USFWS 1982:23; USFWS 2012:72).

The Draft Recovery Plan limits recovery efforts to areas to the south of Interstate 40 based on a description of the species' historic range derived from limited morphological analyses (Heffelfinger et al. 2017). This perspective is not consistent with more recent molecular genetic analyses of Mexican wolf specimens, which suggest a broader historic distribution of Mexican wolves (Hendricks et al. in press; see also Hedrick 2016 and Hendricks 2016). In particular, the Draft Recovery Plan fails to incorporate recent genomic analyses of canids (Hendricks et al. 2016; vonHoldt et al. 2016a,b) which demonstrate genetic exchange due to probable dispersal across the ranges of several subspecies of wolves in North America. Introgression occurs in numerous mammalian species, including canids, and is an important evolutionary process. Hence, a discussion of admixture zones, as part of the recovery effort, should be included in science-based reintroduction plans (vonHoldt et al. 2016a,b). Accordingly, SCBNA and ASM recommend expanding the recovery area northward (e.g., to productive and diverse habitats such as the Grand Canyon and Southern Rockies) as a means of facilitating recovery of Mexican wolves.

In addition to these significant concerns, SCBNA and ASM would also like to make the following observations and suggestions related to amending the Draft Recovery Plan.

- Illegal hunting has had and likely will continue to have a significant impact on the recovery plan. A policy must be established for the replacement of individuals lost due to human impacts. Therefore, there needs to be a policy established for the replacement of loss due to human impacts. As part of this replacement policy, law enforcement must aggressively pursue conviction of those illegally killing Mexican wolves.
- There is heavy reliance on success of reintroduction efforts in northern Mexico. We support the Mexican effort, but assert that preservation of the Mexican wolf must be achievable under U.S. regulations, without significant reliance on Mexican programs.

Conclusion

We agree that the goals of establishing wild populations of Mexican wolves that demonstrate resilience, redundancy, and the ability to adapt to changing environments are essential to any successful recovery plan. The success of any recovery program, however, requires contingency plans for responding to ever-changing conditions. With regard to the currently proposed Draft Recovery Plan for Mexican wolves, we believe that more detailed, specific benchmarks for quantifying recovery over the next 10 years must be established, and the respective roles of state and local governments toward these recovery efforts must be delineated for both the United States and Mexico.

Thank you for your consideration of our comments on this important issue. If you have any questions, please do not hesitate to contact us.

Sincerely,

Jessa Madosky, Ph.D.
President
Society for Conservation Biology North America

Robert Sikes
President
American Society of Mammalogists

Literature Cited

American Society of Mammalogists. 2013. Letter to Secretary of the Interior expressing concern over the premature delisting of the gray wolf. May 22, 2013.

Araiza, M., L. Carrillo, R. List, C. A. López González, E. Meyer, P. G. Martínez-Gutiérrez, O. Moctezuma, N. E. Sánchez-Morales, and J. Servín. 2012. Consensus on criteria for potential areas for wolf reintroduction in Mexico. Conservation Biology 26:630–637.

AZGFD. 2017. Mexican Wolf Experimental Population (MWEPA) monthly project update. April 2017. https://www.fws.gov/southwest/es/mexicanwolf/BRWRP_notes.cfm

Carroll, C. 2005. Priorities for large carnivore restoration in the western United States: A regional-scale analysis of habitat and population viability of wolf and grizzly bear. Orleans, CA: Klamath Center for Conservation Research.

Carroll, C., et al., 2006. Geography and recovery under the U.S. Endangered Species Act, Conservation Biology, Vol. 24:395–403

Carroll, C., R. J. Frederickson, and R. C. Lacy. 2014. Developing metapopulation connectivity criteria from genetic and habitat data to recover the endangered Mexican wolf. Conservation Biology 28:76–86.

Heffelfinger, J. R., R. M. Nowak, and D. Paetkau. 2017. Clarifying historical range to aid recovery of the Mexican wolf. Journal of Wildlife Management DOI: 10.1002/jwmg.21252.

Hedrick, P. 2016. Genetics and recovery goals for Mexican wolves. Biological Conservation, http://dx.doi.org/10.1016/j.biocon.2016.12.033.

Hendricks, S. A., S. Koblmüller, R. J. Harrigan, J. A. Leonard, R. M. Schweizer, B. M. vonHoldt, R. Kays, R. K. Wayne. In press. Defense of an expanded historical range for the Mexican Wolf: A response to Heffelfinger et al. Journal of Wildlife Management.

Hendricks, S. A., P. R. Sesink Clee, R. J. Harrigan , J. P. Pollinger, A. H. Freedman, R. Callas, P. J. Figura, and R. K. Wayne. 2016. Re-defining historical geographic range in species with sparse records: implications for the Mexican wolf reintroduction program. Biological Conservation http://dx.doi.org/10.1016/j.biocon.2015.11.027

IUCN Red List Categories & Criteria (version 3.1). http://www.iucnredlist.org/static/categories_criteria_3_1.

Martínez-Meyer, E., A. González-Bernal, J. A. Velasco, T. L. Swetnam, Z. Y. González-Saucedo, J. Servín, C. A. López González, N. E. Lara Díaz, C. Aguilar Miguel, C. Chávez García, and J. K. Oakleaf. 2017. Mexican wolf habitat suitability analysis in historical range in the Southwestern US and Mexico. Final report, April 2017. 86 pp.

Shaffer, M. L. 1981. Minimum Population Sizes for Species Conservation, BioScience, 31:131–134.

Shaffer M. L., B. A. Stein, 2000. Safeguarding our precious heritage. Pages 301–321 in Stein B. A., L. S. Kutner, I. S. Adams, eds. Precious Heritage: The Status of Biodiversity in the United States. New York: Oxford University Press.

USFWS. 1982. Mexican Wolf Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 103 pp.

USFWS. 2012. Draft Mexican Wolf Revised Recovery Plan. 05-07-2012. USFWS Southwest Region (Region 2). Albuquerque, New Mexico.

VonHoldt, B. M., R. Kays, J. P. Pollinger, and R. K. Wayne. 2016. Admixture mapping identifies introgressed genomic regions in North American canids. Molecular Ecology 25: 2443–2453.

VonHoldt, B. M., J. A. Cahill, Z. Fan, I. Gronau, J. Robinson, J. P. Pollinger, B. Shapiro, J. Wall, and R. K. Wayne. 2016. Whole-genome sequence analysis shows that two endemic species of North American wolf are admixtures of the coyote and gray wolf. Science Advances 2016; 2:e150171.