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Public Comments Processing
Attn: Docket No. FWS-R2-ES-2017-0036
U.S. Fish and Wildlife Service,
New Mexico Ecological Services Field Office,
2105 Osuna Road NE,
Albuquerque, NM 87113
Submitted electronically via www.regulations.gov

We appreciate the opportunity to comment on the U.S. Fish and Wildlife Service (USFWS) Draft Mexican Wolf Recovery Plan.

Wildlands Network is a national wildlife conservation organization whose mission is to reconnect, restore, and rewild North America so that life in all its diversity can thrive. We envision a world where nature is unbroken, and where humans co-exist in harmony with the land and its wild inhabitants.

Grand Canyon Wildlands Council envisions weaving science, passion and integrity to save and heal wild nature in the Grand Canyon region.

Western Wildlife Conservancy is a nonprofit conservation organization dedicated to protecting and conserving wildlife habitat and wildlife native to the intermountain West through education and advocacy.

Founded in 1892, the Sierra Club is a national nonprofit environmental organization with approximately 2.7 million members and supporters, including thousands in the Southwest. Sierra Club's mission is "to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments." Sierra Club has long advocated for and has a significant interest in recovery of the Mexican wolf.

Western Watersheds Project is a nonprofit conservation organization dedicated to restoring western watersheds and wildlife through education, public policy initiatives and legal advocacy.

New Mexico Wilderness Alliance is a grassroots, 501(c)(3) non-profit organization dedicated to the protection, restoration, and continued enjoyment of New Mexico's wild lands and wilderness areas, and it has been advocating for Mexican gray wolf recovery since its inception in 1997.

Great Old Broads for Wilderness is a national grassroots organization, led by elders, that engages and inspires activism to preserve and protect wilderness and wildlands. Conceived by older women who

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love wilderness, Broads gives voice to the millions of Americans
who want to protect their public lands as Wilderness for this and future generations. We bring knowledge, commitment, and humor to the movement to protect our last wild places on earth.

The Grand Canyon Wolf Recovery Project is dedicated to bringing back wolves to help restore ecological health in the Grand Canyon region.

Established in 1992, the Southwest Environmental Center works to protect and restore wildlife and their habitats in the Southwest. Many of our members live, work and recreate in historical and currently occupied Mexican wolf territory.

Roaring Fork Audubon promotes the enjoyment, conservation and understanding of birds, other wildlife, and their habitats, through birding, education, advocacy and fellowship.

Colorado Wolf and Wildlife Center's mission is to educate the public through tours and programs about the importance of wolves, coyotes, and foxes to our ecosystem; to educate the public about the importance of Preservation and Conservation of the forest, land, and water that supports wildlife, flora, and fauna for future generations to enjoy; and provide natural habitats and exceptional lives for the animals entrusted to our care since they cannot live in the wild.

WildEarth Guardians protects and restores the wildlife, wild places, wild rivers, and health of the American West.

I. Introduction

The scientific community has long viewed with alarm the inappropriate politicization of the wolf recovery process. In 2011, for example, 1,293 scientists with expertise in biological systems delivered a letter to the United States Senate urging members "to oppose any legislation that circumvents the use of best available science in Endangered Species Act decision making" (Concerned Scientists 2011). While non-scientific factors may appropriately be considered at points later in the process, their use in listing decisions is inconsistent with the biologically defensible principles of the Endangered Species Act (Concerned Scientists 2011).

Our immediate concern is the draft plan falls far short of the mark needed for recovery of these critically endangered wolves, and that these shortcomings are driven by politics rather than the science of wolf recovery. If implemented, it would allow fewer than half the number of wolves in the wild that most of the previous recovery team scientists say are needed in the U.S. for recovery—with another small isolated population in Mexico—at which time the states would assume full management responsibility for Lobo survival. ***The prospect of premature downlisting and delisting, exacerbated by the relevant states' record opposing wolf recovery discussed below, affords a recipe for extinction—not recovery—for one of the most critically endangered wild mammals in North America***.

Under Section 4(c)(2) of the Endangered Species Act (ESA), any determination to remove a species from the list of threatened and endangered species must be made in accordance with the provisions of subsections 4(a) and 4(b) of the Act. Most importantly, Section 4(b)(1)(A) ***requires listing decisions (and therefore decision to delist a species) to be made "solely on the basis of the best scientific and commercial data available…"*** (emphasis added). The joint U.S. Fish and Wildlife Service/National Marine Fisheries Service Recovery Planning Guidance states that such reasonable actions as may be necessary, based upon the best scientific and commercial data available, for the conservation and survival of listed species" (PEER 2012:10).

Under the Administration Procedures Act (APA), agency decisions may not be arbitrary, capricious, or an abuse of discretion. Because the recovery plan reflects an agency decision for managing a federally listed species, and because the draft recovery plan reflects choices that wholly disregard the entirety of the best available science, it fails the standard of the APA.

The current draft recovery plan (USFWS 2017, 2017c) results from a process initiated in 2015 that significantly differs from previous attempts to draft a recovery plan in several respects and as discussed below. The previous recovery teams included science advisory groups composed almost entirely of scientists with either wolf biology or conservation expertise who were charged with developing recovery criteria based solely on best available science. The current process, which included a group comprised of a majority lacking training in wolf biology, produced criteria significantly different from the generally consistent criteria produced by previous planning efforts. This new draft plan's recovery criteria appears to be heavily influenced by politics and not based on the best available science, but instead a pre-determined policy decision supporting a wolf population with distribution limits negotiated between the U.S. Fish and Wildlife Service (USFWS) and state agencies.

II. Best Available Science

In 2009, the President directed the heads of federal executive departments and agencies to ensure the public trust in the science and scientific process informing public policy decisions, political officials should not suppress or alter scientific or technological findings and conclusions (Obama 2009). Subsequently, the Director of the Office of Science and Technology Policy stressed that the scientific and technological information process relied upon in policymaking be of the highest integrity (Director 2010).

To delist species, several factors are considered: the threats are eliminated or controlled, population size and growth, and the stability of habitat quality and quantity. We outline below the extensive research and analysis culminating in the 2013 recommendations by the USFWS Recovery Team Science and Planning Subgroup (USFWS 2013a,b), and consider their analysis and subsequent recommendations as the foundational elements of the best available scientific

information regarding Mexican wolf management and recovery. We also outline our concerns that the 2015 Final Rule and the Draft 2017 Recovery Plan fall short of standards regarding the best available science and the inappropriate, if not illegal, political disruption of what is supposed to be a rigorous scientific analysis.

A. The USFWS has never adopted scientifically based criteria for Mexican wolf recovery developed by the agency own recovery teams over the past two decades (Hedrick 2016).

Twice in the past decade (2003 and 2010), the USFWS has convened two official Recovery Teams to develop a new and up-to-date (both legally and scientifically) Mexican Wolf Recovery Plan. Science advisors for those recovery teams, composed almost entirely (17 out of 18) of scientists with either wolf biology or conservation expertise, concluded that recovery would require three interconnected populations in the United States, each with at least 250 wolves for a total of ***at least 750*** **animals** (Hedrick 2016). In 2013, the USFWS Recovery Team Science and Planning Subgroup formally recommended to the agency's Director that recovery of the endangered Mexican wolf, or Lobo, required a minimum of three core populations of at least 200 wolves each, totaling at least 750 wolves, with each population stable or increasing over eight years (USFWS 2013). The Draft Plan calls for downlisting the species to threatened[1] with only ***one population*** of at least 320 wolves in the U.S. and 170 in Mexico, totaling 490, over four years (USFWS 2017: 9-10,26-27).

In spite of considerable concern regarding inappropriate, if not illegal, political interference by the states (PEER 2012) with what is supposed to be a plan based on credible science, the draft plan adopts the states' stance of no more than 325 Mexican wolves total in the U.S (in Arizona and New Mexico), and any wolves above this cap would be removed or killed.[2] Two of the three essential U.S. core areas were dropped from consideration in the 2017 Draft Recovery Plan for "geopolitical reasons," not because they were not supported by the best available science (USFWS 2016:4). These draconian constraints would result in Mexican wolves losing the Endangered Species Act protections when there are only half the number in the wild that scientists say are needed in the U.S.—bolstered by only 170 animals in Mexico. At that point in time, the states would assume "management" of the Lobo. If the ideologically driven, anti-wolf opposition to wolf recovery,[3] not to mention the

[1] Reclassifying a species as "threatened" under the ESA allows for increased opportunities for "take" under Section 4(d) of the law. Any increased levels of take would further jeopardize full recovery and expansion into its historic range.

[2] See Environmental Impact Statement for the Proposed Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf (*Canis lupus baileyi*), Final, Mexican Wolf Recovery Program, November 2014, page 2-36 for statement on state request for 325 cap. http://www.fws.gov/southwest/es/mexicanwolf/pdf/EIS_for_the_Proposed_Revision_to_the_Regulations_for_the_Nonessential_Experimental_Population_of_the_Mexican_Wolf.pdf

[3] Lopez 2011; Nelwert 2014; Simon 2013; and Gibson 2013.

slaughter of delisted wolves the northern Rocky Mountains,[4] offers any insight, state control during such a vulnerable period, at best will stall recovery and may be a recipe for extinction, but certainly not a plan for recovery of the Lobo.[5]

B. Development of Credible Scientific Criteria for Lobo Recovery

1) Paquet Report

The 1998 final rule governing the reintroduction project (Parsons 1998) and the 1998 Mexican Wolf Interagency Management Plan both required the USFWS to conduct a comprehensive review of the project at the end of the third year (i.e., March 2001). The authors of that requisite report made several recommendations to improve the insipient Lobo recovery effort including to "[i]mmediately modify the final rule to allow wolves that are not management problems to establish territories outside the Blue [Range] Wolf Recovery Area (Paquet et al. 2001:65).

2) 2003 Recovery Team Recommendations

The 2003 Recovery Team was inexplicably disbanded in 2005 before completing its work, but the Science Subgroup made significant progress in developing criteria for full recovery. According to Dr. Philip Hedrick, a member of that Science Subgroup, "a majority of the Science Subgroup of the recovery team concluded that three populations of 250 wolves each, connected by dispersal constituted a recovery criterion supported by the best available science" (Parsons 2013:9).

Having three populations also provides a precautionary[6] safety net if one or two populations experience a large disease outbreak or other catastrophe, or extensive

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[4] Between April 2011, the year elimination of ESA protection from five states began, more that 4,200 wolves have been slaughtered in six states—Idaho, Montana, Wyoming, Minnesota, Wisconsin, and Michigan. Predator Defense. 2017. Did We only Bring Back Wolves So We Can Kill Them Again? http://www.predatordefense.org/wolves.htm#Rockies. Accessed July 17, 2017.

[5] The previous Science and Planning Subgroup (SPS) concluded that, "…due to alteration of the historic habitat inhabited by Mexican wolves from human development and resource use, defining a recovery area for the Mexican wolf that focused solely on historical range [as does the 2017 draft plan] would preclude recovery" (USFWS 2012:72). In an August 18, 2017 personal communication, Mike Phillips, member of the SPS, stated "If the [2017] draft recovery plan is finalized, and almost certainly it will be with few if any modifications, success will be out of reach and the Mexican wolf will be screwed."

[6] The typical "assimilative capacity approach" to land management assumes that nature is highly resilient to anthropogenic disturbances. It also assumes that we have the capability of measuring and analyzing the extent of our impact to the ecosystem, that we can do so in time to reverse damaging behavior, and that we can rectify non-sustainable management by applying scientific information (Hey 1992, Kuhlmann 1997). In a contrasting approach, a growing number of scholars and conservationists advocate the "precautionary approach" to addressing actions affecting ecosystems (Raffensperger and Tickner 1999; Kuhlmann 1996, 1997; (Gascon et al. 2015). This concept reverses the burden of proof by requiring proponents of anthropogenic change to prove that the proposed actions will not harm species and habitats, rather than requiring conservationists to prove a high likelihood of ecological damage or species loss before halting an activity (Hey 1992, Kuhlmann 1997). The best available science highlights a diverse set of species and services, in ways that are direct, complex, and often unexpected. Taken together, they indicate that just because we generally don't

human killing of wolves, as has occurred in the present reintroduced population. Because genetic variation for future adaptation is fundamental, given environmental challenges, such as the new diseases and climate change, an effective metapopulation size recommended by the USFWS 2010-13 Recovery Team Science and Planning Subgroup (SPS) is necessary (Hedrick 2016).

3) Recovery Team 2012-13 Recommendations
In 2010, USFWS concluded that the struggling, experimental population "is not thriving" due to the current regulatory structure governing the reintroduction program, the lack of an up-to-date management plan, illegal shooting; and genetic inbreeding. Together, the cumulative impacts of these factors "threaten the population with failure"(PEER 2012:3). In that same year, the new USFWS Southwest Regional Office (SWRO) director, Benjamin Tuggle, invited seven scientists with recognized expertise in wolf conservation and management, as well as a social scientist specializing in the human dimensions of the biological resource management, to serve on the Science and Planning Subgroup (SPS) of the Mexican Wolf Recovery Team. Although review and input from three additional subgroups were to be considered, the SPS was given responsibility in ***ensuring recovery criteria were based solely on the best available science***. In keeping with its charge to base criteria "solely" on the best available science, members of the SPS were selected based solely on relevant scientific expertise rather than as representatives of specific agencies or stakeholders (PEER 2012:4). At least that was the intention.

In 2011, the Arizona Game and Fish Department (AZGFD) insisted on imposing an agency representative on the SPS. This perspective, namely that the AZGFD employee on the SPS would represent a particular stakeholder interest, was contrary to the recovery team framework that separated stakeholders and scientists into different subgroups to ensure recovery criteria were based on best available science (PEER 2012). In April 2011, the USFWS capitulated to the state's demands by appointing to the SPS Jim Heffelfinger, an AZGFD agent with little or no expertise in wolf conservation and management, to the SPS.

4) Effective Population Size, Distribution, and Trends
After meetings of SPS and the full recovery team in September of 2011, the SPS produced and provided to the full recovery team a 55-page document evaluating alternate recovery criteria and proposing draft criterion based on the best available science (PEER 2012:4). All members of the SPS, with the exception of AZGFD's Heffelfinger, concurred that a recovery criterion of "three populations of 250 wolves each, connected by dispersal" was supported by best available science. A region in which the three populations could appropriately be established was identified, based on research on historical genetic patterns, habitat availability, and other data, as stretching northward to encompass southern Utah and Colorado (PEER 2012:4-5).

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know what most species' roles in nature are, they are not unimportant (Gascon et al. 2015). The ultimate goal of precaution is working with nature, not against it (Raffensperger and Tickner 1999).

On May 11, 2012, the SPS completed a 146-page draft of the Recovery Plan, supported by a 69-page appendix describing the modeling process used to derive recovery criteria (USFWS 2012; PEER 2012). Seven alternative scenarios (or sets of recovery criteria) were evaluated in the appendix, including scenarios that excluded habitat in Colorado and Utah. The SPS scientists, appointed by the USFWS Regional Director for their recognized expertise in scientific disciplines relevant to Mexican wolf recovery, ***recommended that a minimum of three, naturally connected subpopulations of at least 200 individuals each comprising a metapopulation of at least 750 wolves in the U.S.*** are essential to the survival and recovery of Mexican gray wolves in the wild" (USFWS 2012). This recommendation comported with the earlier 2003 results.

5) 2013 Director's Briefing

In 2013, the agency's Mexican Wolf Recovery Team Science and Planning Subgroup presented to the Director three scenarios for recovery under the "Population Size and Trend" criterion that augmented their original recommendations. The population trend in each of the three primary core populations identified in each scenario requires a high probability (80% confidence) of being stable or increasing over 8 years, based on a statistically reliable monitoring effort (USFWS 2013b:1).

- Option 1: "All populations Equal" (250 x 3 = 750)—three populations of equivalent size (USFWS 2013a)— a metapopulation consisting of a minimum of 3 primary core populations in the wild, each with a census population size of at least 250 individuals, and a total metapopulation size of at least 750 individuals (USFWS 2013b).

- Option 2: "Flexibility" (200 x 3 =750)—three populations of a minimum of 200 with additional 150 spread between any single or multiple populations (USFWS 2013a)—a metapopulation consisting of a minimum of three primary core populations in the wild, each with a census population size of at least 200 individuals, and a total metapopulation size of at least 750 individuals (USFWS 2013b).

- Option 3: "Mexico Counts" (750 + 100 = 850)—either of above options plus a fourth population of 100 (USFWS 2013a)—a metapopulation consisting of a minimum of 3 primary core populations in the wild, each with a census population size of at least 200 individuals, and a total metapopulation size of at least 750 individuals. In addition, at least one secondary core population consisting of at least 100 individuals, for a total of at least 850 wolves in the wild (USFWS 2013b).

To the best of our knowledge, the March 2013 briefing for the Director (USFWS 2013a, 2013b) provided the most recent full SPS final recommendations explicitly stating the conditions necessary for recovery of the Mexican wolf. All three SPS

recommendations require three core areas in the U.S. with a metapopulation of at least 750 wolves. ***To avoid extinction, the USFWS must expediently integrate their recommendations into a scientifically credible recovery plan.***

6) 2015 Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf [Final Rule]

The USFWS Mexican wolf "Final Rule" (USFWS 2015) expanded the Mexican Wolf Experimental Population Area (MWEPA), eliminated the BRWRA designation, and applies only to the area south of I-40 to the Mexican border. Rather than acknowledge their own SPS scientists recommendation for ***a minimum of three, naturally connected subpopulations of at least 200-350 individuals each comprising a metapopulation of at least 750 wolves*** as essential to the survival and recovery of Mexican gray wolves in the wild" (USFWS 2012), the agency backtracked with the goal of only one core area south of I-40 and one population of 200 individual wolves (USFWS 2015:2512, 2017).[7] Incredibly, the agency also delayed full implementation of the rule another decade to 2027 (USFWS 2015:2525).

Ignoring nearly three decades of planning since release of the first recovery plan (USFWS 1982), the agency's final rule offered an unsupportable, if not disingenuous, assertion that it was limiting the revised MWEPA to areas south of Interstate 40 in Arizona and New Mexico "[b]ecause we do not have a revised recovery plan at this time to guide us on where Mexican wolves are needed to reach full recovery (*i.e.,* delisting)" (USFWS 2015:2538). The USFWS has at its fingertips thorough documentation based on impeccably credentialed scientists presenting the best available scientific information regarding recovery of the Mexican wolf. As the USFWS admits, the two recovery core areas deemed essential for Lobo recovery were discarded for "geopolitical reasons," not the best available science (USFWS 2016:4).

7) Litigation, Settlement and a Closed Door Process

Conservationists initiated litigation in November 2014 to force USFWS to complete a final Revised Mexican Wolf Recovery Plan[8] and subsequently reached a

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[7] On August 9, 2013, Larry Voyles, Director of the State of Arizona Game and Fish Department (AZGFD), sent a letter to Dan Ashe, then Director of the USFWS. In his letter, Director Voyles referred to an omission in the Service's June 13, 2013 version of its proposed rule: "Rowan [Gould, Deputy Director, USFWS] confirmed our previous discussions with you and your staff, in which *you* had highlighted the U.S. Fish and Wildlife Service's (USFWS) direction on the major provisions of the Proposed Rule, *assuring us* [AZGFD, Utah Division of Wildlife Resources and a number of other western state wildlife agencies] that any Mexican wolf dispersing outside the MWEPA would be captured and returned to the MWEPA (emphasis added)…This topic was discussed at the July 23, 2013 . . . meeting . . . where Rowen Gould and Gary Frazier [Assistant Director, Endangered Species Program, USFWS] both acknowledged the capture and return provision's absence from the rule was an oversight and that the final rule *will direct the USFWS to capture and return* any Mexican wolf that disperses outside the MWEPA. We greatly appreciate Gary and Rowan's frank acknowledgement and *assurance* that this matter will be corrected" (emphasis added).

[8] No. CV-14-02472-TUC-JGZ.

settlement[9] requiring USFWS to complete a final revised Mexican Wolf Recovery Plan by November 30, 2017.

Anticipating this settlement agreement, USFWS initiated a new and significantly different recovery process in December 2015 to complete the work of the 2010-13 Mexican Wolf Recovery Team (Parsons 2017). A series of "information gathering workshops" were held through February 2017. These workshops were closed-door, invitation-only meetings permitting only personnel affiliated with the states of Arizona, New Mexico, Utah, and Colorado, USFWS, and representatives from Mexico to attend. With the exception of former SPS scientists, stakeholders from the 2010-13 Mexican Wolf Recovery Team were not invited to participate. Four scientists did attend some, but certainly not all, of the workshops. Some, and perhaps all, of these workshops included closed sessions to which the former SPS scientists were not invited, and none of these four individuals were allowed to preview or otherwise participate in the writing of the Draft Revised Mexican Wolf Recovery Plan currently under public review. Conspicuously absent from the process were representatives of conservation organizations that actually support full science-based recovery of Mexican wolves (Parsons 2017). *Neither the draft plan (USFWS 2017) nor the biological report (USFWS 2017c) identifies who actually authored the plan*.

8) 2017 Draft Recovery Plan: USFWS Ignores Its Own Credible Science
In spite of three decades of credible scientific analysis culminating in recommendations for three connected U.S. Mexican wolf populations of ***at least*** 750 animals, the Draft Plan mirrors the final rule and calls for ***one*** **U.S. core area**—the revised Mexican Wolf Experimental Population Area, or MWEPA— with a population between 320 and 380 wolves, ***half the number urged by the agency's own SPS as necessary for recovery*** (USFWS 2017:28).

The Draft Plan limits the revised Mexican Wolf Experimental Population Area (MWEPA) to areas south of Interstate 40 in Arizona and New Mexico, excluding two of the three U.S. recovery cores considered essential for full recovery (*i.e.* delisting), by the scientists. Blatantly contradicting the SPS's findings, the agency unconvincingly asserts, "whether areas north of Interstate 40 are important for the conservation and recovery of the Mexican wolf will be, again, deferred to a future revised recovery plan" (USFWS 2015:2540).[10] In spite of the states' vitriolic opposition to wolf recovery documented below, the Service assures us that "[f]uture revisions may include an expansion of the MWEPA north of I–40, and such a revision would require coordination with the States of Colorado and Utah." In the meantime the agency intends to capture and return any Mexican wolves that disperse north of Interstate 40 and outside MWEPA (USFWS 2015:2533, 2538, 2552).[11]

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[9] CV-14-02472-TUC-JGZ Document 55, Filed 10/18/16.

[10] The last recovery plan was written in 1982. Lobos can't wait another 35 years for the USFWS to allow for an expanded range that includes critical recovery cores.

[11] The USFWS has obtained the requisite Section 10(a)(1)(A) permit that allows take (capture and return) of wolves that leave the experimental population area.

Casting further doubt on the credibility of the proposed population size, the Draft Plan (USFWS 2017:28) states that "[i]n the MWEPA, we may employ management actions to maintain the population between 320 and 380 Mexican wolves [because] *[w]e recognize that population growth significantly above 320 may erode social tolerance in local communities or cause other management concerns such as unacceptable impacts to wild ungulates from Mexican wolves"* (USFWS 2014. Emphasis added).

While the Service is casting the 2017 plan as based on the "best available science," it should be careful not to equate "most recent" with "best." The Service has repeatedly stated that the current populations are based on an "improved, more comprehensive data set," but fails to acknowledge the flaws and assumptions that are inherent in the new analyses. The Service should also acknowledge the demonstrated bias of AZGFD's SPS representative and principal author of Heffelfinger et al. (2017) and weight it accordingly (see pages 6 and 21 of this document).

a) Social Tolerance

Lack of tolerance (or dislike of wolves) leads to high rates of human-caused mortality—the actual threat to wolves (Bruskotter et al. 2013, Figure 1). Intolerance is a broad term that refers to a wide range of phenomena, including having negative feelings about wolves, illegally killing wolves, or taking other actions that may negatively impact wolf populations (Bruskotter and Fulton 2012). Wolves are not immediately threatened by people saying they dislike wolves—or even that they might kill wolves (Bruskotter et al. 2013). Wolves are threatened by high rates of human-caused mortality perpetrated by a very small portion of people who dislike wolves (Bruskotter et al. 2013). And while illegal killing has likely influenced population expansion (Smith et al. 2010; Liberg et al. 2012), it has not generally prevented range expansion.

Although the roots of social intolerance are complex, to say the least, the USFWS has demonstrated its ability to effectively reduce the threat of human-caused wolf mortality (Bruskotter et al. 2013). That threat has been mitigated for decades by regulations that prevent state governments from adopting policies that encourage high rates of human-caused mortality and prevent wolf recolonization, and by re-introducing wolves to former portions of their historic range (Bruskotter et al. 2013). These actions were successfully implemented by the USFWS and resulted in remarkable improvements in the condition of wolves in the northern Rocky Mountains and Great Lakes regions (Wydeven et al. 2009; Smith et al. 2010; Bruskotter et al. 2013). More generally, research indicates that a variety of large carnivores— wolves included—are able to persist so long as policies toward carnivores remain favorable (Linnell et al. 2001). ***In other words, while human-caused mortality, motivated by the intolerance of a few people, is an ongoing threat to wolf populations, today the far greater threat is the USFWS's***

reluctance to exercise its statutory obligations in the face of political pressure (Bruskotter et al. 2013).

The USFWS should also view the recent court order overturning the so-called McKittrick Policy in context of social tolerance. Human-caused mortality has been a significant threat to Mexican wolves in the Blue Range Wolf Recovery Area (BRWRA), but the lack of enforcement and prosecution for ESA violations under the McKittrick policy has given *de facto* permission for bad actors to continue killing wolves with the handy excuse, "I thought it was a coyote." It would seem logical that people are more likely and willing to kill endangered species if they know the likely consequences will be minimal. Now that McKittrick has been found unjust, USFWS should rigorously investigate illegal killings, since the Department of Justice (DOJ) is now not barred from prosecuting people even when they claim mistaken identity. DOJ is expected to accelerate prosecutions for any criminal takings regardless of the excuses provided by the killer and thus provide a deterrent for those considering acting on their dislike of wolves.

Finally, the Service's concerns about social tolerance are not substantiated with any current, scientific evidence. It does not appear that the Service undertook any systematic survey of the number of wolves that would be tolerated but merely took the states' words for what population could be workable. Setting upper limits for a listed population (USFWS 2017:28 "we expect to adapt our management approach for population sizes between 320 and 380 wolves in the MWEPA") is unheard of. The species should be recovered to the extent that it is viable and self-sustaining, and prescribing an ultimate cap on the population to be enforced through lethal and permanent removals is unacceptable; recovery plans set objective, measurable criteria for getting species off the list, and should not commit to limiting populations thereafter.

b) Impact on Livestock

Despite common perceptions to the contrary, research has shown that Mexican wolves overwhelmingly feed on elk and other ungulates, with only a tiny percentage of their diet consisting of live and scavenged cattle. A study of wolf scat showed that the prey remains consisted of 73% elk, 16% other native ungulates, 7% small mammals and unknown and 4% cattle (AZGFD 2009). This correlates with national finding regarding unintended livestock losses. According to a Department of Agriculture report, approximately 65% of the American cattle inventory was lost to health problems and 12% was due to weather (NASS 2011). Less than a quarter of one percent (0.23%) was attributed to native carnivores and dogs in 2010 (NASS 2011). Four percent (4%) of the U.S. total sheep inventory is killed each year by carnivores such as coyotes and dogs (NASS 2010). Similar totals occur in Colorado (3%) and Arizona (4%). Utah losses are slightly higher at about 7% (NASS 2010a,b).

In any event, building social tolerance is a two-way endeavor requiring accountability from ranchers and herders on public lands, as well as the agency. Responsible animal husbandry includes reducing attractants (especially carcasses);

increasing human presence with range riders and herders; using guard dogs; erecting barriers such as fences, fladry, and penning; and using alarms, lighting and nonlethal ammunition (Stone et al. 2016; Dohner 2007). If these proactive measures cannot be implemented quickly or effectively, moving livestock to an alternate grazing site affords a viable solution for livestock owners and wildlife managers alike. Many of these tactics have been used successfully in Arizona and New Mexico.

Finally, despite the obvious conflict-reduction/habitat improvement technique of simply ending grazing on high conflict allotments, the draft recovery plan fails to include any provisions encouraging the retirement of grazing permits, nor does the recovery budget provide dollars to support purchasing and retiring leases. A willing grazing permittee and cooperating agency staff can arrange for a permanent exchange of grazing allotments. *Permanent voluntary retirement* of grazing permits offers an effective resolution of wolf-livestock conflicts. For example, wildlife conservation groups or land trusts have purchased grazing permits from livestock owners on a voluntary basis to end chronic conflict and lethal wolf and grizzly control (Stone et al. 2016). Seeking and supporting permit retirement, and including plan guidance for the land management agencies for accepting such transactions, would significantly reduce wolf-livestock conflict.

c) Impacts on Game Species and Hunting

What constitutes "unacceptable" impacts on wild ungulates is brought up, but not adequately explained in the Draft Recovery Plan nor the final rule for that matter (USFWS 2017:28). The Final Rule did report that between 1998 and 2012, the AZGFD concluded that "while Mexican wolves do target elk as their primary prey source, including elk calves during the spring and summer season, there was no discernible impact on the number of elk calves that survive through early fall periods [and] a similar finding was made for mule deer" (USFWS 2015:2555).

In any event, public lands, including national forests, provide habitat for a rich diversity of wildlife that are appreciated by a significant percentage of the American people. The National Survey of Fishing, Hunting and Wildlife-Associated Recreation show the importance of wildlife-related recreation to the non-hunting public (USFWS 2012b, 2012c). Of all Americans age 16 or older, 71.8 million (30% of U.S. population) observed wildlife and spent $55 billion, compared to the 12.5 million or 6 percent who hunted and spent $34 billion.

These findings are consistent with western state surveys. For example, the Outdoor Industry Foundation (OIF) reports that well over one million Arizonans, or twenty-seven percent of the state's population, participate in hiking, trail running, bicycling and rock climbing. Twenty-four percent (1,098,000) enjoy bird watching and other wildlife watching (OIF 2010). Only three percent hunt.

In Utah, the OIF reports similar findings with 43 percent of the state's population (714,000) engaging in hiking, backpacking, rock climbing and trail running (OIF 2010a). Thirty-two percent enjoy bird and other wildlife watching. Only ten percent

of Utahans hunt.

It is safe to assume that most Americans enjoy the natural diversity of wildlife and do not consider public lands as game farms nor as the exclusive pleasuring grounds for hunting enthusiast. At any rate, elk, deer, pronghorn, and other wild ungulate populations are affected by a suite of factors, including a guild of native carnivores, extreme weather events (i.e., prolonged drought or too much snow), disease, and, especially, overhunting by humans (Vucetich et al. 2005, Wright et al. 2006, Mallonee 2011). In fact, hunters actually constitute the largest mortality factor on ungulate herds by removing prime-age breeding females, while wolves generally prey upon the weak and infirm, which improves herd health (Keefover 2012:12).

What constitutes "unacceptable" impacts on wild ungulates should be considered in a broad ecological and social context and not on the recreational preferences of a small minority. In fact, the absence of wolves and other top predators may have an "unacceptable" impact on wild ungulates due to the positive impacts predators have on prey fitness.

Moreover, the impacts to ungulates must be considered in the context of prey-base displacement by privately-owned livestock grazing. Where the game management agencies are concerned with the number of huntable animals wolves eat, the same agencies would do well to object to livestock grazing on public lands. On Arizona forests, about 50 percent of the palatable vegetation is allocated for livestock. These livestock consume (and remove from the ecosystem) the equivalent of two elk, seven deer, or 11 pronghorn (about 800 pounds each month). The wolves' prey are also socially displaced by the presence of livestock. The draft recovery plan makes no mention of these impacts and fails to identify recovery measures (such as permit retirement) that could improve the prey base (and reduce conflict) for wolves (and human hunters as well).

C. Vortex PVA Modeling

The recovery planning process used the Vortex PVA modeling tool to predict the number of wolves needed to ensure the long-term survival of Mexican wolves with an acceptable minimum risk of extinction over the next 100 years. Population viability analyses (PVA) are valuable tools informing development of recovery criteria, especially for thoroughly studied species such as Mexican wolves.[12] PVA is a tool that assists planners, allowing them to systematically generate and integrate the best available biological information, including factors affecting the demographic and genetic status of threatened species, and the influence of these factors on population viability and endangerment.

Our understanding is that the PVA model as utilized in this recovery process seeks an apparently inadequate "minimum viable population" (MVP) and then control

[12] Hendricks et al. (2017) considers Mexican wolves "one of the best defined groupings below the species level of any large North American vertebrate."

populations at or below these minimal levels. Our concern is that, rather than use the PVA to develop a threshold to reach and surpass, the Draft Plan's appears to simply resurrect the now outdated focus on a single, likely strangling MVP threshold.

A casual reader of the Draft Plan could be easily convince that the Vortex PVA modeling exercise is based on the best available scientific data. But is this the case?

We find remarkable the convergence of the 2015 ESA (10)(j) rule and the output of the Vortex PVA model. During the Environmental Statement (EIS) process, the states of Arizona and New Mexico proposed a cap of 200-300 wolves in the MWEPA as an alternative presented to the USFWS for inclusion in the revision of the rule EIS.[13] The AZGFD convinced the USFWS to cap the number of endangered Mexican gray wolves allowed in the U.S. and to remove or kill any wolves above the limit. The states succeeded in establishing a cap of 325 wolves, but advocated for an even smaller number of 200-300.[14] The Draft Plan reflects the final rule and calls for a MWEPA population between 320 and 380 wolves, ***half the number urged by the agency's own SPS just five years earlier as necessary for recovery*** (USFWS 2017:28).

The Service justifies this convergence saying that it's what the science showed, but it's clear that some arbitrary decisions were used as inputs, including the northern boundary of I-40 (for "geopolitical reasons"),[15] the time horizon for accomplishing the recovery goals, and the decision to use a majority of data from the wild populations of Mexican wolves rather than more robust and self-sustaining populations in the north that have been studied longer. Mexican wolves in the MWEPA and Mexico have been given supplemental food sources, released with a strong understanding of the genetic values, and restricted from expanding their range and meeting with the other subpopulation. This is hardly an accurate baseline condition on which to make long-term predictions.

One of the inputs into the model is called the "management target" (Miller 2017:9):

> *The wolf population abundance deemed both biologically viable (according to identified recovery criteria) and* ***socially acceptable*** *in light of the expected*

[13] See Environmental Impact Statement for the Proposed Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf (*Canis lupus baileyi*), Final, Mexican Wolf Recovery Program, November 2014, page 2-36 for statement on rationale for 325 cap. http://www.fws.gov/southwest/es/mexicanwolf/pdf/EIS_for_the_Pro posed_Revision_to_the_Regulations_for_the_Nonessential_Experimental_Population_of_the_Mexican_ Wolf.pdf

[14] See Environmental Impact Statement for the Proposed revision to the nonessential experimental population of the Mexican wolf (*Canis lupus baileyi*) Draft, 16 July 2014, pages 2-9 to 2-10. http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mexican_Wolf_ DEIS_July_2014.pdf

[15] (USFWS 2016:4).

ongoing issues around livestock depredation and other forms of wolf-human conflict (Emphasis added).

The report continues: ***"if a given population exceeds its management target abundance in a given year, both adults and pups are 'harvested' from the population in equal numbers until the target abundance is reached"*** (Miller 2017:9).

The model is **capped** at whatever management target population size is chosen for the MWEPA population, apparently negating all the "science-based" inputs due to the complete overriding effect of the management target on the outcome of the model. Because the model "harvests," all wolves above the population size chosen as the management target, the output of the model for the MWEPA population is guaranteed to be the same as the arbitrarily chosen management target. This is egregiously and unacceptably unscientific, to say the least. At any rate, this provision violates the "best science" standard set forth in the ESA.

D. Connectivity

Connectivity between populations in the PVA is assumed to be very low, but the preponderance of relevant scientific research demonstrates that connectivity can increase the retention of genetic diversity within component populations. In any event, increased dispersal between wild populations would also help to address genetic threats.

Previous wolf recovery plans from the Northern Rocky Mountains and Great Lakes have required recovery of interconnected populations. The 2013 draft plan addressed genetic threats by proposing a criterion related to the measured rate of connectivity among wild populations expressed in terms of the number of genetically effective migrants per generation (USFWS 2012: Table 1). Connectivity criteria are not addressed in the 2017 draft plan.

E. Imperative for an Independent Science Review

The preponderance of peer reviews contracted by USFWS was highly critical of many aspects of the supporting Draft Biological Report for the Mexican Wolf (Parsons 2017; USFWS 2017c). That report supposedly provides the scientific foundation for the content and recommendations put forth in the *Draft Mexican Wolf Recovery Plan* (USFWS 2017). Without honestly addressing—and not ignoring—the reviewer's extensive criticisms, any semblance of the plan's scientific credibility is suspect.

The discrepancy between the widely different interpretations of "best science" demands the USFWS give great weight to the views of independent scientists who are expert in wolf recovery as well as the conclusions of non-agency scientific societies. This review could assure skeptics of the plan's scientific adequacy by providing credible, transparent management recommendations

for the agency's development of a tenable Mexican wolf recovery final plan (Parsons 2017)*.*

III. Core U.S. Habitat

An effective strategy for wolf recovery involves establishing well-distributed source populations in core areas of highly suitable habitat and then allowing natural dispersal to connect a regional metapopulation. Potential reintroduction sites to consider what would be a 'core area of suitable habitat' that would be both relatively secure habitat and be well situated to facilitate growth of the regional wolf metapopulation. Under current habitat conditions, scientists determined that three major core areas of suitable habitat exist in the area encompassing Arizona, New Mexico, southern Colorado and southern Utah. These areas are projected to become more distinct and separated as landscape change factors such as exurbanization[16] continue (Carroll et al. 2006). Each of the three holds a secure core area of public lands subject to conservation mandates (national parks, wilderness, national monuments) where wolves are predicted to experience the lowest human-induced mortality.

Several habitat suitability assessments conducted over the last 20 years demonstrate that only three major core areas of suitable habitat exist in the area encompassing the Mexican wolf's historical range and adjacent areas in Arizona, New Mexico, southern Colorado and southern Utah that are capable of supporting Mexican wolf populations of sufficient size to contribute to recovery. The three core areas of suitable habitat are 1) the Blue Range Wolf Recovery Area and adjacent public lands (current Mexican Wolf Experimental Population Area—MWEPA), 2) the Grand Canyon and adjacent public lands in northern Arizona and southern Utah, and 3) two linked areas of public lands and private lands with conservation management in northern New Mexico and southern Colorado (USFWS 2012: 48, Table 1).

A. MWEPA—Former Blue Range Wolf Recovery Area (BRWRA) and Adjacent Areas

The 2015 Final Rule expanded the Mexican Wolf Experimental Population Area (MWEPA) by moving the southern boundary from Interstate Highway 10 to the United States–Mexico international border across Arizona and New Mexico (USFWS 2015: 2019 and Figure 2). The agency also discontinued the BRWRA designation.

*B. Grand Canyon Region (Northern Arizona/Southern Utah***)**

This core area encompasses the Grand Canyon and adjacent public lands in northern

[16] Although the term "exurban" was coined by journalists in the 1950s to describe a specific kind of low-density, upscale suburb at the farthest edge of the New York City area, the term is more usefully deployed to refer to settlements of urban families beyond urban areas and built-up suburbs (Bruegmann 2006).

Arizona and southern Utah. With the exception of the Blue Range/Gila Wildlands, the Northern Arizona/Southern Utah core area may have the highest probability of supporting a successful reintroduction and the greatest effect on enhancing regional wolf populations through dispersal (Wayne and Hedrick 2011; Carroll et al. 2005, 2006; USFWS 2012). This is due to both a large area of public lands with low mortality risk for wolves, and substantial connectivity from that habitat southward through the Mogollon Rim from the Blue Range and northward to the public lands of the mountains of southern and central Utah. The area is centered on Grand Canyon National Park (3,045 square miles) and adjacent Kaibab and Coconino NFs lands (8,265 square miles). This ecoregion has suitable habitat, low anthropogenic activity, connectivity with other suitable areas and protected habitat within a U.S. National Park (Sneed 2001; Carroll et al., 2006, 2014; Hendricks et al. 2015). Although Grand Canyon National Park is not predominantly high productivity wolf habitat, wolves within its boundaries would likely benefit from low rates of human-associated mortality. Adjacent public lands on the Kaibab Plateau and other portions of the Kaibab National Forest, as well as the nearby Paunsagunt and Aquarius Plateaus are more mesic with greater prey densities. Wildlife connectivity between the three plateaus lies within the relatively protected Grand Staircase-Escalante National Monument. Earlier studies concluded that potential wolf population connectivity between the Blue Range and the Northern Arizona/Southern Utah core areas is greater than between the Blue Range and the Northern New Mexico/Southern Colorado core area (Carroll et al. 2005, 2006).

C. The Southern Rockies Ecoregion—Southern Colorado and Northern New Mexico

The Southern Rockies Ecoregion stretches from the Medicine Bow region in southern Wyoming, through western Colorado, into north-central New Mexico and includes nearly 25 million acres of public land. The relevant proposed Mexican wolf recovery area includes New Mexico and Colorado lands north of Interstate 40, and bounded by I-70 to the north and I-25 to the east (USFWS 2012:53): This core area of suitable habitat encompasses two linked areas of public lands and private lands with conservation management in northern New Mexico and southern Colorado including the San Juan Mountains and Uncompahgre Plateau (Wayne and Hedrick 2011; USFWS 2012).

1) New Mexico

The New Mexico portion of this area includes sections of the Carson National Forest (3,980 square miles), Santa Fe National Forest (3,980 square miles, Vermejo Park Ranch (1,430 square miles), 104 square miles of additional private lands protected under conservation easements, and the 243 square mile Taos Pueblo of which most is managed as wilderness by the tribe. The Valle Vidal Unit of the Carson National Forest (253 square miles) is managed with special emphasis on wildlife and fisheries resources. For example, 88% of the roads present in 1982 have since been closed or removed to enhance wildlife and fisheries habitat. Given tightly restricted

access to Vermejo Park Ranch, it is functionally roadless (USFWS 2012:53). In addition, the 310,730-acre Rio Grande del Norte National Monument protects over 52 miles of riparian habitat.

2) Colorado

As with the Grand Canyon, the northern New Mexico/southern Colorado core area would aid the reestablishment of well-distributed wolf populations northward to the public lands in western Colorado (USFWS 2012:53). The area contains more public land and prey for wolves than anywhere else in the U.S. (Phillips 2017). The Colorado portion of this area extends across portions of the San Juan National Forest (5,185 square miles), Rio Grande National Forests (4,623 square miles), and Grand Mesa, Uncompahgre, and Gunnison National Forests (7,830 square miles). The San Juan Mountains contain 2,485 square miles of Wilderness Areas and a similar amount of roadless areas including significant lower-elevation ecosystems. Relatively low levels of livestock grazing occur on the San Juan NF (Bennett 1994). The vast majority of the Southern Rockies Ecoregion is found in western Colorado in the form of public land that stretches across approximately 15 million acres that are managed for conservation purposes and support robust populations of native ungulates (hoofed mammals like elk – *Cervus elaphus*, and deer *Odocoileus* spp.), the gray wolf's preferred prey. In addition to the vast assemblage of public land across which wolf recovery is possible, from 2004 through 2015 Colorado's combined, post-hunt population of elk and deer averaged 758,314 animals. It is important to emphasize that this average population estimate was derived after recreational hunters killed a combined number of elk and deer that averaged 85,279 animals annually (Colorado Parks and Wildlife 2015a,b). From 2004-2015 the roughly 18 million acres of public land supported an average combined population of deer and elk that included about 760,000 animals. This probably represents the largest population of ungulates available for wolves anywhere in the world—a noteworthy situation, since prey abundance is the best predictor of habitat quality for wolves in areas where human-caused mortality of wolves is low (Phillips 2017).

In addition to extensive suitable habitat, public approval of the wolf's return to Colorado is significant. Regional public opinion surveys conducted across a span of 20 years reveal strong and durable support for restoration (Bright and Manfredo 1996; Meadow et al. 2005; Phillips 2017). Not surprisingly, a congressionally mandated study concluded that Colorado could support more than 1,000 wolves (Bennett 1994). Three additional studies, using increasing reliable techniques, affirmed that Colorado could easily support a self-sustaining population of wolves (Phillips et al. 2000; Southern Rockies Ecosystem Project 2000; Carroll et al. 2003; Phillips 2017).

D. Border Region

The Final Rule extended the MWEPA to include the U.S. lands south of I-10 to the Mexican border (USFWS 2015: 2019 and Figure 2). *The agency stated objective in*

*doing so is "[w]e are making this modification because the reintroduction effort for Mexican wolves now being undertaken by the Mexican Government has established a need to manage Mexican wolves that **may** disperse into southern Arizona and New Mexico from reestablished Mexican wolf populations in Mexico*" (emphasis added).

However, the 2012 Science and Planning Subgroup (USFWS 2012:54) cautions

> *"[t]he 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).

In any event, the detrimental effects, including blocking wildlife corridors and habitat fragmentation, imposed by the existing and proposed border wall dividing the U.S. and Mexico is a problem. ***The wall will (not just "may") impede, if not eliminate Mexican wolf movement between the two nations*** (Bolstad 2017; Bird 2017).

The 2015 MWEPA expansion was likely less about habitat suitability than it was about intensive management and the USFWS' desire to extend 10(j) status to wolves roaming northward, as evidenced by its prompt removal of a northward wandering wolf in 2017 (USFWS 2017d). The draft recovery plan's intention to translocate wolves between populations is evidence that the Service doesn't intend to allow interaction between the two isolated populations, despite the animals' demonstrated propensity for doing so.

E. Mexico

The Martínez-Meyer et al. (2017:69) report that there is still sufficient habitat remaining in the US and Mexico to support viable populations of the Mexican wolf in the wild, however scientists caution that information on ungulate density in Mexico is still quite poor (USFWS 2012:58). Furthermore, most of the historic range in Mexico is currently unsuitable due to human activity and the probability of anthropogenic wolf mortality is high (Hendricks et al. 2015; Aniza et all. 2012).

In Mexico, several previous analyses have evaluated the extent of potential habitat (USFWS 2012:58). Apparently large, relatively continuous extensions of high-quality habitat remain mainly in the Sierra Madre. Nonetheless, connectivity through suboptimal habitat exists between high-quality patches within and between the two

Sierras Madre, suggesting that dispersion of individuals is possible **(**Martínez-Meyer et al. 2017:69).

Although information on ungulate density remains problematic, Araiza et al. (2002) evaluated GIS data from Sonora, Chihuahua, and Coahuila and identified an area in the northern Sierra Madre Occidental with relatively high levels of habitat security (low road density and human settlement). In any event, it is necessary to undertake the challenge to carry out systematic, extensive field surveys to produce reliable density estimates and rangewide models to be incorporated in the habitat suitability analysis **(**Martínez-Meyer et al. 2017:69). Field measurements of prey abundance indicated deer densities in this area were near the lower limit for wolf persistence. This suggests that augmentation of deer herds through revised grazing techniques and reduced hunting might be necessary before the area could support wolves, a significant ask. Current populations rely heavily on supplemental feeding, an effort that is not viable in the long-term.

Finally, wolf number estimations showed a variation of orders of magnitude, due to the estimation method, input data and habitat scenario. The Sierra Madre Occidental is the area with the potential to hold the largest number of wolves in Mexico **(**Martínez-Meyer et al. 2017:69). While Martínez-Meyer et al. (2017:69) identified four natural protected areas cover portions of high-quality patches identified in the Sierra Madre Occidental, most of high-suitable areas for wolves are on private lands and the authors emphasized that a "diversified conservation strategy" is needed.

In spite of the USFWS and states irrational exuberance for shifting Lobo recovery south of the border,[17] the science does not support their enthusiasm: "The majority of the subspecies' historic range occurred in Mexico . . . However, high human-associated mortality risk and low prey density within potential core areas in Mexico suggests that these areas are unlikely to support populations of over 100 individuals" (Carroll et al. 2014:78). Some scientists warn that the Mexican population is unlikely to contribute to metapopulation recovery because there is already a barrier impeding or preventing wolf movement between Mexico and the United States, and a larger barrier is likely in the future (Hedrick 2016). This doesn't even begin to account for the Service's swift removal and captivity of one of two wolves that ventured north in 2017, where management of the 10(j) population is as effective of a barrier as a physical boundary might be.

Mexico may offer a good opportunity to augment Mexican wolf recovery, but evidence is problematic at best to suggest it become a primary recovery area

[17] See 13 November 2015 letter from the Governors of Arizona, New Mexico, Colorado and Utah to Secretary of the Interior Sally Jewel and US Fish and Wildlife Director Dan Ashe " . . . recovery of the Mexican wolf cannot and will not be achieved if the Service does not recognize that the majority of Mexican wolf recovery must occur in Mexico. . . . [Mexico] must be home to the lion's share of on-the-ground Mexican wolf recovery."

(Hendricks et al. 2015:53).[18] Because the habitat in Mexico largely depends on the social tolerance of private landowners, the habitat is also less reliably considered secure for the future than the publicly-owned lands in the U.S.

IV. Historic Range/Suitable Habitat

Scientists suggest gray wolves from Eurasia colonized North America during the Pleistocene through at least three waves, each by wolves from different lineages (USFWS 2013b: 36-40). The Mexican wolf (*C. l. baileyi)* may represent the last surviving remnant of the initial wave of gray wolf migration into North America (Nowak 1995, p. 396; Nowak 2003:242; Wayne and Vilá 2003:226-228; Chambers et al. 2012:10). The distinctiveness of the Lobo and its recognition as a subspecies is supported by both morphometric and genetic evidence (USFWS 2013b:36-40).

Over time, gray wolf taxonomy has undergone substantial revision, including a major revision in which the number of recognized gray wolf subspecies in North America was reduced from 24 to 5, with C. l. *baileyi* being recognized as a subspecies ranging throughout most of Mexico to just north of the Gila River in southern Arizona and New Mexico (Nowak 1995: 375-397).

Subsequently, Parsons (1996:104) included consideration of dispersal distance when developing a probable historical range for the purpose of reintroducing the Lobo in the wild pursuant to the ESA, by adding a 200-mile northward extension to the most conservative depiction of Mexican wolf historical range (i.e., Hall and Kelson 1959). This description of historical range was carried forward in the Final Environmental Impact Statement "Reintroduction of the Mexican Wolf within its Historic Range in the Southwestern United States" in the selection of the Blue Range Wolf Recovery Area as a reintroduction location for C. l. *baileyi* (USFWS 1996).

Recent molecular genetic evidence from limited historical specimens supports evidence of an intergradation zone between the Lobo and northern gray wolves (Leonard et al. 2005:15-16). This research shows that within the time period that the historical specimens were collected (1856-1916), a northern clade (i.e., a group that originated from and includes all descendants from a common ancestor) was found as far south as Arizona, and individuals with southern clade associated with the Mexican wolf occurred as far north as Utah and Nebraska. Leonard et al. (2005:10) and Chamber's et al. (2012:37) interprets this geographic distribution of as an indication of extensive mixing during this time.

In any event, historical or modern boundaries should also not be viewed as static or frozen in any particular time since delineation of exact geographic boundaries presents challenges (Chambers et al. 2012:43; USFWS 2013b). Rather than sharp

[18] For a description of the condition of Mexican habitats, see Hendricks et al. 2015, page 53: "Furthermore, most of the historic range in Mexico is currently unsuitable due to human activity (blue areas in Figs. 1 and 2) and the probability of anthropogenic wolf mortality is high."

lines separating taxa, boundaries should generally be thought of as intergrade zones of variable width. These "fuzzy" boundaries are a consequence of lineages of wolves that evolved elsewhere before coming into contact. Scientists' understanding of the historical interactions between subspecies or genetically different populations is that they are dynamic processes and boundaries can shift over time (USFWS 2013b; Leonard et al. 2005).

Today, Mexican wolves in Arizona and New Mexico inhabit evergreen pine-oak woodlands (i.e., Madrean woodlands), pinyon-juniper woodlands (i.e., Great Basin conifer forests), and mixed-conifer montane forests (i.e., Rocky Mountain, or petran, forests) that are inhabited by elk, mule deer, and white-tailed deer (USFWS 1996:3–5). These environments are distributed throughout much of the Intermountain West (with significant acreages on public lands) and afford significant opportunity for contributing to recovery of the Lobo.

A. Historical Range Concerns

Underestimation of historical range can be a factor limiting the success of recovery programs, prolonging species endangerment and the expense of recovering them (Hendricks et al. 2015:53). Citing the threat of possible legal challenge and the "foundational" significance for developing a scientifically defensible recovery plan Heffelfinger et al. (2017) outlined concerns regarding recovery efforts outside of the historic range. Notably, Heffelfinger was the non-wolf expert contrarian from the USFWS Mexican Wolf Recovery Team Science and Planning Subgroup (SPS) recommendations described above and his efforts to create scientific support for his agenda in the interim should be viewed with considerable skepticism.

Due to alteration of the historic habitat inhabited by Mexican wolves from human development and resource use, the SPS concluded that ***defining a recovery area for the Mexican wolf that focused solely on historical range would preclude recovery*** (USFWS 2012:72). This realization 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 tension between the current recovery effort and habitat availability within historical range is remedied by including areas outside the Mexican wolf's assumed historic range in the recovery area (USFWS 2012:72). Besides, as Hendricks et al. (2015:53) point out, historical ranges of extirpated taxa, especially in the New World, should not be defined solely on past observations or phenotypic characteristics of historical specimens, both of which are subject to strong sampling biases that tend to underestimate range. Instead, the authors recommend that estimates of historical range should also consider other factors such as the phylogenetic relationships of lineages defined by a population of historical

specimens, including those not assigned taxonomically to the protected taxon, and appropriate habitats within dispersal proximity of the supposed historical geographic range. Moreover, even endangered wildlife with good historical records may have experienced range expansions and contractions in the pre-Columbian era, and such demographic dynamics could be inferred from genetic data (e.g. vonHoldt et al., 2011; Freedman et al., 2014) and used to inform historical range designations (Hendricks et al., 2015:53).

Recent habitat suitability estimates identify habitat outside the traditionally defined historical range of the Mexican wolf but that are currently suitable for this species (Hendricks et al. 2016). Much of the additional range Hendricks et al. (2017) finds in the Grand Canyon ecoregion and Southern Rockies, is confirmed by other landscape scale analysis (Sneed 2001) and niche-based studies (Carroll et al. 2014) and with observations of long range dispersal and admixture zones in modern wolves.

Given the difficulty of establishing Mexican wolves in the U.S. and Mexico, which contrasts with the considerable success of Yellowstone-Idaho reintroduction (Wayne and Hedrick 2011), expanded historical range and suitable habitat is desperately needed, and is supported by ecological and genetic evidence (Hendricks et al. 2013). Further, climate change is likely to increase the proportion of suitable range northwards. Contemporary species conservation needs to move beyond strict adherence to maintaining or restoring populations within their putative historical ranges. Emphasis on the realized contemporary and likely future range may support the long-term viability of highly endangered Mexican wolf reintroduction program (Hendricks et al. 2013).

Two of the three core areas identified by the SPS—the Grand Canyon and northern Arizona/southern Utah core area and the northern New Mexico/southern Colorado core area— are located north of the Mexican wolf's "historical range." For several compelling reasons it is appropriate to include both in the Mexican wolf recovery area (USFWS 2012:69):

1. Mexican Wolf is a Close Living Relative to the Gray Wolf Subspecies That Occupied the Areas Historically (USFWS 2012:69).
The two core areas north of I-40 are proximate to (Brown 1983, Bogan and Mehlhop 1983, Hoffmeister 1986, Nowak 1995) or well within (Leonard et al. 2005) the zone of gray wolf genetic intergradation that characterized the Southwest historically. Leonard et al. (2005) interpret the geographic distribution of genetic markers as evidence that historical gene flow between the Mexican wolf and other wolf "subspecies" was extensive in time and space and supports an area for recovery of the Mexican wolf that extends well beyond the subspecies historical range (USFWS 2012:69).

2. The Mexican Wolf is the Closest Geographic Source of Wolves (USFWS 2012:70).
The Minnesota wolf (*C. l. nubilus*), a close relative of the Mexican wolf, was probably widespread throughout the southwestern U.S. historically (Nowak 1995) until it was

extirpated from the region more than 50 years ago (Brown 1983, Robinson 2005). In response, at least a few Mexican wolves moved north to occupy the vacated habitat in New Mexico and Arizona (Gish 1977, Scudday 1977, Nowak 1995). Nowak (1986:1-2) considered the relevance of shifting ranges when he endorsed the reintroduction of the Mexican wolf

> *…beyond its designated range on the grounds that it could have occupied such sites naturally, if other wolves had not already been there, and indeed, may have been attempting to do so after the other wolves had been extirpated... Suppose, however, that there had been no gray wolves to the immediate north of the range of bailey. In that case, there is no reason to think that baileyi would not have kept right on going to eventually occupy a large part of the western United States.... The genus Canis is remarkably adaptable to a variety of conditions. The main factor limiting the distribution of a particular species or subspecies seems not to be different habitat conditions, but rather the presence of another kind of Canis. It has not been unusual for one subspecies of gray wolf to invade and establish itself in the range of another subspecies that had disappeared.*

Wide-ranging wolves from the former BRWRA affirm Nowak's expectation about range expansion and indicate that the subspecies' current range extends north of the historical range proposed by Parsons (1996). Two wolves from the BRWRA traveled to the edge of the historical range and two beyond that range. The wolf's ability to colonize distant, unoccupied habitat is well known (Mech and Boitani 2003) and is one reason why the USFWS recognizes the importance of long distance movements by gray wolves for defining the boundaries of recovery areas (U.S. Fish and Wildlife Service 2009:15126 – 15127). It is quite possible that the four wolves that are known to have traveled considerable distances from the BRWRA could have survived and reproduced (assuming the presence of other Mexican wolves) in areas well outside the historical range if they had not been captured and returned to the BRWRA (USFWS 2012:70). ***The proximity of the BRWRA population increases the likelihood that northern Arizona/southern Utah and northern New Mexico/southern Colorado the area will be part of the subspecies future range due to similar forays by other young dispersing wolves*** (USFWS 2012:71).

3. Mexican Wolf is Capable of Living as Far North as Southern Utah and Southern Colorado (see Wolves and Prey; USFWS 2012:71).
Hendricks et al. (2015) notes that numerous abiotic and biotic factors such as prey base and land use patterns should be investigated before reintroductions are implemented (e.g. Carroll et al. 2014), but several locations identified as suitable by models have already been shown to have abundant prey, appropriate habitat, low human density, and high connectivity to additional suitable habitat identified by spatially-explicit population models (Sneed 2001; Carroll et al., 2006, 2014).

Given the close proximity of Mexican wolf habitats to a southern-expanding population of northern gray wolves (*Canis lupus irremotus*) now in the U.S.,

admixture zones may develop between these subspecies (see discussion above). Such admixture occurred historically as shown by genetic analysis (Leonard et al., 2005) and is allowable under the SPS approach that is inclusive of past historical processes at the population level. Despite a recent ruling that extends the Mexican Wolf Experimental Population Area (USFWS 2015), the USFWS prohibits natural reintroduction and expansion of Mexican wolves to areas in northern Arizona and New Mexico as well as southern California and western Texas. This limits the movement of a subspecies that had historically and naturally occurred across much of the southwestern U.S. and inhibits admixture for the foreseeable future. Importantly, admixture may lead to enhanced opportunities for selection to craft appropriate phenotypes (Hendricks et al. 2015:53).

4. Mexican Wolf is in Greatest Need of Conservation Assistance (USFWS 2012:71). As noted previously (see Taxonomy and Distribution) early taxonomists identified five gray wolf subspecies that inhabited the southwestern US including three (*C. l. mogollonensis, C. l. monstrabilis, C. l. youngi*) that have been have been extinct for decades and a fourth (*C. l. nubilus*) that is represented in the wild by a robust population in the western Great Lakes states and eastern Canada. This subspecies was extirpated from the southwestern U.S. over 50 years ago (Brown 1983, Robinson 2005). The Mexican wolf (*C. l. baileyi*,), the fifth southwestern subspecies, represents the only, albeit small, wild population in the BRWRA (see Current Population and Trends). Given its precarious status in the wild, the Mexican wolf has been targeted as a conservation priority by the Wolf Specialist Group for the International Union for the Conservation of Nature (IUCN) (Phillips et al. 2000, citing L.D. Mech, pers. comm.). ***The inclusion of northern Arizona/southern Utah and northern New Mexico/southern Colorado in the Mexican wolf recovery area is strongly indicated from a conservation perspective***.

5. Including Areas in Recovery That Are Located Outside the Historical Range for the Mexican Wolf is Consistent With the Best Available Science (USFWS 2012:71)
The several habitat suitability assessments conducted over the last 20 years demonstrate that three major core areas of suitable habitat exist in the area encompassing the Mexican wolf's historical range and adjacent areas in Arizona, New Mexico, southern Colorado and southern Utah that are capable of supporting Mexican wolf populations of sufficient size resulting in recovery. The preponderance of two of the core areas—Grand Canyon Ecoregion and southern Colorado—lie outside of the so-called Mexican wolf historic range. The Grand Canyon and adjacent public lands in northern Arizona and southern Utah may have the highest probability of supporting a successful reintroduction outside of the Blue Range-Gila region and possesses a significant, perhaps greatest effect on enhancing regional wolf populations through dispersal (Carroll et al. 2005, 2006; USFWS 2012).

B. Relevance of Historical Range

More broadly, defining a recovery area that extends outside a species or subspecies historical range following a comprehensive assessment of historical, contemporary, and future conditions is supported by leading ecological research (Lomolino 2006).

In an increasingly dynamic and uncertain world (Dimento and Doughman 2007, Brown 2011, Orr 2010), recovering taxa outside purported historical ranges based on diligently assembled scholarship from the best available science is often times justified (Lomolino 2006). This will likely be especially true for species, such as wolves, that are defined by ecologically similar subspecies with historical distributions that included extensive zones of intergradation. Such an approach to recovery will allow such species (or subspecies) to experience greater security than a restricted approach based on an exclusive focus on subspecies' historical ranges. The Mexican wolf is such subspecies: it arises from a species that is defined by many subspecies all of which were ecological generalists with historical ranges that included wide zones of ecologic and genetic integradation (Brewster and Fritts 1995, Mech and Boitani 2003:11 17, Von Holdt et al. 2011, Chambers 2012).

Due to climate change, increasing aridity in the southwestern U.S. is projected (Notaro et al. 2012). Consequently, the establishment of populations at or beyond the northern limit of the historical range is an appropriate plan to increase recovery success and metapopulation resilience (Carroll et al. 2014). Furthermore, most of the historic range in Mexico currently appears unsuitable due to human activity and there is a high probability of anthropogenic wolf mortality (Aniza et al. 2012). This supports the scientifically credible recommendation to consider additional U.S. reintroduction sites, despite most of the historic range occurring within Mexico's borders (Hendricks et al. 2015:53).

Significantly, defining a Mexican wolf recovery area that extends outside the historical range for the subspecies is consistent with the conclusion reached by the IUCN Conservation Breeding Specialist Group and other experts involved in a comprehensive wolf population and habitat viability analysis (Phillips et al. 2000). Additionally, it is consistent with the findings of the science and planning subgroup of the recovery team that was assembled to develop a recovery plan for the gray wolf southwestern distinct population segment (DPS) that was adopted by the USFWS in 2003 and included the southern half of Utah and Colorado (Federal Register 68:15804-15875). Members of that subgroup concluded that *C. l . baileyi* was the most appropriate source stock for recovering the DPS (U.S. Fish and Wildlife Service 2003; USFWS 2012:72).

Importantly, ecological degradation of historic Mexican habitat convinced the USFWS Science and Planning Subgroup (SPS) that ***defining a recovery area for the Mexican wolf that focused solely on historical range would preclude recovery*** (USFWS 2012:72). That threat is reason enough to include the recovery zones north of Interstate Highway 40 identified by SPS (USFWS 2012).

Finally, the USFWS's plan fails to provide any explanation for why it completely disregarded habitat in the recovery plan. The draft plan admits that the Draft Biological Report considers "adequate habitat availability/suitability" to be one of four stressors (USFWS 2017;18) and then promptly dismisses it as a threat to be considered within the context of the plan (Ibid.) The decision to ignore this stressor

entirely and not include habitat expansion, improvement, and diminished habitat threats as important to the recovery strategy (i.e. resiliency, redundancy) is unexplained. There is no reason provided in the plan for omitting this important part of the problem of Mexican wolves (i.e. reducing other land uses that impair conservation/recovery through prey displacement and social intolerance) from the potential actions necessary to achieve the conservation and recovery of the species. There are notably no habitat-based objectives in the plan, such as protecting denning habitat from livestock threats, minimizing the threats of increased predation through carcass disposal, etc.

The Service also arbitrarily determines that habitat destruction, modification and curtailment (Factor A under the five factor test) are not threatening or endangering Mexican wolf (USFWS 2017:18), but it has failed to consider that curtailment **by its own northern boundary** is a threat. Given the scientific evidence that expanded ranges and numerous core populations must occur to ensure the viability of the species, the limitation that the Service has imposed on Mexican wolves is indeed a threat.

V. Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands (Nie et al. 2017:95; Greaves 2009;919,931).

The Federal Register announcing the Mexican Wolf Draft Recovery Plan, First Revision states "New Mexico and Arizona, and the Mexican government, will ***determine the timing, location and circumstances of releases of wolves into the wild within their respective states***" (USFWS 2017b: 29920). This proposed action repeats a failed earlier attempt by the USFWS to extricate itself from fundamental federal responsibilities resulting a lawsuit and settlement agreement disallowing this action (Greaves 2009).

Congress passed the Endangered Species Act (ESA; 16 U.S.C. §§ 1531–1543) in 1973 "to provide a program for the conservation of ... endangered species and threatened species" and "to provide a means whereby the ecosystems upon which endangered...and threatened species depend may be conserved" (16 U.S.C. § 1531(b)). The ESA establishes an affirmative obligation for the federal government to use "all methods and procedures which are necessary to bring any [listed] species to the point at which the measures provided in this [act] are no longer necessary,"[19] and states that "all federal departments and agencies shall seek to conserve endangered ... and threatened species" (16 U.S.C. § 1531(c)). "Conserve" and "conservation" are defined by the statute as using "all methods and procedures which are necessary to bring any endangered ...or threatened species to the point at which the measures provided" by the statute are no longer necessary (16 U.S.C. § 1532(3)).

[19] 16 U.S.C. §1532(3). The goal of the statute is not to "list" species but to recover their populations so that they can be "delisted".

The ESA carved out a role for the states *to assist* in achieving the ESA's protective purposes by providing that, in carrying out the statute, the USFWS should cooperate "to the maximum extent practicable with the States"(16 U.S.C. § 1535(a). Through this provision Congress recognized the expertise of state agencies and required USFWS to solicit and ***consider*** relevant information from them. Even through Congress encourages cooperation, the secretary may not abdicate his or her affirmative duty to administer the Mexican wolf recovery program (Greaves 2009:919). To our knowledge, no relevant statute *requires* the federal government to follow state preferences (Nie et al. 2017:124). And in all cases the statutes do not *permit* the federal agency to relinquish its statutory obligations (Nie et al. 2017:124; Greaves 2009:931).

Bluntly stated, the decision to allow the states veto power on timing, location and circumstances of Mexican wolf releases weakens federal authority over the program, undermining the most crucial aspect of genetic recovery (releases) of the wild population based on political support by non-elected officials in state wildlife agencies. ***The "optimism" of USFWS about state cooperation must not outweigh the clear history of state interference in Mexican wolf recovery***.

A. Recovery Run AMOC

In 2003, the Mexican Wolf Recovery Program was restructured to allow states and tribes to assume lead responsibility for implementing the Blue Range Wolf Recovery Area (BRWRA) Reintroduction Project on lands under their jurisdiction. Under this structure the Project was managed jointly by the Arizona Game and Fish Department (AZGFD), New Mexico Department of Game and Fish (NMDGF), along with several federal agencies including the USFWS. Other cooperators include Graham, Greenlee, and Navajo Counties in Arizona, Sierra County in New Mexico, and the New Mexico Department of Agriculture. The agencies were directed to work together under a Memorandum of Understanding (MOU), which defined and formalized the role of each cooperator in the resulting "Adaptive Management Oversight Committee," or AMOC program (Greaves 2009). Conservationists became alarmed that this arrangement apparently required federal agency subservience to the other signatories in every respect relevant to successful wolf recovery ultimately jeopardizing recovery of the Mexican wolf (Greaves 2009:920). We also believed this abdication of federal responsibility was illegal and USFWS, under pressure from the courts, apparently agreed and subsequently disbanded the program (USFWS 2011:9; Parsons 2008).

Perhaps the strongest evidence of why there remains a concern about the lack of federal oversight can be found in examining the AMOC'S adverse effects on the Mexican Wolf population. While the AMOC promulgated several standard operating procedures (SOPs), the procedure that received the most criticism was SOP 13.0, or the "Control of Mexican Wolves" (Parsons 2008; Greaves 2009:922-23). SOP 13.0's most controversial and damaging provision was the requirement that "[w]olves known or likely to have committed three depredation incidents within a period of

365 days shall be permanently removed from the wild as expeditiously as possible." This draconian mandate flew in the face of emphatic recommendations by expert scientific opinion (Paquet et al. 2001) and appeared to deny federal intervention on actions believed detrimental to wolf recovery (Greaves 2009:925).

Before the USFWS abdicated control of the reintroduction program to the multi-agency AMOC, the Mexican wolf population in the wild precisely matched the projection under the original Environmental Impact Statement.[20] Under AMOC control the BRWRA population of Mexican wolves actually declined between 2003 and 2009 (Parsons 2013; Greaves 2009:929). In July 2009 the U.S. District Court for the District of Arizona consolidated two lawsuits filed by multiple conservation groups[21] alleging, among other concerns, that the Service violated the National Environmental Policy Act, Endangered Species Act and Administrative Procedures Act in creating AMOC and authorizing Standard Operating Procedure 13. In December 2009 the Service finalized a settlement agreement with plaintiffs. In the Consent Decree, the Service agreed to reclaim its decision-making authority and at year's end the USFWS was no longer a signatory to the MOU that established AMOC (USFWS 2011:6,9).

Following the return of USFWS responsibility for wolf recovery through the litigation settlement agreement, the population has increased annually (Parsons 2013; AZGFD 2017). Given this record of performance of the AMOC and the fact that the states demonstrated hostility (see "State Opposition" section below) to wolf recovery, we again remind the USFWS of its authority and responsibility to "determine the timing, location and circumstances of releases of wolves into the wild."

VI. State Opposition to Wolf Recovery[22]

The draft plan would allow Mexican wolves to lose ESA protection with only 320 in the United States—fewer than half the number that scientists say are needed—with another small isolated population of 170 in Mexico. At that time, the states would assume full management responsibility for Lobo survival. ***That prospect, based on the states' record opposing wolf recovery outlined below, affords a recipe for extinction, not recovery.***

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[20] USFWS 2014, Chapter 1, page 21, Table 1-4 (Population Projections Compared to Mexican Wolf End of Year Minimum Population Counts in New Mexico and Arizona from 1998 to 2013); Year 2003; Minimum population count (observed) 55; Population Projected in the 1996 Final Environmental Impact Statement (USFWS 1996).

[21] The plaintiffs in the case were Defenders of Wildlife, Center for Biological Diversity, Western Watersheds Project, New Mexico Audubon Council, New Mexico Wilderness Alliance, University of New Mexico Wilderness Alliance, The Wildlands Network, Sierra Club, Southwest Environmental Center, and Grand Canyon Wildlands Council.

[22] See Lobos of the Southwest, 2017, Whose Side Are They On? States' Efforts to Derail Wolf Recovery. http://mexicanwolves.org/uploads/Four_States_Derail_Wolf_Recovery.pdf

Ignoring the legal requirement that endangered species recovery must be based on the best available science, the four states offering the best chances for the Lobo's survival, via a letter signed by the governors of each, insisted that the majority of Mexican wolf recovery must occur in Mexico[23] despite peer-reviewed science showing that habitats in Mexico alone cannot support enough wolves to prevent extinction (Carroll et al. 2014).

In spite of strong public support for wolf recovery in the states of Arizona[24] and New Mexico[25] where wolves live now, and Utah,[26] and Colorado,[27] where the best science indicates they will need to expand in the future, state game agencies have been actively sabotaging the wolves' chances for long-term survival: spending tax payer money on anti-wolf lobbyists,[28] supporting increased killing of wolves,[29] denying permits and suing the federal government to stop needed wolf releases.[30]

a) Arizona Opposition to Wolf Recovery

Although the world's wild Lobo population hovered around only 50 wolves in 2010, Arizona Game and Fish Department (AZGFD) asked congress to remove all federal

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[23] November 2015 letter from the Governors of Arizona, New Mexico, Colorado and Utah to Secretary of the Interior Sally Jewel and US Fish and Wildlife Director Dan Ashe " . . . recovery of the Mexican wolf cannot and will not be achieved if the Service does not recognize that the majority of Mexican wolf recovery must occur in Mexico. . . . [Mexico] must be home to the lion's share of on-the-ground Mexican wolf recovery.

[24] See 2008, Research and Polling, Inc., page 12, http://www.mexicanwolves.org/pdf/Reading17WolfSurveyAZ.pdf; and 2013, Tulchin Research, page 3. http://www.mexicanwolves.org/uploads/polling/Polling%20memo%20AZ%20NM%202013.pdf

[25] See 2008, Research and Polling, Inc., page 12. http://mexicanwolves.org/pdf/Reading18WolfSurveyNM.pdf; and 2013,Tulchin Research, page 3. http://www.mexicanwolves.org/uploads/polling/Polling%20memo%20AZ%20NM%202013.pdf

[26] Are Attitudes toward Wolves Changing? A Case Study in Utah. Bruskotter, J.T., R.H. Schmidt, R.H., and T.L. Teel. 2007. *Biological Conservation* 139: 211-218.

[27] Peak Campaigns. 2013. Poll conducted for Defenders of Wildlife, February 10-11, 2013.

[28] Legislators steering another $300,000 to anti-wolf crusade, By Brian Maffly, The Salt Lake Tribune, Mar 07 2013. http://archive.sltrib.com/story.php?ref=/sltrib/politics/55960783-90/300000-anti-contract-game.html.csp

[29] See cover letter to Benjamin Tuggle, April 15, 2014. Arizona Game and Fish Department is the first signatory. Letter accompanies "Mexican wolf management in Arizona and New Mexico: A Cooperating Agencies Alternative," 15 April 2014. See Cooperating Agencies Alternative: " . . . removals will occur as necessary to reduce the state-wide population to no more than 150 wolves " (page 8, 5a). These removals would include killing; see page 8 5b iv and v. See page 8, 9. For removals due to depredations, and page 18, bb. (iii) for removal of entire families including pups. For elk removals including removing wolves down to a population of 100 in the state, see page 22, (e). For killing wolves "to avoid conflict with human activities" see page 24, (ii).

[30] Opening brief for the U.S. Department of the Interior *et al*., filed in the Tenth Circuit Court of Appeals on appeal of the U.S. District Court ruling granting New Mexico a preliminary injunction against wolf releases in the state, Appeal Nos. 16-2189 & 16-2202, September 9, 2011, see pages 7-15. Also, Reply brief for New Mexico Department of Game and Fish, filed in U.S. District Court in support of its motion for a preliminary injunction, Case No. 1:16-cv-00462-WJ-KBM, May 25, 2016, see page 6.

protections for this critically endangered mammal.[31] As discussed above (AMOC, pages 25-26), AZGFD leadership of the wolf reintroduction program from 2003 through 2009 resulted in the wild population dropping from 55 to 42. Only when the USFWS resumed control of the program in 2009 did the wolf population rise from 50 to 113 by 2017.

In February 2017, Arizona Senator Jeff Flake introduced the so-called "Mexican Wolf Recovery Act—Senate Bill S.368—which was immediately labeled a "hostile takeover" of the Lobo recovery planning effort.[32] Conservationists correctly pointed out that the "bill… would give unchecked power in Mexican gray wolf recovery planning to special interests and Arizona and New Mexico – states that have repeatedly obstructed efforts to recover the critically endangered species." It would further erode federal authority to recover the Lobo, taking wolves off the protected list and exempting judicial review and undermining the checks and balances built into our democratic system of government. After delisting, wolves could theoretically regain ESA protection under criteria agreed to by the livestock industry, anti-wolf hunting groups and the game departments.[33] Arizona Game and Fish Commissioners publically supported Flake's bill and even backed an earlier bill to remove ESA protect and the cap the population at 100.[34]

b) New Mexico Opposition to Wolf Recovery

New Mexico's participation in recovery was minimal until Governor Richardson's Game Commission voted to become more active in field activities. But after Governor Martinez took office in 2011, the commission voted to end state participation in the recovery program and then, after began to actively thwart lobo recovery in the state through legal and administrative actions. From denying a permit to the Turner Ranch for serving as a holding facility pending wolf releases to denying the USFWS permits to release wolves in the state at all, to suing for the *removal* of pups, New Mexico's actions do not suggest an amicable partnership in wolf recovery, and the plan's abdication of authority to this state puts the future of Mexican wolves on unstable footing.

New Mexico has also persisted in allowing the use of leg-hold traps, a bodily threat to Mexican wolves within the MWEPA, including reversing a ban on such devices that was in place under Governor Richardson.

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[31] See 7 December 2010 letter from AZ G&F Department Director Larry Voyles, on behalf of the commission: "We ask that you help us . . . to delist the wolf rangewide (including the Mexican wolf)."

[32] Mexican Gray Wolves Under the Gun, Defenders of Wildlife https://secure.defenders.org/site/Advocacy?cmd=display&page=UserAction&id=3076; New Bill Aiming to Hijack Lobo Recovery Planning, February 14, 2017, Wolf Conservation Center, https://nywolf.org/tag/mexican-gray-wolf-recovery-plan-act/

[33] Lobos of the Southwest Action Alert, June 20, 2017; http://mexicanwolves.org/index.php/news/1726/51/Arizona-Action-Alert

[34] http://www.azcentral.com/story/news/politics/arizona/2016/08/12/arizona-lawmakers-want-control-endangered-mexican-gray-wolves/88544828/.

c) Colorado Opposition To Wolf Recovery

Colorado is home to spectacular wildlife and wildlands and contains more public land and prey for wolves than anywhere else in the U.S. (Phillips 2017). Unfortunately, its wildlife-friendly reputation does not extend to wolves. The state has a long history of opposing active reintroduction of wolves, and after scientists identified habitats in southern Colorado as vital to the recovery of Mexican wolves, Colorado Parks and Wildlife increased its efforts to keep lobos out of the state, endangering their survival and recovery (Lobos of SW 2017).

The Colorado Division of Parks and Wildlife (CPW) opposed the Science and Planning Subgroup (SPS) recommendations to include Colorado as an essential ecological component (PEER 2012:5).[35] In January 2016, the Colorado Parks and Wildlife Commission passed a resolution opposing the release of any wolves into Colorado[36] despite of strong (70%) support by Coloradans for wolf restoration.[37]

d) Utah Opposition to Wolf Recovery

Utah can contribute significantly to saving wolves, and habitats in southern Utah are particularly vital to the Mexican gray wolf. But ever since the reintroductions of northern gray wolves to Yellowstone, and Mexican gray wolves to Arizona and New Mexico, Utah officials have worked to sabotage wolf recovery (Lobos SW 2017).

Utah threatened litigation if the Mexican Wolf Recovery Plan includes essential southern Utah habitat. The Utah Division of Wildlife Resources (DWR) insisted "[i]dentification of areas outside the historic range of the sub-species as part of the recovery area is inappropriate and will be vigorously apposed [sic] (legally and politically) by the Utah Division of Wildlife Resources and the State of Utah."[38]

Utah congressional representatives are notoriously anti-wolf and anti-ESA; allowing these officials to set arbitrary management boundaries is antithetical to the best available science requirements of the ESA.

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[35] October 2011 comments submitted by Colorado Division of Parks and Wildlife to USFWS on draft Mexican Wolf recovery plan; see PEER 2012:5.

[36] Resolution 16-01 Regarding Introduction/Reintroduction of Wolves. Signed 13 January 2016. [Colorado Parks and Wildlife Commission] "opposes the intentional release of any wolves into Colorado, recommends that Mexican wolf recovery be confined to the subspecies' historic range . . ." http://cpw.state.co.us/Documents/Commission/policy_procedures/PWC_Resolution_Wolves_in_Colorado.pdf

[37] Peak Campaigns. 2013. Poll conducted for Defenders of Wildlife, February 10-11, 2013.

[38] The Utah Division of Wildlife Resources, as part of their participation on the Mexican Wolf Recovery Team, submitted comments on the 16 November 2011 draft recovery plan. The comments were submitted as Adobe Acrobat "sticky notes" on the PDF document. See file UTAH TextDraftRecoveryPlan16092011_UDWR Comments. On page 1 of the plan, linked to the phrase "southern portions of Utah and Colorado" the UDWR comments "Identification of areas outside the historic range of the sub-species as part of the recovery area is inappropriate and will be vigorously apposed [sic] (legally and politically) by the Utah Division of Wildlife Resources and the State of Utah."

VII. Summary

We implore the U.S. Fish and Wildlife Service to revise the Draft Mexican Wolf Recovery Plan (USFWS 2017) to address ours concerns presented above, and specifically those summarized below.

A. Utilize the Best Available Science

As describe above, the process for developing the draft revised recovery plan, developed by USFWS with public trustee responsibility over endangered wildlife in the United States, has raised serious doubts regarding the plan's scientific credibility. Based on the concerns regarding development of the 2017 Draft Mexican Wolf Recovery Plan, First Revision (USFWS 2017) described above, and pending findings of an independent scientific peer review described above as well, the USFWS must replace the recovery criteria presented in the draft revised recovery plan with criteria developed through three decades of credible scientific analysis culminating in recommendations by the 2010-13 Mexican Wolf Recovery Team Science and Planning Subgroup (USFWS 2012,2013). This includes:

- Suitable habitats necessary for recovery of Mexican wolves lying north of I-40 in the U.S. have been unscientifically and politically excluded from consideration. The revised recovery plan must include effective measures to restore wolves to suitable habitats north of I-40 as identified in the draft recovery plan submitted by the SPS of the 2010-13 Mexican Wolf Recovery Team.
- Regardless of the scientific underpinnings of other input parameters, capping the output of the Vortex PVA model by inserting arbitrary "management targets" that are unsupported by any relevant science disqualifies the entire Vortex PVA process and outputs from representing any semblance of the "best available scientific and commercial data" required by the ESA. The most thoroughly vetted and transparent process produced the imperative of establishing ***a minimum of three U.S. primary core populations with a total metapopulation of at least 750 individual wolves.***
- We further request that those who actually contributed directly to the writing or were given an opportunity to review, edit, suggest edits, or provide comments on the internal working draft of the recovery plan be specifically identified by name and institution**.** Such disclosures and transparency would be consistent with Department of Interior policy on scientific integrity as set forth in *Departmental Manual 305DM3.*
- We request a full analysis of the scientific evidence and justification for the numbers chosen as management targets for input into the Vortex PVA model.

B. Reaffirm Federal Responsibility to Recovery the Mexican Wolf.

The USFWS must clearly articulate its affirmative, non-discretionary obligation under the ESA to use "all methods and procedures which are necessary to bring any [listed] species to the point at which the measures provided in this [act] are no

longer necessary" (16 U.S.C. § 1531(c)).[39] This responsibility lies with the federal agency and cannot be delegated to the states.

Thank you again for this opportunity to comment. In addition to this copy submitted electronically to www.regulations.gov, we are sending a hardcopy plus a copy with references on a usb drive via FedEx to the Falls Church address.

Sincerely,

Kim Crumbo, Western Conservation Director, Wildlands Network

Kelly Burke, Executive Director, Grand Canyon Wildlands Council

Kirk Robinson, Executive Director, Western Wildlife Conservancy

Greta Anderson, Deputy Director, Western Watershed Project

Bob McPherson, Ph.D., Private Citizen, Albuquerque, New Mexico

Sandy Bahr, Chapter Director, Grand Canyon Chapter, Sierra Club

Delia G. Malone, Wildlife Committee Chair, Colorado Chapter, Sierra Club

Mary Katherine Ray, Wildlife Chair, Rio Grande Chapter, Sierra Club

Marc Thomas, Chair, Utah Chapter, Sierra Club

Shelly Silbert, Executive Director, Great Old Broads for Wilderness

Peter M. and Jean Ossorio, Private Citizens, Las Cruces, New Mexico

Emily Renn, Executive Director, Grand Canyon Wolf Recovery Project

Kevin Bixby, Executive Director, Southwest Environmental Center

Delia Malone, Chair, Roaring Fork Audubon Society

Billie Hughes, Broadband Leader, Footsteps of Leopold Broadband (Great Old Broads)

Darlene Kobobel, President, Colorado Wolf and Wildlife

Kelly Nokes, Carnivore Advocate, WildEarth Guardians

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[39] 16 U.S.C. §1532(3). The goal of the statute is not to "list" species but to recover their populations so that they can be "delisted."

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