FWS has noted, without a valid recovery plan "to organize, coordinate and prioritize the many possible recovery actions, [a recovery] effort may be inefficient or even ineffective." Interim Endangered and Threatened Species Recovery Planning Guidance, Version 1.3 1.1-1 (June 2010) [hereinafter "Recovery Planning Guidance"]. The Mexican gray wolf reintroduction effort has been "inefficient or even ineffective," because the Service's 1982 "Recovery Plan" document lacks the fundamental scientific basis necessary to "organize, coordinate and prioritize" Mexican gray wolf recovery actions, as well as fundamental requirements such as established criteria that would signify full recovery and support eventual delisting.

38. The 1982 document was drafted without ESA-required recovery and delisting criteria because, at the time of the document's drafting, "the status of the Mexican wolf was so dire that the recovery team could not foresee full recovery and eventual delisting." 78 Fed. Reg. 35,719, 35,726 (June 13, 2013). As a result, the document's authors sought only "to ensure the immediate survival of the Mexican wolf." 2010 Conservation Assessment, at 22. They thus grounded the document in the maintenance of a captive breeding program and a stopgap measure of re-establishing in the wild "a viable, self-sustaining population of at least 100 Mexican wolves." Mexican Wolf Recovery Team, Mexican Wolf Recovery Plan 23 (Sept. 1982) [hereinafter 1982 "Recovery Plan" document].

39. Despite its stopgap nature, that 100-wolf measure has continued to serve as FWS's sole guidepost for the Mexican gray wolf reintroduction effort. As FWS has

stated, aside from the 100-wolf objective, "the gray wolf recovery effort in the Southwest operates without any guidance in terms of the number and distribution of wolves considered adequate for recovery and delisting." 2010 Conservation Assessment, at 7.

40. Yet the 100-wolf objective is admittedly an inadequate guidepost. In this regard, the Service "recognize[s] that the reestablishment of a single experimental population of Mexican wolves is inadequate for recovery and … [is] fully cognizant that a small isolated wolf population such as the experimental population now occupying the [Blue Range Wolf Recovery Area ("BRWRA"), which lies within the MWEPA] can neither be considered 'viable' nor 'self-sustaining'—regardless of whether it grows to a number of 'at least 100.'" U.S. Fish & Wildlife Serv., Final Environmental Impact Statement for the Proposed Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf (*Canis lupus baileyi*) (November 2014) Ch. 1, at 17 [hereinafter FEIS]. FWS has further "acknowledge[d] that this [100-wolf] population target is … insufficient for recovery and delisting of C. l. baileyi, as the subspecies would still be in danger of extinction with a single population of this size." 78 Fed. Reg. 35,664, 35,695 (June 13, 2013) (emphasis added).

41. Since 1982, FWS has convened three recovery teams in an effort to develop a legitimate recovery plan. Three times, FWS has charged those teams with the task of drafting a recovery plan that reflects the best available scientific information. Three times, FWS has failed to issue such a plan.

42. In the first attempt, FWS in 1995 produced a draft recovery plan to supersede the 1982 "Recovery Plan" document. It was never finalized. The FWS Southwest Region convened another recovery team in 2003, but indefinitely suspended that recovery planning process in 2005.

43. FWS initiated the most recent recovery planning effort in 2010 when the Southwest Regional Director charged a Science and Planning Subgroup of the agency's Mexican Wolf Recovery Team with developing a recovery plan consistent with the best available scientific information. That subgroup included an interdisciplinary team of prominent scientists, including some of the world's foremost wolf biologists.

44. The Science and Planning Subgroup drafted a plan that proposed, based on the best available science, a minimum of three interconnected subpopulations, each of at least 200 animals, as part of a metapopulation of at least 750 Mexican gray wolves. A metapopulation consists of a group of distinct, spatially separated populations of the same species that are connected by dispersal. However, within two weeks of the release of a May 7, 2012, draft recovery plan containing this recommendation, FWS's Southwest Regional Director cancelled an upcoming recovery team meeting and effectively suspended the recovery planning process despite disagreement from members of the team who disputed the need to suspend the meetings.

## THE MEXICAN GRAY WOLF REINTRODUCTION PROGRAM UNDER ESA SECTION 10(j)

45. The Mexican gray wolf is one of the most genetically, morphologically, and ecologically distinct lineages of wolves in the Western Hemisphere. It is believed to

be "the only surviving descendant[] of the first wave of gray wolves to colonize North America during the Pleistocene Epoch." Letter from Michael A. Mares, Ph.D., President, Am. Soc'y of Mammalogists, et al., to the Honorable Dan Ashe, Director, U.S. Fish & Wildlife Serv., Re: Recovery Planning for the Mexican Wolf (June 20, 2012). Mexican gray wolves historically inhabited Mexico and the southwestern United States, including portions of Arizona, New Mexico, and Texas. It appears that the subspecies also may have ranged into southern Utah and southern Colorado.

46. Largely at the behest of the livestock industry, the U.S. Biological Survey effectively exterminated the subspecies from the southwestern United States by the mid-1900s. In 1950, FWS (the institutional successor to the Biological Survey) launched a similar campaign in Mexico. According to FWS, the last known wild Mexican gray wolf in the United States was killed in 1970. It is believed that the subspecies was completely extinct in the wild by the mid-1980s.

47. Between 1977 and 1980, five Mexican gray wolves—four males and one female—were captured in Mexico. These wolves were placed in a captive breeding program and became known as the "McBride" lineage. Two other already-existing captive lineages, the "Aragón" and "Ghost Ranch" lineages, were also certified as genetically pure Mexican gray wolves in 1995. All individuals alive today come from a founding stock of seven of these captive Mexican gray wolves: three McBride wolves, two Aragón wolves, and two Ghost Ranch wolves.

48. In 1998, after a near thirty-year absence of Mexican gray wolves from the landscape, FWS released eleven captive-reared Mexican gray wolves under ESA section 10(j) as a nonessential experimental population into the BRWRA in east-central Arizona and west-central New Mexico. See 16 U.S.C. § 1539(j) (the "10(j)" provision for "experimental" populations); 63 Fed. Reg. 1752 (Jan. 12, 1998) (rule for the establishment of a 10(j) population of Mexican gray wolves in Arizona and New Mexico); see also 50 C.F.R. § 17.84(k)(9).

49. As described by FWS in the 1982 "Recovery Plan" document, the original, stopgap objective of the reintroduction effort was to achieve "a viable, self-sustaining population of at least 100 Mexican wolves" in the wild. 1982 "Recovery Plan" document, at 23. As of the Service's most recent population report in December 2013, the reintroduction program has fallen well short of that target, with only 83 individuals in the wild. At the end of 2013, the wild Mexican gray wolf population was neither viable nor self-sustaining. At its current size and level of genetic variation, the Mexican gray wolf population is "considered small, genetically impoverished, and significantly below estimates of viability appearing in the scientific literature." FEIS, Ch. 1, at 22. FWS has admitted that "[t]his would be true even at the 1982 Recovery Plan objective of 'at least 100 wolves.'" Id.

50. Several factors have contributed to the limited success of the reintroduction effort. Many are attributable to the actions—and failures to act—of FWS itself. Specifically, FWS has failed to respond to mounting genetic issues, inappropriately

limited the geography in which Mexican gray wolves can be released and can reside, excessively removed wolves from the wild, and failed to effectively respond to an extremely high level of illegal wolf mortality. These problems will persist—and may even be exacerbated—under the revised 10(j) rule.

***Genetic Problems***

51. The genetic challenges to Mexican gray wolf recovery largely stem from the small number of individuals that remained in existence when conservation efforts for this subspecies began. The extremely small number of founders in the captive breeding population (i.e., the Mexican gray wolves from which all individuals living today descend) has raised significant concerns about the long-term genetic health of the Mexican gray wolf subspecies. As FWS explains, "[t]he small number of founders upon which the existing Mexican wolf population was established has resulted in pronounced genetic challenges, including inbreeding (mating of related individuals), loss of heterozygosity (a decrease in the proportion of individuals in a population that have two different [variants of] a specific gene), and loss of adaptive potential (the ability of populations to maintain their viability when confronted with environmental variations)." FEIS, Ch. 1, at 4.

52. Inbreeding was a concern with the McBride lineage, which was founded by only three individuals. Indeed, by the mid-1990s, McBride pups had inbreeding levels "similar to … offspring from … full sibling or parent-offspring pairs." 78 Fed. Reg. at 35,704. In 1995, the captive breeding program integrated the Aragón and Ghost Ranch

lineages—both of which were also highly inbred—into the McBride lineage in an attempt to increase the overall genetic diversity of the founder population. After this integration of the three lineages, specific breeding protocols and genetic goals were established to inform Mexican gray wolf pairings.

53. Unfortunately, while the captive breeding facilities have more recently managed the Mexican gray wolf breeding program to preserve as much genetic diversity as possible, much of the genetic potential of the founding stock has been lost. The loss of genetic potential is the result of the small number of founder wolves, the fact that "[t]he Mexican wolf captive breeding effort … was not managed to retain genetic variation until several years into the effort," and the failure of the reintroduction program to facilitate the rapid expansion of a genetically diverse wild Mexican gray wolf population. FEIS, Ch. 1, at 20. Today, "[t]he captive population is estimated to retain only 3.01 founder genome equivalents, suggesting that more than half of the alleles (gene variants) from the seven founders have been lost from the population." 78 Fed. Reg. at 35,705. In other words, despite the fact that the founding stock for the current population consisted of seven individual wolves, the captive Mexican gray wolf population today retains the genetic material of only approximately three individual founders.

54. The wild population is in even worse genetic shape than the captive population. According to FWS, the wild population "has poor representation of the genetic variation remaining in the captive population. The wolves in the experimental population have Founder Genome Equivalents (FGE) that are 33 percent lower than

found in the captive population and the estimated relatedness … of these animals suggest that on average they are as related to one another as … full siblings are related to each other." FEIS, Ch. 1, at 20-21. FWS has acknowledged that "[w]ithout substantial management action to improve the genetic composition of the [wild] population, inbreeding will accumulate and … [genetic material] will be lost much faster than in the captive population." 78 Fed. Reg. at 35,706.

55. As would be expected in the present circumstances, there is already "evidence of strong inbreeding depression in the reintroduced [Mexican gray wolf] population," including reduced litter size and reduced pack size. 78 Fed. Reg. at 35,706. In other words, inbreeding has reduced the reintroduced Mexican gray wolves' ability to survive and reproduce. FWS has emphasized that "[h]igher levels of genetic variation within the experimental population are critically important to minimize the risk of inbreeding and support individual fitness and ecological and evolutionary processes." FEIS, Ch. 1, at 20. Unless rectified, the current "level of inbreeding depression may substantially reduce the viability of the population" and "limit the ability of future Mexican wolf populations to adapt to environmental challenges." 78 Fed. Reg. at 35,706. That is, inbreeding may result in a Mexican gray wolf population that suffers from both a genetically based reduction in survival and reproduction potential, and—again because of its genetic limitations—a reduced ability to respond to environmental changes.

56. To maximize genetic potential and prospects for recovery, FWS must commit to an active program of releasing genetically diverse wolves into the wild,

capitalizing on the genetic potential now available in the captive population before it is further depleted. Such releases, if managed properly, would promote "[r]apid expansion of the population …[,] further promot[ing] maintenance of genetic diversity." 2010 Conservation Assessment, at 60. Rapid expansion is critical because it will allow the released wolves to reproduce and express the full spectrum of remaining genetic potential—something they are unable to do in captivity due to constraints on the number of breeding facilities and holding space. In addition to minimizing the loss of genetic potential, it is critical to release more wolves into the wild in a timely fashion because "[i]f captive Mexican wolves are not reintroduced to the wild within a reasonable period of time, … physical … or behavioral changes resulting from prolonged captivity could diminish their prospects for recovery." 63 Fed. Reg. at 1755. As FWS itself said in 2010, "[t]he longer … threats [to the Mexican gray wolf] persist, the greater the challenges for recovery, particularly as related to genetic fitness and long-term adaptive potential of the population." 2010 Conservation Assessment, at 78.

57. Under the FWS's revised section 10(j) rule, the agency would maintain a single experimental Mexican gray wolf population of 300-325 individuals in the MWEPA and successfully integrate a small number of captive wolves into the population per generation. FEIS, Exec. Summary, at ES-8; id., Ch. 1, at 22. However, the FEIS for the revised rule ignores the substantial risk that a single, isolated population of wolves with a low level of genetic diversity, supplemented by an extremely low level of releases

of captive wolves, is insufficient to support the survival or recovery of the species in the wild.

***Excessive Removals, Insufficient Releases & Illegal Mortality***

58. The genetic impediments to recovery described above are exacerbated by extremely high levels of Mexican gray wolf take and removal from the wild. One of the reasons FWS reintroduced Mexican gray wolves as an ESA section 10(j) nonessential, experimental population was to "enable[] the Service to develop measures for management of the population that are less restrictive than the mandatory prohibitions that protect species with 'endangered' status. This includes allowing limited 'take' … of individual wolves …." 63 Fed. Reg. at 1754. FWS deemed such "[m]anagement flexibility" necessary "to make reintroduction compatible with current and planned human activities, such as livestock grazing and hunting" and "to obtain[] needed State, Tribal, local, and private cooperation." Id. FWS believed such "flexibility [would] improve the likelihood of success" of the reintroduction program and, ultimately, Mexican gray wolf recovery. Id. Unfortunately, as the past sixteen years have demonstrated, this management flexibility has not resulted in a successful reintroduction program. Instead, the reintroduction effort currently teeters on the brink of failure and the subspecies' recovery prospects remain in jeopardy.

59. Since reintroduction began, removal of Mexican gray wolves from the wild, whether by agency-authorized action or illegal killing by members of the public, has exacted a heavy toll on the Blue Range population. FWS itself removed 160 Mexican

gray wolves from the reintroduced population since 1998. Of these, FWS has killed or ordered the killing of twelve wolves and consigned twenty-four once-wild wolves to permanent captivity. The remaining 124 instances of removal were temporary removals, meaning those wolves remained theoretically eligible for translocation. However, some temporarily removed wolves, "while eligible for translocation, have been removed from consideration for future release." U.S. Fish & Wildlife Serv., Outcomes of Mexican Wolf Management Removals from the Blue Range Population, Arizona and New Mexico, 1998-2013 (Dec. 31, 2013). Such removal of Mexican gray wolves from the wild "[has] the same practical effect on the wolf population as mortality if the wolf is permanently removed." 2010 Conservation Assessment, at 61. Indeed, FWS has identified "[t]he high number of wolf removals … as a contributing factor hindering the population's growth." Id. at 55.

60. Wolves that are killed or permanently removed from the wild are no longer able to genetically enrich the reintroduced population. Nevertheless, to date, FWS has shown little regard for the genetic contribution or importance of individual wolves in authorizing take or removal. For example, in November 2007, FWS permanently removed the alpha male from the Aspen pack—then the most genetically valuable pack in the reintroduced population. In December of that year, it permanently removed the Aspen pack's alpha female and a yearling female, and temporarily removed several pups.

61. As FWS has recognized, "[t]he ability of management to address inbreeding depression in the Blue Range population is constrained by regulatory and

discretionary management mechanisms that do not incorporate consideration of genetic issues yet result in limitation or alteration of the genetic diversity of the population. … The … Mexican Wolf [Species Survival Plan program, a bi-national cooperative conservation program overseen by the Association of Zoos and Aquariums that manages the species' breeding so as to maintain a healthy, genetically diverse, and demographically stable population,] has recommended that until the representation of the Ghost Range and Aragon lineages has increased and demographic stability is achieved in the wild population, careful consideration of genetic diversity should be prioritized during decisions to permanently remove wolves." 2010 Conservation Assessment, at 60. Nevertheless, "[t]he Service has not developed any specific protocols to promote genetic fitness in the population in response to recent research and professional recommendations." Id. The absence of such protocols is particularly problematic because high levels of illegal killing of Mexican gray wolves coupled with the Service's lenient take provision and its inadequate record of releasing new wolves into the wild (only four new wolves have been released since 2008) mean that the genetic issues only stand to worsen and become harder to remedy.

***Wolves' Inability to Roam***

62. Even for Mexican gray wolves that are released or born into the wild and that persist, the road to recovery is daunting. To date, FWS has confined the wolves to an ecologically arbitrary geography that impedes the subspecies' recovery.

63. FWS's 1998 10(j) rule did not permit wolves to establish territories wholly outside the BRWRA boundary. When wolves attempted to establish territories outside this ecologically arbitrary boundary, FWS captured and relocated them. This boundary restriction "does not allow for natural dispersal movements from the BRWRA or occupation of the [larger MWEPA]." 78 Fed. Reg. at 35,727. This limitation hindered Mexican gray wolf recovery by preventing natural wolf behavior, i.e., wide-ranging dispersal to find unoccupied territories with sufficient prey, denning sites, and other basic life necessities.

64. If wolves are not allowed to disperse more widely, it is highly unlikely that a viable, self-sustaining population will ever be established. Experts have long counseled and FWS has acknowledged that the long-term conservation of the Mexican gray wolf will likely "'depend on establishment of a metapopulation or several semi-disjunct but viable populations spanning a significant portion of [the species'] historic range.'" FEIS, App. G, at 28 (citation omitted). Independent scientists have recently echoed this advice in a peer-reviewed scientific journal publication that FWS itself has cited as an authoritative source of the best available scientific information. The independent scientists stated that "viability of the existing wild population is uncertain unless additional populations can be created and linked by dispersal." Carlos Carroll et al., Developing Metapopulation Connectivity Criteria from Genetic and Habitat Data to Recover the Endangered Mexican Wolf, 28 Conservation Biology 76, 84 (2014) ("Carroll et al. (2014)"). As FWS has explained, "[f]or a species that has been extirpated from so

much of its historic range, explicit effort must be made to recreate redundancy" (where "[r]edundancy refers to the existence of redundant, or multiple, populations spread throughout a species' range"). 2010 Conservation Assessment, at 68, 72 (emphasis omitted).

65. Generally speaking, well-connected metapopulations are better able to withstand less favorable demographic rates (e.g., birth rate, fertility rate, life expectancy) and catastrophic environmental events (e.g., wildfire, disease outbreak) than are isolated populations. This is because (1) connectivity facilitates gene flow as individuals move among populations, which reduces the severity and effects of inbreeding, and (2) the existence of multiple populations helps to ensure that the species is not wiped out if a catastrophic event decimates one of the populations. A well-connected metapopulation is especially important for the recovery of the Mexican gray wolf, which right now exists in the wild as one extremely small, isolated, and genetically-threatened population.

66. FWS recognized the need for a metapopulation early on in its management of Mexican gray wolves. Even the inadequate 1982 "Recovery Plan" document provided that an appropriate interim objective for Mexican gray wolf conservation would be to establish at least a second population. FWS reiterated this objective in the 1996 FEIS for Mexican gray wolf reintroduction into the Blue Range, where the Service stated that "[f]ull recovery of the Mexican wolf subspecies likely will require additional reintroduction projects elsewhere." U.S. Fish & Wildlife Serv., Reintroduction of the Mexican Wolf within its Historic Range in the Southwestern United States: Final

Environmental Impact Statement 1-1 (Nov. 1996) [hereinafter 1996 FEIS]. The agency has admitted that meeting the 1982 document's 100-wolf objective "alone would not allow de-listing; other populations would need to be reestablished elsewhere in accordance with criteria … developed in the revision of the Mexican Wolf Recovery Plan." Id. at 5-42.

67. The Service acknowledged this need again in the Biological Opinion accompanying the 2014 FEIS for the proposed revision to the nonessential experimental population of the Mexican gray wolf, where the agency stated, that "[t]he recovery and long-term conservation of the Mexican wolf in the southwestern U.S. and northern Mexico is likely to 'depend on establishment of a metapopulation of several semi-disjunct but viable populations spanning a significant portion of [the subspecies'] historic range in the region.'" FEIS, App. G, at 28 (citation omitted). Nevertheless, FWS's management rules have not permitted, much less facilitated, such metapopulation establishment.

**THE REVISED SECTION 10(j) RULE**

68. The Service's 1998 10(j) Rule for the Mexican gray wolf provided that "[t]he Service will evaluate Mexican wolf reintroduction progress and prepare ... full evaluations after 3 and 5 years that recommend continuation, modification, or termination of the reintroduction effort." 50 C.F.R. § 17.84(k)(13).

69. Accordingly, in 2001 FWS conducted a Three-Year Review of the reintroduction program with a team of scientific experts. That review resulted in a

number of recommendations, including that FWS "immediately modify" the 10(j) rule to allow for more widespread releases of Mexican gray wolves and afford wolves more latitude to establish territories outside the BRWRA. The Three-Year Review warned that "[s]urvival and recruitment rates [for Mexican wolves] are far too low to ensure population growth or persistence" and "[w]ithout dramatic improvement in these vital rates, the wolf population will fall short of predictions for upcoming years." Paul C. Paquet et al., Mexican Wolf Recovery: Three-Year Program Review and Assessment 27 (2001). These recommendations for facilitating the presence of more wolves in expanded territory were supported by an independent analysis by the Arizona Game and Fish Department ("AZGFD") and the New Mexico Department of Game and Fish.

70. A subsequent Five-Year Review offered further support for these recommendations. The Five-Year Review was completed in 2005 by the Mexican Wolf Adaptive Management Oversight Committee ("AMOC") under the 10(j) rule. AMOC consisted of representatives from FWS, AZGFD, New Mexico Department of Game and Fish, U.S. Forest Service, Wildlife Services (a program within the U.S. Department of Agriculture), and the White Mountain Apache Tribe.

71. Like the Three-Year Review, the Five-Year Review recommended continuation of the reintroduction program subject to modifications that would allow wolves to expand their territory outside of the BRWRA and allow the release of wolves in New Mexico. FWS did not adopt any of these recommendations.

72. Finally, in 2012 – spurred on by citizen advocacy, including a petition and two lawsuits filed by Plaintiff Center for Biological Diversity – the Service commenced formal rulemaking to revise the Mexican gray wolf 10(j) rule. On June 13, 2013, the Service published a proposed rule to revise the existing nonessential experimental population designation of the Mexican gray wolf and several provisions of the associated 10(j) rule. 78 Fed. Reg. 35,719.

73. On July 25, 2014, FWS released for public review and comment a Draft Environmental Impact Statement ("DEIS") for the proposed rule. 79 Fed. Reg. 43,358 (July 25, 2014). In the DEIS, the Service analyzed three, nearly-identical action alternatives (one of which was the preferred alternative) and one "no action" alternative. None of the alternatives included a population cap or a phased process for wolf reintroduction and dispersal; each of those provisions appears for the first time in the final rule.

74. Indeed, in connection with the DEIS, FWS expressly rejected for further consideration an alternative that would establish a cap on the population of Mexican wolves. FWS explained that setting a cap would be "premature" without the guidance of a new recovery plan, and would "not contribute to the achievement of our objective to further the conservation of the Mexican wolf." U.S. Fish & Wildlife Serv., Draft Environmental Impact Statement for the Proposed Revision to the Nonessential Experimental Population of the Mexican Wolf (*Canis lupus baileyi*) Ch. 2, at 10 (July 16, 2014) [hereinafter DEIS]. Accordingly, Plaintiffs did not comment on those issues.