

**Mexican Wolf Recovery Program:
Progress Report #13**

Reporting Period: January 1 – December 31, 2010

Prepared by: The U.S. Fish and Wildlife Service

Cooperators: Arizona Game and Fish Department, New Mexico Department of Game and Fish, USDA-APHIS Wildlife Services, US Forest Service, and White Mountain Apache Tribe



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Foreword

The U.S. Fish and Wildlife Service (Service) is the lead agency responsible for recovery of the Mexican wolf (*Canis lupus baileyi*), pursuant to the Endangered Species Act. The Mexican Wolf Recovery Program essentially is separated into two, interrelated components: 1) Recovery – includes aspects of the program administered primarily by the Service that pertain to the overall goal of Mexican wolf recovery and delisting from the list of threatened and endangered species, and 2) Reintroduction – includes aspects of the program implemented by the Service and cooperating States, Tribes, and other Federal agencies that pertain to management of the reintroduced Mexican wolf population in the Blue Range Wolf Recovery Area (BRWRA), which consists of the entire Apache and Gila National Forests in Arizona and New Mexico. This report details all aspects of the Mexican Wolf Recovery Program. The reporting period for this progress report is January 1 – December 31, 2010.

Background

The Mexican wolf, or “lobo,” is the smallest, rarest, southernmost occurring, and most genetically distinct subspecies of the North American gray wolf. It once occurred in the mountainous regions of the Southwest from central Mexico throughout portions of Texas, New Mexico, and Arizona, and perhaps even farther north, as suggested by more recent research. Mexican wolves were extirpated from the wild in the United States by 1970, primarily as a result of a concerted effort to eradicate them due to livestock conflicts. Recovery efforts for the Mexican wolf began when it was listed as an endangered species in 1976. A captive breeding program was initiated and saved the Mexican wolf from extinction with the capture of the last five remaining Mexican wolves in the wild in Mexico from 1977 - 1980.

A Mexican Wolf Recovery Team was convened in 1979 to write a recovery plan, which was approved by the Service in 1982. The recovery plan contains objectives for maintaining a captive population and reestablishing Mexican wolves within their historic range. In June 1995, with the captive population numbers secure, the Service released a draft Environmental Impact Statement (EIS) entitled: *Reintroduction of the Mexican wolf within its Historic Range in the Southwestern United States*. After an extensive public review and comment period, the Final EIS was released in December 1996.

In March 1997, the Secretary of the Interior signed a Record of Decision approving the Service’s preferred alternative in the EIS to release captive-reared Mexican wolves into a portion of the BRWRA. The Mexican wolf Final Rule - Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico (Final Rule) - was published in the Federal Register on January 12, 1998, and provided regulations for how the reintroduced population would be managed (US Fish and Wildlife Service 1998). On March 29, 1998, the first Mexican wolves were released into the wild. All wolves within the BRWRA are designated as a nonessential experimental population under section 10(j) of the Endangered Species Act which allows for greater management flexibility to address potential conflicts such as livestock depredations and nuisance behavior. An Interagency Field Team (IFT) comprised of members from the Service, Arizona Game and Fish Department (AGFD), New Mexico Department of Game and Fish (NMDGF), White Mountain Apache Tribe (WMAT), US Forest Service, and

U.S. Department of Agriculture-Wildlife Services (USDA-WS) has been formed to monitor and manage the reintroduced population.



Mexican wolf, M1050. Photo courtesy of the Endangered Wolf Center.

PART A: RECOVERY ADMINISTRATION

1. Mexican Wolf Captive Breeding Program

a. Mexican Wolf Species Survival Plan

The 1982 Mexican Wolf Recovery Plan contains the objective of establishing and maintaining a captive breeding program as an essential component of recovery (US Fish and Wildlife Service 1982). A captive breeding program was initiated in 1977 through 1980 with the capture of the five remaining wild Mexican wolves in Mexico. The captive breeding program is managed for the Service under the American Zoological and Aquarium Association's (AZAA) Mexican Wolf Species Survival Plan (SSP) program. The SSP is a bi-national (United States and Mexico) captive breeding program. Its mission is to reestablish the Mexican wolf in the wild through captive breeding, public education, and research. The SSP designation is significant because it indicates to AZAA member facilities the need for the species to be conserved, and triggers internal support to member facilities to help conserve such imperiled species. Wolves in these facilities are managed in accordance with a Service approved standard protocol. The SSP is the sole source population to reestablish the species in the wild, thus, without the SSP recovery of the Mexican wolf would not be possible. The SSP has been extremely successful and has steadily expanded throughout the years. In 2010, there were approximately 283 captive Mexican wolves managed in 49 facilities in the United States and Mexico. The SSP members routinely transfer Mexican wolves to facilitate genetic exchange and maintain the health and genetic diversity of the captive population.

The SSP's goal of housing a minimum of 240 wolves with a target population size of 300 ensures the security of the species in captivity and produces surplus animals for reintroduction. Potential Mexican wolf release candidates are sent to one of three Service approved pre-release facilities (see below) where they are evaluated for release suitability and undergo an acclimation process. All wolves selected for release are genetically redundant to the captive population, meaning their genes are already well represented. This minimizes any adverse effects to the genetic integrity of the captive population, in the event that wolves released to the wild do not survive.

Each July, the SSP holds a bi-national meeting to plan and coordinate wolf breeding, transfers and related activities among facilities. The location of these meetings alternates between Mexico and the United States. In 2010, the annual SSP meeting was held in South Salem, New York and hosted by Wolf Conservation Center.

b. Mexican Wolf Pre-Release Facilities

Mexican wolves are acclimated prior to release to the wild at these Service-approved facilities, which are designed to house wolves in a manner that fosters wild characteristics and behaviors. These facilities are the Ladder Ranch and Sevilleta Wolf Management Facilities, located in New Mexico near the BRWRA, and Wolf Haven International, located in Tenino, Washington. At these facilities, wolves are managed with minimal exposure to humans for the purpose of

minimizing habituation to humans and maximizing pair bonding, breeding, pup rearing, and healthy pack structure development. Wolves are evaluated and selected for release to the wild based on genetic makeup, reproductive performance, behavior, physical suitability, and overall response to the adaptation process. These facilities have been successful in breeding wolves for release and are integral to Mexican wolf recovery efforts. To further minimize habituation to humans, public visitation to the Ladder Ranch and Sevilleta facilities is not permitted.

Release candidates are sustained on a zoo-based diet of carnivore logs and a kibble diet formulated for wild canids. Diets of release candidates are supplemented with carcasses of road-killed ungulate species, such as deer and elk, and scraps from local game processors (meat, organs, hides, and bones) from wild game/prey species only. Release candidates are given annual examinations to vaccinate for canine diseases (e.g., parvo, adeno2, parinfluenza, distemper and rabies viruses, etc.), are dewormed, have laboratory evaluations performed, and have their overall health condition evaluated. Animals are treated for other veterinary purposes on an as-needed basis.

Sevilleta Wolf Management Facility (SWMF)

The SWMF is located on the Sevilleta National Wildlife Refuge (SNWR) near Socorro, New Mexico and is the only Mexican wolf pre-release facility managed entirely by the Service. There are a total of eight enclosures, ranging in size from 0.25 acre to approximately 1.25 acres, and a quarantine pen. In 2010 the staff of SNWR continued to assist in the maintenance and administration of the SWMF. Through the course of the year, 19 individual wolves were housed at the SWMF. Of these, one wolf was released into the BRWRA, and two wolves were received from the Ladder Ranch Wolf Management Facility. Five pups were born and no deaths occurred at the SWMF. At year's end, the SWMF housed 18 wolves.

Ladder Ranch Wolf Management Facility (LRWMF)

The LRWMF, owned by R. E. Turner, is located on the Ladder Ranch near Truth or Consequences, New Mexico. There are a total of five enclosures, ranging in size of 0.25 acre to 1.0 acre. The LRWMF is maintained by an employee of the Turner Endangered Species Fund (TESF), though the facility is managed and supported financially by the Service to keep it operating and available for housing and pre-conditioning release candidates. During 2010, 10 individual wolves were housed at the LRWMF. Three wolves were transferred to a participating SSP facility, and two wolves were transferred to the SWMF. No births or deaths occurred at the LRWMF. At year's end, the LRWMF housed 5 wolves.

Wolf Haven International (WHI)

The WHI is located in Tenino, Washington. There are 2 Mexican wolf pre-release enclosures at the facility, each just over 0.50 acre in size. Management and funding is supported entirely by WHI. The pre-release enclosures are entirely off exhibit, though WHI does house other gray wolves on display for viewing and educational purposes. During 2010, WHI housed 13 individual Mexican wolves in the pre-release enclosures. None of these wolves were released into the BRWRA, one was transferred to another facility in the SSP, and three animals were received from other facilities in the SSP. At year's end, WHI housed 12 Mexican wolves in the pre-release enclosures.



Mexican wolf F168. Photo courtesy of the California Wolf Center. Note: F168 was first released to the wild in 1999 and eventually removed for livestock depredations. F168 was retired to the California Wolf Center and lived to be 16 years old. F168 died on March 27, 2010.

2. Recovery Planning

On April 1, 2003, the Service published a final rule revising the listing status of the gray wolf across most of the conterminous United States (68 Federal Register 15804). Within that rule, the Service established three distinct population segments (DPS) for the gray wolf. Gray wolves in the Western DPS and the Eastern DPS were reclassified from endangered to threatened, except where already classified as threatened or as an experimental population. Mexican wolves in the Southwestern DPS retained their previous endangered or experimental population status. Under this ruling, the Southwestern DPS became the listed entity to base recovery planning. The Service's Southwest Region formed a Southwestern DPS Recovery Team in July 2003 to develop a recovery plan for the Southwestern DPS that would address recovery actions for the Mexican wolf. The Service intended the Southwestern DPS recovery plan to supersede and replace the 1982 Mexican Wolf Recovery Plan which does not contain recovery (downlisting or delisting) criteria. The team met five times between October 2003 and October 2004 and made progress towards developing the recovery plan. On January 31 and August 19, 2005, U.S. District Courts in Oregon and Vermont, respectively, ruled that the April 1, 2003, final rule violated the Endangered Species Act (*Defenders of Wildlife v. Norton*, 1:03-1348-JO, D.OR2005 and *National Wildlife Federation v Norton*, 1:03-CV-340, D.VT.2005). The Courts' rulings invalidated the revisions of the gray wolf listing. Therefore, the status of gray wolves outside of

Minnesota and outside of areas designated as nonessential experimental populations reverted back to endangered (as had been the case prior to the 2003 reclassification). The Courts also invalidated the three DPS designations in the April 1, 2003, rule and the associated special regulations.

In response to these rulings, the Service placed the Southwestern DPS Recovery Team on hold, because its charge to develop a recovery plan for the Southwestern DPS was no longer valid since the DPS no longer existed. The Service instructed the Recovery Team that its work could not continue until legal issues were resolved at the national level. On December 16, 2005, the Department of Interior issued a statement that the Service would not appeal the 2005 U.S. District Courts' decisions on the reclassification of the gray wolf. On July 30, 2010, the Service issued letters disbanding the Southwest DPS Recovery Team, citing that it intended to form a new recovery team in the near future.

Since the April 1, 2003, final rule was rendered invalid in 2005, the Service has been involved in several listing activities that have resolved neither the nationwide status of the gray wolf nor the listing status of the Mexican wolf. In April, 2008, the Service initiated a process to compile and assess the data generated by past recovery planning efforts. The result of this process is the Mexican Gray Wolf Conservation Assessment, a non-regulatory document containing a synthesis and summary of data generated during all previous recovery planning for the Mexican wolf, which was released in 2010.

The invalidation of the 2003 final rule, and court opinions on subsequent rules (see section 7, "Litigation," for further information) attempting to address the Northern Rockies and Great Lakes wolf populations, displayed the need to take a more comprehensive look at how best to recover wolves in the contiguous United States. Thus, a team of Service biologists, led by experts in structured decision making from the United States Geological Survey, and administrators in affected regions, undertook a comprehensive evaluation of a suite of alternative gray wolf listing classifications, including the existing classification, using decision analytical techniques. At the end of 2008 and throughout 2010 the group met to evaluate and discuss the alternatives, including convening experts on Mexican wolf biology and management to apply a DPS or subspecies tradeoff analysis to the Mexican wolf.

In addition, the structured decision making team undertook a preliminary status assessment of the geographic units identified by the analysis, to plan how to proceed with further assessment and regulatory action. This workshop did not result in a consensus solution for wolf listing nationwide, although many issues were resolved and a constrained range of alternatives was established. In August 2010, the Service hosted a national workshop to bring together Service managers, technical experts, and state management partners. At the workshop, a course national vision for wolf assessment was developed, and three breakout teams began to analyze regional details. Although the team has not reached consensus for wolf listing nationwide, it is generally agreed upon that the Southwest qualifies as a listable entity at either the Mexican wolf subspecies level or as a DPS, and is a desired part of the distribution of wolves in North America.

In December 2010, the Service sent letters inviting participants to the new Mexican Wolf Recovery Team. This new team consists of four subgroups – Science and Planning, Tribal Liaisons, Stakeholder Liaisons, and Agency Liaisons.

3. Reclassification

On August 11, 2009, the Service received a petition from the Center for Biological Diversity requesting that the Mexican wolf be listed as an endangered subspecies or DPS and critical habitat be designated under the Endangered Species Act. On August 12, 2009, we received a petition dated August 10, 2009, from WildEarth Guardians and The Rewilding Institute requesting that the Mexican wolf be listed as an endangered subspecies and critical habitat be designated under the Endangered Species Act. On August 4, 2010, the Service announced a 90-day finding on the two petitions, stating the petitions presented substantial scientific or commercial information indicating that the Mexican wolf subspecies may warrant listing such that reclassifying the Mexican wolf as a separate subspecies may be warranted. The Service is conducting a status review and will issue a 12-month finding on the petitions to address whether the petitioned action is warranted.

4. Blue Range Wolf Reintroduction Project Structure

In 2003, the Mexican Wolf Recovery Program was restructured to allow States and Tribes to assume lead responsibility for implementing the BRWRA Reintroduction Project on lands under their jurisdiction. Under this structure the BRWRA Reintroduction Project was managed jointly by the AGFD, NMDGF, USDA-Forest Service, USDA-WS, WMAT, and the Service. Other cooperators included Graham, Greenlee, and Navajo Counties in Arizona, Sierra County in New Mexico, and the New Mexico Department of Agriculture. The agencies worked together under a Memorandum of Understanding (MOU) which defined and formalized the role of each cooperator in the program. An Adaptive Management Oversight Committee (AMOC), consisting of members from each of the cooperating agencies, provided guidance to the Interagency Field Team (IFT) on policy issues related to the management of Mexican wolves in the BRWRA and coordinated the BRWRA reintroduction project between the various entities and the public. The AMOC was chaired by AGFD since inception, and that chairmanship continued through 2009. Under this structure the IFT was guided by 27 Standard Operating Procedures, which provided management for the free-ranging wolf population.

The 2003 restructuring of the program also included the creation of an Adaptive Management Working Group (AMWG). AMWG was comprised of any member of the interested public. The purpose of the AMWG was to provide a forum for all interested parties to participate in the BRWRA Reintroduction Project. AMWG meetings were hosted quarterly throughout the year by the AMOC in an open forum accessible to any interested party to discuss pertinent Mexican wolf management issues specific to the BRWRA. Meetings alternated between Arizona and New Mexico.

In December 2009 the Service finalized a settlement agreement with plaintiffs Wild Earth Guardians and Defenders of Wildlife. In the Consent Decree, the Service agreed to make no further decisions that relate to the Mexican Wolf Recovery Program pursuant to the MOU that

created AMOC, and to Standard Operating Procedure 13.0: Control of Mexican Wolves (see section 7, “Litigation,” for further discussion). During 2010 the Service worked with its partners and cooperators to prepare and establish a new MOU that adheres to the Consent Decree while upholding its commitment to the many agencies involved in the recovery of the Mexican wolf. The 2010 MOU was signed by AGFD, NMDGF, USDA-Forest Service, USDA-WS, WMAT, and the Service, as well as the New Mexico Department of Agriculture and Graham, Greenlee, and Navajo counties in Arizona, and Sierra County in New Mexico.

Each year the IFT produces an Annual Report, detailing Mexican wolf field activities (e.g., population status, reproduction, mortalities, releases/translocations, dispersal, depredations, etc.) in the BRWRA. The 2010 report is included as PART B of this report. Monthly BRWRA project updates are available at <http://www.fws.gov/southwest/es/mexicanwolf> or you may sign up to receive them electronically by visiting <http://azgfd.gov/signup>. Additional information about the BRWRA Reintroduction Project can be found on the Service’s web page at: <http://www.fws.gov/southwest/es/mexicanwolf> or AGFD’s web page at: <http://azgfd.gov/wolf>.

5. Cooperative Agreements and Contracts

In 2010, the Service continued funding cooperative agreements with AGFD, NMDGF, TESH, WMAT, and the San Carlos Apache Tribe (SCAT). Agreements with AGFD and NMDGF have been matching agreements where the Service provides 75% of costs and each state agency provides 25%. The Service also provided funding through cooperative agreements to the University of New Mexico for curatorial services, to The Living Desert for services associated with the captive breeding program, and to the Mexican Wolf Fund for contribution toward the administration and facilitation of recovery planning efforts.

Cooperator	Amount Funded in 2010 by USFWS from Mexican Wolf Project Funds
WMAT	\$ 205,000
NMDGF	\$145,000
AGFD	\$ 133,000
Mexican Wolf Fund	\$ 43,000
SCAT	\$ 40,000
TESF	\$ 39,000
The Living Desert	\$ 15,000
University of New Mexico	\$ 7,000

In addition to the above agreements, the Service also provided funding for several miscellaneous contracts for veterinary and other services.

6. Research

a. Mexican Wolf Captive Breeding Program

The Mexican Wolf SSP program conducts a variety of research projects on behalf of the conservation of captive Mexican wolves as well as the reintroduction program.

Dr. Cheryl Asa and the Research Department at the Saint Louis Zoo and J. Arturo Rivera at San Juan de Aragon Zoo in Mexico City continued reproductive research on Mexican wolves in

2010. In 1991, the Mexican Wolf Recovery Team selected the Saint Louis Zoo to establish and maintain a semen bank to preserve germplasm of genetically important males. Since that time the lab has been collecting, evaluating and freezing semen samples from individual wolves as directed by the Service and the SSP. In 2008 oocyte vitrification (freeze drying of eggs) was added so that female gametes could be preserved. As part of their ongoing reproductive research efforts, several projects were conducted during 2010. These included semen collection and freezing, oocyte vitrification, testing two new semen extenders, evaluation of cabergoline to terminate pseudopregnancy, deslorelin (Suprelorin) for use as a contraceptive, development of an improved trans-cervical insemination technique, and identification of factors related to uterine endometrial hyperplasia (which can cause infertility) and incidence of pyometra (a potentially fatal uterine infection).

In 2008 Dr. Dan Moriarty, University of San Diego, and Lowell Nicolaus, Northern Illinois University, began work analyzing thiabendazole as an aversion agent for use in Mexican wolves. This research focused on the potential to mitigate wolf conflicts with domestic livestock via conditioned taste aversion. A captive application of the study was completed at the California Wolf Center, near Julian, CA in October 2008. This study was performed on generic gray wolves and had the support of the Humane Society of the United States. Results demonstrated the safety and efficacy of thiabendazole-based aversions in a captive setting. During 2010 the Service made preparations to replicate this effort on several Mexican wolves at the SWMF. These wolves have been proposed for release during 2011.

Krista Hausig, USDA-APHIS-Wildlife Services continued research efforts to determine the efficacy of various rabies vaccines used in gray wolves by correlating rabies antibody titer levels with the known vaccination history for each animal. Currently, there is no rabies vaccine labeled for gray wolves. During 2010 facilities participating in the Mexican Wolf SSP continued to collect data (wolf ID, age, sex, vaccination history, route of administration, etc.) and serum for use in this study.

Itzel Yanez, Universidad Autónoma Metropolitana, continued researching an explanation for the higher than expected incidence of nasal squamous cell carcinoma in Mexican wolves. Current research is looking at chromosomal alterations that might indicate a genetic relationship that could link the susceptibility of Mexican wolves to this specific neoplasia.

b. Carnivore-Cattle Studies

A publication was completed by Dr. Stewart Breck and colleagues entitled “Domestic calf mortality and producer detection rates in the Mexican wolf recovery area: Implications for livestock management and carnivore compensation schemes.” This article was accepted by Biological Conservation in 2010 and is expected to appear in the journal in early 2011.

c. Noninvasive Monitoring Studies

C.A. Cariappa and Warren Ballard, Texas Tech University, and Stewart Breck, National Wildlife Research Center, are attempting species and individual identification using DNA extracted from wolf scat as a potential noninvasive technique to estimate population size. The lab tested the

ability to identify individual Mexican wolves using scat collected from eight wolves at the SWMF and was successful in obtaining individual genotypes for all eight wolves. In September 2007 scat was collected within an area of the BRWRA known to share occupancy of four wolf packs. The area was surveyed again in late 2007, February 2008, and April 2008. The dissertation involving this research was completed in 2010. This work is expected to be published in 2011.

Sarah Rinkevich, Ph.D. Candidate at the University of Arizona's School of Natural Resources and the Environment completed her field work in 2009 using non-invasive genetic sampling to estimate the population size of Mexican wolves on the Fort Apache Indian Reservation. Tribal members were hired as field technicians and scat samples from large carnivores were collected using scat detection dogs. Diet analyses were also performed. Due to a large amount of coyote scat collected incidentally, analyses will include coyote diet and abundance. Rinkevich also interviewed 32 tribal members knowledgeable about the wolf. These interviews documented traditional ecological knowledge about the wolf as well as how Western Apaches view the wolf both traditionally and contemporarily. A draft dissertation is expected late in 2011.

7. Litigation

a. WildEarth Guardians, Rewilding Institute, and Defenders of Wildlife Lawsuit.

On April 30, 2008, WildEarth Guardians and the Rewilding Institute filed a lawsuit in the U.S. District Court for the District of Arizona alleging that the Service and the USDA-Forest Service had failed to meet the requirement of Section 10(j) of the Endangered Species Act that any release of an experimental population of an endangered or threatened species will further the conservation of such species (*WildEarth Guardians, et al. v U.S. Fish and Wildlife Service*, No. 2:08-CV-820, D. Ariz). On May 1, 2008, Defenders of Wildlife and ten other conservation non-governmental organizations filed a lawsuit in the U.S. District Court for the District of Arizona alleging 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, which required permanent removal of wolves that have engaged in three livestock depredation incidents during a one-year period (*Defenders of Wildlife, et al. v Hall*, 4:08-CV-289, D.Ariz).

On July 21, 2008, the court consolidated the WildEarth Guardians and Defenders of Wildlife cases due to their similarity. From July 28 through October 20, 2008, the parties filed briefs in response to the Service's motion to dismiss. On March 31, 2009, the court denied the Service's motion to dismiss, and on December 2, 2009, the Service and the plaintiffs finalized settlement in a Consent Decree in which the Service stated it would make no further decisions that relate to the Mexican Wolf Recovery Program pursuant to the MOU that established AMOC, nor would the Service make decisions that relate to the Mexican Wolf Recovery Program pursuant to Standard Operating Procedure 13.0: Control of Mexican Wolves. In the December 3, 2009 Consent Decree the Service also recognized that AMOC does not oversee the actions of the Service, and has no decision-making authority over the Service with regard to the Service's management of the Mexican Wolf Recovery Program or the Mexican Wolf Reintroduction Project.

The only remaining claim in this case was between WildEarth Guardians and the U.S. Forest Service. It was not resolved by year's end.

b. Lawsuit from interested parties in New Mexico

On August 20, 2010, Americans for the Preservation of the Western Environment, Adobe Ranch, Beaverhead Ranch, Alan Tackman, the Gila National Forest Livestock Permittees' Association, Inc., the Otero County Board of Commissioners and the Catron County Board of Commissioners filed a lawsuit against the Service and the NMDGF in the U.S. District Court for the District of New Mexico alleging National Environmental Policy Act and Administrative Procedures Act violations relative to the Service's management decisions regarding Mexican wolves, specifically claiming the Service violated the enabling rules and altered the program without completing the environmental review required by NEPA (*Americans for the Preservation of the Western Environment, et al. v. U.S. Fish and Wildlife Service*, No. 1:10-CV-00788 (D. N.M.)). NMDGF's motion to dismiss was granted on December 16, 2010. This case remained open through 2010, however, on February 1, 2011, the parties stipulated to voluntarily dismiss the case without prejudice as to the Federal Defendants.

c. Gray Wolf Reclassification Lawsuits

On April 1, 2003, the Service changed the classification of gray wolves under the Endangered Species Act from endangered to threatened, in portions of the lower 48 states and established 3 DPS's for the gray wolf that encompasses the entire historical range of wolves in the United States and Mexico. A Southwestern Gray Wolf DPS was created by this ruling and encompassed all of Arizona and New Mexico, and portions of Utah, Colorado, Oklahoma, Texas, and Mexico. Several environmental groups subsequently filed lawsuits or Notices of Intents to sue regarding the Service's reclassification of gray wolves.

In 2005, the Service lost the lawsuits and the 2003 reclassification was invalidated. The Service reverted to the 1978 gray wolf listing. On December 16, 2005, the Department of Interior issued a statement that we would not appeal the 2005 U.S. District Courts' decisions and further, we planned to issue separate, proposed rules to delist new DPS's of gray wolves in the northern Rocky Mountains and the Great Lakes.

On February 27, 2008, a final rule was issued recognizing a Northern Rocky Mountain (NRM) DPS and removing all of this DPS from the List of Endangered and Threatened Wildlife (73 FR 10514). On April 28, 2008, a lawsuit was filed challenging the identification and delisting of the NRM DPS, and on July 18, 2008, the U.S. District Court for the District of Montana granted the plaintiffs' motion for preliminary injunction and enjoined our implementation of the final delisting rule for the NRM DPS. The court held that the Service's actions with respect to delisting a population that lacked evidence of genetic exchange, and in approving Wyoming's State wolf management plan were arbitrary and capricious. On September 22, 2008, we asked the court to vacate the final rule and remand it to us which it did on October 14, 2008.

Similarly, on February 8, 2007, the Service recognized a Western Great Lakes (WGL) DPS and removed it from the List of Endangered and Threatened Wildlife (72 FR 6052). This was also

challenged in court, with plaintiff's arguing that we may not identify a DPS within a broader pre-existing listed entity for the purpose of delisting the DPS (*Humane Society of the United States v. Kempthorne*, Civil action No. 07-0677 (PLF)(D.D.C)). On September 29, 2008, the court vacated the WGL DPS final rule and remanded it to the Service.

On April 2, 2009, two final rules were issued, one recognizing a new NRM DPS and removing all of this DPS, except for Wyoming, from the List of Endangered and Threatened Wildlife (74 FR 15123). This final rule was litigated and on August 5, 2010, the U.S. District Court for the District of Montana vacated the rule (*Defenders of Wildlife, et al. v. Salazar, et al.*, 729 F. Suppl. 2d 1207 (D. Mont.)). The second final rule identified and removed a WGL DPS from the List of Endangered and Threatened Wildlife (74 FR 15070). In response to legal challenge, this delisting action was withdrawn because sufficient opportunity for public comment, as required by law, was not provided before the decision was published.

8. Rule Amendment and Environmental Impact Statement

On August 7, 2007, the Service issued a notice of scoping meetings and intent to prepare an EIS and socio-economic assessment for the proposed amendment of the rule establishing a nonessential experimental population of the Arizona and New Mexico population of the gray wolf (72 Federal Register 44065-44069). The Service held scoping meetings in 12 Arizona and New Mexico communities in 2007, and received approximately 13,500 written comments from the public, non-governmental organizations and government agencies at the local, state and federal levels. Work has been temporarily suspended on the EIS, and is now pending the completion of the Mexican Wolf Recovery Team Plan, which will guide the revisions to the experimental population boundaries and management actions.

9. Mexican Wolf Interdiction Fund and Stakeholder Council

The Service in cooperation with the National Fish and Wildlife Foundation, established the Mexican Wolf /Livestock Interdiction Trust Fund (Interdiction Fund) on September 23, 2009. The objective of the Interdiction Fund is to generate long-term funding for prolonged financial support to livestock operators within the framework of conservation and recovery of Mexican gray wolf populations in the Southwest. Funding will be applied to initiatives that address management, monitoring, and other proactive conservation needs for Mexican gray wolves as they relate to livestock, including alternative livestock husbandry practices, grazing management alternatives, livestock protection, measures to avoid and minimize depredation, habitat protection, species protection, scientific research, conflict resolution, compensation for damage, education, and outreach activities.

10. Literature Cited

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US Fish and Wildlife Service. 2007, Final Rule Designating the Western Great Lakes Populations of Gray Wolves as a Distinct Population Segment; Removing the Western Great Lakes Distinct Population Segment of the Gray Wolf From the List of Endangered and Threatened Wildlife, 72 *Federal Register* 6051-6103.



Mexican wolf M1155 on an elk carcass. Photo courtesy of Tim Booth and the New Mexico Department of Game and Fish

PART B: REINTRODUCTION

Mexican Wolf Blue Range Reintroduction Project
Interagency Field Team Annual Report
Reporting Period: January 1 – December 31, 2010

Prepared by:

Arizona Game and Fish Department, New Mexico Department of Game and Fish, U.S. Department of Agriculture - Animal and Plant Health Inspection Service - Wildlife Services, U.S. Forest Service, U.S. Fish and Wildlife Service, and White Mountain Apache Tribe.

Lead Agencies:

Arizona Game and Fish Department (AGFD)
New Mexico Department of Game and Fish (NMDGF)
USDA-APHIS Wildlife Services (USDA-WS)
U.S. Fish and Wildlife Service (USFWS)
U.S. Forest Service (USFS)
White Mountain Apache Tribe (WMAT)

1. Introduction

This report summarizes results of Mexican Wolf Interagency Field Team (IFT) activities during 2010. The Mexican Wolf Blue Range Reintroduction Project (Reintroduction Project) is part of a larger recovery program that is intended to reestablish the Mexican wolf (*Canis lupus baileyi*) across its historical range.

The Reintroduction Project is conducted in accordance with a nonessential experimental population final rule (USFWS 1998) that established the 6850 mi² (17,740 km²) Blue Range Wolf Recovery Area (BRWRA) (Fig. 1). In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow free-ranging Mexican wolves to inhabit the Fort Apache Indian Reservation (FAIR). The reintroduction area lies within the Alpine, Clifton, and Springerville Ranger Districts of the Apache-Sitgreaves National Forests (ASNF) and the FAIR in east-central Arizona, and the Gila National Forest (GNF) in west-central New Mexico.

In March 1998, the first release of Mexican wolves occurred on the Alpine and Clifton Ranger Districts of the Apache-Sitgreaves National Forest, Arizona. At the end of 1998, the wild population in Arizona and New Mexico consisted of four wolves in two packs. The wild population grew to its highest minimal count of 59 wolves in 2006 through natural reproduction, translocations, and initial releases. At the end of 2010, the wild population totaled a minimum of 50 wolves, 2 breeding pairs, and 10 packs. More information on population statistics can be found at <http://www.fws.gov/southwest/es/mexicanwolf/>

Wolf age and sex abbreviations used in this document:

A = alpha
M = adult male (> two years old)
F = adult female (> two years old)

m = subadult male (one - two years old)
f = subadult female (one - two years old)
mp = male pup (< one year old)
fp = female pup (< one year old)

2. Methods

The IFT followed Standard Operating Procedures (SOPs) approved by the Lead Agencies. These SOPs can be found at <http://azgfd.gov/wolf>. Note: In December 2009 the USFWS finalized a settlement agreement and in a Consent Decree agreed to make no further decisions that relate to the Mexican Wolf Recovery Program pursuant to Standard Operating Procedure 13.0: Control of Livestock. The following definitions apply to the SOPs and to this report:

Breeding pair: an adult male and an adult female that have produced at least two pups during the previous breeding season and which survived until December 31 of the year of their birth (USFWS 1998).

Wolf pack: two or more wolves that maintain an established territory. In the event one of the two alpha (dominant) wolves dies, the remaining alpha wolf, regardless of pack size, retains the name.

Releases: wolves released directly from captivity, with no previous free-ranging experience. These “initial releases” may only occur in the Primary Recovery Zone, which is entirely within Greenlee County, Arizona (see Fig. 1 and Fig. 2).

Translocations: free-ranging wolves that are captured and moved to a location away from their site of capture; this includes captured free-ranging wolves that have been temporarily placed in captivity. Unlike initial releases, translocations can occur in the Primary Recovery Zone or in the Secondary Recovery Zone (Fig. 1). The Secondary Recovery Zone contains portions of Apache and Greenlee counties in Arizona, and portions of Catron, Sierra, and Grant counties in New Mexico (Fig. 2).

Depredation: confirmed killing or wounding of lawfully-present domestic livestock by one or more wolves.

Depredation incident: means the aggregate number of livestock killed or mortally wounded by an individual wolf or by a single pack of wolves at a single location within a one-day (24 hr) period, beginning with the first confirmed kill, as documented in an initial IFT incident investigation pursuant to SOP 11.0.

Releases and Translocations

Initial release candidates are genetic surpluses to the captive breeding program. Once selected for release, wolves are acclimated in USFWS-approved facilities prior to release. These facilities include the Ladder Ranch Wolf Management Facility, managed by the Turner Endangered Species Fund, and the Sevilleta Wolf Management Facility, managed by the USFWS at Sevilleta National Wildlife Refuge. Both facilities are located in New Mexico.

In management facilities, contact between wolves and humans is minimized. Carcasses of road-killed native prey species primarily deer (*Odocoileus* spp.) and elk (*Cervus elaphus*) supplement the routine diet of processed canine food. Genetically and socially compatible breeding pairs are established and evaluated for physical, reproductive, and behavioral suitability for direct release into the wild. Single wolves are also evaluated for release and potential pairing with wolves in the wild.

Wolves are released using either a soft release or a hard release method. The soft release method holds wolves at the release site for one day to several months to acclimate them to the specific area. Soft release pens are constructed of chain link. A modified soft release consists of placing the wolves in an acclimation pen approximately 0.13 acres (526 m²) in size and built of nylon mesh, with electric fencing interwoven into the structure. Flagging is also attached to the pen walls approximately every two feet, as a visual barrier to discourage wolves from running into pen walls. Wolves generally self release within a few days. A hard release is a direct release of a wolf (or wolves) from a crate into the wild or into an enclosure built of fladry (flagging hanging on a rope surrounding a small protected area; sometimes the fladry “fence-line” is electrified).

Radio Telemetry Monitoring

In 2010 all radio-collared wolves were monitored by standard radio telemetry from the ground and once weekly from the air as opportunity allowed. Visual observations, wolf behavior, evidence of a kill site, associated uncollared wolves, and fresh sign were also noted when possible. Location data were entered into the project’s Access database for analysis.

Aerial locations of wolves were used to develop home ranges (White and Garrott 1990), which were calculated based on the definition in the final rule (USFWS 1998). Home ranges were calculated using ≥ 20 individual aerial locations on a pack, pair, or single wolf exhibiting territorial behavior over a period of \geq six months. To maximize sample independence, individual radio-collared wolf locations were included in home range calculations only if individual wolf locations were spatially or temporally separated from other radio-collared pack members. This limited pseudo-replication of locations. Home range polygons were generated at the 95% confidence level, using the minimum convex polygon (MCP) method (White and Garrott 1990) in the animal movement extension in the program ArcView (Hooge et al. 1999; ESRI, Redlands, CA, USA). Home ranges were not calculated for wolves that had < 20 aerial radio locations, displayed dispersal behavior, or exhibited non-territorial behavior during 2010.

Occupied Range

Occupied wolf range was calculated based on the definition in the Final Rule (USFWS 1998) and using the following criteria: (1) a five mi (eight km) radius around all locations of non radio monitored wolves and wolf sign occurring in an area consistently used over a period of at least one month; (2) a five mi (eight km) radius around radio locations of resident wolves when < 20 radio locations are available (for radio monitored wolves only); (3) a five mi (eight km) radius around radio monitored wolf locations (for wolves exhibiting dispersal or non-territorial behavior); and (4) a three mi (five km) radius around the minimum convex polygon developed from ≥ 20 radio locations of a pack, pair, or single wolf exhibiting territorial behavior.

Predation and Depredation Investigations

Throughout the year, project personnel investigated ungulate carcasses as they were discovered to determine sex, age, general body condition, and whether the carcass had been scavenged or was a wolf kill. USDA-WS wolf specialists investigated suspected wolf depredations on livestock within 24 hours of receiving a report. On occasion, USFWS biologists conducted parallel investigations to determine if any discernable events caused the depredation to occur. Not all dead livestock were found, or found in time to document cause of death. Accordingly, depredation numbers in this report represent the minimum number of livestock killed by wolves.

The 1996 Final Environmental Impact Statement (FEIS) predicted 1-34 confirmed killed cattle per year with a population of 100 Mexican wolves. This represents <0.05 % of all cattle present on the range (USFWS 1996). The Mexican Wolf Blue Range Reintroduction Project 5-year Review (AMOC and IFT 2005) reported, between 1998 and 2003, the mean number of cattle confirmed killed per year by wolves was 3.8, which extrapolates to 13.8 cattle killed per year from a population of 100 Mexican wolves. From 2005 to 2009, the number of confirmed cattle killed by wolves exceeded the predicted rate by the FEIS, and ranged between 36.5 depredations per 100 wolves in 2008 to 50 depredations per 100 wolves in 2007.

Wolf Management

The IFT hazed (purposefully harassed) wolves on foot or by vehicle if the wolves localized near areas of human activity or were found feeding on, chasing, or killing livestock. When necessary, the IFT used rubber bullets, cracker shells, and fladry to encourage aversive response to humans and to discourage nuisance and depredation behavior. The IFT captured wolves with leg hold traps. In addition, wolves that established themselves outside the BRWRA were captured and brought back into the BRWRA or temporarily held in captivity, per the final rule (USFWS 1998).

Proactive Management Activities

The IFT utilized proactive management activities in an attempt to reduce wolf-livestock conflicts in the BRWRA. These activities included:

Turbo Fladry: electric fence with red flagging installed around livestock holding pastures and private property to discourage wolf utilization inside the perimeter.

Hay: feed purchased for livestock owners who opted to keep livestock on private property during calving season.

Range Riders: contract employees with radio telemetry equipment to assist stakeholders in monitoring wolf movements in relation to cattle on USFS grazing allotments.

Livestock Grazing Rotation: moving livestock between different pastures within USFS grazing allotments in order to avoid areas of high wolf use including den and rendezvous sites.

Exclusionary Fencing: eight-foot-high fence enclosing areas of private property for the purposes of protecting especially vulnerable animals or other specific reasons.

Radio Telemetry Equipment: monitoring equipment issued to stakeholders to facilitate their own proactive management activities and aid in the detection and prevention of depredations.

Diversionsary Food Cache: road-killed native prey carcasses or carnivore logs provided to wolves in areas so as to reduce potential conflicts with livestock.

Supplemental Food Cache: road-killed native prey carcasses or carnivore logs provided to wolves in order to assist a pack or remnant of a pack in feeding young of the year when extenuating circumstances reduce their own ability to do so. Supplemental food caches also serve to reduce potential conflicts between wolves and livestock.

Population Estimation

The IFT continued the expanded efforts that were initiated in 2006 to make the 2010 year-end population estimate more comprehensive. Actions included increased ground surveys and trapping for uncollared wolves, greater coordination of wolf sightings by the public and other agencies, and use of remote cameras.

Wolf sign (i.e. tracks, scats) was documented by driving roads and hiking canyons, trails, or other areas closed to motor vehicles. Confirmation of uncollared wolves was achieved via visual observation, howling, scats, and tracks. Ground survey efforts for suspected, but uncollared packs, were documented using global positioning system (GPS) and geographical information systems (GIS) software and hardware. GPS locations were recorded and downloaded into GIS software for analysis and mapping. Survey data were also recorded daily on forms and a dedicated survey effort spreadsheet.

In January 2011, aircraft were used to document free-ranging wolves for the end-of-year 2010 population count and to capture wolves as necessary to affix radio-collars. Including January data in the December 31 end-of-year count (and in this 2010 annual report) is appropriate, because wolves alive in January were also alive in December (i.e. whelping does not occur in mid-winter). Fixed-wing aircraft were used to locate wolves and assess the potential for darting wolves from the helicopter. A helicopter was used to more accurately count the number of uncollared wolves associated with collared wolves in all areas and to capture target animals (e.g. uncollared wolves, injured wolves, wolves with old collars, or wolves outside the 10j boundary) where the terrain allowed.

As part of the 2010 population estimate, members of the local public were also surveyed for possible wolf sightings. Ranchers, private landowners, wildlife managers, USFS personnel, and others were contacted to develop a wolf sighting database. Sighting reports from agency cooperators were also collected. All sightings were analyzed to determine those that most likely represented unknown wolves or packs.

Remote digital cameras (regular flash and infrared) were used to document wolf presence. Information gleaned from public reports, surveys, and wolf sign were used to guide IFT efforts to trap uncollared single wolves or groups. The objective was to have at least one member of

each pack collared. Using these methods, the IFT counted the number of uncollared wolves not associated with collared wolves.

Mortality

Wolf mortalities were identified via telemetry and public reports. Mortality signals from radio collars were investigated within 12 hours of detection to determine the status of the wolf. Carcasses were investigated by law enforcement agents and necropsies were conducted to determine proximate cause of death. Causes were summarized for all known deaths. For radio-collared wolves, mortality, missing, and removal rates were calculated using methods presented in Heisey and Fuller (1985).

The IFT calculated yearly cause-specific mortality rates (i.e. human-caused versus natural/unknown mortality). Management removals have an effect equivalent to mortalities on the free-ranging population of Mexican wolves (see Paquet et al. 2001). Thus, the IFT also calculated yearly cause-specific removal rates for radio-collared wolves. Wolves are removed from the population for four primary causes: (1) dispersal outside the BRWRA, (2) cattle depredations, (3) nuisance to humans, and (4) other (principally to pair with other wolves or to move a wolf to a better area without any of the other causes occurring first). Each time a wolf was moved, it was considered a removal, regardless of the animal's status later in the year (e.g. if the wolf was translocated or held in captivity). The IFT calculated an overall failure rate of wolves in the wild by combining mortality, missing (only those wolves that went missing under questionable scenarios), and removal rates to represent the overall yearly rate of wolves affected (i.e. dead, missing, or managed) in a given year.

Outreach

The IFT outreach efforts affirm the project's commitment to engage in effective communication, identify various outreach mechanisms, and standardize certain outreach activities. These goals help ensure timely, accurate, and effective two-way communication between, and among, cooperating agencies and the public. Project personnel conducted outreach activities on a regular basis, as a means of disseminating information to stakeholders, concerned citizens, and government and non-government organizations. This was facilitated through monthly updates, field contacts, handouts, informational display booths, Web page updates and phone contacts. The IFT gave formal presentations at local livestock producer meetings and conducted one public meeting to gather comment on a proposed Mexican wolf Translocation action within the BRWRA.

The IFT conducted outreach activities by continuing to utilize the Mexican Wolf Blue Range Reintroduction Project Outreach Plan developed during 2007. The plan provides an outline of activities the IFT uses to inform various target audiences about the reintroduction project and stimulate productive dialogue between stakeholders and cooperating agencies.

During 2010, the IFT posted Mexican wolf reintroduction project updates within the BRWRA once each month, at places such as USFS offices, US post offices, and libraries, as well as on the AGFD Mexican wolf web site at <http://azgfd.gov/wolf> and the USFWS Mexican wolf web site at <http://www.fws.gov/southwest/es/mexicanwolf>. Interested parties could sign up to receive the

update electronically by visiting the AGFD web site at <http://azgfd.gov/signup>. The IFT faxed monthly project updates to primary cooperating agencies, stakeholders and interested citizens.

The IFT produced a location map to inform cooperators and the public of areas occupied by wolves. The map was updated quarterly and contained the previous three months of wolf aerial locations. The map was posted on the AGFD web site at <http://azgfd.gov/wolf>. In addition to the map, a description of wolf locations from weekly flights was posted to this web site within 48 hours of each flight per SOP 26. IFT personnel conducted weekly contacts of specific grazing permittees to provide the general locations of wolves on or adjacent to their grazing allotments or private lands.

Project personnel made contact with campers, hunters, and other members of the public within the BRWRA and provided them with information about the wolf project. These contacts advised the public of the potential for encountering wolves, provided general recommendations for recreating in wolf-occupied areas and explained legal provisions of the non-essential experimental population rule. The IFT collected information on wolf sightings, tracks and scat from these public contacts.

3. Results

Information on the number of wolves and specific locations from the FAIR and the San Carlos Apache Reservation (SCAR) is not included in this report in accordance with Tribal agreements.

a. Population Status

The minimum population estimate at the end of 2010 was 50 wolves and 2 breeding pairs. Pups comprised 28% (14 of 50) of this population which is an increase from the previous year.

At the beginning of 2010, the collared population consisted of 28 wolves among 9 packs and 3 singles. Documented mortalities during the year reduced the collared population to 23 wolves among 10 packs towards the end of 2010 (16 adults, 4 subadults, and 3 pups).

Twenty-seven uncollared wolves were documented in the Mexican Wolf Nonessential Experimental Population Zone (MWNEPZ) (note: uncollared wolves captured during the January 2011 helicopter operation were included as uncollared animals associated with known packs above). Eleven of the 27 uncollared wolves were associated with 6 radio-collared packs (Table 1).

The IFT observed wolf sign indicating the potential for four single uncollared animals (two in AZ, two in NM) not associated with known collared packs. Additional uncollared animals were found on the FAIR and on the SCAR. These areas will be priorities for IFT trapping efforts in the spring and summer of 2011.

One natural pairing was detected in 2010. In February, M1155 (Hawks Nest wolf born in 2008) paired with F1106 (originally from the Aspen pack and translocated into NM in 2008) within the

GNF. The pair was named Morgart's pack. No denning was evident from telemetry locations. In October F1106 was found dead.

There were five radio-collared single wolves (M619, F1106, f1154, M1155, m1185) for a portion of the year. Two of the wolves were known to be alive (M1155, m1185) at the end of the year. M1155 retained the Morgart's pack name after F1106 died. m1185 of the Middle Fork pack dispersed from his natal pack in May, but returned in August only to leave again in November. In December, m1185 again exhibited extraterritorial movements and moved outside the pack's traditional home range. Approximately 91% (21 out of 23 wolves) of the radio-collared individuals alive at the end of the year and 96% (48 out of 50 wolves) of all documented wolves at the end of the year were born in the wild.

b. Reproduction

In 2010, eight packs (Dark Canyon, Bluestem, Hawks Nest, Luna, Middle Fork, Paradise, Rim, and San Mateo) exhibited denning behavior, and all but Bluestem and Paradise were believed to have produced wild-conceived, wild-born litters. The IFT documented a minimum of 18 pups born with a minimum of 14 surviving in the wild until year-end (Table 1). This marked the ninth consecutive year in which wild born wolves bred and raised pups in the wild. Of the ten known packs at the end of 2010, all packs were formed naturally in the wild and composed of at least one wild-born wolf.



Mexican wolf pups. Mexican Wolf Interagency photo, taken by a trail camera above the Hawks Nest Pack den.

c. Releases and Translocations

The IFT conducted two hard release translocations. One wolf was translocated for a boundary violation; the other translocation was an attempt to increase genetic diversity, the number of breeding pairs, and the number of wolves in the wild.

On January 10, the IFT translocated f1154 from captivity. This wolf was born in 2008 to the Bacho pack on the FAIR. In June 2009, f1154 was placed into captivity for being outside the BRWRA on the SCAR. The wolf was released at the Gila Flat release site on the GNF.

On January 25, the IFT captured an uncollared male wolf outside the BRWRA, north of Antelope Peak on Arizona State Trust lands. The wolf was located with M1155 of the Hawks Nest Pack. The yearling male wolf was collared and assigned studbook number M1189. The IFT released it back inside the BRWRA on the ASNF near Carnero Lake.

d. Home Ranges and Movements

The IFT calculated home ranges for 10 packs exhibiting territorial behavior. The MCP method produced an average home range size of 237 mi² (613 km²), with home ranges varying from 66 mi² to 830 mi² (171 km² to 2149 km²) (Fig. 4, Table 3). The Fox Mountain pack exhibited a much larger than normal home range in 2010 as compared to previous years (830 mi² in 2010 vs. 463 mi² in 2009). This pack did not breed in 2010 and their movements reflected this situation. The Fox Mountain pack's movements were responsible for the overall increase in average home range sizes for all wolves this year. Home ranges were not calculated for 7 wolves (F521, M619, F1106, f1154, M1157, M1158, and m1185) that dispersed or traveled alone during all or portions of 2010 (see Appendix A for detailed summaries of these individuals).

Mexican wolves occupied 5245 mi² (13,579 km²) of the Mexican Wolf Nonessential Experimental Zone (MWNEPZ) during 2010 (Fig. 5). Within the BRWRA there were 3565 mi² (9229 km²) of occupied range. On the SCAR there were 76 mi² (197 km²) of occupied range. Outside of the BRWRA 1193 mi² (3088 km²) of occupied range was documented. Occupied wolf range occurred and was documented on the FAIR; however, this information is not displayed on the map and specific area values are not provided as requested by the WMAT. In comparison, Mexican wolves occupied 5325 mi² (13786 km²) of the MWNEPZ during 2009.

e. Mortality

The IFT has documented 80 wolf mortalities in the wild since 1998 (Table 4), 6 of which occurred in 2010 (Table 5). Mortalities in 2010 included: AM1044, M1189 and F521 from illegal shooting; F1106 from intestinal blockage; and f1154 and AM1114 have necropsy reports pending. This should be considered a minimum estimate of mortalities, since some pups and uncollared wolves die without being documented. Two wolves from Arizona (M619, AM795) are "fate unknown".

The IFT monitored 31 individual radio-collared wolves for a total of 8856 radio days during 2010. A total of 7 radio-collared wolves were considered removed ($n = 0$), dead ($n = 6$), or missing ($n = 1$). The overall survival rate was 0.748, or a corresponding failure rate of 0.252.

The overall failure rate was composed of the human caused mortality rate (0.11; $n = 3$), natural mortality rate (0.036; $n = 1$), unknown/awaiting necropsy mortality rate (0.07; $n = 2$), boundary removal rate (0.00; $n = 0$), missing radio-collared wolves rate (0.036; $n = 1$), cattle depredation removal rate (0.00; $n = 0$), nuisance removal rate (0.00; $n = 0$), and other removal rate (0.00; $n = 0$).



Mexican wolf M795 of the Paradise Pack. Mexican Wolf Interagency trail camera photo.

f. Wolf Predation

A total of nine carcasses (seven elk, two mule deer) were investigated opportunistically. Age determinations of the elk revealed: four adults, three calves and no yearlings. The age estimation of the mule deer revealed: one adult, and one yearling. Sex determinations of elk revealed four females and three of unknown sex, one male mule deer and one yearling mule deer of unknown sex.

Of the nine carcasses investigated: seven elk were confirmed or probable wolf kills; and two mule deer were probable wolf kills.

g. Wolf Depredation

USDA-WS members of the IFT completed 30 investigations on 48 animals with potential Mexican wolf involvement. Of these 30 investigations, 27 involved cattle ($n = 38$), 2 involved horses ($n = 2$) and 1 investigation involved sheep ($n = 1$). In addition, the IFT conducted 1 non-livestock investigation involving seven dead chickens. Average IFT response time between the reporting of an incident to the initiation of an on-site investigation was < 24 hours.

Of the 30 investigations, 12 (40%) were confirmed as being wolf related. Eight cattle deaths were confirmed as wolf depredations, 2 cattle deaths were probable wolf depredations, and 3 injured calves were confirmed as being wolf related. Sixty-seven percent ($n = 8$) of these occurred in New Mexico and 33% ($n = 4$) occurred in Arizona (Table 7). Fifty-six percent of the investigations ($n=18$) were determined to be unknown or non-wolf related. Mortality causes included: unknown ($n = 11$), coyote (*C. latrans*) ($n = 1$), bloat ($n = 2$), black bear ($n = 1$), gunshot ($n = 1$), dog ($n = 1$), vehicle ($n = 1$).

Seventy-three percent ($n = 22$) of the 30 investigations conducted were in response to reports from ranchers and the public and the remaining 27% ($n = 8$) were initiated by the IFT. Ten percent ($n = 1$) of the confirmed or probable wolf-caused livestock mortalities were found and reported by the IFT (Table 7).

In total, 4 of the 8 (50%) confirmed depredations involved uncollared wolves (Table 7). No wolves were permanently removed in 2010 for repeated depredations. The confirmed killed cattle rate for 2010 extrapolates to 14 depredations/100 wolves using the number of confirmed killed cattle ($n = 7$; table 7) compared to the final population count ($n = 50$). This projected number of depredations was within the 1-34 confirmed killed cattle per 100 wolves predicted in the FEIS.

In 2010, Defenders of Wildlife (Defenders) paid a total of \$3,568 to individuals who filed wolf-related depredation claims (this can include veterinary expenses in addition to compensation for losses). In September 2010, Defenders of Wildlife ended its long standing wolf compensation trust fund program. This program had provided compensation to livestock producers for confirmed or probable livestock kills that were attributable to wolves. They will now be shifting their focus to collaborative efforts to help livestock producers coexist with wolves. In March 2010, the Farm Service Agency (FSA) Emergency Livestock Assistance Program (ELAP) added wolf depredation as one of a list of potential events for which compensation funds can be dispersed to agricultural growers. Percentage (likely 25% up to 75%) reimbursed depends upon the total demand for ELAP funds nationally. FY 2010 funds will cover events occurring in 2008, 2009, and 2010. Funds will be dispersed after the end of year 2010. The ELAP Program is part of the Farm Bill and will undergo reauthorization starting in 2011, but its future status is unknown at this time. This fund targets agency confirmed livestock losses that have not been reimbursed by another method of compensation.

Arizona and New Mexico were each granted \$60,000, and the San Carlos Apache Tribe was granted \$4,000, from the Wolf Livestock Demonstration Project (Omnibus Bill/Tester Bill). The

grant requires a state or tribal match of 100%. So far, neither state has spent a large amount of these funds. There is currently no proposal to continue funding this Project in 2011.

h. Management Actions

In 2010, one uncollared wolf was captured for routine monitoring, in addition to being outside the BRWRA boundary. This wolf was collared, assigned studbook number M1189, and translocated back inside the BRWRA. Eight wolves were captured, collared, processed, and released on site for routine monitoring purposes for a total of nine times (Table 8). One pup, fp1208 was captured twice. The pup was originally fitted with a pup sized collar; however, an adult sized collar was attached after the second capture.

During the summer, the IFT conducted pup counts in Arizona utilizing remote trail cameras placed at den sites. Seven pups were documented as having been produced by the Hawks Nest pack and at least one pup was produced by the Rim pack. Trapping efforts to capture and collar pups from these two packs were initiated in August and three of the seven pups from the Hawks Nest pack were captured and collared during these operations.

During October, the IFT conducted a helicopter count and capture operation in New Mexico. Goals of the operation included: 1) conduct pup counts, 2) fit VHF collars on pups, and 3) replace existing VHF collars with GPS collars on alpha wolves. During the pack counts, the IFT saw pups from the helicopter; however, trail camera photos from the summer indicated there were more pups in the Luna and San Mateo packs (three and five pups, respectively) than were seen from the air (one pup in each pack). In the Middle Fork pack, the IFT observed one pup from the helicopter, whereas trail cameras had photographed two pups. The IFT did not observe from the helicopter any pups with the Dark Canyon pack. No photographic evidence or visual observation of pups was ever documented in this pack, despite having heard pup howling and observed potential pup tracks in August. Attempts to dart alpha females or pups were not successful. Three alpha males were captured and fitted with GPS collars, including AM1156 of the Luna pack, M1155 of Morgart's pack and AM871 of the Middle Fork pack.

No wolves were lethally removed in 2010 and none were permanently removed from the wild. Two wolves were translocated (f1154, M1189). f1154 was found dead on April 28. On July 15, M1189 was killed by illegal gunshot. Both incidents are under investigation.

The IFT conducted investigations in response to 11 cases of nuisance wolf behavior in 2010 (Table 9). Nuisance reports of collared animals involved wolves near residences or livestock. The remaining reports concerned possible uncollared wolves; however, IFT personnel could not confirm these sightings. The IFT issued cracker shells to one private individual who had multiple reports of f1154 in the area of his residence. Additionally, the IFT issued cracker shells to a private landowner who reported wolves adjacent to his livestock in Arizona. Trail cameras, tracking, telemetry, and howling were used to gather evidence about reported nuisance problems.

i. Proactive Management Activities

The IFT, working with Non Governmental Organizations (NGO), utilized proactive management to assist in eliminating or reducing wolf livestock conflicts in the BRWRA (Table 10). The Project and NGOs spent approximately \$100,000 on proactive management activities affecting an estimated 7100 livestock. This represented approximately 15% of the permitted livestock grazing in the BRWRA. The IFT, agency contract employees, and NGO contract employees spent approximately 5750 hours implementing proactive management activities.

The IFT installed and maintained turbo fladry around one large pasture for one stakeholder in Arizona to protect livestock on both public land and private property. No livestock depredation incidences occurred within the enclosed areas following the installation of the turbo fladry. Additional fladry was installed in smaller areas for night enclosures.

The IFT intensively monitored and hazed the Hawks Nest pack in response to the close proximity of livestock to this pack during the summer grazing season on public lands in Arizona. No livestock depredation was documented in the area where these wolves were present.

The Project and NGOs purchased hay during the calving season for one stakeholder in Arizona, and supplements for two stakeholders. One livestock depredation incident occurred on grazing lands associated with these ranches.

The Project coordinated with the Reserve Ranger District and a stakeholder in NM to address potential conflicts between livestock and wolves. Livestock were scheduled to graze in the pasture where the wolves had denned. The District and the rancher changed the pasture rotation and moved livestock into an alternate pasture for the denning season. Previous analyses and a decision by the District identified the need for two dirt water tanks in order for the alternate pasture to accommodate livestock. The District funded and pushed up the construction of the two tanks to allow the pasture to be grazed during the denning season. No known depredations occurred on the allotment during 2010.

Project personnel met with District Rangers, biologists and range staffs, to discuss livestock management during the wolf denning season. In several cases, Districts in both states changed Annual Operating Plans and pasture rotations to potentially reduce interactions between livestock and denning wolves.

The Project and NGOs contracted eight range riders to assist eight stakeholders (six in Arizona, two in New Mexico) in monitoring wolves in relation to cattle. Range riders monitored approximately 6200 livestock within six wolf pack home ranges, and provided additional oversight of livestock and light hazing of wolves when they were among the livestock.

The IFT coordinated with two NGOs, NMDGF, and the FS who contracted to build a fence to split a pasture in order to keep livestock out of a traditional wolf denning area during the denning season. Unfortunately, the contractor was unable to complete the fence during 2010 due to extenuating circumstances. The fence is slated for completion in 2011.

The IFT issued radio telemetry equipment to stakeholders in areas where wolf-livestock conflicts were prevalent. Two sets of telemetry equipment were issued to ranches in Arizona and five sets were issued in New Mexico. Two of these loans were in response to depredations by wolves on specific allotments. The IFT trained stakeholders to use the telemetry equipment to monitor wolves in the vicinity of cattle or residences. The IFT instructed stakeholders on non-injurious hazing techniques. Stakeholders were encouraged to contact the IFT for assistance and were required to report any wolf-livestock conflicts requiring intensive hazing efforts. These measures resulted in stakeholders increasing their vigilance over livestock when wolves were in the vicinity and stakeholders felt the equipment helped them to reduce the potential for livestock depredations. No depredations are known to have occurred on the allotments during the periods when range riders were under contract.

Diversionsary or supplemental food caches were utilized for three packs in 2010. Diversionsary food caches are utilized in order to reduce potential conflicts between wolves and livestock. Supplemental food caches are utilized to assist a pack or remnant of a pack in feeding young of the year when extenuating circumstances reduce their own ability to do so. Supplemental food caches also serve to reduce potential conflicts between wolves and livestock. The alpha male of the San Mateo pack died in June, while the alpha male and a yearling male of the Hawks Nest pack died in July. Both of these packs were denning and assumed to have young pups when the adults died. The IFT established supplemental food caches within a reasonable distance of the two dens in order to help the remaining adults feed the young of the year and to reduce the likelihood of livestock depredations. In both situations, two or more pups survived until the end of the year. In a third situation, a diversionsary food cache was established for the Middle Fork pack during the denning season to reduce depredation potential after the pack was confirmed by IFT personnel in 2009 for ten depredations on livestock.

One stakeholder moved livestock out of their winter range pastures and pastured them on leased land outside of the BRWRA. This change in management allowed the winter range to be rested from livestock grazing, providing an area free of livestock where native ungulates congregate. The potential for winter depredations was greatly reduced in the area. An NGO paid for the trucking costs.

Cracker shells were allocated to two stakeholders for use in hazing wolves that entered private land. IFT personnel hazed wolves on a number of occasions when they were creating nuisances to private landowners or were in close proximity to livestock on private and public land. In many cases, the wolves moved away though a few were persistent in returning.



Mexican wolf F903 of the San Mateo Pack with young of the year at a supplemental food cache. Mexican Wolf Interagency Field Team trail camera photo.

j. Non-IFT Wolf Sighting Reports

In 2010, the IFT received a total of 55 wolf-sighting reports from the public, which included 45 reports from Arizona and 10 reports from New Mexico (Appendix B). The IFT determined 30 reports were non-wolf sightings (coyote, dogs, etc.), seven reports were sightings from known wolves within established territories (Arizona $n = 6$, New Mexico $n = 1$), one report was likely an uncollared/unknown wolf (Arizona $n = 1$, New Mexico $n = 0$), with five reports being probable wolf sightings (wolves located in area; however, weak sighting descriptions cannot be proven) (Arizona $n = 6$, New Mexico $n = 1$), and twelve reports did not have enough information to make a determination. To report a sighting of a Mexican wolf, please call 1-888-495-WOLF (9653). The public is encouraged to report Mexican wolf sightings to help the IFT locate undocumented packs and track movements of wolves within and around the BRWRA.

k. Uncollared wolf sign

The IFT used uncollared wolf sign and sighting reports to target 14 core areas (Fig. 6) in an effort to document and/or radio collar unknown wolves in and around the BRWRA. The IFT searched a total of 932 mi (1500 km) of roads and trails. Two single wolves were documented in AZ and two single wolves were documented in New Mexico (Fig. 7).

l. Outreach

The IFT and other project personnel gave 23 presentations and status reports to approximately 676 people in federal and state agencies, conservation groups, rural communities, schools, wildlife workshops, and various other public and private institutions throughout Arizona, New Mexico and White Mountain Apache Tribal lands. Seventy-eight percent of the presentations were for the BRWRA target audience. In addition, 5683 weekly contacts were made to cooperating agencies and stakeholders. The monthly project update was faxed to, or posted at, 40 different individuals/locations across the BRWRA. Endangered Species Updates containing current project and recovery program information also went out to an average of 12,712 people a month. Outreach presentations can be scheduled by contacting the IFT at 1-888-495-WOLF (9653).

At available USFS kiosks and various road pullouts in the BRWRA, the IFT maintained metal signs and laminated posters that provide information on how to minimize conflicts with wolves. The IFT also maintained USFWS reward posters at USFS kiosks and local businesses in the BRWRA as necessary, to provide notice of a \$10,000 reward for information leading to the apprehension of individuals responsible for illegal Mexican wolf killings.

4. Summary

The 2010 end-of-year count confirmed 23 radio-collared wolves (16 adults, 4 subadults, and 3 pups). The population consisted of 10 packs (4 in Arizona, 6 in New Mexico). Twenty-seven uncollared wolves, including uncollared singles and groups were documented throughout 2010. Eleven of the 27 uncollared wolves were associated with 6 radio-collared packs (Table 1). There were 3 radio-collared single wolves (M619, f1154, m1185) but only m1185 was known to be alive at the end of the year (Note: M1155 and F1106 were single wolves for a portion of the year, but had naturally paired by year's end). There are likely more undocumented, free-ranging wolves in the population, but most of these are likely single animals, as a wolf pack generally leaves more sign and its existence is easier to document.

The IFT conducted two hard release translocations of one wolf each. One wolf, M1189, was translocated for being outside the boundary. F1106 was translocated in attempt to increase genetic diversity, the number of breeding pairs, and the number of wolves in the wild.

Seven packs produced wild-conceived, wild-born litters. This is the ninth consecutive year wild-born Mexican wolves bred and raised pups in the wild. In addition, 91% of the radio-collared individuals and 96% of all documented wolves were wild-born.

The IFT documented six mortalities of free-ranging wolves in 2010, including five adults and one subadult.

Home ranges were calculated for 10 packs exhibiting territorial behavior. The MCP method produced an average home range size of 237 mi² (613 km²), with home ranges varying from 66 mi² to 830 mi² (171 km² to 2149 km²).

Native prey used by wolves consisted primarily of elk; however, there were also eight confirmed livestock depredations and two probable livestock depredation. There were three confirmed livestock injuries attributed to wolves.

The IFT captured eight wolves a total of nine times for routine monitoring ($n = 7$), movement outside the BRWRA boundary ($n = 1$) and incidental catch ($n = 1$). One wolf, fp1208, was caught a second time while the IFT continued the trap line for additional pups in that litter. The wolf, M1189, was outside of the boundary was translocated back into the BRWRA.

The IFT analyzed 51 reports of wolf sightings from the public; 59% of these reports were non-wolf sightings (coyote, dogs, deer, etc.), 14% were sightings of known wolves within established territories, 10% were probable wolf sightings, 2% were likely uncollared/unknown wolves, and the remainder was categorized as unknown due to insufficient information. In response to these sightings, the IFT searched 932 mi (1500 km) of roads, trails, and canyons looking for unknown wolves in and around the BRWRA. As a result, the IFT was successful in documenting two single wolves in AZ and two single wolves in New Mexico.

Project personnel gave 23 presentations and status reports to approximately 676 people in federal and state agencies, conservation groups, rural and urban communities, guide/outfitter organizations, livestock associations, schools, fairs, and various other public and private institutions. In addition, 5683 weekly contacts were made to cooperating agencies and stakeholders. *Endangered Species Updates* containing current project and recovery program information went out to an average of 12712 people a month.

The IFT acknowledges the assistance of all agency personnel and volunteers who provided data and support services for the operational field portion of the Mexican wolf reintroduction project during this reporting period. Individuals listed in Appendix C collected data or provided other information for this report.

5. Discussion

The IFT documented the Mexican wolf population at a minimum population of 50 wolves in 2010 (Table 1, Fig. 8). The minimum number of breeding pairs (two) remained the same in 2010 as in 2008 and 2009 (Table 1, Fig. 4). The minimum total number of pups alive at the end of the year was higher ($n = 14$ (Table 1) than the previous year ($n = 7$) and the number of known mortalities decreased from eight in 2009 to six in 2010 (Table 4). Of the three single wolves: one is fate unknown (M619); one died (f1154) and one remains in the wild with a functioning radio-collared (m1185). The subadult male (m1185) left the Middle Fork pack in May but returned in August, only to leave again in November. Morgart's pack (F1106, M1155) was the only natural pair

formation. Fewer known adult wolves available for pair formation are likely a compounding result of low pup survival in the previous years in addition to human caused mortality and lack of appropriate initial releases and successful translocations from captivity.

Based on meta-analysis of gray wolf literature, Fuller et al. (2003) identified a 0.34 mortality rate as the inflection point of wolf populations. Theoretically, wolf populations below a 0.34 mortality rate would increase naturally, and wolf populations above a 0.34 mortality rate would decrease. The Mexican wolf population had an overall failure (mortality plus removal) rate of 0.252 in 2010, largely due to no management removals of wolves in the population this year. While the significant reduction in the number of management removals is encouraging, the majority of the population losses in 2010 were due to human-caused mortalities rather than removals. Efforts to document the uncollared wolf component of the population will continue to be a priority activity. The project will also continue to attempt to reduce the level of mortality, while replacing the individual animals lost through initial releases and translocations.

The 2010 confirmed killed cattle rate extrapolates to approximately 14 depredations/100 wolves using the number of confirmed killed cattle ($n = 7$) compared to the final 2010 population count ($n = 50$). This projected number of depredations was within the 1-34 confirmed killed cattle per 100 wolves predicted in the FEIS. It is important to note the standard for extrapolating the annual confirmed killed cattle rate/100 wolves uses the end of year wolf population count, which does not include wolves that died during 2010. Thus, the confirmed killed cattle rate per 100 wolves, as a matter of practice, underestimated the denominator which inflates the total rate.

A high number of mortalities may exceed growth from natural recruitment, translocations, and initial releases in a given year. Nonetheless, a combination of initial releases, translocations, natural pair formations, and reproduction in 2011 could result in another increase in the Mexican wolf population. The Project management objective for 2011 is a 10% increase in the minimum wolf population counts and/or the addition of at least two breeding pairs, while minimizing negative impacts of wolves. Critical suggested changes to the Mexican wolf reintroduction project are outlined in the Five Year Review. The Project will continue to work on implementing these improvements in 2011.

6. Literature Cited

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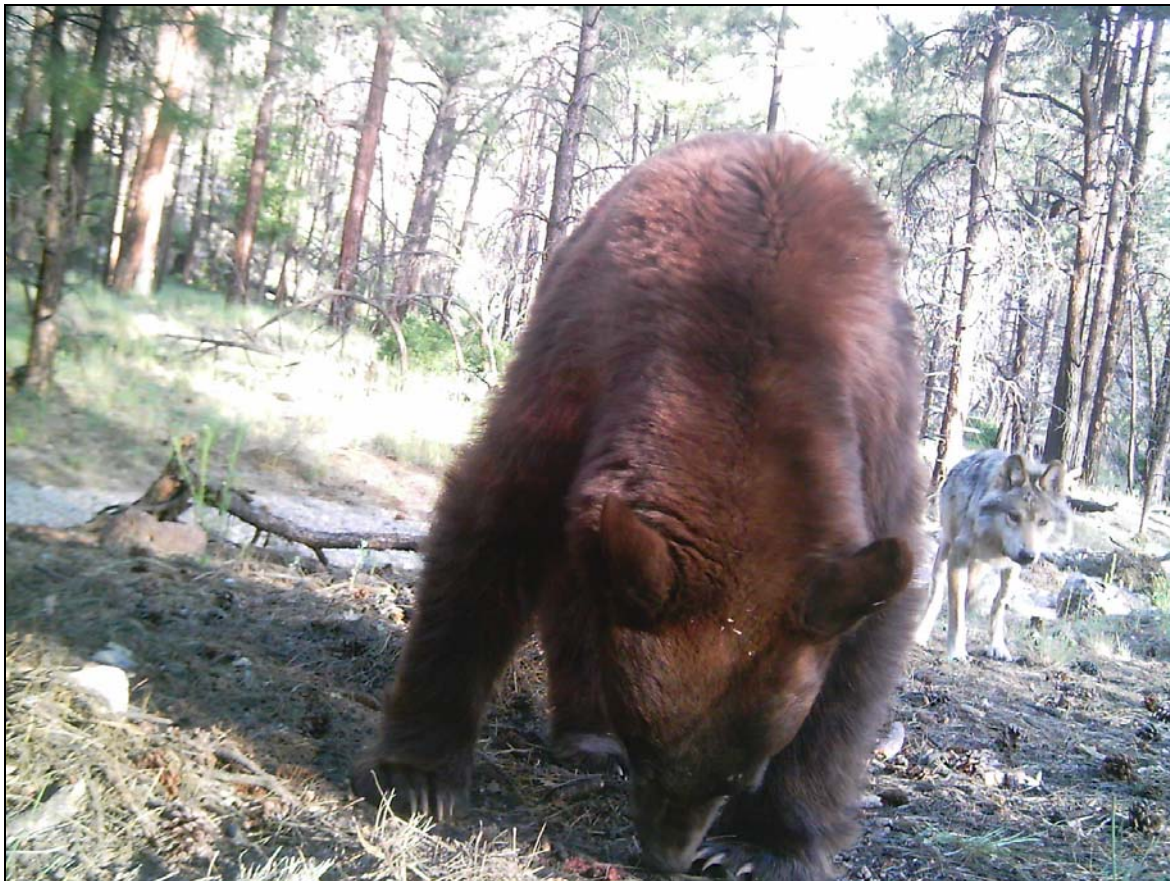
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Mexican wolf M871 of the Middle Fork Pack. Mexican Wolf Interagency Field Team trail camera photo.

Table 1. Status of Mexican wolf packs in Arizona and New Mexico, as of December 31, 2010.

Pack	Wolf ID	Reproduction ^a	Pups at Year End ^b	No. Collared	No. Uncollared	Min pack Size ^c
Bluestem, AZ	AM806, AF1042, m1183	0	0	3	0	3
Dark Canyon, NM	AM992, AF923	0	0	2	0	2
Fox Mountain, NM	F521 ^e , M1157, M1158	0	0	2	0	2
Hawks Nest, AZ	AM1044 ^e , AF1110, M1155 ⁱ , f1188, M1189 ^e fp1208, mp1209, mp1210	7	5	5	3	8
Luna, NM*	M1156, F1115	3	3	2	3	5
Middle Fork, NM*	AM871, AF861, m1185 ^j , fp1211 ^h	2	2	2	2	4
Morgart's Pack, NM	F1106, M1155	0	0	1	0	1
Paradise, AZ	AM795 ^f , AF1056	0	0	1	1	2
Rim, AZ	AM1107, AF858, f1187	1	1	3	1	4
San Mateo, NM	AM1114 ^e , AF903, fp1212 ^h	5	3	1	3	4
Radio collared wolf, NM	F1106 ^{e,i}	0	0	0	0	0
Radio collared wolf, NM	f1154 ^e	0	0	0	0	0
Radio collared wolf, NM	m1185 ^j	0	0	1	0	1
Radio collared wolf, AZ/NM	M619 ^f	0	0	0	0	0
Raspberry Creek, AZ	Uncollared wolf	0	0	0	1	1
Coleman Creek, AZ	Uncollared wolf	0	0	0	1	1
Iron Creek, NM	Uncollared wolf	0	0	0	1	1
Leggett Peak, NM	Uncollared wolf	0	0	0	1	1
FAIR	Uncollared wolves	N/A ^d	N/A ^d	N/A ^d	N/A ^d	N/A ^d
SCAR	Uncollared wolves	N/A ^d	N/A ^d	N/A ^d	N/A ^d	N/A ^d
Totals¹		18	14	23	27	50

^aReproduction-maximum number of pups documented in 2010.

^bPups at year end documented surviving until December 31, 2010.

^cMin pack size-total number of wolves (collared, uncollared, pups) documented at year end.

^dWolf numbers on FAIR and SCAR are proprietary and therefore not displayed.

^eDied during 2010.

^fFate unknown during 2010.

^h Counted as uncollared in 2010, collared in 2011.

ⁱ Dispersed to form new pack.

^j Dispersed off and on throughout year; counted as single in table.

¹ Totals include wolves occurring on FAIR and SCAR.

*A pack that meets the definition of a breeding pair per the final rule.

Table 2. Mexican wolves translocated from captivity or the wild in Arizona and New Mexico during January 1 – December 31, 2010.

Wolf pack	Wolf #	Release Site	Release Date	Released or Translocated
Single	f1154	Gila Flat, NM	January 10	Translocated from captivity
Hawks Nest	M1189	Carnero Lake, AZ	January 25	Translocated from wild

Table 3. Home range sizes of free-ranging Mexican wolf packs in Arizona and New Mexico, January 1 – December 31, 2010.

Wolf ID	Home Range Size 95% Min. Convex Polygon mi ² (km ²)	Number of Independent Aerial Locations	Duration of Time Radio Locations were Available during 2010
Bluestem	185 (479)	45	12 months
Dark Canyon	116 (300)	41	12 months
Fox Mountain	830 (2149)	41	7 months
Hawks Nest	210 (543)	46	12 months
Luna	185 (479)	45	12 months
Middle Fork	66 (171)	44	12 months
Morgart's	204 (528)	32	7 Months
Paradise	142 (367)	43	12 months
Rim	89 (230)	45	12 months
San Mateo	349 (903)	43	12 months
Average^a	237 (615)	43	11.6 months

^aAverages were based on packs with enough locations to calculate home ranges.

Table 4. Wild Mexican wolf mortalities documented in Arizona and New Mexico, 1998-2010.

Year	Illegal shooting	Vehicle collision	Natural ^a	Other ^b	Unknown	Awaiting necropsy	Annual Total
1998	4	0	0	1	0	0	5
1999	0	1	2	0	0	0	3
2000	1	2	1	0	0	0	4
2001	4	1	2	1	1	0	9
2002	3	0	0	0	0	0	3
2003	7	4	0	0	1	0	12
2004	1	1	1	0	0	0	3
2005	3	0	0	0	1	0	4
2006	1	1	1	1	2	0	6
2007	1	0	1	0	2	0	4
2008	6	2	2	1	2	0	13
2009	4	0	3	0	0	1	8
2010	2	0	1	0	0	3	6
Total	37	12	14	4	9	4	80

^aIncludes three wolves lost to predation, two to starvation, two to disease (canine parvovirus and chronic bacterial pleuritis), and one each to asphyxiation (snake bite), euthanasia, toxemia, and ingestion of a foreign object.

^bIncludes 2 capture-related mortalities and 1 legal public shooting.

Table 5. Mexican wolf mortalities documented in Arizona and New Mexico during January 1 - December 31, 2010.

Wolf ID	Pack	Age (years)	Date Found	Cause of Death
f1154	Single	2	April 28	Awaiting necropsy
M1044	Hawks Nest	5 - 6	June 18	Illegal shooting
M1114	San Mateo	5	June 23	Awaiting necropsy
M1189	Hawks Nest	2 - 3	July 15	Illegal shooting
F1106	Morgart's	3	October 12	Intestinal blockage
F521	Fox Mountain	13	December 2	Illegal shooting

Table 6. Mexican wolf depredations of livestock documented in Arizona and New Mexico during January 1 – December 31, 2010.

	Confirmed	Probable	Total
Fatal	8	2	10
Injury	3	0	3

Table 7. Investigations of confirmed and probable depredation and injuries caused by Mexican wolves to livestock during 2010 in New Mexico and Arizona. Depredation incidents are defined as the aggregate number of livestock confirmed killed or mortally wounded by an individual wolf or a single pack of wolves at a single location within a 1-day (24-hour) period, beginning with the first confirmed kill, as documented in the initial IFT incident investigation pursuant to SOP 11.0.

	Wolves in Area	Investigation Date	Located By IFT	Species	State	Killed/Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents for 2010	Management Action
1	Paradise	February 1	No	Cattle	AZ	Killed	Confirmed	795, 1056	No ^a	0	Monitoring
2	Fox Mountain (521, 1157)	February 3	Yes	Cattle	NM	Killed	Probable	521, 1157	No	0	Monitoring
3	Fox Mountain and San Mateo	February 19	No	Cattle	NM	Killed	Confirmed	unknown	No ^b	0	Monitoring
4	Middle Fork	April 28	No	Cattle	NM	Killed	Confirmed	unknown	No ^b	0	Monitoring
5	San Mateo	June 19	No	Cattle	NM	Killed	Confirmed	uncollared	Yes	1	Monitoring; food cache established
6	San Mateo	June 19	No	Cattle	NM	Injured	Confirmed	AM1114	No	0	Monitoring; food cache established
7	San Mateo	June 22	No	Cattle	NM	Killed	Probable	San Mateo	No	0	Monitoring; food cache established
8	Bluestem	July 1	Yes	Cattle	AZ	Killed	Confirmed	Bluestem	Yes	1	Monitoring; Intensive hazing
9	Bluestem	July 3	No	Cattle	AZ	Injured	Confirmed	Bluestem	No	1	Monitoring; Intensive hazing
10	Unknown	April 2	No	Horse	NM	Killed	Confirmed	Uncollared	No	0	Set traps in area.
11	Unknown	April 26	No	Cattle	NM	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
12	Unknown	May 14	No	Cattle	NM	Injured	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
13	Unknown	August 30	No	Cattle	AZ	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity

^aCattle were not lawfully present. Therefore, based on the definition of a depredation this event is not tallied in the document text in Part B, 3, g.

^bNo depredation incident was assigned. Evidence was not definitive as to which wolves were involved.

Table 8. Mexican wolves captured in Arizona and New Mexico from January 1, 2010 – December 31, 2010.

Pack	Wolf ID	Capture Date	Reason for Capture
Hawks Nest	M1189	January 25	Helicopter capture, outside the BRWRA boundary, collared and released inside BRWRA boundary.
San Mateo	AF903	January 30	Helicopter capture, collar replaced and released.
Hawks Nest	fp1208	August 19	Routine monitoring purposes. Captured, collared and released on site.
Hawks Nest	mp1209	August 21	Routine monitoring purposes. Captured, collared and released on site.
Hawks Nest	fp1208	October 1	Routine monitoring purposes. Captured, collared and released on site.
Hawks Nest	mp1210	October 3	Routine monitoring purposes. Captured, collared and released on site.
Middle Fork	AM871	October 5	Routine monitoring purposes. Helicopter capture. Captured, collared and released on site.
Morgart's	M1155	October 7	Routine monitoring purposes. Helicopter capture. Captured, collared and released on site.
Luna	AM1156	October 7	Routine monitoring purposes. Helicopter capture. Captured, collared and released on site.

Table 9. IFT management actions resulting from Mexican wolf nuisance activities in Arizona and New Mexico during 2010.

Date	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
February 13	San Mateo	North of Apache Creek, NM	Wolves near residence and cattle	IFT investigated the report.	No action taken, wolves had left area.
February 27	Uncollared	Heber, AZ	Wolves were near residence	IFT investigated the report.	No wolves documented in area, coyote and dog tracks.
February 19 March 10	Uncollared	Cliff, NM	Wolves on private property near residence	IFT investigated the report.	Staff monitored for uncollared wolves and found one potential wolf size track.
mid-March	F1154	North of Mimbres, NM	Wolf on private property near residence	IFT investigated the report.	Cracker shells issued to landowner. Wolf left area.
July 10	Hawks Nest	ASNF	Wolves testing group of 6 cows and 1 calf	IFT investigated the report and hazed wolves out of the area.	Staff continued to monitor weekly and haze when required.
July 24 to 30	Uncollared	Reserve, NM	Wolf tracks on private property	IFT investigated report.	Set up trail camera. No wolf tracks found.
August 6	Uncollared	Springerville, AZ	Wolf tracks near residence	IFT investigated the report.	Set up trail camera. No wolf tracks documented.
September 6 to 20	Hawks Nest	ASNF	Wolves near cows	IFT investigated and hazed wolves out of area.	Staff continued to monitor weekly and haze when required.
September 7 to 22, November 9	Uncollared	Glenwood, NM	Wolves seen in campground	IFT investigated the report.	Set up trail camera. Photos of wolves shown to individual and determined it was not the animal observed. No wolves documented in the area.
September 8	Morgart's	Winston, NM	Wolves ran horses through fence	Owner declined investigation	No action taken.
December 10	Uncollared	Eagar, AZ	Wolf reported on private property near boneyard	IFT investigated report.	Set up trail camera. No wolves documented in area.

Table 10. IFT proactive management activities in Arizona and New Mexico during 2010.

Proactive Management Activity	Purpose	Date	Location	Wolf ID	Management Result
Fladry – 3 miles	Reduce the probability of livestock depredation within a small area.	May to October	Sheep Springs, AZ	Paradise, uncollared?	No known livestock depredations
Fladry – variable	Reduce the probability of livestock depredation on sheep at night.	May to September	Sheep Springs, AZ	Paradise, uncollared?	No known livestock depredations
Transport	Move livestock out of area in winter.	December	Greer, AZ	Paradise, Hawks Nest, Uncollared	No livestock depredation
Hay and Supplements	Reduce the probability of livestock depredation during calving season.	January to March	Blue River, AZ	Uncollared Wolves	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	June through September	Crosby Crossing, AZ	Hawks Nest	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	July through November	Mangas, NM	San Mateo	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	July to October	Greens Peak, AZ	Paradise, Uncollared Wolves	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	July through October	Beaverhead NM	Morgart, Middle Fork	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	August to November	Black River, AZ	Bluestem	No additional livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	December	Strayhorse, AZ	Uncollared wolves	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	May through August	Pole Knoll, AZ	Paradise, Uncollared Wolves	No known livestock depredations
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	September	Greer, AZ	Uncollared	No additional livestock depredations
Built 2 Water Dirt Tanks	Allow use of alternate pasture to reduce wolf depredation.	May	Elk Mountain, NM	Middle Fork	No known livestock depredations

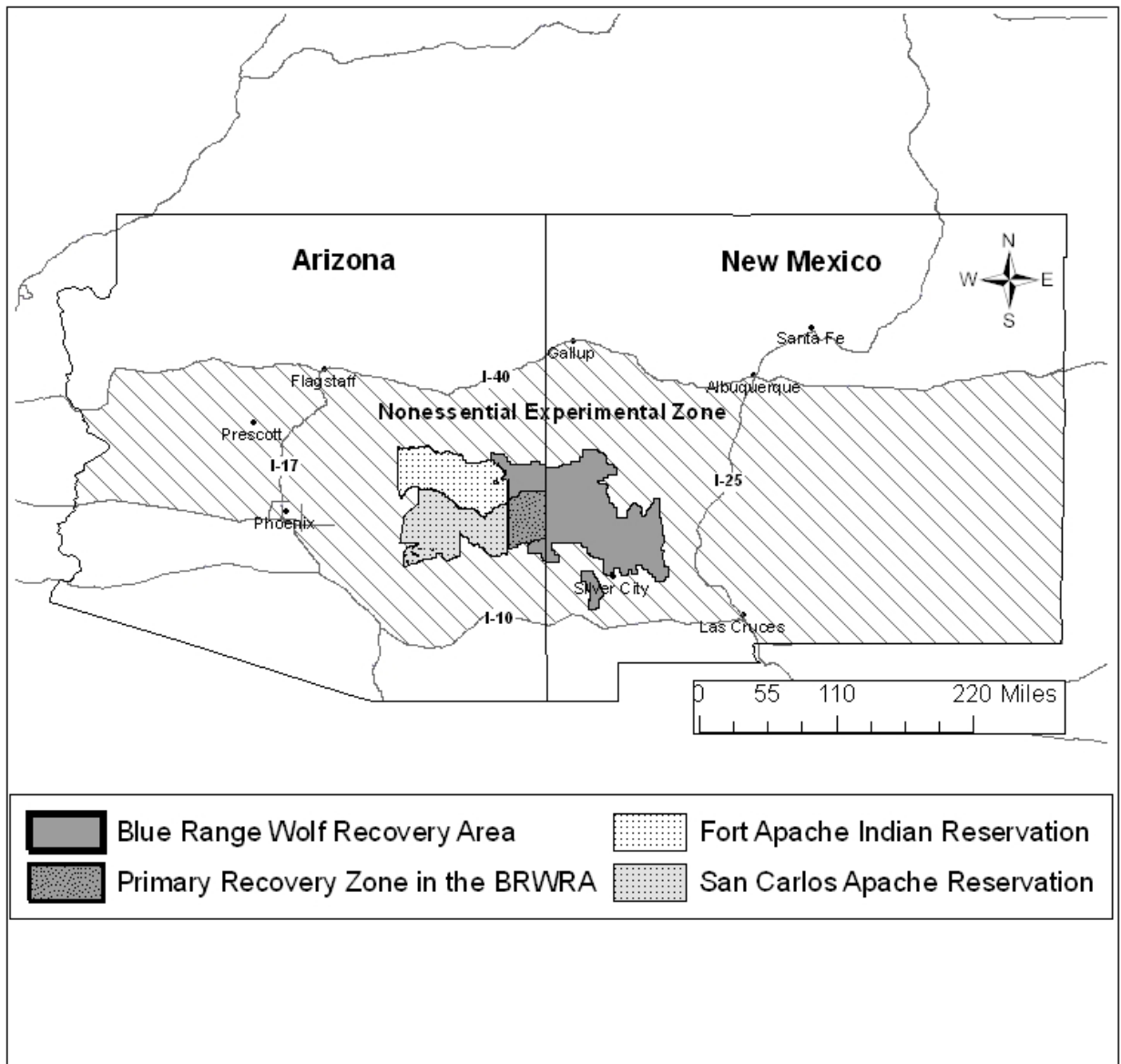


Figure 1. The Blue Range Wolf Recovery Area and Mexican wolf nonessential experimental zone (cross-hatched area) in Arizona and New Mexico.

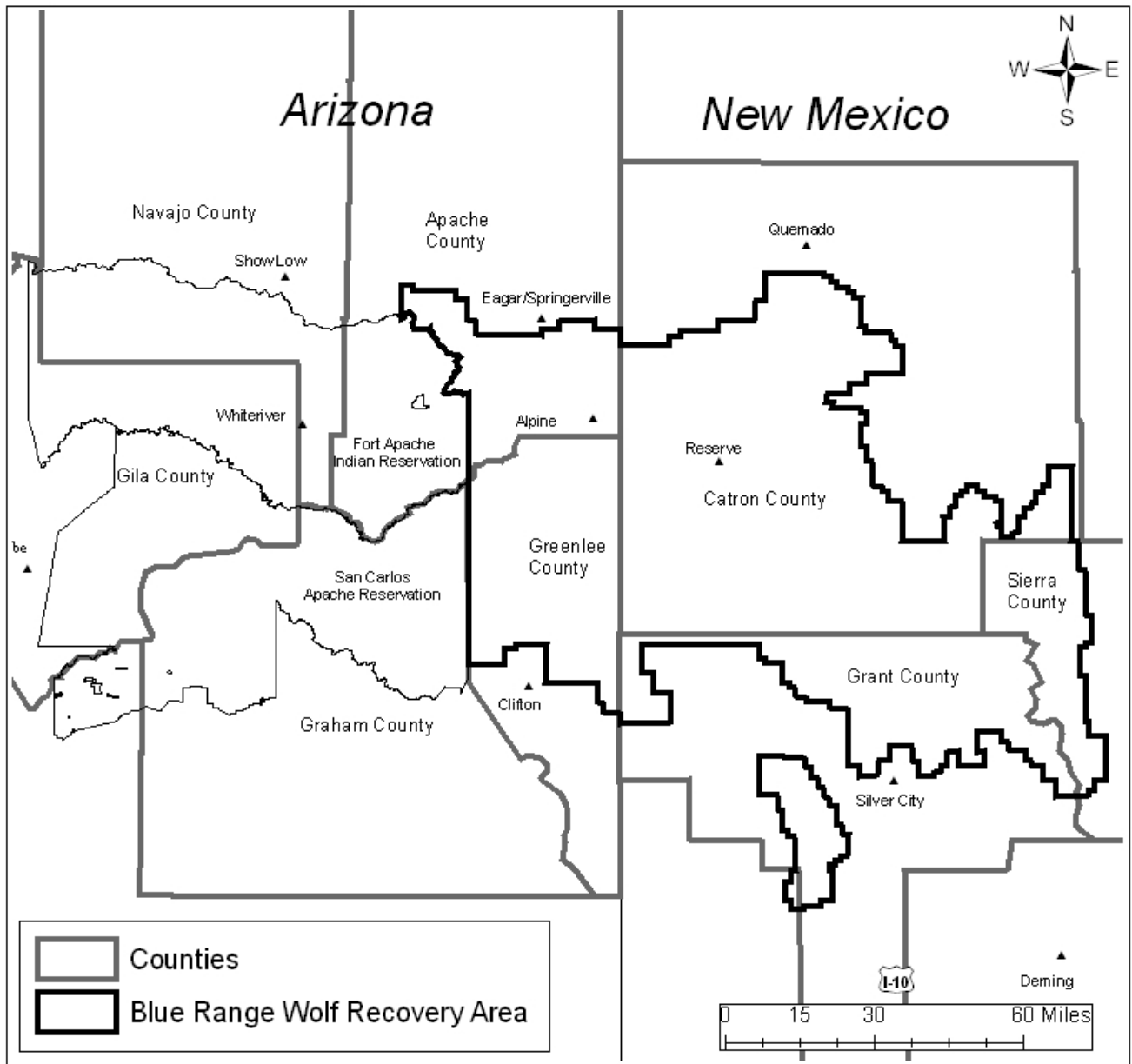


Figure 2. Counties that occur in or adjacent to the Blue Range Wolf Recovery Area in Arizona and New Mexico.



Figure 3. Translocation sites used during 2010 in Arizona and New Mexico within the Blue Range Wolf Recovery Area.

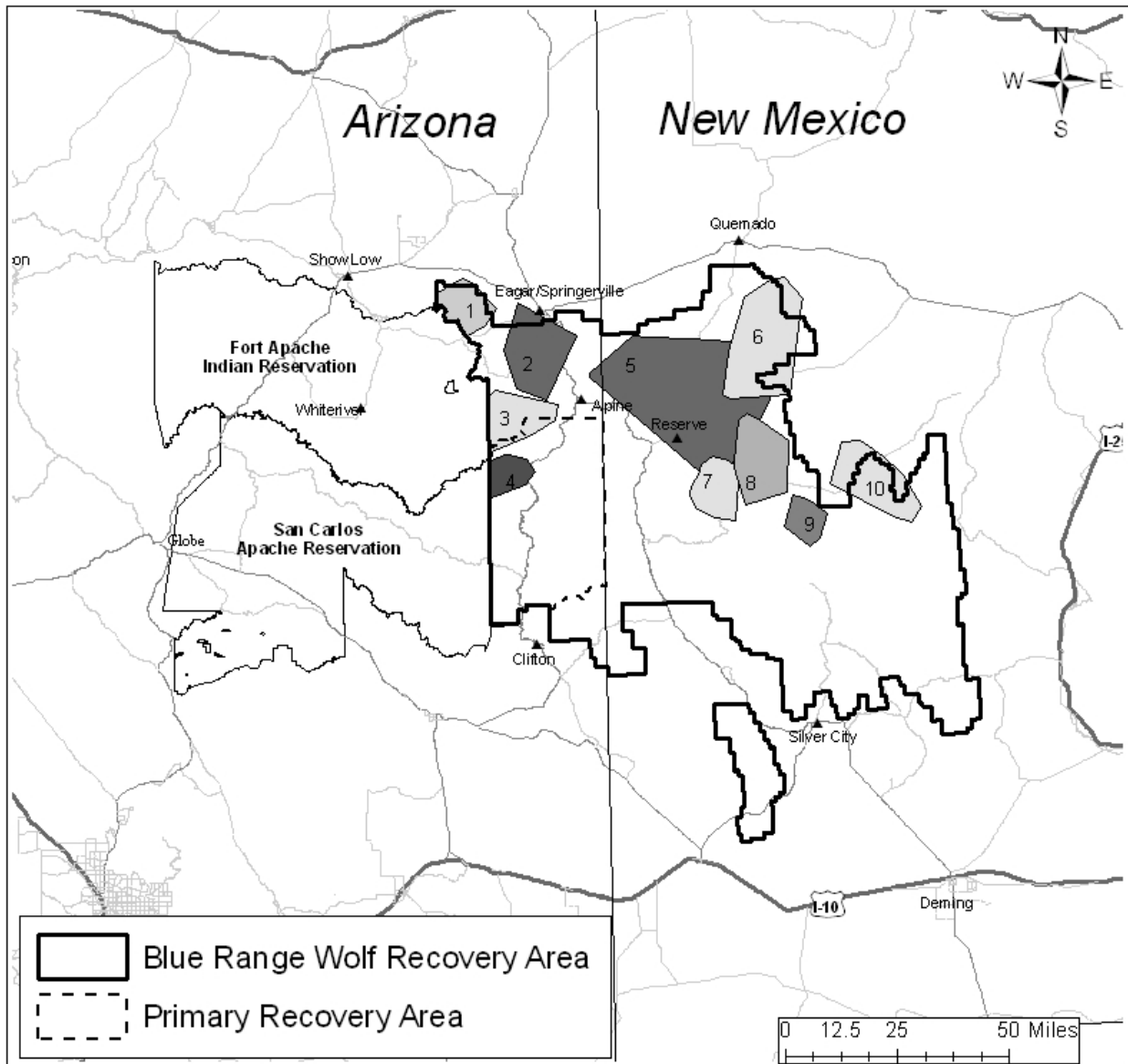


Figure 4. Mexican wolf home ranges for 2010 in Arizona and New Mexico. The shaded polygons and corresponding numbers on the map represent wolves having >20 independent radio locations and exhibiting movement characteristics consistent with a home range during 2010. See the following page for information regarding the wolf packs and home ranges.

Figure 4. Continued.

Map Number	Wolf Pack	Number of Wolves	Wolf Fate at the End of 2010	Breeding Pair Status	Home Range Size (mi²)
1	Paradise	2	Free-ranging	No	142
2	Hawks Nest	7	Free-ranging	No	210
3	Bluestem	3	Free-ranging	No	185
4	Rim	4	Free-ranging	No	89
5	Fox Mountain	2	Free-ranging	No	830
6	San Mateo	5	Free-ranging	No	349
7	Dark Canyon	2	Free-ranging	No	116
8	Luna	5	Free-ranging	Yes	185
9	Middle Fork	4	Free-ranging	Yes	66
10	Morgart's	1 ^a	Free-ranging	No	204

^aThis pack met the requirements for consideration as an independent pack from April through October of 2010, until F1106 was located dead in the BRWRA.

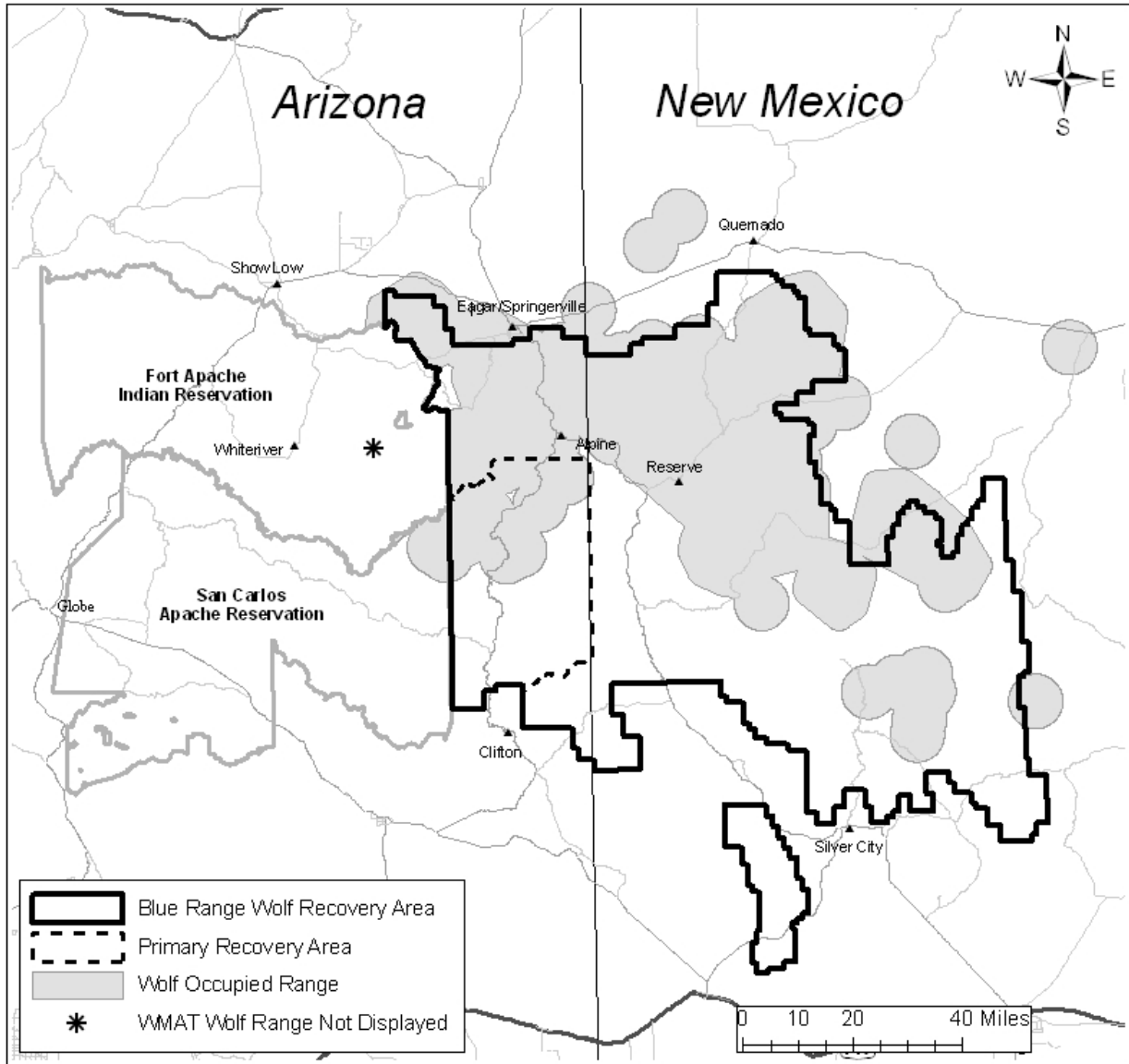


Figure 5. Mexican wolf occupied range in Arizona and New Mexico within the Mexican Wolf Nonessential Experimental Zone as defined in the Final Rule (USFWS 1998).

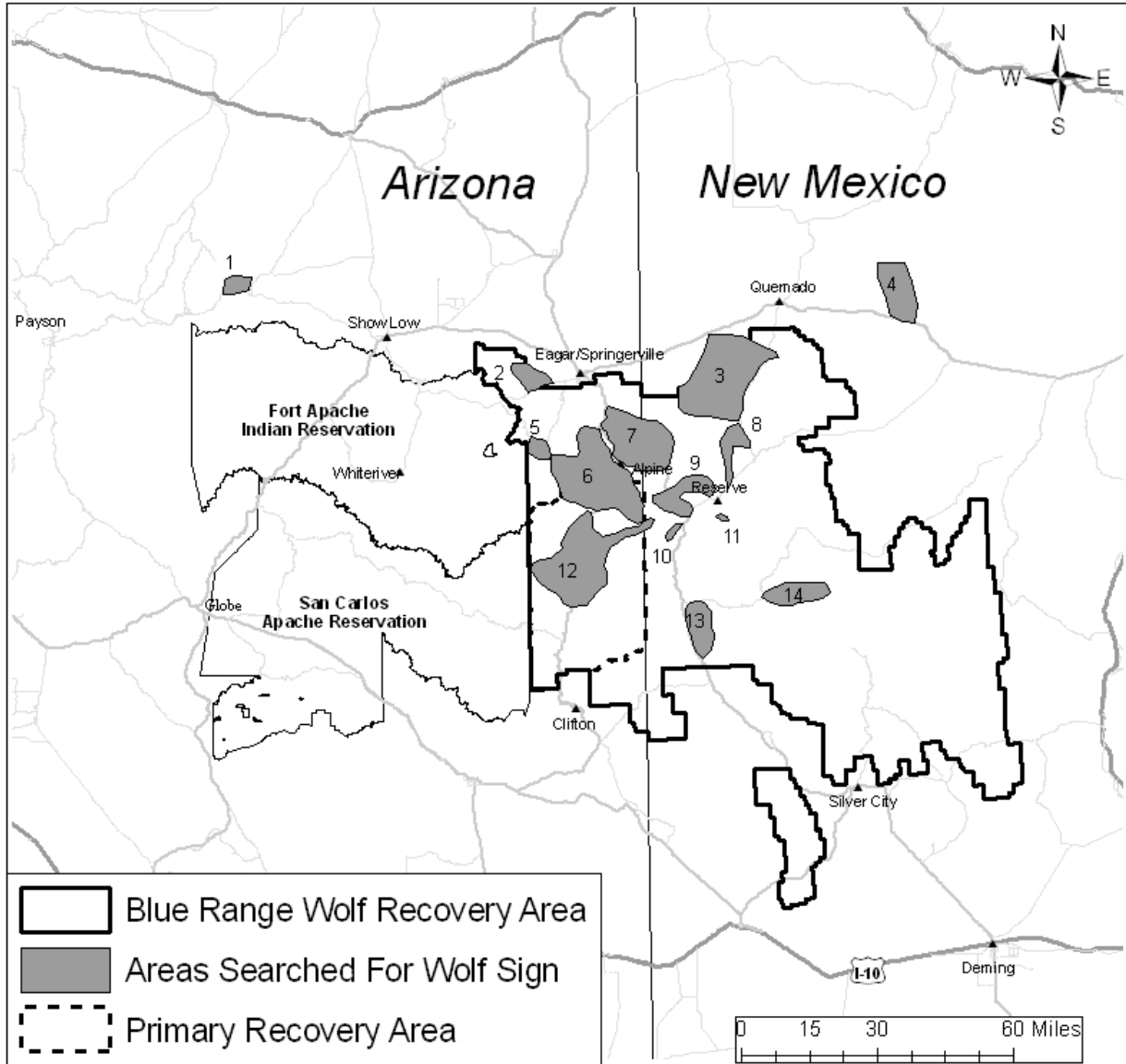


Figure 6. Areas searched and corresponding miles searched (driven or hiked) for uncollared wolf sign in Arizona and New Mexico. Search areas corresponding to “map numbers” as follows:

Figure 6 continued.

Map Numbers	Search Area	Miles Searched in AZ	Miles Searched in NM
1	Heber	6	0
2	Antelope Mountain	19	0
3	Johnson Basin	0	69
4	Datil	0	28
5	Big Lake	17	0
6	Coleman Creek	222	0
7	Escudilla	44	44
8	Torriette Lakes	0	45
9	Bull Basin	0	54
10	Pueblo Park	0	6
11	Negrito Creek	0	4
12	Strayhorse	313	0
13	Glenwood	0	25
14	Iron Creek	0	36
	Total	621	311
	Grand Total for AZ and NM	932	

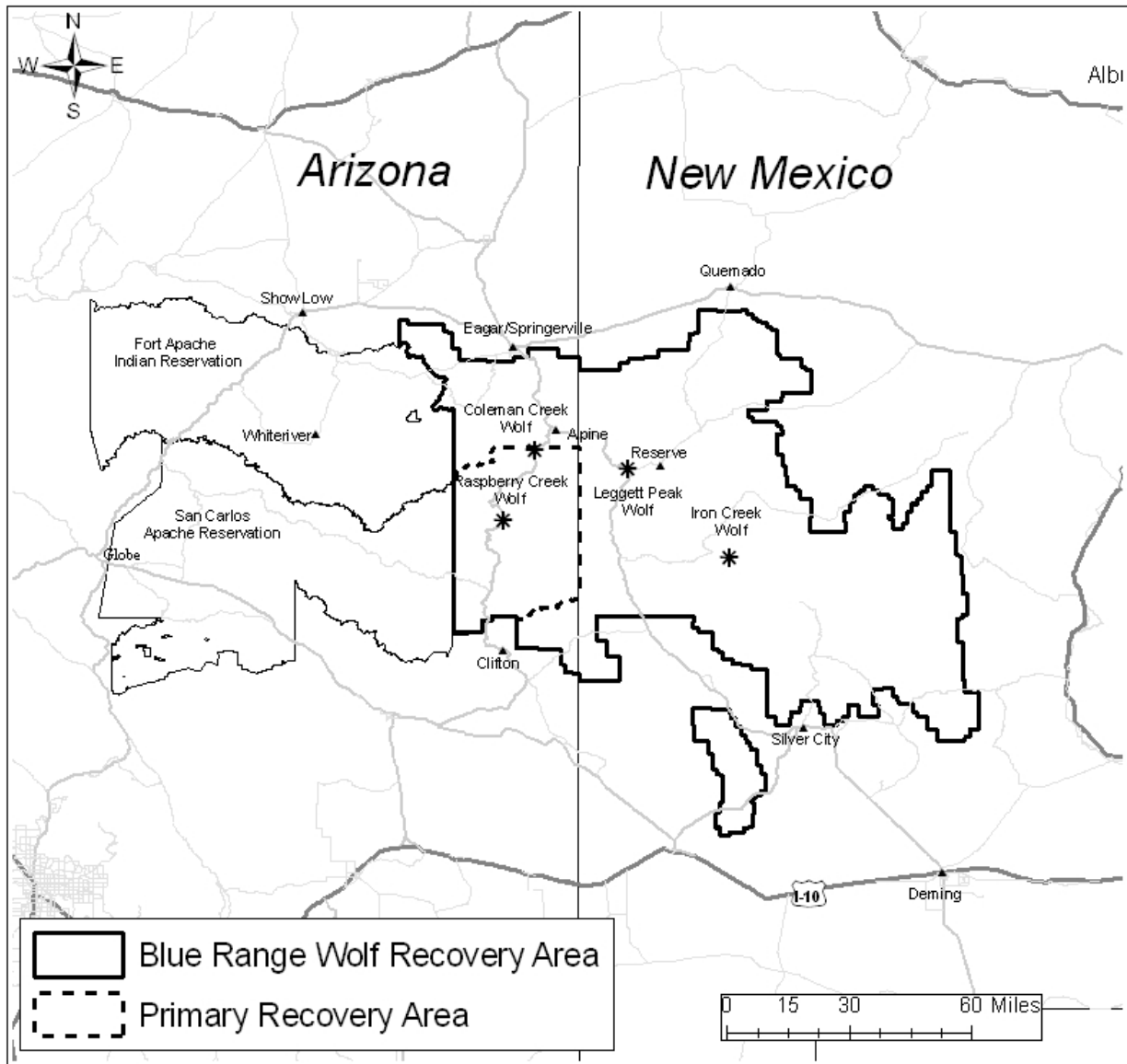


Figure 7. Uncollared wolves documented and counted in the 2010 wolf population in Arizona and New Mexico.

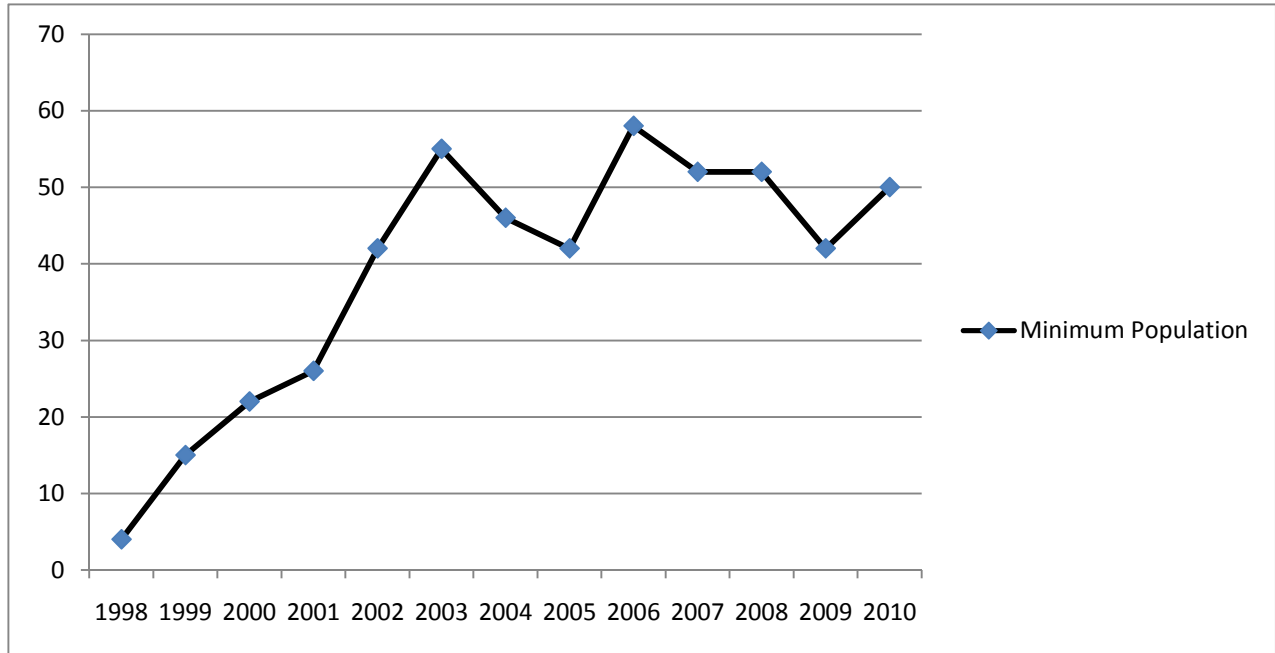


Figure 8. Mexican wolf minimum population estimates from 1998 through 2010 in Arizona and New Mexico.

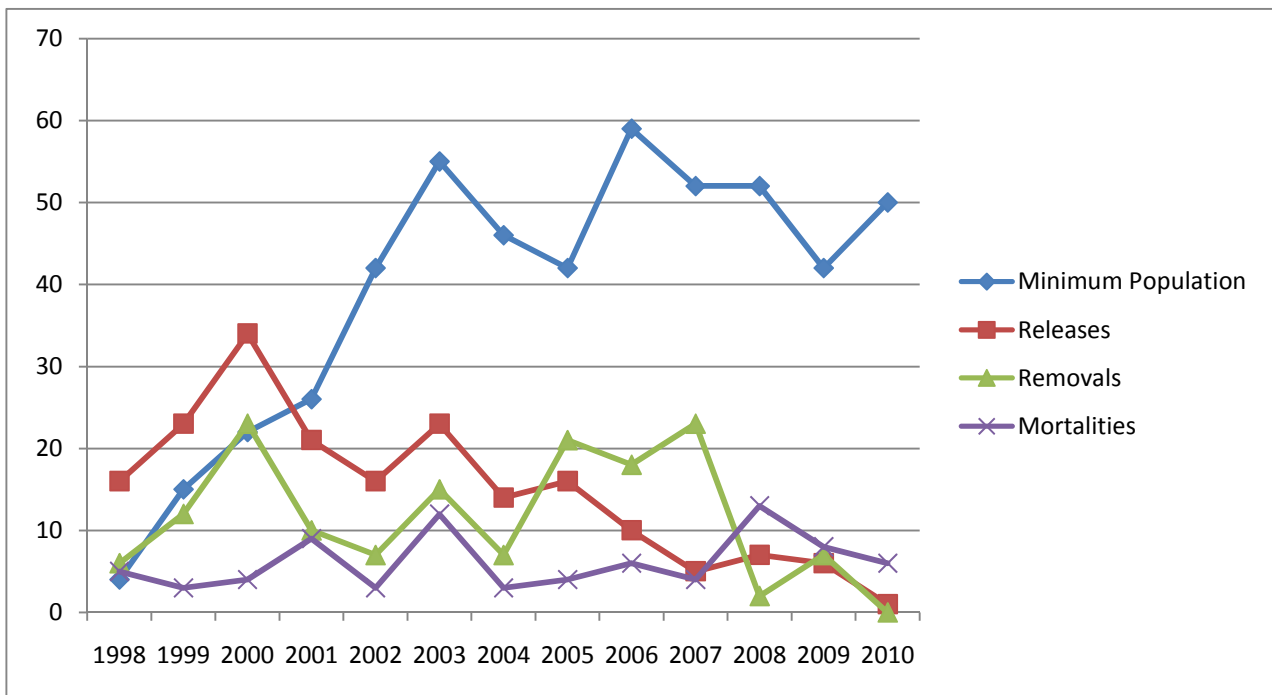


Figure 9. Mexican wolf population estimates and associated population parameters. Wolves released included: translocations (wolves re-released from captivity back into the wild) and initial releases (wolves released with no wild experience). Lethal control of wolves was counted within the wolves removed figures because they are associated with management actions.

Appendix A. 2010 Pack and Single Wolf Summaries

7. Pack Summaries

Bluestem pack (AM806, AF1042, m1183)

Throughout the year the Bluestem pack utilized their traditional territory in the central portion of the ASNF and the FAIR. In January, the Bluestem pack consisted of three wolves with functioning radio collars (AM806, AF1042, and m1183). The IFT documented denning behavior from AM806 and AF1042 in May. In June, the Bluestem pack started making large movements through their territory, which indicated an abandonment of denning activities. On July 1, IFT personnel confirmed that multiple wolves killed a cow south of Big Lake. The incident was assigned to the Bluestem pack. The Bluestem pack injured a calf on July 3 south of Big Lake. The calf was expected to survive the injuries. In December, m1183 made dispersal movements and remained apart from AM806 and AF1042. As of January 2011, the Bluestem pack consisted of two animals (AM806, AF1042); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule (USFWS 1998). No mortalities, removals or translocations involving the Bluestem pack occurred in 2010.

Dark Canyon pack (AF923, AM992)

In January, the pack consisted of AF923 and AM992. Throughout the year, the Dark Canyon pack remained in its traditional territory in the west-central portion of the GNF. In May, the IFT documented denning behavior; however, the IFT could not confirm pups even though adult behavior suggested pups survived past the denning period. During the annual population count in January 2011, no uncollared animals were spotted with the alpha pair despite numerous attempts. Therefore, per the definition in the Final Rule, the Dark Canyon pack was not considered a “Breeding Pair” in 2010 (USFWS 1998). No confirmed depredations, mortalities, removals or translocations involving the Dark Canyon pack occurred in 2010.

Fox Mountain pack (F521, M1157, M1158)

In January, the Fox Mountain pack consisted of M1157, M1158, and F521. Throughout the year, the pack moved throughout the north, north central and northwestern portion of the GNF. On January 30, the IFT observed F521 and M1157 next to two calf carcasses in the Tularosa Mountains. On January 31, IFT personnel attempted to reach the carcasses on ATVs, but were unsuccessful due to snow conditions. On February 3, IFT personnel used a Sno-cat to access the area and conducted an investigation. One calf was a probable wolf depredation and was assigned to the Fox Mountain pack. The other calf died from unknown causes. On February 19, the IFT responded to a report of wolves feeding on a dead calf located on private property near Govina Canyon. Investigators determined at least two different wolves killed the calf. A dead bull in the immediate vicinity died from unknown causes. The IFT documented telemetry signals from six different wolves from two packs (San Mateo and Fox Mountain) in the general area. The IFT did not assign the depredation to any specific wolves given the inconclusive information regarding which wolves may have killed the calf. In April and May, the pack showed no indications of denning. Given F521 was 13 years old, the likelihood of denning was quite low. In early July, the IFT documented F521 localizing near the state border. The IFT attempted to capture the wolf to evaluate its condition; however, this wolf was more mobile than initially assessed and was never captured. A Project veterinarian then viewed F521 from a close distance and determined

the animal could evaluate its environment for threats and other stimuli. Shortly after, F521 traveled more widely with M1157 and M1158. During August, the three wolves began traveling separately and by November, M1158 was traveling apart in the east central portion of the ASNF in Arizona. A trail camera photo taken in Arizona documented M1158 with an uncollared wolf. On December 2, F521 died from a gunshot. Per the definition in the Final Rule, the Fox Mountain pack was not considered a “Breeding Pair” in 2010. There were no removals or translocations involving the Fox Mountain pack in 2010.

Hawks Nest pack (AF1110, AM1044, M1155, f1188, M1189, fp1208, mp1209, mp1210)

In January, the Hawks Nest pack consisted of AM1044, AF1110, M1155, fp1188, M1189 and an uncollared animal observed during the annual population count. In February, M1155 dispersed from Hawks Nest and remained apart from the pack for the rest of the year. On February 25, M1155 was located with F1106 traveling together in New Mexico. In March, the IFT designated M1155 and F1106 as Morgart’s Pack. In May, the IFT documented denning behavior in the Hawks Nest pack. On June 3, the IFT documented seven pups. On June 18, AM1044 was found dead due to gunshot wounds. On July 15, M1189 was found dead due to gunshot wounds. On August 19, a pup was trapped, collared and assigned studbook number fp1208. On August 24, a pup was trapped, collared, and assigned studbook number mp1209. On September 6, IFT personnel observed AF1110, F1188, fp1208, mp1209, one uncollared subadult, and five uncollared pups for a total of ten wolves at the rendezvous site. On October 1, fp1208 was trapped again and fitted with a larger collar and released on site. On October 3, a pup was trapped, collared, and assigned studbook number mp1210. On December 4, IFT personnel observed eight wolves (collared and uncollared) in the pack. At the end of 2010 f1188 began to disperse and travel away from the pack. During the January 2011 helicopter operation AF1110, fp1208, mp1209, and mp1210 were observed with three uncollared wolves. As of the end of 2010 it does not appear that an adult male wolf had replaced AM1044. Due to the loss of AM1044, the Hawks Nest pack was not considered a “Breeding Pair” in 2010 per the definition in the Final Rule (USFWS 1998). No confirmed depredations or removals involving the Hawks Nest pack occurred in 2010.

Luna pack (AF1115, AM1156)

In January, the Luna pack consisted of F1115 and M1156. Throughout the year, the IFT located the Luna pack within its traditional territory in the central portion of the GNF. In May, the IFT documented denning behavior. The IFT documented three pups in August. On October 7, AM1156 was fitted with a GPS collar. In December, the IFT documented three uncollared animals with F1115. During the 2010 annual population count in January 2011, three pups were documented with this pack; therefore, per the definition in the Final Rule, the Luna pack was considered a “Breeding Pair” in 2010 (USFWS 1998). No confirmed depredations, mortalities, removals or translocations involving the Luna pack occurred in 2010.

Middle Fork pack (AF861, AM871, m1185)

In January, the Middle Fork pack consisted of AF861, AM871 and m1185. Throughout the year, the pack remained in its traditional territory in the central portion of the GNF. In May, the IFT documented denning behavior. Around the same time m1185 began traveling away from the Middle Fork pack. By the end of the month, m1185 was documented in Arizona; however, towards the end of August, m1185 returned to the pack. During mid-June, the IFT established a

diversionary food cache to prevent depredations. The food cache lasted until the middle of November. In late June, trail camera photos documented an adult sized, uncollared wolf with the pack. In September, the IFT documented two pups. On October 5, AM871 was fitted with a GPS collar. During the 2010 annual population count in January 2011, two pups were observed; therefore, per the definition in the Final Rule, the Middle Fork pack was considered a “Breeding Pair” in 2010 (USFWS 1998). There were no confirmed depredations, mortalities, removals or translocations involving the Middle Fork pack in 2010.

Morgart’s Pack (F1106, M1155)

In February through April, the IFT located F1106 and M1155 traveling together in the northwestern portion of the GNF. The IFT did not document any denning behavior in May. The wolves moved to the eastern portion of the GNF. The pair established a territory in this area with occasional random, wide ranging movements to other areas. On October 7, M1155 was fitted with a GPS collar. On October 12, F1106 was found dead from intestinal blockage. Morgart’s pack was not considered a “breeding pair” in 2010 per the definition in the Final Rule (USFWS 1998). No confirmed depredations, removals or translocations involving Morgart’s pack occurred in 2010.

Paradise pack (AM795, AF1056)

At the beginning of 2010, the Paradise pack consisted of AM795 and AF1056. On February 1, the Paradise pack killed a calf, which was snowbound in a drainage with 8 other cattle. Because the calf was not legally present on the allotment, a depredation incident was not assigned. The three cattle that were still alive were removed from the area via snowmobile and returned to the permittee. On April 24, the IFT triangulated AM795 for the last time and is now considered “fate unknown”. In May, the IFT documented denning behavior. AF1056 remained near the den site throughout the summer. On October 18, the IFT found two adult sized tracks indicating at least one additional wolf with AF1056. During the annual population count in January 2011, IFT personnel counted one apparently uncollared wolf in addition to AF1056. The Paradise pack was not considered a “breeding pair” in 2010 per the definition in the Final Rule (USFWS 1998). There were no confirmed mortalities, removals, or translocations involving the Paradise pack in 2010.

Rim pack (AF858, AM1107, f1187)

In January 2010, the Rim pack consisted of three wolves (AF858, AM1107, and f1187). Throughout the year, the Rim pack was located within its traditional home range in the central portion of the ASNF. In April, the IFT documented denning behavior. On June 9, the IFT documented one pup with the Rim pack. In September, the IFT observed an uncollared adult sized wolf with the Rim pack. In January 2011, during the annual population count, IFT personnel documented AF858, AM1107, f1187, and one uncollared wolf; therefore, the Rim pack was not considered a “breeding pair” in 2010 per the definition in the Final Rule (USFWS 1998). There were no confirmed depredations, mortalities, removals or translocations involving the Rim pack occurred in 2010.

San Mateo pack (AF903, AM1114)

In January, the San Mateo pack consisted of AM1114 and AF903. Throughout the year, the IFT located the pack within its traditional territory in the north central portion of the GNF. On January 30, the IFT capture AF903 during the annual population count to replace the radio collar. The wolf was released near the capture site in Sand Canyon on the GNF. On February 19,

the IFT responded to a report of wolves feeding on a dead calf located on private property near Govina Canyon. Investigators determined at least two different wolves killed the calf. A dead bull in the immediate vicinity died from unknown causes. The IFT documented telemetry signals from six different wolves from two packs (San Mateo and Fox Mountain) in the general area. The IFT did not assign the depredation to any specific wolves given the inconclusive information regarding which wolves may have killed the calf. In April, the IFT documented denning behavior. On June 19, the IFT investigated injured calves on a ranch just north of the BRWRA. Both calves were determined to be attacked by at least one wolf. One was injured severely and euthanized, while the other calf recovered. The IFT concluded an unknown wolf from the San Mateo pack was involved. On June 23, AM1114 was found dead. The death is currently under investigation. The IFT established a supplemental food cache in mid-June to deter depredations and assist AF903 in raising pups. Five pups were documented from September to the end of October. The wolves abandoned the cache in December. Due to the death of AM1114, the San Mateo pack was not considered a “breeding pair” in 2010 per the definition in the Final Rule (USFWS 1998). There were no confirmed removals or translocations in 2010.

8. Individual Wolf Summaries

M619

In January 2010, M619 was observed traveling alone. On January 23, a member of the public observed M619 trying to kill an elk in the South Fork of the Little Colorado River. Members of the IFT confirmed the incident the same day. From January through May, M619 was located in the north central portions of the ASNF and the GNF. On May 27, the IFT located M619 for the last time. M619 is now considered fate unknown.

F1106

During January, the IFT located the wolf in the northeast and northwest portions of the GNF and continued to make large movements as a single wolf. In late February, the IFT located this wolf in the vicinity of M1155 from the Hawks Nest pack. The pair was subsequently named Morgart’s pack. F1106 was found dead in October and a necropsy determined that she died of an intestinal rupture due to an ingested foreign object.

f1154

On January 10, the IFT released f1154 from captivity at the Gila Flat release site in New Mexico. This wolf was wild born in 2008 as part of the Bacho Pack. In 2009, f1154 was moved to captivity for being outside the BRWRA area on the SCAR. From January to March 2010, the IFT located this wolf in the Aldo Leopold and Gila Wilderness areas and the GNF in Grant County, NM. The wolf was observed near a residence and cracker shells were issued to the land owner. Eventually the wolf moved out of the area on its own. During the early part of April, the wolf traveled north and eventually ended up outside the BRWRA, north of the San Mateo Mountains. At the end of April, the IFT located f1154 dead in New Mexico. The cause of death is under investigation and a necropsy is pending.

M1155

M1155 began dispersing from the Hawks Nest pack in January. The wolf continued to travel alone in Arizona until late February when the IFT located it in the northwest portion of the GNF with F1106. The pair was subsequently named Morgart’s pack.

m1185

m1185 began dispersing from the Middle Fork pack in May and traveled through the BRWRA in both Arizona and New Mexico until August at which time the wolf returned to the pack only to leave again in November. At the end of 2010 this wolf was traveling alone in New Mexico.



Three Mexican wolf pups documented with the Luna Pack (one pup in photo, a pup tail each on the left and right side of the image). Mexican wolf Interagency Field Team trail camera photo.

Appendix B. Summary of sighting reports received from the public from January 1 through December 31, 2010.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
# AZ Reports	3	4	4	1	6	1	5	0	1	3	6	5	45
Known Wolf Reports	0	0	0	0	0	0	1	0	0	0	0	0	1
Unknown/Uncollared Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-wolf Reports	2	2	1	0	1	1	2	4	0	0	2	2	17
Probable Wolf Reports	1	1	0	0	1	0	0	0	1	1	2	1	8
Not Enough Information	0	1	3	1	4	0	2	2	0	2	2	2	19
# NM Reports	0	1	0	0	5	1	2	0	0	1	0	0	10
Known Wolf Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/Uncollared Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-wolf Reports	0	0	0	0	1	0	0	0	0	0	0	0	1
Probable Wolf Reports	0	1	0	0	0	1	0	0	0	0	0	0	2
Not Enough Information	0	0	0	0	4	0	2	0	0	1	0	0	7
Total Sightings per Month	3	5	4	1	11	2	7	0	1	4	6	5	55

9. Personnel

Arizona Game and Fish Department

Chris Bagnoli, Field Team Leader
Colby Gardner, Wolf Biologist
Jeff Dolphin, Wolf Technician/Wolf Biologist
Beth Wojcik, Wolf Technician
Mike Godwin, Wildlife Manager Supervisor
Joel Weiss, Wildlife Manager
Aaron Hartzell, Wildlife Manager
Dave Cagle, Wildlife Program Manager
John Hervert, Capture Specialist
Bill David, Chief Pilot
Basil Coffman, Pilot
Steve Sunde, Pilot
Steve Dubois, Pilot

New Mexico Department of Game and Fish

Ellen Heilhecker, Wolf Biologist
Mischa Larisch, District Officer / Wolf Biologist
K.C. Gehrt, District Officer
Bobby Griego, District Supervisor
Ty Jackson, District Officer
Mike Matthews, District Supervisor
Andrew Teaschner, District Officer
Derek Theobald, District Officer
Storm Usrey, District Officer

USDA-APHIS Wildlife Services

Sterling Simpson, Field Team Leader/Wolf Management Specialist
Bill Nelson, Wolf Depredation Specialist
Armando Orona, Wolf Management Specialist
Chris Carrillo, District Supervisor
Keel Price, District Supervisor
Mike Kelly, Wildlife Biological Science Technician
Jedediah Murphy, Wildlife Biological Science Technician

U.S. Forest Service

Cathy Taylor – Forest Service Liaison to the Wolf Project

U.S. Fish and Wildlife Service

Bud Fazio, Mexican Wolf Recovery Coordinator
Sherry Barrett, Mexican Wolf Recovery Coordinator
Maggie Dwire, Assistant Mexican Wolf Recovery Coordinator
AnnMarie Houser, Wildlife Biologist
Susan Dicks, Wildlife Biologist

Melissa Kreutzian, Wildlife Biologist
John Oakleaf, Wildlife Biologist
Dewey Wesley, Biological Technician
Ryan Gordon, Biologist (detailed)
Sarah Rinkevich, Endangered Species Biologist (detailed)
Jim Ashburner, Lead Special Agent

USFWS Volunteers

Jason D'Agostino
Julie Dewilde
Quinn Harrison
Carrisa Michaud
Tara Poloski
Michael Robinson
Kim Romano
Elina Suvilampi
Linda WhiteTrifaro
Ryan Wilbur

White Mountain Apache Tribe

Krista Beazley, Field Team Leader
Deon Hinton, Wolf Technician
Ivan Kasey, Wolf Technician
Bobby Tovin, Wolf Technician

Project Veterinarians

Dr. Ole Alcumbrac
Dr. Susan Dicks