

**Mexican Wolf Recovery Program:
Progress Report #17**

Reporting Period: January 1 – December 31, 2014

Prepared by: U.S. Fish and Wildlife Service

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



Mexican wolf. Credit: George Andrejko, AGFD

Table of Contents

Foreword
Background

Part A: Recovery Administration	Page
1. Mexican wolf Captive Breeding Program	1
a. Mexican Wolf Species Survival Plan	1
b. Mexican Wolf Pre-Release Facilities	1
2. Recovery Planning	3
3. Mexican Gray Wolf Subspecies Listing	4
4. Proposed Revision to the Nonessential Experimental Population and Environmental Impact Statement	4
5. Litigation	5
a. Center for Biological Diversity v. Jewell, et al., No. 1:12-cv-01920-RCL (D. D.C.)	5
b. Defenders of Wildlife v. Jewell, et al., No. 4:14-cv-024720-FRZ (D. Ariz.)	6
6. Blue Range Wolf Reintroduction Project Structure	6
7. Cooperative Agreements	7
8. Research	8
9. Mexican Wolf Interdiction Fund and Coexistence Council	9
10. Literature Cited	11
Part B: Reintroduction	12
1. Introduction	12
2. Methods	13
3. Results	21
a. Population Status	21
b. Reproduction	22
c. Release and Translocations	23
d. Home Ranges and Movements	25
e. Mortality	26
f. Wolf Predation	26
g. Wolf Depredation	27
h. Management Actions	27
i. Proactive Management Activities	29
j. Non-IFT Wolf Sighting Reports	31
k. Uncollared Wolf Sign	31
l. Public Outreach	32
4. Summary	32
5. Discussion	34
6. Literature Cited	36
7. Pack Summaries	61
8. Individual Wolf Summaries	67
9. Personnel	70

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 has 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, 2013.

Background

The Mexican wolf is the smallest, rarest, southernmost occurring, and most genetically distinct subspecies of the North American gray wolf. Mexican wolves were extirpated from the wild in the southwestern United States by 1970, primarily as a result of a decades long 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 historical 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 (US Fish and Wildlife Service 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), White Mountain Apache Tribe (WMAT), US Forest Service, and U.S. Department of Agriculture-Wildlife Services (USDA-WS) monitors and manages the reintroduced population.

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 and SEMARNAT (Mexico's Secretary of Environment and Natural Resources) 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 steadily expanded throughout the years to approximately 248 captive Mexican wolves managed in 55 facilities in the United States and Mexico in 2014. SSP members routinely transfer Mexican wolves between participating facilities to promote 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. In the United States, 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 2014, the annual SSP meeting was hosted by the Endangered Wolf Center, in Eureka, MO.

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 2014 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. Four wolves were received at SWMF from participating SSP institutions in the United States and Mexico, plus five wolves were received from the BRWRA. Fourteen wolves were transferred out of SWMF; four wolves to Mexico, three wolves to SSP facilities in the United States, and eight wolves to the BRWRA. Two animals were temporarily transferred to the Ladder Ranch Wolf Management Facility for four months to allow for maintenance at the SWFM. No births or deaths occurred at the SWMF in 2014. At year's end, the SWMF housed 4 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. During 2014, 13 individual wolves were housed at the LRWMF. Five wolves were received at LRWMF from participating SSP institutions. Eleven wolves were transferred out; two wolves to Mexico, seven wolves to SSP facilities in the US, and two wolves to the BRWRA. No births or deaths occurred at the LRWMF in 2014. At year's end, the LRWMF housed 2 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 2014, WHI housed 5 individual Mexican wolves in the pre-release enclosures. One wolf was euthanized due to cancerous

growths and no births of pre-release candidates occurred at the WHI. At year's end, WHI housed 4 Mexican wolves in the pre-release enclosures.



Mexican wolf F1126 at Sevilleta Wolf Management Facility. Credit: US Fish and Wildlife Service.

2. Recovery Planning

The Service published the Mexican Wolf Recovery Plan in 1982. The plan recommends a two-pronged approach to recovery that includes establishment of a captive breeding program and reintroduction of wolves to the wild. This plan, however, did not provide objective and measurable recovery criteria for the recovery and delisting of the Mexican wolf as required by the Endangered Species Act; instead, it recommended the establishment of a wild population of at least 100 wolves. Although substantial progress in implementing the 1982 Mexican Wolf Recovery Plan has been achieved, a revised recovery plan has never been developed to establish recovery criteria specific to the Mexican wolf.

In December, 2010, the Service initiated a revision of the 1982 Mexican Wolf Recovery Plan. The new recovery team consists of four subgroups – Science and Planning, Tribal Liaisons, Stakeholder Liaisons, and Agency Liaisons. The Science and Planning subgroup is tasked with assisting the Service in writing the recovery plan, working together to update the scientific background and develop recovery strategies that include goals, objectives, and criteria that promote successful Mexican wolf recovery and delisting. The Tribal and Agency Liaison subgroups provide applied natural resources management perspectives pertinent to their local communities and constituents. The Stakeholder Liaison subgroup provides a diverse source of expertise in wolf recovery including human, social, and economic considerations.

Members of the Science and Planning Subgroup briefed the Director of the U.S. Fish and Wildlife Service in Washington, D.C. on the subgroup's draft recovery criteria in March 2013.

The subgroup continued analyzing, developing, and reviewing materials related to the development of recovery criteria. Since the summer of 2013, Service staff tasked with recovery team oversight has been reassigned to a high priority rule revision and development of an associated Environmental Impact Statement. Service staff will return to recovery planning as soon as feasible upon completion of these rules (see below). A draft plan will be submitted for public and peer review prior to the publication of the final recovery plan.

3. Mexican Gray Wolf Subspecies Listing

On June 13, 2013, the Service published a proposed rule, Removing the Gray Wolf (*Canis lupus*) from the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican wolf (*Canis lupus baileyi*) by Listing it as Endangered (78 FR 35664) for public comment and peer review. The public comment period was extended twice (78 FR 54614 and 78 FR 64192) and closed on December 17, 2013. Four public hearings were held in conjunction with public meetings: November 19, 2013 in Denver, CO; November 20, 2013 in Albuquerque, NM; November 22 in Sacramento, CA. An informational meeting (without a hearing) was also held on December 3, 2013 in Pinetop, AZ. On February 10, 2014, the Service reopened the public comment period, and announced the availability of the independent scientific peer review report on the proposal (79 FR 7627). This public comment period closed on March 27, 2014. This rule proposes to delist the gray wolf in the United States but to maintain protections for the Mexican wolf by listing it as endangered. We intend to finalize this rule in 2015.

4. Proposed Revision to the Nonessential Experimental Population of the Mexican Wolf and Environmental Impact Statement

On June 13, 2013, the Service published the Proposed Revision to the Nonessential Experimental Population of the Mexican Wolf (78 FR 35719-35742) for public and peer review. The comment period was extended twice (78 FR 54614 and 78 FR 64192) and closed on December 17, 2013. We are proposing to modify a number of the geographic and management-related regulations in our current Final Rule to improve the status of the nonessential experimental population and the effectiveness of our management.

In coordination with development of this rule, the Service announced its intent to develop an Environmental Impact Statement, pursuant to the National Environment Policy Act (78 FR 47268-47270), on August 5, 2013, to analyze our proposed action to revise the regulations associated with the nonessential experimental population. We invited state, county, tribal, and Federal entities to serve as Cooperating Agencies in the development of the EIS. We held a kick-off meeting on August 8-9, 2013, and a follow up meeting on December 10, 2013. We held a tribal working group meeting (open to all interested tribes, regardless of Cooperating Agency status) on December 12, 2013. In 2014, we held a Cooperating Agency meeting on April 15, 2014 and teleconferences with cooperating agencies, tribes, and representatives from stakeholder counties on June 2, 12, and 23, 2014. We held a tribal working group meeting on April 16, 2014. Additional information about public involvement is available in the final EIS.

On July 25, 2014, the Service proposed new revisions, reopened the public comment period, and scheduled public hearings on the repropounded rule (79 FR 43358). In addition, the Service

announced the availability of a draft EIS on the proposed revisions to the existing nonessential experimental population designation of the Mexican wolf. The Service held two public hearings (each preceded with a public informational session) on the repropoed rule and draft EIS, in Pinetop, AZ, on August, 11, 2014, and in Truth or Consequences, NM, on August 13, 2014. The public comment period closed on September 23, 2014. We intend to finalize this rule in 2015, based on our settlement agreement with the Center for Biological Diversity (see Litigation).



Mexican wolf M1051 with four pups. Credit: US Fish and Wildlife Service.

5. Litigation

a. Center for Biological Diversity v. Jewell, et al., No. 1:12-cv-1920-RCL (D. D.C.)

On November 28, 2012, the Center for Biological Diversity filed a complaint for declaratory and injunctive relief seeking to compel the Service to conclude a formal rulemaking to amend a federal regulation promulgated in 1998 under the Endangered Species Act that governs the Service's Mexican wolf reintroduction program. On May 24, 2013, the parties filed a Joint Stay Motion suspending the litigation to discuss settlement. On August 26, 2013, the District Court for the District of Columbia approved the settlement agreement that required the Service to submit its final determination concerning the Proposed 10(j) Rule Modification to the Federal Register for publication by January 12, 2015.

b. Defenders of Wildlife v Jewell, et al., No 4:14-cv-024720-FRZ (D. Ariz.)

On November 11, 2014, Defenders of Wildlife et al. filed a complaint for declaratory and injunctive relief alleging violations of the Endangered Species Act and Administrative Procedures Act for failure to prepare a recovery plan for the Mexican gray wolf. At the end of 2014 the Service had not yet responded to this complaint.

6. Blue Range Wolf Reintroduction Project Structure

Beginning in 2003, the BRWRA Reintroduction Project was managed jointly by the AGFD, NMDGF, USDA-Forest Service, USDA-WS, WMAT, and the Service. These agencies and additional cooperating counties worked together under a Memorandum of Understanding (MOU) and developed Standard Operating Procedures to guide the IFT in providing management for the free-ranging population (see the Arizona Game and Fish Department website at http://www.azgfd.gov/w_c/wolf/sop.shtml).

In 2010, the Service worked with its partners and cooperators to prepare and establish a new MOU. At the end of 2014, the signatories to this MOU included AGFD, USDA-Forest Service, USDA-WS, WMAT, and the Service, as well as the cooperating counties of Gila, Graham, Greenlee, and Navajo in Arizona and the Eastern Arizona Counties Organization (ECO). A copy of this MOU can be found at <http://www.fws.gov/southwest/es/mexicanwolf>

On December 2, 2011, the Arizona Game and Fish Commission voted to continue both its financial and infrastructure support of Mexican wolf conservation in the state, but voted not to support the release of any new wolves until the Service completes a new recovery plan, management plan, and a new 10(j) rule is in place. Previously, all initial releases of captive Mexican wolves in the U.S. have occurred in Arizona with the concurrence and support of the Game and Fish Department. On January 13, 2012, the Arizona Game and Fish Commission amended this policy stating the AGFD Director has the authority to approve a wolf release to effectively replace an animal(s) lost from the population due to an unlawful act, and when a wolf is lost to any other cause of mortality the Arizona Game and Fish Commission must approve a release.

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 2014 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>.



Mexican wolf on a den box at Sevilleta Wolf Management Facility. Credit: US Fish and Wildlife Service.

7. Cooperative Agreements

In 2014, the Service funded cooperative agreements with AGFD, San Carlos Apache Tribe (SCAT), TESH, The Living Desert, University of Idaho, University of New Mexico, and WMAT. Agreements with AGFD have been matching agreements where the Service provides 75% of costs and the state agency provides 25%.

Cooperator	USFWS/Mexican Wolf Project Funds Provided in 2014
AGFD	\$ 165,000
SCAT	\$ 40,000
TESH	\$ 29,000
The Living Desert	\$ 30,000
University of New Mexico	\$ 10,000
University of Idaho	\$ 10,000
White Mountain Apache Tribe	\$ 205,000

In addition to the above agreements, the Service also provided funding for several miscellaneous contracts for veterinary and other services. For more information on Program costs to date visit <http://www.fws.gov/southwest/es/mexicanwolf/>

8. 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 generic gray and Mexican wolves in 2014. 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 Mexican wolves as directed by the Service and the SSP. In 2008, oocyte vitrification (freeze drying of eggs) was added so that female Mexican wolf gametes could be preserved. As part of their ongoing reproductive research efforts, several projects were conducted during 2014. These included semen collection and freezing, sperm post-thaw assessments, oocyte and ovarian slice vitrification, post-thaw viability of ovarian slices, examination of the female wolf ovulatory cycle hormone profiles to diagnose female infertility, and the efficacy, potential side effects, and reversal of deslorelin (Suprelorin) as a contraceptive. As of 2014, samples had been banked from 110 males, and 1072 oocytes plus 189 ovarian slices from 30 females were successfully collected and preserved.

The Saint Louis Zoo Research Department is compiling records for Mexican wolves to analyze whether breeding events may be shifting in time. In the past, most reported breeding dates were in February, but in recent years many facilities are reporting breeding dates in March. The analysis will compare breeding dates to temperature data for each location, to determine whether the shift is real and if it might be related to warmer temperatures associated with climate change.

Dr. Melanie Culver and Ph.D. candidate Robert Fitak with the University of Arizona are examining the effects of extirpation and reintroduction on the Mexican wolf through genome-wide association. The study has the potential to characterize the genetic loci responsible for any lost adaptive and accrued detrimental variation. The results will potentially aid in optimizing the management strategies of captive and wild populations of Mexican wolves to protect against concerns like inbreeding. A final report submitted for publication is expected in 2015.

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, and conducted two trials during 2011 that resulted in the treatment of 8 animals. The trials were replicated in 2012 and resulted in the treatment of an additional 5 wolves. In 2012, two wolves that had successfully undergone treatment in 2011 were re-tested, both wolves continued to

demonstrate an aversion. Condition taste aversion trials at SWMF in 2013 resulted in the treatment of 10 wolves. No Mexican wolves were treated in 2014.

The USDA-APHIS-Wildlife Services is conducting a canine measurement study in order to provide scientific information useful for potentially identifying the species of predator involved in a depredation. In 2014, Wildlife Services continued to request that SSP facilities capable of measuring wolf canine tooth spread during annual handling events do so to increase the reliability of identifications that would otherwise rely on qualitative evidence.

Dr. Carlos Sanchez continued a multi-institutional project to determine the historic and current prevalence of nasal neoplasms in Mexican wolves. This effort may provide guidance for the diagnosis and management of nasal neoplasms in Mexican wolves.

b. Blue Range Wolf Recovery Area

John K. Oakleaf, senior wolf biologist with the Service and Ph.D. candidate at Texas Tech University, in collaboration with Dr. Stewart Breck, Dr. James Cain, and Dr. Phil Gipson, continued looking at the population dynamics and reintroduction characteristics of Mexican wolves in the BRWRA. The objective of this study is to investigate: 1) habitat colonization preferences of Mexican wolves and the distribution of preferred wolf habitat across the southwestern United States, 2) factors that promote successful initial releases and translocations of Mexican wolves, 3) factors that contribute to increased reproduction rates, 4) survival of Mexican wolves, and 5) dispersal patterns of Mexican wolves. Mr. Oakleaf is expected to complete this work in 2015.

9. Mexican Wolf/Livestock Interdiction Fund and Coexistence 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 wolf populations in the Southwest. Funding will be applied to initiatives that address management, monitoring, and other proactive conservation needs for Mexican 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.

In 2011, the Service appointed an 11-member Interdiction Fund Stakeholder council (ISC) which has the authority to identify, recommend, and approve conservation activities, identify recipients, and approve the amount of the direct disbursement of funds to qualified recipients. The ISC – which changed its name to the Coexistence Council in 2013, developed an interim program to compensate livestock producers for wolf depredations.

In 2014, the Coexistence Council finalized a long-term strategic plan that focuses more on incentives rather than direct compensation for livestock losses. Included in this plan is payments

for the presence of wolves, based on a formula that considers a variety of factors to determine allocation of the annual funding for each applicant, including whether the applicant's land or grazing lease overlaps a wolf territory or core area and the number of wolf pups annually surviving to December 31 in the territory, recognizing that survival of wolf pups is not dependent upon the livestock producer. The formula also considers the number of livestock exposed to wolves and the applicant's participation in proactive conflict avoidance measures. In November, 2014, the Coexistence Council issued its first payments to 26 Arizona and New Mexico livestock operators who participated in the Coexistence Plan's pilot year. These payments, totaling \$85,500, were based on Mexican wolf data and livestock information from calendar year 2013.

In addition, the Coexistence Council continued to compensate livestock producers for wolf depredations, and approved payments totaling \$61,263 to producers for depredations that occurred in 2014.



Mexican wolf at the Sevilleta Wolf Management Facility. Credit: US Fish and Wildlife Service.

10. Literature Cited

- US Fish and Wildlife Service. 1982, Mexican Wolf Recovery Plan 1982, US Fish and Wildlife Service, Albuquerque, New Mexico.
- US Fish and Wildlife Service. 1996, Reintroduction of the Mexican wolf within its Historic Range in the Southwestern United States, US Fish and Wildlife Service, Albuquerque, New Mexico.
- US Fish and Wildlife Service. 1998, Final Rule. Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico, 63 *Federal Register* 1752-1772.
- US Fish and Wildlife Service, 2013, Proposed Rule. Removing the Gray Wolf (*Canis lupus*) From the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican Wolf (*Canis lupus baileyi*) by Listing It as Endangered, 78 *Federal Register* 35664-35719.
- US Fish and Wildlife Service, 2013, Proposed Rule; Proposed Revision To the Nonessential Experimental Population of the Mexican Wolf, 78 *Federal Register* 35719-35742.
- US Fish and Wildlife Service, 2013, Proposed Rule; Extension of Public Comment Period, and Announcement of Public Hearings. Removing the Gray Wolf (*Canis lupus*) From the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican Wolf (*Canis lupus baileyi*) by Listing It as Endangered, 78 *Federal Register* 54614-54616.
- US Fish and Wildlife Service, 2013, Proposed Rule; Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Revision to the Nonessential Experimental Population of the Mexican Wolf (*Canis lupus baileyi*), 78 *Federal Register* 47268-47270.
- US Fish and Wildlife Service, 2013, Extending the Public Comment Periods and Rescheduling Public Hearings Pertaining to the Gray Wolf (*Canis lupus*) and the Mexican Wolf (*Canis lupus baileyi*), 78 *Federal Register* 64192-64193.
- US Fish and Wildlife Service, 2014, Proposed Rule; Notice of Availability and Reopening of Comment Period. Removing the Gray Wolf (*Canis lupus*) From the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican Wolf (*Canis lupus baileyi*) by Listing It as Endangered, 79 *Federal Register* 7627-7629.
- US Fish and Wildlife Service, 2014, Proposed Rule; Revisions and Notice of Availability of a Draft Environmental Impact Statement; Reopening of Public Comment Period and Announcement of Public Hearings, 79 *Federal Register* 43358-43373.

PART B: REINTRODUCTION

Mexican Wolf Blue Range Reintroduction Project Interagency Field Team Annual Report Reporting Period: January 1 – December 31, 2014

Prepared by:

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

The 2014 annual report reflects the 2013 population parameters published in the 2013 annual report addendum (<http://www.fws.gov/southwest/es/mexicanwolf/documents.cfm>).

1. Introduction

This report summarizes results of Mexican Wolf Interagency Field Team (IFT) activities during 2014. 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*) within 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). The BRWRA lies within the Alpine, Clifton, and Springerville Ranger Districts of the Apache-Sitgreaves National Forests (ASNF) and the Gila National Forest (GNF) in west-central New Mexico. In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow free-ranging Mexican wolves to inhabit the Fort Apache Indian Reservation (FAIR). The FAIR is adjacent to the BRWRA in east-central Arizona, and adds 2440 mi² (6319 km²) of area that wolves may occupy.

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 110 wolves in 2014 through natural reproduction, translocations (including one cross-foster event of two wolf pups), and initial releases. Twelve translocations and two initial releases occurred in 2014. At the end of 2014, the wild population totaled a minimum of 110 wolves, eight breeding pairs, one operational breeding pair, and 19 packs. More information on population statistics can be found at <http://www.fws.gov/southwest/es/mexicanwolf/> and http://www.azgfd.gov/w_c/es/wolf_reintroduction.shtml

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 SOP 13.0: Control of Mexican Wolves. The USFWS continues to follow relevant portions of the 1998 Interagency Management Plan for guidance on control of Mexican wolves. All other SOPs are considered valid and continue to be utilized by the IFT in conducting wolf management operations. 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 that survived until December 31 of the year of their birth (USFWS 1998).

Operational breeding pair: an adult male and an adult female that have produced at least two pups during the previous breeding season and of which at least 2 pups survived until December 31 of the year of their birth, despite the loss and replacement of at least one biological parent of the offspring. This is a modification of the “Breeding pair” definition per the 1998 Final 10j Rule, to include pairs where alphas (one or both of the breeding adults in a pack) have been replaced but are functioning as a biological unit with a high probability of breeding success in the subsequent year.

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 pack name.

Releases: wolves released directly from captivity, having no previous free-ranging experience. During 2014, these “initial releases” could only occur in the Primary Recovery Zone, which is entirely within Greenlee County, Arizona (see Fig. 1 and Fig. 2). During 2015, these “initial releases” can occur inside Zone 1 and in specific instances in Zone 2 as described in the 2015 Final Rule found at

http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf.

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 could occur in the Primary Recovery Zone or in the Secondary Recovery Zone (Fig. 1) during 2014. 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). During 2015, translocations will be allowed to occur within Zone 1 or Zone 2 per the 2015 Final Rule found at http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf.

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. Translocation candidates are wolves with prior wild experience, which are re-released into the wild from captivity or another location in the wild. Once selected, and prior to release, wolves are acclimated in USFWS-approved facilities. Pre-release facilities in New Mexico 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. A third pre-release facility, located at Wolf Haven International in Washington, is managed by Wolf Haven International.

In pre-release facilities, contact between wolves and humans is minimized. Carcasses of road-killed native prey species, primarily deer (*Odocoileus* spp.) and elk (*Cervus canadensis*), supplement the routine diet of processed canine food supplied to wolves. 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.

Prior to release, wolves may be adversely conditioned to avoid certain food types (i.e., domestic livestock) and human presence. As close to release as possible, wolves may be subjected to taste aversion conditioning in efforts to deter their use of domestic livestock as a food source. Separately, or in addition to taste aversion conditioning, wolves in pre-release facilities may be hazed (purposefully harassed) prior to release in efforts to increase their avoidance of humans and/or inhabited areas.

Wolves are released or translocated 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 and are approximately 0.30 acres (0.0005 mi²) in size. A modified soft release consists of placing the wolves in an acclimation pen approximately 0.13 acres (0.0002 mi²) 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).



Coronado pack self-releasing from a mesh pen. Credit: US Fish and Wildlife Service.

Radio Telemetry Monitoring

In 2014, all wolves equipped with radio-collars 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 and satellite locations of wolves were used to develop home ranges (White and Garrott 1990), which were calculated based on the definition in the 1998 Final Rule (USFWS 1998). Throughout the history of the project, wolf home range polygons were generated using the minimum convex polygon (MCP) method (White and Garrott 1990). However, kernel methods can provide more accurate home range estimates than minimum convex polygon (MCP) models (Seaman and Powell 1996) and have shown to be robust provided a substantial sample size (Seaman et al. 1999). Thus, kernel density estimates were used to generate home range polygons for 2014.

Home ranges were calculated using ≥ 20 individual locations on a pack, pair, or single wolf exhibiting territorial behavior over a period of $\geq$ six months. For 2014, the number of individual locations used ranged from 24 to 326 locations, depending on the number of individual locations obtained throughout the year. 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 pack members equipped with radio-collars. This limited pseudo-replication of locations. Home range polygons were generated using the 95% fixed kernel method (Seaman and Powell 1996) in the Geospatial Modeling Environment platform in conjunction with ArcGIS 10 (Beyer 2014, ESRI 2011). Home ranges were not calculated for wolves that had < 20 locations, displayed dispersal behavior, or exhibited non-territorial behavior during 2014.

Occupied Range

Occupied wolf range was calculated based on the definition in the 1998 Final Rule (USFWS 1998) which used the following criteria: (1) a five mile (eight km) radius around all locations of non-radio monitored wolves and wolf sign in an area consistently used over a period of at least one month; (2) a five mile (eight km) radius around radio locations of resident wolves when < 20 radio locations are available (for radio monitored wolves only); (3) a five mile (eight km) radius around radio monitored wolf locations (for wolves exhibiting dispersal or non-territorial behavior); and (4) a three mile (five km) radius around the 95% fixed kernel 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 killed by wolves. In addition, during 2014, the IFT initiated a study to estimate Mexican wolf kill rates and prey selection within the Blue Range Wolf Recovery Area (BRWRA) on non-tribal lands. GPS cluster analysis was conducted using data from downloadable GPS collars to detect predation events during a 30-day time period in winter (February/March) and summer (June/July). A GPS cluster was defined as a group of two or more GPS points in which each point is $< 100\text{m}$ from its nearest neighbor (Sand et al. 2005, Ruth et al. 2010); GPS fix rates were set to one point every two hours in winter and every hour in summer. To reduce the potential of missing wolf killed prey, 25% of all single GPS points were randomly selected in ArcGIS for investigation (Sand et al. 2005). Identified GPS clusters were investigated within one week of determination, following abandonment by wolves; all points within a cluster were investigated regardless if a carcass was located at a previous GPS point (Ruth et al. 2010). The information gathered will be used to gain a more robust measure of the biomass required per wolf to sustain a viable wolf population, determine the prey characteristics (e.g. species, sex, age, and nutritional condition) selected by Mexican wolves, and assess kill site characteristics. All domestic livestock carcasses located via cluster analyses were reported to USDA-WS wolf specialists to initiate a depredation investigation.

USDA-WS wolf specialists investigated suspected wolf depredations on livestock, including livestock located during the predation study, within 24 hours of receiving a report. 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. From 2010 to 2013, the number of confirmed cattle killed by wolves was within the rate predicted by the FEIS and averaged 27 cattle killed per 100 wolves.

Wolf Management

The IFT hazed wolves on foot or by vehicle in cases where 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 foot-hold traps to collar, translocate, or remove wolves from the wild for specific management purposes. In addition, wolves that establish themselves outside the BRWRA are captured and brought back into the BRWRA or temporarily held in captivity, per the Final Rule (USFWS 1998).

Proactive Management Activities

The IFT utilized various proactive management activities in an attempt to reduce wolf-livestock conflicts in the BRWRA. Proactive management approaches and tools available to the IFT include:

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

Hay and Supplements: feed and mineral supplements purchased for livestock owners who opt to hold livestock on private property during livestock calving season or wolf denning periods.

Range Riders: contract employees with radio telemetry equipment who assist stakeholders in monitoring wolf movements in relation to livestock, providing human presence and light hazing to move wolves away from cattle. Range Riders without telemetry equipment provided additional human presence to deter wolves.

Altering Livestock Grazing Rotations: moving livestock between different pastures within USFS grazing allotments in order to avoid areas of high wolf use that may correspond to den and rendezvous sites.

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

Radio Telemetry Equipment: monitoring equipment used by the IFT, and in some cases issued to stakeholders, to facilitate their own proactive management activities and aid in the detection and prevention of wolf 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 (e.g. one animal raising young or just after initial releases and translocations).

Population Estimation

The year-end population estimate is derived from information gathered through a variety of methods that are deployed annually by the IFT from November 1st through the year-end helicopter count. The IFT continued to employ comprehensive efforts initiated in 2006 to make the 2014 year-end population estimate more accurate. Management actions implemented included increased surveys and focus on trapping for uncollared wolves, greater coordination and

investigation of wolf sightings provided through the public and other agency sources, deployment of remote trail cameras (blind and scented), and utilizing howl surveys and food caches in conjunction with remote cameras in areas of suspected uncollared wolf use.

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, remote cameras, howling, scats, and tracks. Ground survey efforts for suspected packs having no collared members 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 compiled in an Access database.

In January and February 2015, aircraft were used to document free-ranging wolves for the end-of-year 2014 population count and to capture wolves to affix radio collars. Including January and February data in the December 31 end-of-year count (and in this 2014 annual report) is appropriate, because wolves alive in these months were also alive in the preceding December (i.e. whelping does not occur in mid-winter, and any wolf added to the population via initial release or translocation after December 31 and before the end of the survey is not counted in the year-end minimum population count). 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 boundary) where the terrain allowed.

As part of the 2014 population year-end count, the IFT coordinated with and surveyed members of the local public to identify possible wolf sightings. Ranchers, private landowners, wildlife managers, USFS personnel, and other agency cooperators were contacted to increase wolf sighting data for the database. All such sightings were analyzed by the IFT to determine those that most likely represented unknown wolves or packs for purposes of completing the year-end count.

Documentation of wolves or wolf sign, obtained through the above methods, was also used to guide IFT efforts to trap uncollared single wolves or groups. The IFT objective was to have at least one member of each pack collared. Through these various methods, the IFT was able to count uncollared wolves not associated with collared wolves.



Helicopter operations. Credit: George Andrejko, AGFD.

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 wolf deaths.

For wolves equipped with radio-collars, mortality, missing, and removal rates were calculated using methods presented in Heisey and Fuller (1985). Wolves not located or documented alive for three or more months are considered missing or “fate unknown.” These wolves may have died, dispersed, or have a malfunctioned radio collar. The IFT calculated annual cause-specific mortality rates (i.e. human-caused versus natural/unknown mortality) for the population. Management removals can 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 wolves equipped with radio-collars. 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 more appropriate 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.



Mexican wolf M1107. Credit: Mexican Wolf IFT

Public 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. Outreach was facilitated through weekly and monthly updates, field contacts, handouts, informational display booths, web page updates, and phone contacts. The IFT provided formal presentations at local livestock producer meetings and conducted three public meetings in 2014 to gather comment on proposed Mexican wolf initial release and translocation actions within the BRWRA.

The IFT conducted outreach activities by continuing to utilize the Mexican Wolf Blue Range Reintroduction Project Outreach Plan developed during 2007. This 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 involved in the project.

During 2014, 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://www.azgfd.gov/w_c/es/wolf_reintroduction.shtml 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 also produced a wolf location map to inform cooperators and the public of areas occupied by wolves, with the map being updated quarterly and reflecting the previous three months of wolf aerial locations. The map was posted on the AGFD web site at www.azgfd.gov/w_c/es/wolf_reintroduction.shtml. 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. This information was also available through the USFWS Mexican wolf web site via a link at <http://www.fws.gov/southwest/es/mexicanwolf>. IFT personnel augmented these efforts by conducting routine/weekly contacts of individual grazing permittees to provide 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 focused on advising the public of the potential for encountering wolves, providing general recommendations for recreating in wolf-occupied areas and explaining legal provisions of the non-essential experimental population rule. The IFT also utilized these contacts to collect information on wolf sightings, tracks and scat from the public.

3. Results

Specific information regarding wolves on the FAIR and the San Carlos Apache Reservation (SCAR) is not included in this report in accordance with Tribal agreements.

a. Population Status

At the end of 2014, the minimum population estimate was 110 wolves and eight breeding pairs. Pups comprised 35% of this population which is a 20% increase from the previous year.

At the beginning of 2014, the collared population consisted of 46 wolves among 14 packs and five single/unaffiliated wolves. At the end of 2014, routine trapping efforts to add radio collars to the population were offset by an increase in the number of documented mortalities, removals, and fate-unknown wolves; however, the collared population still increased to 55 wolves (35 adults, 10 subadults, and 10 pups) among 19 packs and four single wolves.

A total of 55 uncollared wolves were documented in the Mexican Wolf Nonessential Experimental Population Zone (MWNEPZ) at the end of 2014 (*note: uncollared wolves captured during the January and February 2015 helicopter operation would have been included as uncollared animals associated with known packs above*). Thirty-two of the 55 uncollared wolves were associated with 15 packs equipped with radio-collars (Table 1).

The IFT observed wolf sign and other information indicating the potential existence of four uncollared pairs or groups of wolves (two in Arizona, two in New Mexico) and two uncollared single wolves (one in Arizona, one in New Mexico) not being associated with known collared packs. Additional uncollared animals were found on the FAIR in 2014. These areas will be priorities for IFT trapping efforts in 2015.

Seven natural pairings of breeding age wolves in the BRWRA population occurred in 2014. The natural pairings of dispersing wolves F1283 and AM1249 with uncollared wolves resulted in the continuation of the Tsay-Oh-Ah pack and designation of the Tse ighan lige (Diamond) pack,

respectively. The uncollared wolf that paired with F1283 was captured in January 2014 and designated M1343. Following the loss of AM1157, AF903 paired with dispersing wolf M1345 of the Fox Mountain pack. Following the loss of AM1107, dispersing wolf m1336 paired with AF1305 of the Rim pack (although they paired in 2014, m1336 was not considered a member of the Rim pack in 2014). Dispersing wolf M1296 paired with f1327 of the San Mateo pack which resulted in the designation of the Mangas pack. The pairing of two dispersing wolves M1240 and F1278 resulted in the designation of the Iron Creek pack. Following the translocation of the Lava pack into the Gila Wilderness, M1282 left the pack and rejoined its natal pack San Mateo; subsequently, dispersing wolf M1285 paired with F1295, effectively joining the Lava pack.

A total of 13 single wolves equipped with radio-collars (M1240, M1244, M1254, F1278, M1282, M1284, M1285, M1286, F1295, M1296, mp1329, f1332, m1336) were part of the population for a portion of the year. Eight of these wolves (M1240, F1278, M1284, M1285, F1295, M1296, f1332, m1336) were confirmed to be alive at the end of the year. During 2014, M1240 and F1278 formed the Iron Creek pack, M1285 paired with Lava pack F1295, and M1296 paired with San Mateo f1327 forming the Mangas pack. Thus, M1240, F1278, M1285, F1295, and M1296 are no longer considered single animals (Table 1). Of the five remaining single wolves, M1284 was considered a dispersing wolf throughout the year. f1332 and m1336 began dispersing in the fall and were both located away from their natal packs during the 2014 population count. m1336 was located with AM1305 of the Rim pack and f1332 was located with M1161 whose radio collar had failed in 2009. All ($n = 55$) of the wolves equipped with radio-collars were alive at the end of the year and all ($n = 110$) wolves at the end of the year were born in the wild.

b. Reproduction

In 2014, 17 packs exhibited denning behavior which included 7 packs in Arizona (Bluestem, Tse ighan lige (Diamond), Elk Horn, Hawks Nest, Maverick, Rim, and Tsay-O-Ah) and 10 packs in New Mexico (Coronado, Iron Creek, Mangas, San Mateo, Luna, Dark Canyon, Fox Mountain, Prieto, Canyon Creek, and Willow Springs). All of these packs but Canyon Creek and Mangas were confirmed to have produced wild-born litters; all but one pack, Coronado, conceived in the wild. The IFT documented a minimum of 45 pups born with minimum of 39 (17 pups in Arizona and 22 pups in New Mexico) surviving in the wild until year-end which showed that 86% of the pups documented in early counts survived until the end of the year (Table 1). This marked the thirteenth consecutive year in which wild born wolves bred and raised pups in the wild. Of the 17 known packs at the end of 2014, all but the Coronado pack was formed naturally in the wild and the population consisted entirely of wild born wolves ($n = 110$).



Mexican wolf pups f1346, m1347, f1348, m1350, and m1351 from the Coronado den. Credit: Mexican wolf IFT

c. Releases and Translocations

The IFT conducted one hard release translocation of a pair of wolves (F1295 and M1282), two hard release translocations of wild born wolves paired each with an initial release naive pregnant female (M1290 with F1218 and M1249 with F1126), two hard release translocations of pups (mp1347 and fp1346) cross-fostered into another wild wolf den, and one modified-soft release translocation of a pack consisting of an adult pair and four pups (AF1126, M1051, mp1351, fp1348, mp1349, and mp1350) in attempts to increase genetic diversity, increase the number of breeding pairs and wolves in the wild, and resolve management concerns (Table 2).

On April 2, the IFT translocated M1290 and conducted an initial release of F1218, designated the Hoodoo pack, together at Fish Bench. M1290 had previously been removed from the wild in an attempt to facilitate a pair bond with F1218 and increase genetic diversity in the wild. By April 5, the Hoodoo pack was no longer traveling together; the Maverick pack was documented in the general area which may have caused the Hoodoo pack to split apart. M1290 made long distance movements to the north and was subsequently documented traveling with an uncollared wolf. F1218 traveled south and was illegally shot on May 5th (Table 5).

On April 9, the IFT translocated M1249 and conducted an initial release of F1126, designated the Coronado pack, together at Conklin Creek. M1249 had previously been removed from the wild in an attempt to facilitate a pair bond with F1126 and increase genetic diversity in the wild. By April 16, the IFT documented F1126 alone; M1249 had left the area was eventually documented on the Fort Apache Indian Reservation, where it remained. F1126 later whelped six pups in the wild. Because F1126 was a naive female with pups and no mate and to increase the likelihood of pup

survival, the IFT decided to remove F1126 and the dependent pups from the wild for later translocation with M1051 (a male with whom F1126 had previously been pair bonded). On May 15, the IFT successfully captured F1126 and six dependent pups and all but two pups were transported to captivity.

On May 15, the IFT translocated two of F1126's six pups into the Dark Canyon pack den. This was the IFT's first cross-foster operation. Two pups conceived in captivity by Coronado F1126 and M1249 but born in the wild were placed in a well-established wild pack (Dark Canyon) den in New Mexico. The IFT hypothesized that these genetically valuable pups would have an increased chance of survival if raised by an established and successful breeding pack in the wild. AF923 of the Dark Canyon pack had whelped three wild pups at approximately the same time as F1126. All of the pups were approximately 10 days old at the time of the cross-foster. As of December 31, the IFT confirmed that at least one of the cross-fostered pups (mp1347) was alive at year end; four of five pups associated with the Dark Canyon pack were documented during the end-of-year minimum population count.



US Fish and Wildlife Service personnel cross fostering two Coronado pack pups into the Dark Canyon pack litter. Credit: US Fish and Wildlife Service

On June 18, the IFT translocated M1282 and F1295, designated the Lava pack, to Gila Flats. This pair was previously removed from the wild for being outside the BRWRA. The IFT hypothesized that the new pack would establish a territory within the Gila Wilderness. However, M1282 subsequently left the area, returning to the Malpais Conservation Area for a short time before returning to its natal pack, the San Mateo pack. M1282 was last located in October 2014. F1295 traveled within the Gila Wilderness and was subsequently joined by Single M1285. F1295 retained the Lava pack name and M1285 is now considered part of the Lava pack, which are primarily utilizing the Gila Wilderness.

On July 22, the IFT translocated the Coronado pack, consisting of M1051, AF1126, fp1348, mp1349, mp1350, and mp1351 to the McKenna Park release site in the Gila Wilderness. The Coronado pack self-released from the modified-soft release pen on July 24. AF1126 was located dead; the incident is still under investigation on December 22. At the end of the year, M1051, mp1350 and two uncollared pups were documented alive. The cross-foster and Coronado pack translocation operations were considered successful; 67% of the six pups produced by the Coronado pack survived (one of two cross-fostered into the Dark Canyon pack and three of four translocated with AF1126).



Project personnel with Mexican wolf M1282. Credit: US Fish and Wildlife Service

d. Home Ranges and Movements

The IFT calculated home ranges for 20 packs or individuals exhibiting territorial behavior. The 95% fixed kernel method produced an average home range size of 233 mi² (603 km²), with home ranges varying from 106 mi² to 469 mi² (274 km² to 1,215 km²) (Fig. 4; Table 3). Home ranges were not calculated for seven wolves (M1244, M1254, M1276, F1281, M1282, M1284, and M1286) that dispersed, traveled alone during all or portions of 2014, or had fewer than 20 aerial locations by the end of 2014 (see Appendix A for detailed summaries of these individuals).

Mexican wolves occupied 7,255 mi² (18,791 km²) of the Mexican Wolf Nonessential Experimental Zone (MWNEPZ) during 2014 (Fig. 5). Within the BRWRA wolves occupied 5,331 mi² (13,801 km²). On the SCAR, wolves occupied 158 mi² (409 km²). Outside of the BRWRA, SCAR, and FAIR, wolves occupied 1,773 mi² (4,591 km²). Occupied wolf range occurred and was documented on the FAIR; however, this information is not displayed on the map nor are specific area values provided, as requested by the WMAT. In comparison, Mexican wolves occupied 5,791 mi² (14,998 km²) of the MWNEPZ during 2013.

e. Mortality

The IFT has documented 111 wolf mortalities in the wild since 1998 (Table 4), eleven of which occurred in 2014 (Table 5). Five of the documented wolf mortalities in 2014 were considered illegal, including: AM1157, F1218, M1254, M1275, and f1327. Three wolves died of natural causes: M1244 was killed by a mountain lion, AM1253 died of cancer (AM1253 was actually M825 originally released as part of the Hon Dah pack, in June of 2003), and AM1107 was killed by other wolves. One uncollared pup, designated mp1393, was hit by a vehicle, and AM1287 died of unknown causes, but necropsy results did suggest that this animal was likely illegally shot. AF1126 was located dead at the end of 2014; the cause of death is still under investigation. Other more frequent causes of death should be considered a minimum estimate of mortality, since some pups and uncollared wolves may die without those mortalities being documented by the IFT. Three wolves from New Mexico (mp1329, M1286, M1276) and zero wolves from Arizona were listed as “fate unknown” during 2014.

The IFT monitored 75 individual wolves equipped with radio-collars for a total of 18,731 radio days during 2014. A total of nineteen wolves equipped with radio-collars were considered removed ($n = 6$), dead ($n = 10$), or missing ($n = 3$). Uncollared animals that were documented dead (mp1393) or removed (mp1344, fp1346, mp1347, fp1348, mp1349, mp1350, and mp1351) were not included in this analysis (See Table 5 and 8 for information on these animals). The overall survival rate was 0.69, or a corresponding failure rate of 0.31. The overall failure rate was composed of the human caused mortality rate (0.10; $n = 6$), natural mortality rate (0.05; $n = 3$), unknown/awaiting necropsy mortality rate (0.02; $n = 1$), boundary removal rate (0.03; $n = 2$), missing wolves rate (0.05; $n = 3$), cattle depredation removal rate (0.02; $n = 1$), nuisance removal rate (0.00; $n = 0$), and other removal rate (0.05; $n = 3$).

f. Wolf Predation

Two packs containing at least one GPS collar were selected for the predation study in 2014, one in New Mexico (San Mateo AM1157) and one in Arizona (Bluestem AM1341). Pack sizes during both study periods, winter and summer, consisted of two adult members in San Mateo and nine to ten members in Bluestem (adults, sub-adults and pups).

Winter Study Predation Period. The IFT searched a total of 134 clusters along with 25% of randomly selected single GPS points. Of the clusters and single points searched the IFT detected 26 carcasses, 16 of which were determined to be confirmed, probable, or possible wolf kills related to the Bluestem and San Mateo packs. The remaining carcasses consisted of unknown causes of death ($n=6$), domestic horses killed and dumped by owner ($n=2$), hunter wounded loss ($n=1$) and cougar ($n=1$). Species of prey consisted of 24 elk (92%), and 2 horse scavenges (8%). The composition of elk kills related to wolves was 13% cows, 75% calves, 0% bulls, 0% yearlings, 6% adults of unknown sex, and 6% of unknown sex and age.

Summer Study Predation Period. The IFT searched a total of 67 clusters and 25% of randomly selected single GPS points. Of the clusters and single points searched the IFT detected 25 carcasses, 22 of which were determined to be confirmed, probable, or possible wolf kills related to the Bluestem and San Mateo packs. The remaining three carcasses were unknown causes of death. Species of prey consisted of 24 elk (96%) and 1 pronghorn calf (4%). The composition of elk kills related to wolves was 23% cows, 73% calves, 0% bulls, 4% yearlings, 0% adults of unknown sex, and 0% of unknown sex and age.

g. Wolf Depredation

During 2014, USDA-WS members of the IFT completed a total of 64 investigations involving 74 animals reported as having potential Mexican wolf involvement. Of these 64 investigations, 58 involved cattle ($n = 62$), two involved a horse ($n = 4$), one involved sheep ($n = 5$) and two involved dogs ($n = 2$). Average IFT response time between the reporting of an incident to the initiation of an on-site investigation was < 24 hours.

Of the 64 investigations completed in 2014, 42 (66%) were confirmed as being wolf-related. Thirty cattle deaths were confirmed as wolf depredations; seven cattle deaths were probable wolf depredations; zero injured cows were confirmed as being wolf related; and one cattle injury had probable wolf involvement. Two injured dogs and four injured horses were also confirmed as wolf related in 2014. Sixty-seven percent ($n = 28$) of the 42 investigations confirmed as wolf related occurred in New Mexico and 31% ($n = 13$) occurred in Arizona (Table 7). Thirty-four percent ($n = 22$) of the total investigations were determined to be unknown or non-wolf related. These mortality causes included: unknown ($n = 10$), black bear ($n = 2$), coyote ($n = 3$), mountain lion ($n = 1$), dog ($n = 1$), broken back ($n = 1$), natural causes ($n = 2$), birthing complications ($n = 0$), hit by car ($n = 2$) and lightning ($n = 1$).

Ninety-five percent ($n = 61$) of the 64 investigations conducted were in response to reports from ranchers and the public and the remaining 5% ($n = 3$) were in response to reports from the IFT. Six percent ($n = 2$) of the confirmed wolf-caused livestock mortalities were found and reported by the IFT (Table 7).

In total, ten of the 30 (33%) confirmed depredations, resulting in the death of livestock, involved uncollared wolves not associated with collared packs (Table 7). Two wolves (Paradise AF1056 and an uncollared wolf (mp1344) loosely associated with the Fox Mountain pack were removed in 2014 for repeated depredations.

The confirmed killed cattle rate for 2014 extrapolates to 27 depredations/100 wolves using the number of confirmed killed cattle ($n = 30$; Table 7) compared to the final population count ($n = 110$). This projected number of depredations is within the 1-34 confirmed killed cattle per 100 wolves predicted in the FEIS and reflects an decrease from the 2013 extrapolation.

h. Management Actions

In 2014, 40 different wolves were captured and/or removed a total of 48 times. Seventeen wolves were captured, collared for the first time, processed, and released on site for routine monitoring purposes by the IFT (Table 8). Twelve wolves were re-captured, given new collars, processed and released on site, or simply released on site with the current collar (Table 8). One wolf was captured and released on site with the current collar. Three wolves (young pups) were captured, processed and released on site during a cross-fostering event. Two wolves, one collared and one uncollared, were incidentally captured by private trappers, who reported the captures to the IFT. Both were processed and released on site.

Two wolves were captured and removed from the wild pursuant to approved removal orders. AF1056 (Paradise Pack) and mp1344 (Fox Mountain pack) were removed for repeated livestock depredations (Table 7). Nine wolves were removed for other management purposes. M1249 and m1290 were removed to facilitate pair bonds with naïve female wolves and increase genetic

diversity in the wild. M1282 and F1295 were removed for establishing outside the BRWRA. AF1126 and four dependent pups (fp1348, mp1349, mp1350, and mp1351) were removed to increase the chance of pup survival and facilitate a pair bond with M1051 for future translocation (Table 2). Two wolves (young pups) were captured and translocated into the Dark Canyon pack den during a cross-fostering event.

The IFT, from all management-related trapping and captures, successfully added 22 wolves to the collared population in 2014: three pups (fp1339, fp1340, and mp1382) and one adult (AM1341) from the Bluestem pack; one subadult (m1342) from the Maverick pack; four pups (fp1348, mp1349, mp1350, and mp1351) from the Coronado pack; one pup (mp1354) from the Dark Canyon pack; one pup (mp1384) and one subadult (m1345) from the Fox Mountain pack; one pup (mp1383) from the Hawk's Nest pack; two pups (mp1386, fp1392) and one adult (AM1387) from the Prieto pack; two pups (mp1385, fp1390) and one subadult (m1391) from the Willow Springs pack. Two wolves were incidentally captured by private trappers and processed by the IFT. One subadult (m1338) a previously uncollared wolf from the Willow Springs pack was collared and one adult (AM1185) from the Willow Springs pack was processed and released. Trapping was also conducted on the FAIR; however, wolf numbers on the FAIR are not provided at the request of the WMAT.

In 2014, the IFT investigated nine reported cases of potential nuisance wolf behavior (Table 9). The investigations were in response to reports of potential wolves; near human dwellings/camps ($n = 6$) or chasing/harassing livestock ($n = 3$). Of the six instances of potential wolves near human dwellings/camps, two were reports of tracks, one also included wolves following mules in the Gila Wilderness, one was also in close proximity to livestock, and two involved injuries to dogs. Of the nine reports seven were determined to have known or likely Mexican wolf involvement; tracks near residence ($n = 2$), chasing/harassing livestock ($n = 2$), near camp/following mules ($n = 1$), dog injury ($n = 2$). Of these, the Coronado pack was involved in four and Luna pack M1337 was involved in one. Trail cameras, tracking, telemetry, howling, and trapping were used by IFT members during investigations to gather evidence of wolf involvement on reported nuisance problems. Hazing was used to move wolves away from residences and livestock.



Mexican wolf m1384. Credit: US Fish and Wildlife Service

i. Proactive Management Activities

The IFT, working with Non-Governmental Organizations (NGO), used proactive management to assist in reducing wolf-livestock conflicts in the BRWRA (Table 10). The Reintroduction Project and NGOs spent approximately \$120,000 on proactive management activities affecting an estimated 10 Allotments in Arizona and 8 in New Mexico. The IFT, agency contract employees, and NGO contract employees spent approximately 11,800 hours implementing proactive management activities during 2014.

The agencies and NGOs purchased hay and supplements during the calving season for three stakeholders in Arizona and no in New Mexico. No known depredations occurred on the eight allotments. Project personnel met with Forest District Rangers, biologists and range staffs, to discuss livestock management during the wolf denning season. The IFT coordinated with the Alpine, Clifton, Springerville, Quemado, Wilderness, and Reserve Ranger Districts and stakeholders in Arizona and New Mexico to address potential conflicts between livestock and wolves. In several of these cases, livestock were scheduled to graze in or near pastures where wolves were denning. In pursuing efforts to reduce interactions between livestock and denning wolves, the Districts and ranchers changed pasture rotations and moved livestock into alternate pastures during the denning season, where possible. The movements were voluntary for the ranchers.

During 2014, the Reintroduction Project and NGOs contracted 15 range riders (8 in Arizona, and 7 in New Mexico) to assist 21 stakeholders (10 in Arizona, 11 in New Mexico) in monitoring wolves in proximity to cattle. Range riders monitored approximately 20 allotments within 10 wolf pack home ranges, one single wolf home range and one uncollared group of wolves, and provided

additional oversight of livestock and light hazing of wolves when they were among livestock. Twelve confirmed depredation incidents occurred on monitored allotments while ranger riders were under contract (Table 10).

The IFT issued radio telemetry equipment to stakeholders (9 in Arizona, 13 in New Mexico) in areas where wolf-livestock conflicts were prevalent. Most of these equipment loans were in association with range riders. The IFT trained stakeholders to use the telemetry equipment to monitor wolves in the vicinity of cattle or residences, and instructed them on non-injurious hazing techniques.

Supplemental food caches were utilized to assist a pack or remnant of a pack in feeding young of the year when extenuating circumstances (such as a death of one of the adults) reduce their own ability to do so. Supplemental food caches were utilized for the five packs (3 in Arizona, 2 in New Mexico) in 2014. Following the death of AM1287 of the Elk Horn Pack, a supplemental food cache was established to assist AF1294 feed at least three pups; two pups survived to year-end. The IFT cross-fostered two pups into the Dark Canyon den and thus, established a supplemental food cache within a reasonable distance to the den and rendezvous sties to assist in the success of the effort. The Mangas pack exhibited denning behavior in 2014; following the death of F1327, a supplemental food cache was established to help M1296 feed potential young. However, the effort was stopped in October when M1296 starting making large movements outside its territory, suggesting there were no surviving pups. Both the Coronado pack and Hoodoo pack were released or translocated prior to denning. In both instances the packs did not remain together. Supplemental food caches were established for both females to help them feed potential pups following whelping. F1218 of the Hoodoo pack did not produced pups and was subsequently located dead from an illegal gun shot. AF1126 of the Coronado pack produced six pups. AF1126 was subsequently captured and transported to captivity with four of its pups for pairing with another male wolf and future translocation. The remaining two pups were cross-fostered into the Dark Canyon pack

Diversionsary food caches are utilized to reduce potential conflicts between wolves and livestock, primarily in areas where depredations have occurred in the past. Diversionsary food caches were established for six packs during 2014. Following the confirmed injury of two horses by members of the Bluestem pack in July, a diversionsary food cache was established. In November, one additional depredation by the Bluestem pack was documented. After one confirmed and one probable depredation involving uncollared wolves loosely associated with the Luna pack a diversionsary food cache was established. No further depredations involving these uncollared wolves were reported after the food cache was in place. After two depredations involving collared members of the Willow Springs pack a diversionsary food cache was established. No depredations were reported after the food cache was in place. A diversionsary food cache was proactively established the Prieto pack, due to denning in proximity to grazing livestock and prior depredation history during 2013. AM1387 was involved in the injury of two horses in July; but, no other depredations involving the Prieto pack occurred in 2014. The IFT attempted to proactively establish a diversionsary food cache for the Fox Mountain pack due to denning in close proximity to grazing livestock in conjunction with their past depredation history. However, a depredation involving the Fox Mountain pack occurred prior to the pack locating and utilizing the food cache. The diversionsary food cache was moved and the pack located and began utilizing it; no confirmed depredations involving the Fox Mountain pack occurred during the remainder of 2014.



Dark Canyon Pack. Credit: US Fish and Wildlife Service.

j. Non-IFT Wolf Sighting Reports

In 2014, the IFT received a total of 57 wolf sighting reports from the public, which included 38 reports from Arizona, 17 reports from New Mexico, and two reports from Texas (Appendix B). The IFT determined 15 reports, including both reports from Texas, were non-wolf sightings (coyote, dogs, etc.), 10 reports were sightings of known wolves within established territories (Arizona $n = 4$, New Mexico $n = 6$), one report was likely uncollared/unknown wolves (Arizona $n = 0$, New Mexico $n = 1$), and 31 reports did not have enough information to make a determination. 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, and are provided the 1-888-495-WOLF (9653) number to report Mexican wolf sightings.

k. Uncollared wolf sign

The IFT analyzed unoccupied range, uncollared wolf sign, and sighting reports to target 12 core areas in Arizona and New Mexico (Fig. 6) in an effort to document and/or radio collar unknown wolves in and around the BRWRA. The IFT searched a total of 1593 mi (2563 km) of roads and trails in 2014. Six uncollared wolves were documented in Arizona and seven uncollared wolves were documented in New Mexico (Fig. 7) as a result of these efforts.

Five howling surveys were conducted in NM for a total of 55.5 miles searched. Two were conducted in the Poverty Flats area, two in the Indian Peaks area, and one in the Eagle Peak area. No wolf responses were heard during these efforts in uncollared search areas.



Mexican wolf. Credit: George Andrejko, AGFD.

1. Public Outreach

The IFT and other project personnel provided a total of 17 presentations and status reports to approximately 2,388 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. Ninety-nine percent of the presentations were for the BRWRA target audience. In addition, a total of 5,824 weekly contacts were made to cooperating agencies and stakeholders in 2014. Project updates were faxed to, or posted at, 41 different individuals/locations on a monthly basis across the BRWRA. Endangered Species Updates containing current project and recovery program information also went out to an average of 19,000 people a month. The AZGFD Mexican wolf website was visited 19,322 times throughout 2014. Outreach presentations can be scheduled by contacting the IFT at 1-888-495-WOLF (9653).

Utilizing available USFS kiosks and various road pullouts within 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 2014 end-of-year count confirmed a minimum of 110 wolves, 55 wolves (35 adults, 10 subadults, and 10 pups) of which were equipped with radio-collars. The population consisted of 19 packs (eight in Arizona, 11 in New Mexico). Fifty-five uncollared wolves, including uncollared singles and groups were documented throughout 2014. Thirty-two of the 55 uncollared

wolves were associated with 15 packs equipped with radio-collars (Table 1). Three single wolves equipped with radio-collars (M1284, f1332, and m1336) were still alive at year-end and one previously fate unknown wolf (M1161) was documented alive during the end of year count. There are likely more undocumented free-ranging wolves in the population, but most of these are likely single animals because wolf packs generally leave more sign and their existence/presence is easier to document.

The IFT conducted two initial releases and 12 translocations in 2014. Of the 14 wolves released or translocated, eight (M1051, M1249, M1290, F1295, mp1350, two uncollared pups associated with the Coronado pack, and one uncollared pup cross-fostered into the Dark Canyon pack den) remained in the wild at the end of 2014. F1218 was released pregnant and paired with M1290. They did not remain together; M1290 traveled north alone and F1218 was illegally shot in May. F1126 was released pregnant and paired with M1249. They did not remain together; F1126 whelped six pups in the wild and was subsequently removed from the wild to increase the likelihood of pup survival. F1126 was later translocated with M1051 and four of the pups whelped in the wild (fp1348, mp1349, mp1350, and mp1351) as the Coronado pack. M1051, mp1350 and two uncollared pups survived to year end; AF1126 was located dead in December the cause of death is still under investigation. Two pups (fp1346 and mp1347) whelped by AF1126 in the wild were translocated into the Dark Canyon packs den in the IFT's first attempt at cross-fostering. At least one pup (mp1347) was known to be alive at year-end; all pups, including fp1346, were known to be alive through August. F1295 was translocated with M1282, designated the Lava pack, into the Gila Wilderness. The pair did not stay together; F1295 remained in the wilderness and subsequently joined with Single M1285. This pair retained the Lava pack designation. M1282 traveled north and was last located in October.

Fourteen packs produced wild-conceived, wild-born litters, which represents the 13th consecutive year in which wild-born Mexican wolves bred and raised pups in the wild. In addition, all documented wolves in the population were wild-born.

The IFT documented 11 mortalities of free-ranging wolves in 2014, including ten adults, zero subadults, and one pup.

Home ranges were calculated for 20 packs or individuals exhibiting territorial behavior. The 95% fixed kernel method produced an average home range size of 233 mi² (603 km²), with home ranges varying from 106 mi² to 469 mi² (274 km² to 1,215 km²).

Native prey used by wolves consisted primarily of elk; however, there were also 30 confirmed livestock depredation incidents resulting in 30 cattle killed. In addition, two injured dogs and four injured horses were confirmed to have been caused by wolves.

The IFT captured 40 wolves a total of 48 times for routine monitoring ($n = 30$), management actions ($n = 11$), to facilitate cross-fostering ($n = 3$), medical attention ($n = 0$), and movement outside the BRWRA boundary ($n = 2$). Additionally, 2 wolves (uncollared m1338 and AM1185) were processed and released by IFT personnel, following their incidental capture by private trappers. Two wolves (AF1056 and mp1344) were captured and removed pursuant to a USFWS removal order. Two wolves, M1249 and m1290, were removed to facilitate pair bonds with naïve female wolves and increase genetic diversity in the wild. Seven wolves (AF1126, fp1346, mp1347, fp1348, mp1349, mp1350, and mp1351) were captured to increase the likelihood of pup survival following an unsuccessful pair bond with AM1249. Three wolves (fp1352, fp1353, and

mp1354) were captured to facilitate cross-fostering of two Coronado pups into a wild wolf den. Two wolves, M1282 and F1295, were removed for establishing outside the BRWRA. Six wolves (mp1385, mp1383, AM1038, AM1249, mp1350, and M1342) were captured twice; mp1354 was captured three times.

In 2014, the IFT analyzed 57 reports of wolf sightings from the public; 30% of these reports were non-wolf sightings (coyote, dogs, deer, etc.), 18% were sightings of known wolves within established territories, 0% 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 1593 mi (2563 km) of roads, trails, and canyons looking for unknown wolves in and around the BRWRA. As a result, the IFT was successful in documenting one single wolf, one pair of wolves, and one group of three wolves in Arizona and one single wolf, one pair of wolves, and one group of four wolves in New Mexico.

Project personnel provided 17 presentations and status reports to approximately 2,388 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, 5,824 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 19,000 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 of 110 wolves in 2014 (Fig. 8; Table 1). The minimum number of breeding pairs increased from five in 2013 to eight in 2014 (including one “Operational Breeding Pair”) (Fig. 4; Table 1). In January, AF1056 was removed for repeated depredations. An uncollared wolf, designated mp1344, loosely associated with the Fox Mountain pack, was removed from the wild in March in an effort to alter pack behavior following repeated depredations.

The minimum total number of pups alive at the end of the year was higher ($n = 39$; Table 1) than the previous year ($n = 17$) and the number of known mortalities increased from seven in 2013 to 11 in 2014 (Table 4). Seven natural pairings occurred in 2014. Dispersing wolves F1283 and AM1249 paired with uncollared wolves, which resulted in the continuation of the Tsay-Oh-Ah pack and designation of the Tse ighan lige (Diamond) pack, respectively. Dispersing wolf M1345 from the Fox Mountain pack joined AF903 of the San Mateo pack following the illegal shooting of AM1157. Dispersing wolf m1336 from the Maverick pack joined AF1305 of the Rim pack following the death of AM1107 as a result of interspecific competition. Dispersing wolf M1296 paired with f1327 of the San Mateo pack which resulted in the designation of the Mangas pack. Two dispersing wolves, M1240 and F1278, formed the Iron Creek pack. Following the translocation of the Lava pack into the Gila Wilderness, M1282 left the pack and rejoined its natal pack San Mateo; subsequently, dispersing wolf M1285 paired with F1295 effectively joining the Lava pack. The formation of many new pairings in 2014 along with an estimated recruitment of

87% (39 pups alive out of 45 known produced) are positive indicators for the growth of the overall wolf population. Two of the new pairings referenced above involved the pairing of one known collared wolf with previously unknown, uncollared wolves. All of the remaining pairings except one (M1240 and F1278) involved the joining of one collared dispersing wolf to an existing pack following the loss of one of the paired animals.

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 plus missing rate) rate of 0.31 in 2014. This failure rate would predict an increasing population which was indeed the case in 2014. The failure rate remains low largely due to minimal ($n = 6$) management removals of radio-collared wolves from the population. While the reduction in the number of management removals is encouraging, the majority of the population losses in 2014 were either due to human-caused mortalities or missing animals rather than management removals. It is difficult to determine the effect on the population from missing animals because individuals could still be alive. In this case, all three missing animals (mp1329, M1286, M1276) are likely dead based on the circumstances associated with the disappearance of the wolves. In 2014, seven of the mortalities were human-caused mortalities (six known or likely illegal mortalities, and one vehicle strike), while three of the mortalities were considered natural and one is awaiting necropsy results. Efforts to reduce the level of mortality, while replacing the individual animals lost through initial releases and translocations will continue to be a priority. The IFT will also continue to document the uncollared wolf component of the population.

The 2014 confirmed killed cattle rate extrapolates to approximately 27 depredations/100 wolves using the number of confirmed killed cattle ($n = 30$) compared to the final 2014 wolf population count ($n = 110$). 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 or were removed during 2014. 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 2015 could result in another increase in the Mexican wolf population. The Reintroduction Project management objective for 2015 is a 10% increase in the minimum wolf population counts and/or the addition of at least two packs that produce a minimum of one pup that survives to December 31, while minimizing negative impacts of wolves. Changes to the Mexican wolf reintroduction project are outlined in the 2015 Final Rule (http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf). The IFT will begin the implementation of this rule while simultaneously evaluating its effectiveness during 2015.

6. Literature Cited

- Beyer, Hawthorne. 2014. Geospatial Modeling Environment.
<<http://www.spatial ecology.com/gme>>. Accessed March 2015.
- ESRI (Environmental Systems Research Institute). 2011. ArcGIS Desktop. Version 10. Environmental Systems Research Institute, Redlands, California.
- Heisey, D. M., and T. K. Fuller. 1985. Evaluation of survival and cause-specific mortality rates using telemetry data. *Journal of Wildlife Management* 49:668-674.
- Fuller, T. K., L. D. Mech, and J. F. Cochrane. 2003. Wolf population dynamics. Pages 161-191 in L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology, and conservation*. The University of Chicago Press, Chicago, Illinois, USA.
- Metz, M. C., D. W. Smith, J. A. Vucetich, D. R. Stahler, and R. O. Peterson. 2012. Seasonal patterns of predation for gray wolves in the multi-prey system of Yellowstone National Park. *Journal of Animal Ecology* 81:553-563.
- Mexican Wolf Blue Range Adaptive Management Oversight Committee and Interagency Field Team. 2005. Mexican Wolf Blue Range Reintroduction Project 5-year review. USFWS, Albuquerque, New Mexico, USA.
- Paquet, P. C., J. Vucetich, M. L. Phillips, and L. Vucetich. 2001. Mexican wolf recovery: three year program review and assessment. Prepared by the Conservation Breeding Specialist Group for the U.S. Fish and Wildlife Service, Albuquerque, New Mexico, USA.
- Ruth, T. K., P. C. Buotte, and H. B. Quigley. 2010. Comparing ground telemetry and global positioning system methods to determine cougar kill rates. *The Journal of Wildlife Management* 74(5):1122-1133.
- Sand, J., B. Zimmerman, P. Wabakken, H. C. Pedersen. 2005. Using GPS technology and GIS cluster analyses to estimate kill rates in wolf-ungulate ecosystems. *Wildlife Society Bulletin* 33(3):914-925.
- Seaman, D. E., and R. A. Powell. 1996. An evaluation of the accuracy of kernel density estimators for home range analysis. *Ecology* 77:2075-2085.
- Seaman, D. E., J. J. Millspaugh, B. J. Kernohan, G. C. Brundige, K. J. Raedeke, and R. A. Gitzen. 1999. Effects of sample size on kernel home range estimates. *The Journal of Wildlife Management* 63:739-747.
- Singer, F. J., W. Schreier, J. Oppenheim, and E. O. Garton. 1989. Drought, fires, and large mammals. *BioScience* 39:716-722.

- U. S. Fish and Wildlife Service. 1996. Final environmental impact statement for the reintroduction of the Mexican wolf within its historic range in the southwestern United States. USFWS, Albuquerque, New Mexico, USA.
- U. S. Fish and Wildlife Service. 1998. The final Mexican wolf experimental rule. 63 Federal Register. Pp 1763-1772.
- White, G. C., and R. A. Garrott. 1990. Analysis of wildlife radio-tracking data. Academic Press Incorporated, New York, New York, USA.



Hoodoo Pack release. Credit: George Andrejko, AGFD.

Table 1. Status of Mexican wolf packs in Arizona and New Mexico, as of December 31, 2014.

Pack	Wolf ID	Reproduction ^a	Pups at Year End ^b	No. Collared	No. Uncollared	Min pack Size ^c
Bluestem, AZ*	AF1042, AM1341, M1275 ^c , m1330 ^g , m1331, f1333, f1339, m1340, mp1382	6	6	7	5	12
Canyon Creek, NM	AF1246, AM1252	0	0	2	0	2
Coronado, NM	M1051, AF1126 ^c , mp1350	4	3	2	2	4
Dark Canyon, NM*	AF923, AM992, M1293, mp1354	5	4	4	3	7
Elk Horn, AZ**	AM1287 ^c , AF1294, M1342 ⁱ	3	2	2	2	4
Fox Mountain, NM*	AF1212, AM1158, M1276 ^f , mp1384, mp1344 ^h	4	3	3	2	5
Hawks Nest, AZ*	AM1038, AF1280, mp1383	3	3	3	2	5
Hoodoo, AZ	M1290, F1218 ^c	0	0	1	1	2
Iron Creek, NM	AM1240, AF1278	1	1	2	1	3
Lava, NM	F1295, M1285 ⁱ	0	0	2	0	2
Luna, NM*	AF1115, AM1155, M1337	3	2	3	2	5
Mangas, NM	M1296, f1327 ^c	0	0	1	0	1
Maverick, AZ*	AM1183 ^j , AM1291, F1335	4	4	2	5	7
Paradise, AZ	AF1056 ^h	0	0	0	0	0
Prieto, NM*	AF1251, AM1387, mp1386, fp1392	3	3	4	1	5
Rim, AZ	AM1107 ^c , AF1305	1	0	1	0	1
San Mateo, NM	AM1157 ^c , AF903, M1345	1	1	2	1	3
Willow Springs, NM*	AF1279, AM1185, m1338, m1391, mp1385, fp1390	5	5	6	3	9
Radio collared wolf, AZ	f1332	0	0	1	0	1
Radio collared wolf, AZ	m1336	0	0	1	0	1
Radio collared wolf, AZ	M1161 ^j	0	0	0	1	1
Radio collared wolf, NM	M1244 ^c	0	0	0	0	0
Radio collared wolf, NM	M1254 ^c	0	0	0	0	0
Radio collared wolf, NM	M1282 ^g	0	0	0	0	0
Radio collared wolf, NM	M1284	0	0	1	0	1
Radio collared wolf, NM	M1286 ^f	0	0	0	0	0
Radio collared wolf, NM	mp1329 ^f	0	0	0	0	0
Uncollared wolf, NM	mp1393 ^c	0	0	0	0	0
Middle Mountain, AZ	Uncollared wolf	0	0	0	1	1
Cerro Montoso, AZ	Uncollared wolves	0	0	0	3	3
Chevelon Canyon, AZ	Uncollared wolves	0	0	0	2	2
Gasoline Lake, NM	Uncollared wolf	0	0	0	1	1
Pueblo Creek, NM	Uncollared wolves	0	0	0	4	4
Eagle Peak, NM	Uncollared wolves	0	0	0	2	2
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
Totalsⁱ		45	39	55	55	110

Table 1. Continued.

^a Reproduction-maximum number of pups documented in 2014.

^b Pups at year end documented surviving until December 31, 2014.

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

^d Wolf numbers on FAIR and SCAR are not displayed at the request of the tribes.

^e Died during 2014.

^f Fate unknown during 2014.

^g Radio collared wolf not missing for 3 months, but not located nor believed alive by IFT through December 31, 2014.

^h Removed from wild for management purposes during 2014.

ⁱ Dispersed and joined existing pack.

^j Radio collar no longer functions; but, documented alive through December 31, 2014.

^l Totals include wolves occurring on FAIR and SCAR.

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

**A pack that meets the definition of a operational breeding pair.

Table 2. Mexican wolves initial released or translocated from captivity or the wild in Arizona and New Mexico during January 1 – December 31, 2014.

Wolf pack	Wolf #	Release Site	Release Date	Released or Translocated
Hoodoo	m1290	Fish Bench	April 2	Translocated
Hoodoo	F1218	Fish Bench	April 2	Released
Coronado	M1249	Conklin Creek	April 9	Translocated
Coronado	F1126	Conklin Creek	April 9	Released
Dark Canyon	fp1346	Dark Canyon Den	May 15	Translocated (Cross-Fostered)
Dark Canyon	mp1347	Dark Canyon Den	May 15	Translocated (Cross-Fostered)
Single	F1295	Gila Flats	June 18	Translocated
Single	M1282	Gila Flats	June 18	Translocated
Coronado	AF1126	McKenna Park	July 22	Translocated
Coronado	M1051	McKenna Park	July 22	Translocated
Coronado	fp1348	McKenna Park	July 22	Translocated
Coronado	mp1349	McKenna Park	July 22	Translocated
Coronado	mp1350	McKenna Park	July 22	Translocated
Coronado	mp1351	McKenna Park	July 22	Translocated

Table 3. Home range sizes of free-ranging Mexican wolf packs in Arizona and New Mexico, January 1 – December 31, 2014.

Wolf ID	Home range size mi² (km²)	Number of independent locations	Availability of radio locations during 2014
Bluestem	286 (742)	299	12 months
Canyon Creek	332 (859)	326	12 months
Coronado	210 (545)	34	6 months
Dark Canyon	106 (274)	125	12 months
Elk Horn	169 (437)	47	12 months
F1332	160 (415)	123	9 months
Fox Mountain	389 (1009)	44	12 months
Hawks Nest	151 (391)	43	12 months
Hoodoo	374 (969)	24	9 months
Iron Creek	115 (298)	43	12 months
Lava	301 (780)	25	7 months
Luna	257 (665)	59	12 months
Mangas	195 (505)	37	11 months
Maverick	264 (684)	42	12 months
Prieto	178 (461)	43	12 months
Rim	178 (461)	47	12 months
San Mateo	192 (498)	49	12 months
Tsay-O-Ah	469 (1215)	56	12 months
Tse ighan lige (Diamond)	189 (491)	35	8 months
Willow Springs	139 (361)	301	12 months
Average	233 (603)	90	10.9 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, 1998-2014.

Year	Illegal Mortality ^a	Vehicle collision	Natural ^b	Other ^c	Unknown	Awaiting necropsy	Annual Total
1998	4	0	0	1	0	0	5
1999	0	1	2	0	0	0	3
2000	2	2	1	0	0	0	5
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	2	0	1	0	1	0	4
2008	7	2	2	0	2	0	13
2009	4	0	4	0	0	0	8
2010	5	0	1	0	0	0	6
2011	3	2	3	0	0	0	8
2012	4	0	0	0	0	0	4
2013	5	0	0	2	0	0	7
2014	6	1	3	0	0	1	11
Total	61	15	21	5	8	1	111

^aIllegal mortality causes of death may include, but are not limited to known or suspected illegal shooting with a firearm or arrow, and trap related mortalities by the public following necropsy.

^bNatural causes of death may include, but are not limited to predation, starvation, interspecific strife, lightening, and disease.

^cOther causes of death include capture-related mortalities and legal shootings by the public.

Table 5. Mexican wolf mortalities documented in Arizona and New Mexico during January 1 - December 31, 2014.

Wolf ID	Pack	Age (years)	Date Found	Cause of Death
M1244	Single	2	January 6	Mountain lion
AM825 (AM1253)	Tsay-O-Ah	10	March 31	Cancer
M1275	Single	2	April 21	Illegal mortality
F1218	Hoodoo	3	May 5	Illegal mortality
F1327	Mangas	2	June 24	Illegal mortality
AM1287	Elk Horn	4	August 8	Unknown (suspected illegal mortality)
AM1157	San Mateo	6	October 14	Illegal mortality
M1254	Single	3	October 20	Illegal mortality
AM1107	Rim	9	November 18	Wolves
mp1393	Unknown	<1	December 14	Vehicle
AF1126	Coronado	6	December 22	Awaiting Necropsy

Table 6. Mexican wolf depredations of livestock documented in Arizona and New Mexico during January 1 – December 31, 2014.

	Confirmed	Probable	Total
Fatal	30	7	37
Injury	2	1	3

Table 7. Investigations of confirmed and probable depredations and injuries caused by Mexican wolves to livestock and dogs during 2014 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. Number of depredation incidents on a given wolf at a given point in time is calculated based on the number of incidents in the preceding 365 days.

	Wolves in Area	Investigation Date	Located By IFT	Species	State	# Killed/ # Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents	Management Action
1	Fox Mountain	1/20/2014	Yes	Cattle	NM	1 Killed	Confirmed Wolf	AM1158 AF1212 and 1 Uncollared	Yes	1	Increased monitoring and establishing a range rider
2	Unknown	1/23/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared wolf or wolves in Fox Mountain Territory	Yes	1	Increased sign search and monitoring for any collared wolves potentially in the area
3	Unknown	2/1/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared wolf or wolves in Fox Mountain Territory	Yes	2	Removal order issued and diversionary food cache established
4	Unknown	2/1/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared wolf or wolves in Fox Mountain Territory	Yes	3	Removal order issued and diversionary food cache established
5	Unknown	2/1/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared wolf or wolves in Fox Mountain Territory	Yes	4	Removal order issued and diversionary food cache established
6	Unknown	2/1/2014	No	Cattle	NM	1 Killed	Probable	Uncollared wolf or wolves in Fox Mountain Territory	No		Removal order issued and diversionary food cache established
7	Unknown	2/12/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared wolf or wolves loosely associated with Fox Mountain	Yes	5	Continued implementation of management decision
8	Fox Mountain	3/7/2014		Cattle	NM	1 Killed	Probable	Fox Mountain	No		Increased monitoring
9	Willow Springs	3/10/2014	Yes	Cattle	NM	1 Killed	Confirmed Wolf	AM1185 and AF1279	Yes	1	Increased monitoring

10	Unknown	3/22/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Willow Springs Uncollared Wolves	Yes	1	Increased monitoring of pack
11	F1295	3/22/2014	Yes	Cattle	NM	1 Killed	Probable	F1295	No		Increased monitoring and removal for being outside the BRWRA
12	Unknown	3/26/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	1	Set out 4 trail cameras to collect evidence of wolves in the area. Uncollared sign search weekly
13	Unknown	3/29/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	2	Set out 4 trail cameras to collect evidence of wolves in the area. Uncollared sign search weekly
14	Willow Springs	3/31/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	AM1185 AF1279 mp1338	Yes	2	Established a diversionary food cache
15	Unknown	4/4/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	3	Set out 4 trail cameras to collect evidence of wolves in the area. Uncollared sign search weekly
16	Unknown	4/8/2014	No	Cattle	AZ	1 Killed	Probable	Uncollared	No		
17	M1249	4/17/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	M1249	Yes	1	Hazed and attempted to trap
18	M1249	4/21/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	M1249	Yes	2	Trapping continued
19	Unknown	4/25/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared	Yes	1	Increased sign search and monitoring for any collared wolves potentially in the area
20	Fox Mountain	5/2/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	AM1158 or an uncollared	Yes	2	Increased monitoring and establishment of a diversionary food cache
21	Unknown	5/10/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared	Yes	1	Increased sign search and monitoring for any collared wolves potentially in the area
22	M1284	5/19/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	M1284 and any Uncollareds with it at the time	Yes	1	Increased monitoring

23	Unknown	5/22/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	San Mateo Uncollared	Yes	1	Maintaining remote cameras to document uncollared wolves
24	f1332	6/24/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	f1332	Yes	1	Increased monitoring by range rider
25	Unknown	7/2/2014	No	Cattle	AZ	1 Killed	Probable		No		
26	Bluestem	7/20/2014	No	Horse	AZ	2 Injured	Confirmed Wolf	AF1042 and 3 others	Yes	1	Increased monitoring and establishment of a diversionary food cache
27	Prieto	7/20/2014	No	Horse	NM	2 Injured	Confirmed Wolf	AM1387	No	1	Increased monitoring
28	Unknown	8/3/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	2 Uncollared wolves loosely associated with Luna	Yes	1	Established a diversionary food cache
29	San Mateo	8/6/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	AF903 AM1157 M1282	Yes	1	Increased monitoring
30	Fox Mountain	8/13/2014	No	Cattle	NM	1 Injured	Probable	Fox Mountain	No		Increased monitoring and maintained diversionary food cache
31	Luna	8/20/2014	No	Cattle	NM	1 Killed	Probable	Luna Uncollared	No		Maintaining and moving the established diversionary food cache to increase likelihood of use
32	Unknown	8/21/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared	Yes	2	Increased sign search and monitoring for any collared wolves potentially in the area
33	Unknown	9/1/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	Uncollared	Yes	3	Increased sign search and monitoring for any collared wolves potentially in the area
34	Unknown	9/12/2015	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	1	Increased sign search and monitoring for any collared wolves potentially in the area. Set traps and attempted to trap uncollared wolves.

35	Unknown	9/12/2015	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	2	Increased sign search and monitoring for any collared wolves potentially in the area. Set traps and attempted to trap uncollared wolves.
36	Unknown	9/26/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	Uncollared	Yes	3	Increased sign search and monitoring for any collared wolves potentially in the area. Set traps and attempted to trap uncollared wolves.
37	Fox Mountain	10/2/2014	No	Cattle	NM	1 Killed	Probable	Fox Mountain	No		Increased monitoring
38	Bluestem	11/1/2014	No	Cattle	AZ	1 Killed	Confirmed Wolf	Bluestem	Yes	2	Increased monitoring
39	Mangas	11/19/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	M1296	Yes	1	Increased monitoring
30	Luna	11/25/2014	No	Cattle	NM	1 Killed	Confirmed Wolf	AM1155 AF1115 M1337	Yes	1	Increased monitoring
41	Coronado	11/28/2014	No	Dog	NM	1 Injured	Confirmed Wolf	Coronado	Yes	1	Increased monitoring and hazing of wolves
42	Coronado	11/30/2014	No	Dog	NM	1 Injured	Confirmed Wolf	Coronado	Yes	2	Increased monitoring and hazing of wolves

Table 8. Mexican wolves captured in Arizona and New Mexico from January 1 – December 31, 2014.

	Pack	Wolf ID	Capture Date	Reason for Capture
1	Willow Springs	mp1338	January 14	Caught by private trapper. IFT responded, collared and released wolf on site.
2	Maverick	m1290	January 20	Helicopter capture. Temporarily removed from the wild. Transported to Sevilleta to facilitate pair bonding.
3	Hawks Nest	AM1038	January 20	Helicopter capture. Routine monitoring purposes. Captured, re-collared and released on site.
4	Paradise	AF1056	January 20	Helicopter capture. Removed from the wild in accordance with USFWS Removal Order.
5	Paradise	M1249	January 20	Helicopter capture. Temporarily removed from the wild. Transported to Sevilleta to facilitate pair bonding.
6	Elk Horn	F1294	January 21	Helicopter capture. Routine monitoring purposes. Captured, re-collared and released on site.
7	Bluestem	fp1339	January 21	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
8	Bluestem	fp1340	January 21	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
9	Bluestem	M1341	January 21	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
10	Maverick	m1342	January 21	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
11	Maverick	AM1183	January 21	Helicopter capture. Routine monitoring purposes. Captured, re-collared and released on site.
12	Single	M1343	January 22	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
13	Fox Mountain	mp1344	March 03	Management trapping. Removed from wild in accordance with USFWS Removal Order.
14	Willow Springs	AM1185	March 22	Caught by private trapper. IFT responded, processed and released wolf on site.
15	Fox Mountain	AM1158	March 28	Helicopter capture. Routine monitoring purposes. Captured, re-collared and released on site.
16	San Mateo	m1282	March 28	Helicopter capture. Temporarily removed from the wild for being outside the BRWRA.
17	Single	f1295	March 28	Helicopter capture. Temporarily removed from the wild for being outside the BRWRA.
18	Fox Mountain	m1345	March 29	Helicopter capture. Routine monitoring purposes. Captured, collared and released on site.
19	Coronado	fp1346	May 15	Hand capture. Translocated into Dark Canyon den for cross-fostering.
20	Coronado	mp1347	May 15	Hand capture. Translocated into Dark Canyon den for cross-fostering.
21	Coronado	fp1348	May 15	Hand capture. Temporarily removed from wild for future translocation.
22	Coronado	mp1349	May 15	Hand capture. Temporarily removed from wild for future translocation.
24	Coronado	mp1350	May 15	Hand capture. Temporarily removed from wild for future translocation.
25	Coronado	mp1351	May 15	Hand capture. Temporarily removed from wild for future translocation.
23	Coronado	AF1126	May 15	Management trapping. Temporarily removed from the wild. Transported to Sevilleta.
26	Dark Canyon	fp1352	May 15	Hand capture to facilitate cross-fostering and identify pups. Released on site.
27	Dark Canyon	fp1353	May 15	Hand capture to facilitate cross-fostering and identify pups. Released on site.

28	Dark Canyon	mp1354	May 15	Hand capture to facilitate cross-fostering and identify pups. Released on site.
29	Bluestem	mp1382	August 07	Routine monitoring purposes. Captured, collared and released on site.
30	Hawks Nest	mp1383	August 24	Routine monitoring purposes. Captured, collared and released on site.
31	Dark Canyon	mp1354	August 25	Routine monitoring purposes. Re-captured, collared and released on site.
32	Fox Mountain	mp1384	September 02	Routine monitoring purposes. Captured, collared and released on site.
33	Willow Springs	mp1385	September 07	Routine monitoring purposes. Captured, collared and released on site.
34	Willow Springs	mp1385	September 11	Routine monitoring purposes. Re-captured and released on site.
35	Hawks Nest	mp1383	September 16	Routine monitoring purposes. Re-captured, re-collared and released on site.
36	Prieto	mp1386	September 22	Routine monitoring purposes. Captured, collared and released on site.
37	Prieto	AM1387	September 25	Routine monitoring purposes. Captured, collared and released on site.
38	Hawks Nest	AM1038	September 26	Routine monitoring purposes. Re-captured, re-collared and released on site.
39	Single	f1388	October 12	Routine monitoring purposes. Captured, collared and released on site.
40	Single	f1389	October 14	Routine monitoring purposes. Captured, collared and released on site.
41	Single	M1249	October 14	Routine monitoring purposes. Re-captured, processed and released on site.
42	Coronado	AM1051	October 18	Routine monitoring purposes. Captured, processed and released on site.
43	Coronado	mp1350	October 19	Routine monitoring purposes. Re-captured, re-collared and released on site.
44	Willow Springs	fp1390	October 20	Routine monitoring purposes. Captured, collared and released on site.
45	Willow Springs	m1391	October 21	Routine monitoring purposes. Captured, collared and released on site.
46	Maverick	M1342	October 30	Routine monitoring purposes. Re-captured, re-collared and released on site.
47	Prieto	fp1392	November 09	Routine monitoring purposes. Captured, collared and released on site.
48	Dark Canyon	mp1354	December 15	Routine monitoring purposes. Re-captured, re-collared and released on site.

Table 9. IFT management actions resulting from reported cases of potential Mexican wolf nuisance activities in Arizona and New Mexico during 2014.

Date	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
March 10	Unknown	Sand Flats, NM	Wolf tracks on private land in driveway.	IFT investigated and did not find wolf sign in area of report. Placed trail cameras in area.	No photos of wolves on trail camera photos.
March 20	Unknown	Malpais Conservation Area, NM	Wolf tracks on private land in driveway.	IFT investigated tracks and reported that they may have been made by domestic dogs. Placed trail cameras in area.	Wildlife Services began a feral dog removal. No photos of wolves on trail camera.
June 2	M1337	Y Ranch, NM	Wolves observed chasing livestock on public land.	Permittee declined IFT offer to haze wolf out of area. IFT monitored closely.	No other incidents or any depredations reported.
September 4	Unknown	Magdalena, NM	Wolves harassing livestock on private land.	Investigated by Wildlife Services and did not find any sign of wolves, only coyote sign found.	None.
October 10	Unknown	East of Highway 32, NM	Wolves observed chasing livestock on private land.	Wolves had left area prior to report, no investigation was conducted by IFT. IFT attempted to contact reporter but call was not returned.	Wolves left area.
October 15	Coronado	McKenna Park, NM	Wolves harassing hunter camp and following mules on trails.	IFT trapped the M1051 and hazed with rubber bullets upon release. Also trapped mp1350. Monitored wolves and spoke to hunter camps in area.	Reports of wolves being seen by various hunters in area, however, wolves did not go back into hunter camps or follow mules while IFT was in area trapping.
November 24	Coronado M1051 and F1126	Gila Hot Springs, NM	Wolves in and around domestic sheep and horse pens on private land.	IFT placed deterrent fladry around sheep pens along with intensive monitoring and hazing.	Wolves left area within a few days.
November 29	Coronado F1126	Gila Hot Springs, NM	Domestic dog injury by wolf on private land.	Investigated by Wildlife Services and confirmed the incident on a wolf. IFT intensively monitored and hazed wolves.	Wolves left the area within a couple of days.
December 24 and 25	Coronado M1051 and un-collared pup	Gila Hot Springs, NM	Wolves in and around domestic sheep and dogs on private land.	IFT responded with intensive monitoring and hazing wolves out of area.	M1051 left the area, and intensive monitoring continued.

Table 10. IFT proactive management activities in Arizona and New Mexico during 2014.

Proactive Management Activity	Purpose	Date	Location	Wolf ID	Management Result
Hay and supplements	Reduce livestock depredations.	Calving season	Blue River, AZ	Uncollared wolves	No confirmed depredations
Supplements	Reduce livestock depredations.	Calving season	Springerville, AZ	Hawks Nest	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	4 months	Big Lake, AZ	Hawks Nest	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	11 months	Blue River, AZ	Bluestem, Elk Horn	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	5 months	Springerville, AZ	Uncollared wolves	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	4 months	Springerville, AZ	Uncollared wolves	3 confirmed depredations
Range Rider	Reduce predator depredations on free-ranging livestock	4 months	PS Knoll, AZ	Bluestem, Maverick, f1332	1 depredation
Range Rider	Reduce depredations on free-ranging livestock	5 months	Springerville, AZ	Uncollared wolves	No Known Depredations
Range Rider	Reduce depredations on free-ranging livestock	3 months	Escudilla, AZ	Elk Horn	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	4 months	Strayhorse, AZ	Uncollared wolves	2 confirmed depredations
Range Rider	Reduce depredations on free-ranging livestock	7 months	Horse Springs, NM	San Mateo, Willow Springs	2 confirmed depredations
Range Rider	Reduce depredations on free-ranging livestock	5 months	Apache Creek, NM	San Mateo	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	3 months	Quemado, NM	Fox Mountain, Uncollared wolves	2 confirmed depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	9 months	Luna, NM	Fox Mountain, Uncollared wolves	1 confirmed depredation
Range Rider	Reduce predator depredations on free-ranging livestock.	7 months	Apache Creek, NM	Fox Mountain	1 confirmed depredation
Range Rider	Reduce depredations on free-ranging livestock	6 months	Govina, NM	Willow Springs	No known depredations
Range Rider	Reduce predator depredations on free-ranging livestock.	5 months	Cox Canyon, NM	Luna	No known depredations

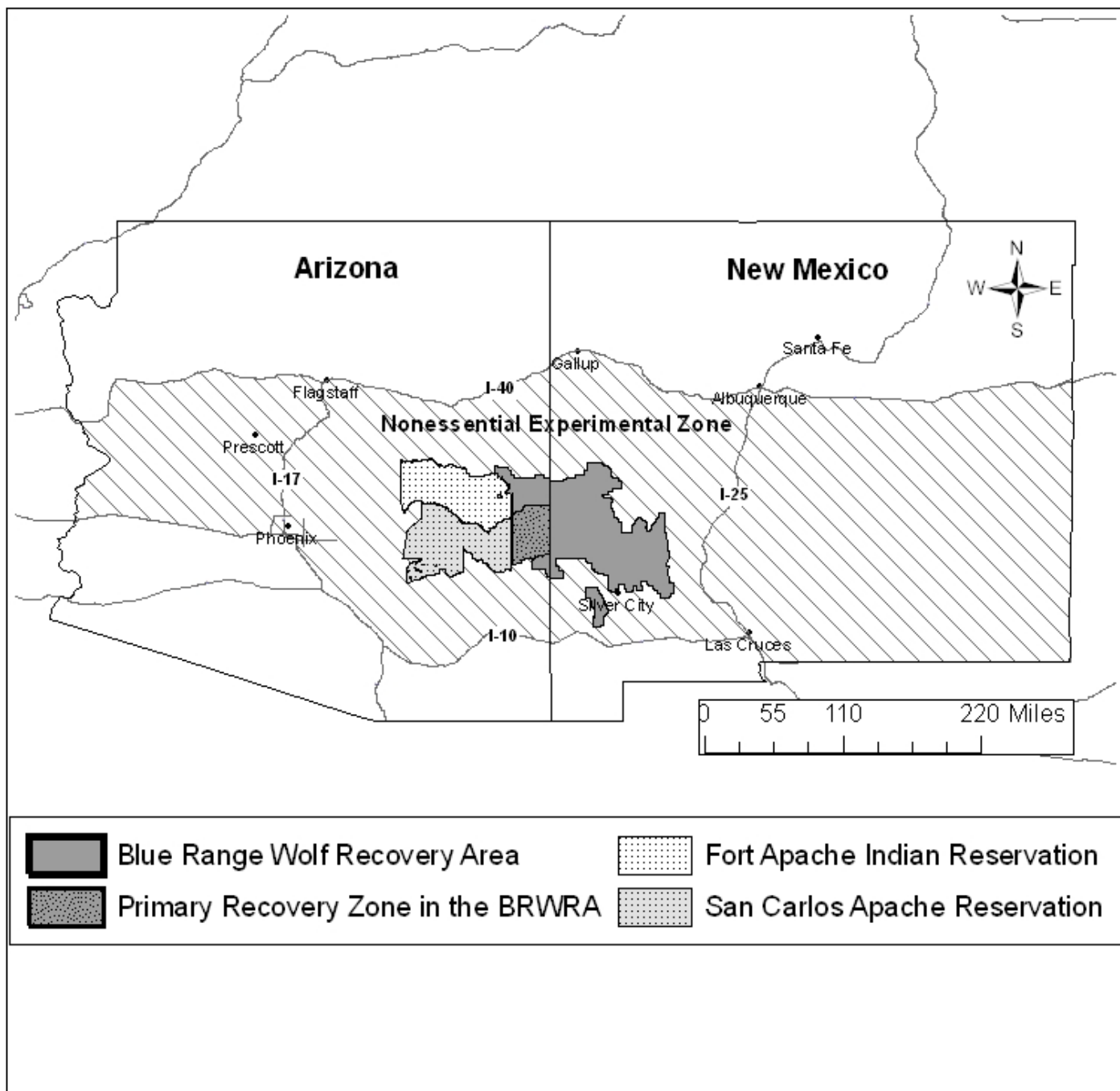


Figure 1. The Blue Range Wolf Recovery Area and Mexican wolf nonessential experimental zone (cross-hatched area) in Arizona and New Mexico.

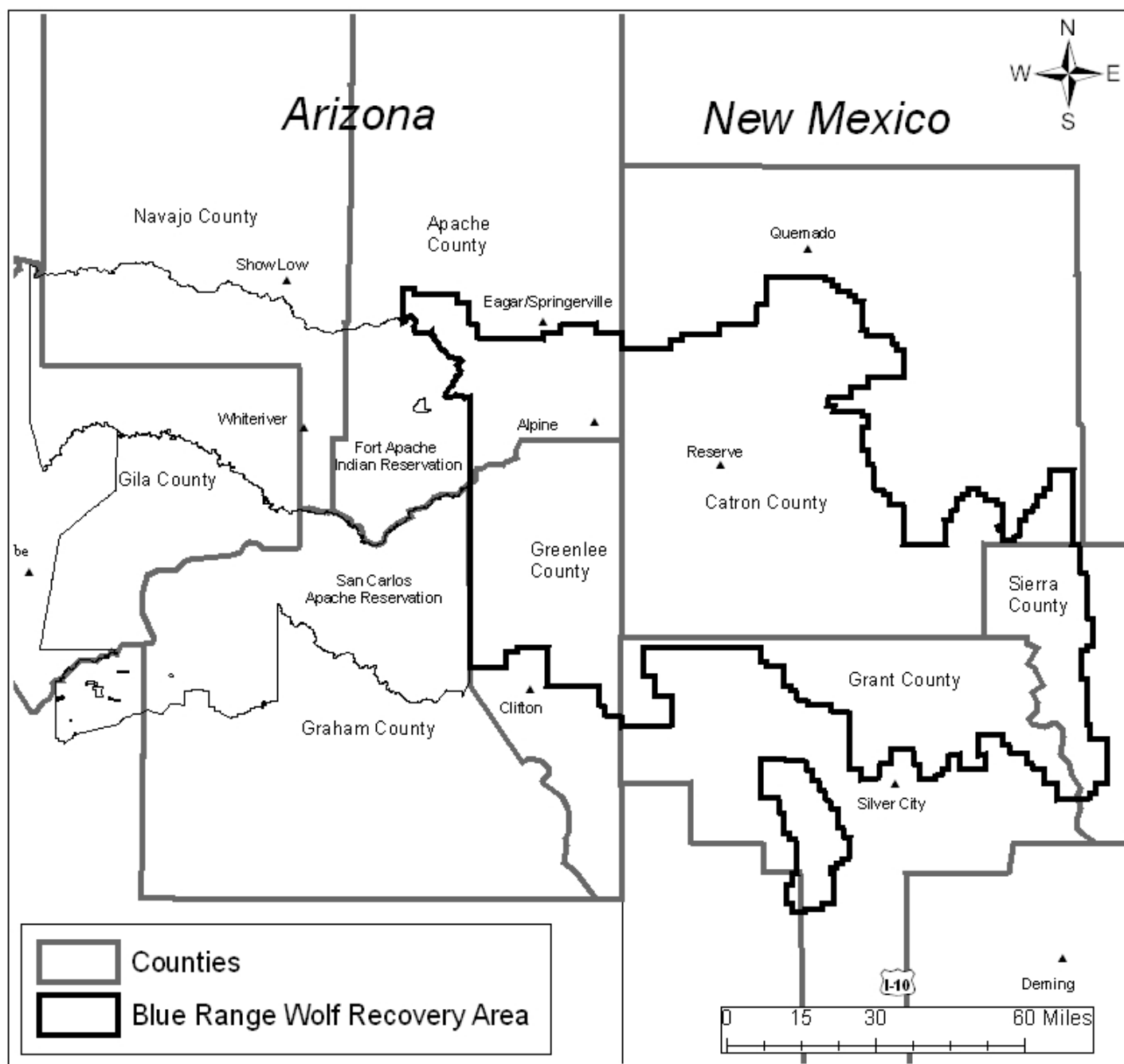


Figure 2. Counties that occur in or adjacent to the Blue Range Wolf Recovery Area in Arizona and New Mexico.

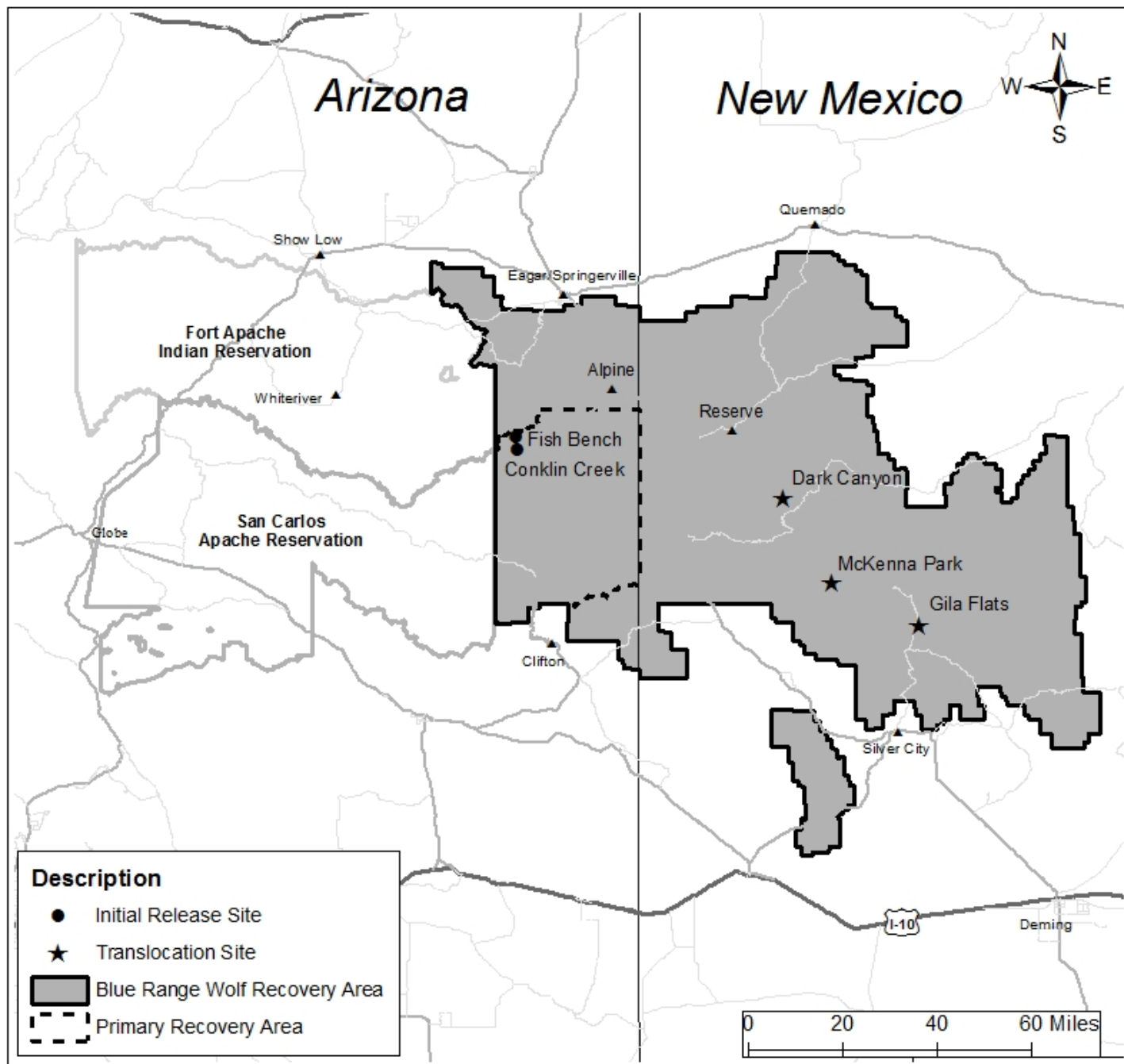


Figure 3. Two translocation sites and one initial release site were used during 2014 in Arizona and New Mexico within the Blue Range Wolf Recovery Area.

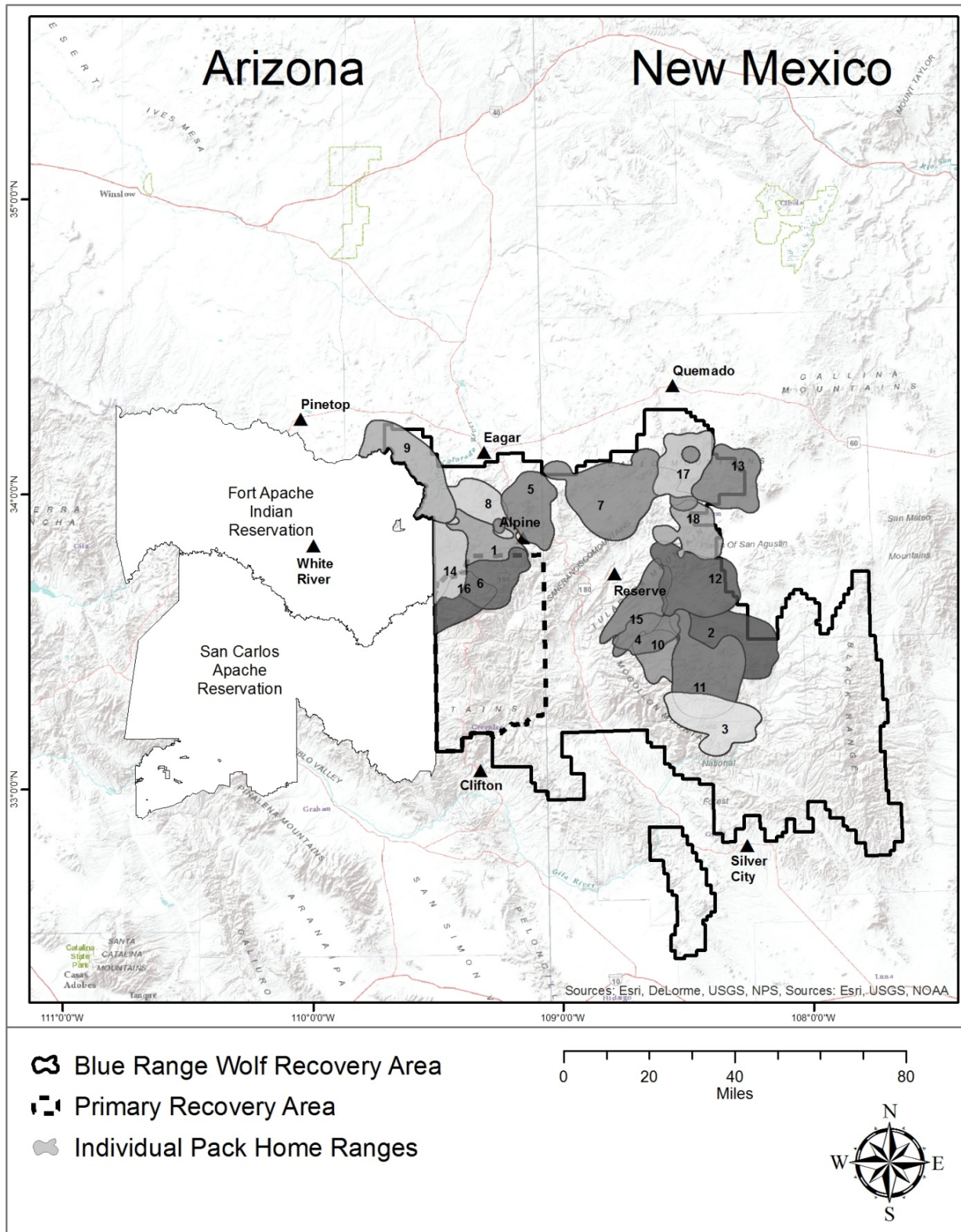


Figure 4. Mexican wolf home ranges for 2014 in Arizona and New Mexico. The shaded polygons and corresponding numbers on the map represent wolves having a minimum of 20 and a maximum of 326 independent radio locations and exhibiting movement characteristics consistent with a home range during 2014. See 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 end of 2014	Breeding pair status	Home range size mi ² (km ²)
1	Bluestem	12	Free-ranging	Yes	286 (742)
2	Canyon Creek	2	Free-ranging	No	332 (859)
3	Coronado	4	Free-ranging	No	210 (545)
4	Dark Canyon	7	Free-ranging	Yes	106 (274)
5	Elk Horn**	4	Free-ranging	Yes	169 (437)
6	F1332	1	Free-ranging	No	160 (415)
7	Fox Mountain	6	Free-ranging	Yes	389 (1009)
8	Hawks Nest	5	Free-ranging	Yes	151 (391)
9	Hoodoo	2	Free-ranging	No	374 (969)
10	Iron Creek	3	Free-ranging	No	115 (298)
11	Lava	2	Free-ranging	No	301 (780)
12	Luna	5	Free-ranging	Yes	257 (665)
13	Mangas	1	Free-ranging	No	195 (505)
14	Maverick	7	Free-ranging	Yes	264 (684)
15	Prieto	5	Free-ranging	Yes	178 (461)
16	Rim	1	Free-ranging	No	178 (461)
17	San Mateo	3	Free-ranging	No	192 (498)
	Tsay-O-Ah	N/A*	Free-ranging	No	469 (1215)
	Tse ighan lige (Diamond)	N/A*	Free-ranging	No	189 (491)
18	Willow Springs	9	Free-ranging	Yes	139 (361)

*Wolf information (including numbers) on the Fort Apache Indian Reservation is not displayed at the tribe's request.

**This pack meets the definition of an operational breeding pair.

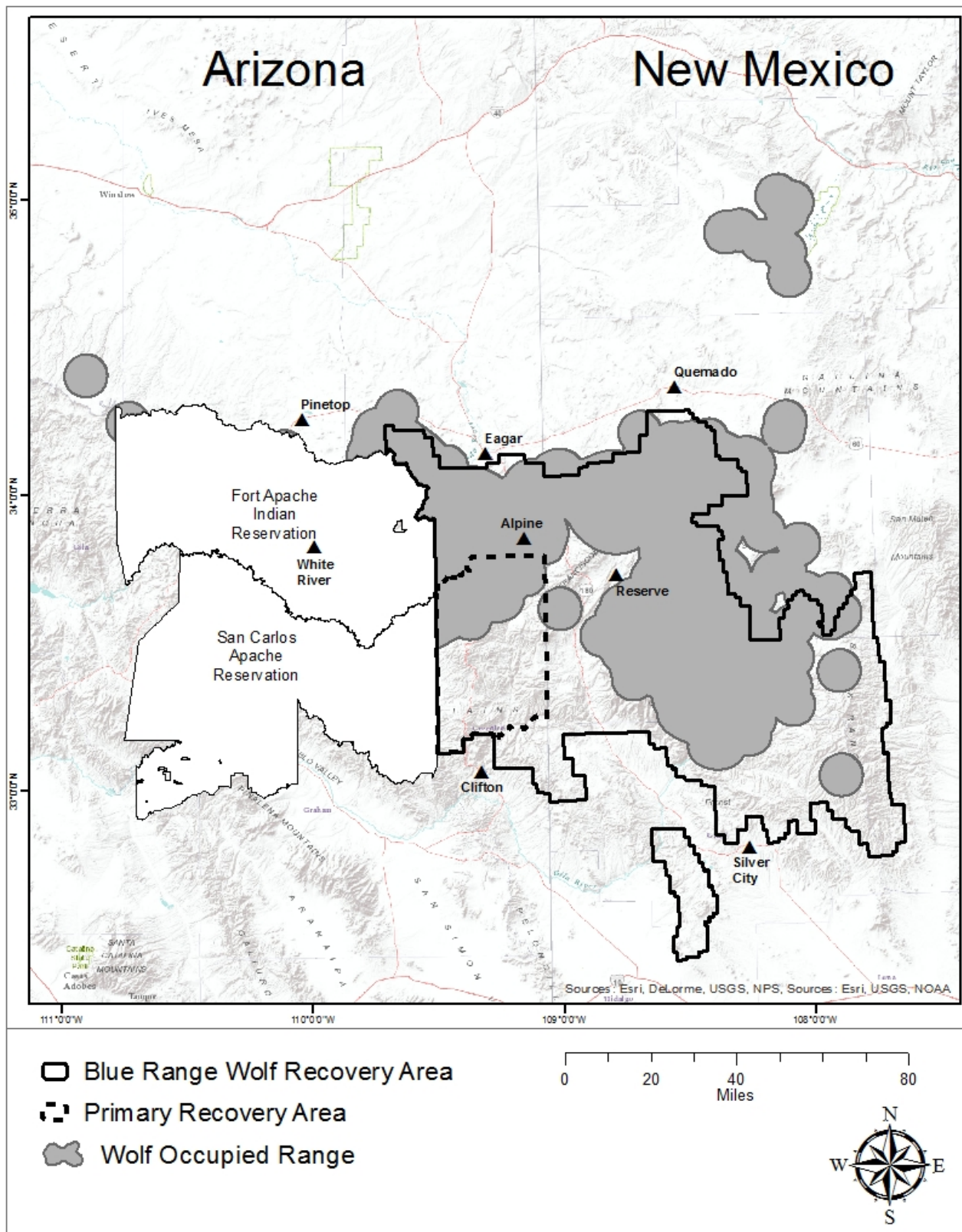


Figure 5. Mexican wolf occupied range in Arizona and New Mexico (2014) within the Mexican Wolf Nonessential Experimental Zone as defined in the Final Rule (USFWS 1998).

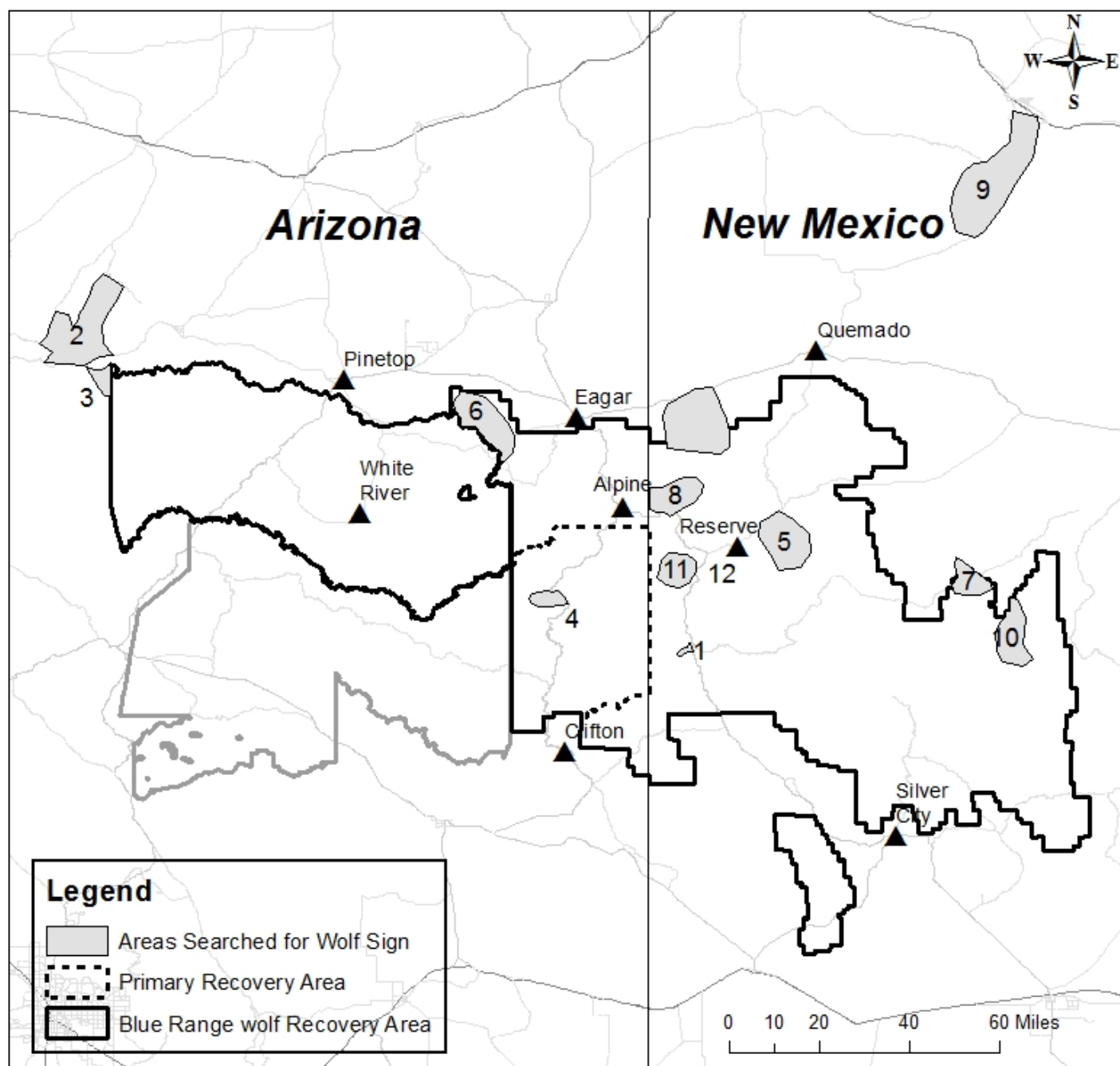


Figure 6. Areas searched and corresponding miles searched (driven or hiked) for uncollared wolf sign in Arizona and New Mexico during 2014. Search areas correspond to “map numbers” as follows:

Map Numbers	Search Areas	Miles Searched in AZ	Miles Searched in NM
1	Alma	0	20
2	Chevron	129	0
3	Canyon Creek	88	0
4	Eagle Creek	50	0
5	Eagle Peak	0	10
6	Green's Peak	88	0
7	Indian Peaks	0	43
8	Luna	0	98
9	Malpais	0	521
10	Poverty Flats	0	185
11	Pueblo Park	0	125
12	Red Hill/Bill Knight Gap	0	236
	Total	355	1238
	Grand Total for AZ and NM	1593	

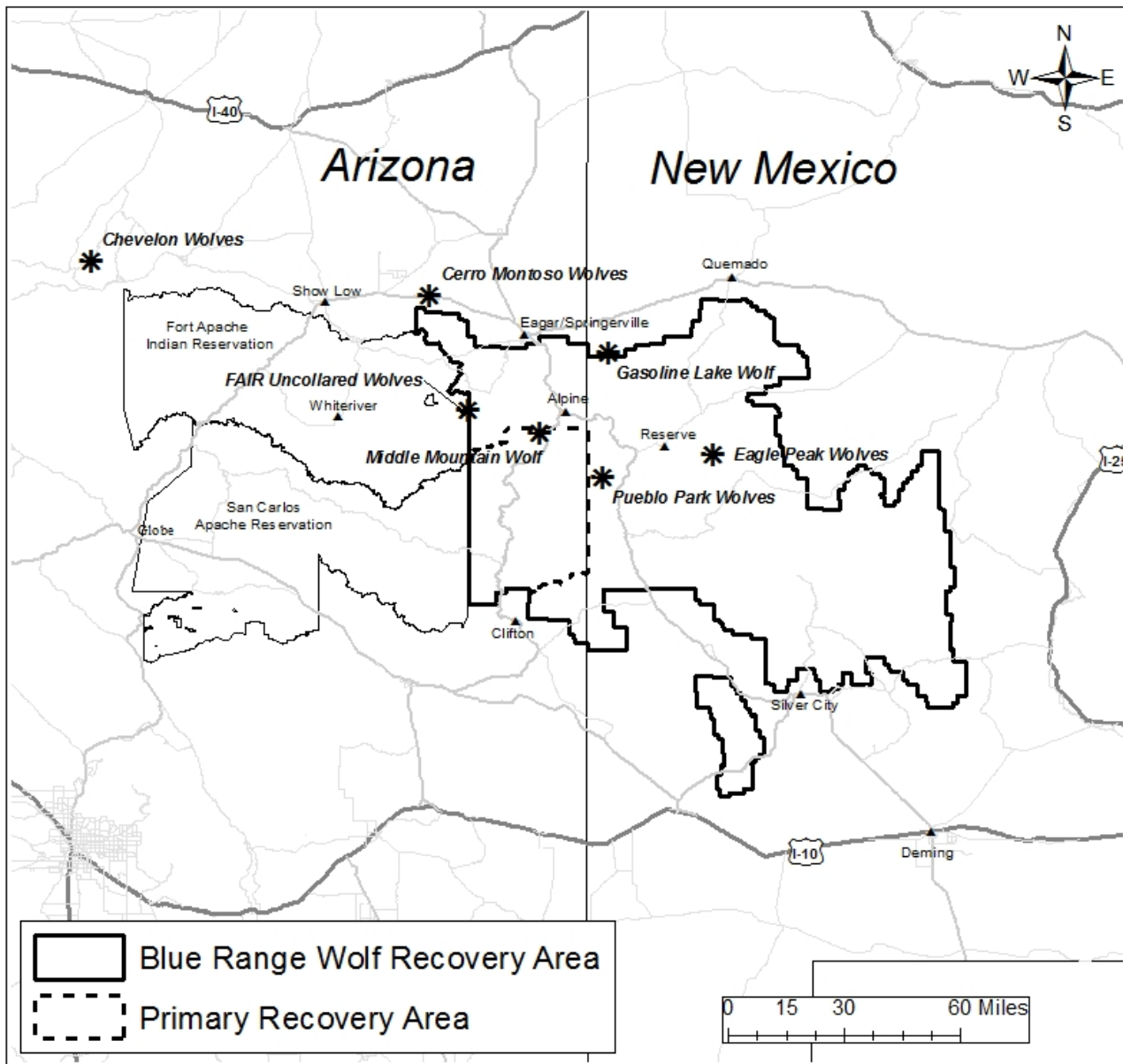


Figure 7. Uncollared wolves documented and counted in the 2014 wolf population in Arizona and New Mexico.

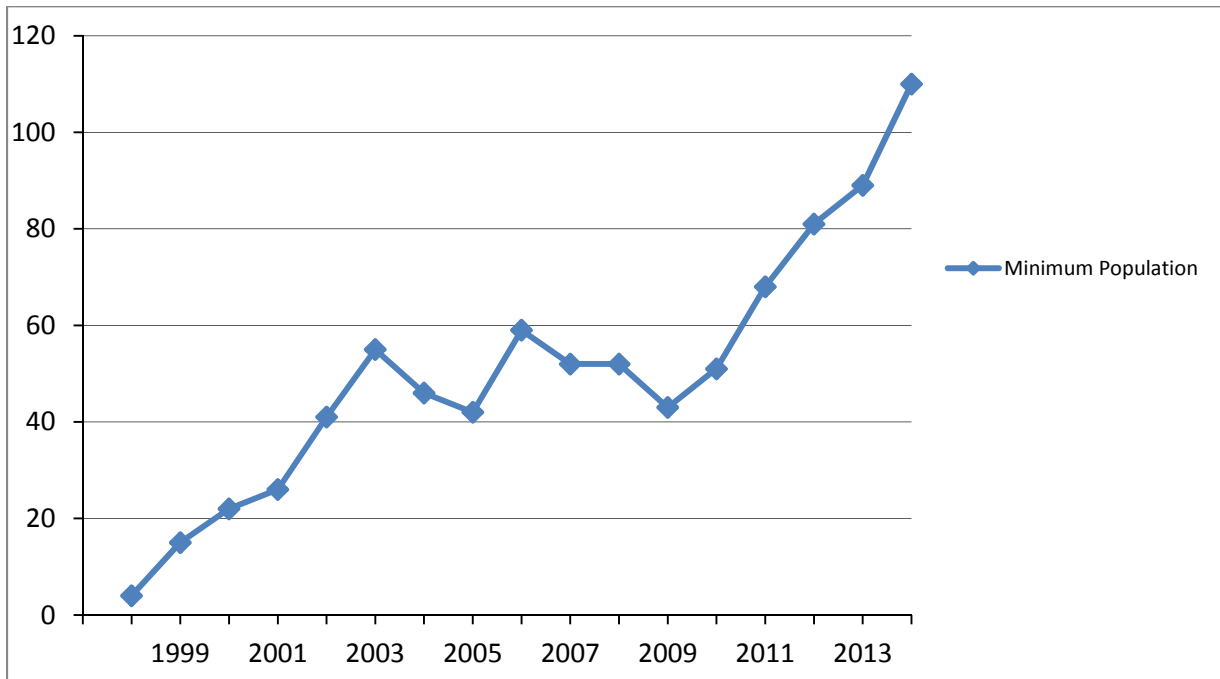


Figure 8. Mexican wolf minimum population estimates from 1998 through 2014 in Arizona and New Mexico.

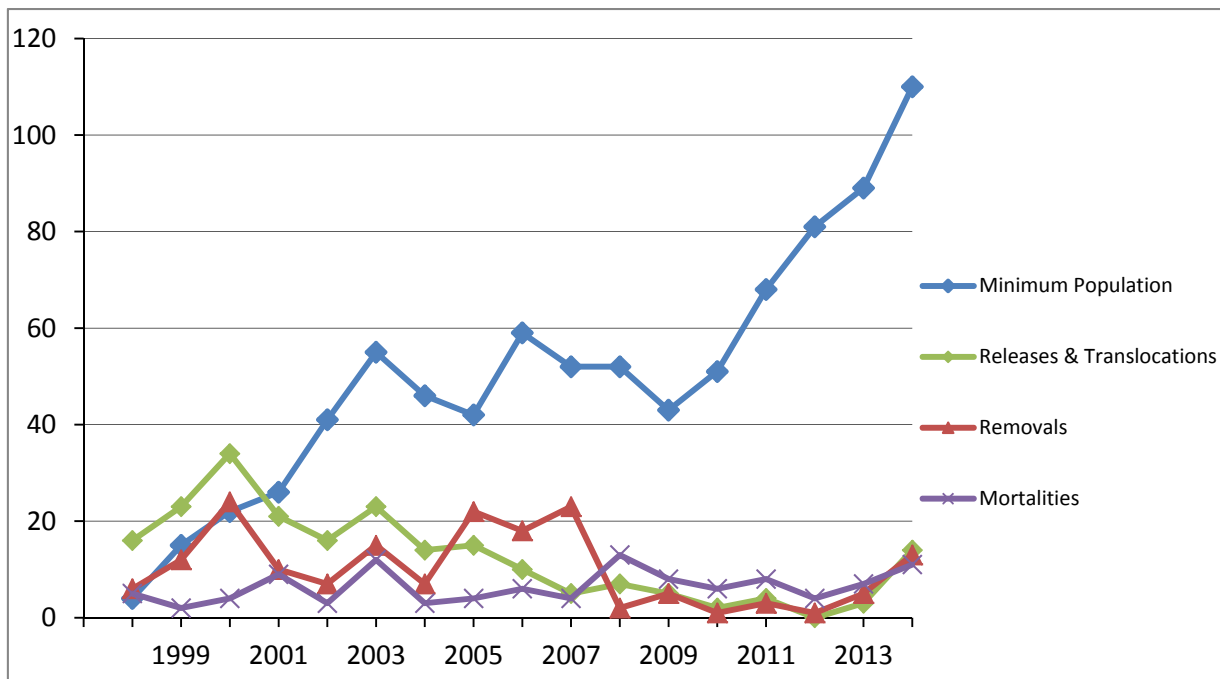


Figure 9. Mexican wolf minimum population estimates and associated population parameters (1998-2014). Releases and translocations included: initial releases (wolves released with no wild experience), translocations (wolves re-released from captivity back into the wild, and free-ranging wolves that were captured and re-released back into the wild for management purposes such as but not limited to boundary issues without having been placed temporarily into captivity). Removals included: wolves permanently removed from the wild (including wolves lethally controlled because they are associated with management actions), wolves temporarily removed from the wild and available for future translocation, and free-ranging wolves temporarily removed for management purposes such as boundary issues but without having been placed temporarily into captivity.

Appendix A. 2013 Pack and Single Wolf Summaries

7. Pack Summaries

Bluestem pack (AF1042, AM1341, m1331, f1333, f1339, f1340, and mp1382)

In January, the Bluestem pack consisted of ten wolves (AF1042, M1340, m1275, mp1330, mp1331, fp1332, fp1333, fp1339, fp1340 and one uncollared wolf). Throughout 2014, Bluestem utilized their traditional territory in the central portion of the ASNF. In April, m1275 was illegally shot. In late April, the IFT located a den associated with AF1042 and was able to confirm the production of at least three pups. In late April, f1332 began displaying dispersal behavior. On June 24, a depredation was confirmed and assigned to f1332. On July 20, injuries to two horses were assigned to AF1042 and three other Bluestem pack members. On August 7, a pup was trapped, collared and assigned studbook number mp1382. Genetics showed that AM1341 is the breeding male in the Bluestem pack. In September, f1332 had been located separate from the remainder of the pack for three consecutive months and was considered a single wolf. In October, the IFT observed 11 wolves in the pack. In November, the IFT observed 13 wolves associated with the Bluestem pack. On November 1, a depredation was confirmed south of Middle Mountain in Arizona and assigned to the Bluestem pack. f1339 and mp1382 were located apart from the rest of the pack in December. As of January 2015, the Bluestem pack consisted of 12 animals (AF1042, AM1340, m1331, f1333, f1339, f1340, mp1382, five uncollared pups). Per the definition of the final rule, Bluestem is a “Breeding Pair” in 2014. The Bluestem pack had one confirmed livestock injury, one confirmed depredation, one mortality, no removals, and no translocations in 2014.

Canyon Creek pack (AF1246, AM1252)

In January, the Canyon Creek pack consisted of AF1246, AM1252, and an uncollared pup that was documented during the helicopter capture. Throughout the year, the IFT located the Canyon Creek pack within its traditional territory in the central portion of the GNF, north of the Gila Wilderness Area, but the uncollared pup was not visually observed again. The IFT did; however, gather sufficient evidence to suggest the uncollared wolf survived into the summer. The IFT documented denning behavior in this pack; however, no pups were documented, produced nor survived. As of December 31, the Canyon Creek pack consisted of AF1246 and AM1252; therefore, this pack was not considered a “Breeding Pair” in 2014, per the definition in the Final Rule. The Canyon Creek pack had no confirmed depredations, removals, translocations, or documented mortalities in 2014.

Coronado pack (M1051, mp1350)

In January, M1249 was captured, transported to captivity, and paired with F1126 to facilitate pair bonding for future translocation/release and increase genetic diversity in the wild. On April 9, a pregnant pair (M1249 and F1126), named the Coronado pack, was released at Conklin Creek. By April 16, the IFT documented F1126 alone; M1249 had left the area and was eventually documented on the Fort Apache Indian Reservation, where it remained. F1126 whelped six pups. On May 15, the IFT captured and transported AF1126 and four (fp1348, mp1349, mp1350, and mp1351) of the six pups to captivity for future release. Two pups (fp1346 and mp1347) were translocated into the Dark Canyon pack’s den in the IFT’s first attempt at cross fostering to increase genetic diversity. AM1249 was subsequently considered a single animal. On July 21, the IFT captured the current Coronado pack members (M1051, AF1126, and four pups [fp1348, mp1349, mp1350, and mp1351]) at the Sevilleta Wolf Management facility and released them into a modified-soft release pen on July 22 at McKenna park in the Gila Wilderness. On July 24, the pack had self-released from the pen. By July 31, mp1351’s radio collar dropped off and was recovered, followed by mp1349 and mp1350 on August 1. All six animals were located and visually observed the same day. On September 1, fp1348’s radio collar dropped off, but both adults were still monitored. In October, the Coronado pack was involved in nuisance behavior, being located near a wilderness hunting camp and following pack stock. In response, the IFT began efforts to haze wolves from the hunt camp and attempt to capture individuals to replace dropped radio collars. On October 18, M1051 was trapped, hazed, and released on site; mp1350 was trapped, processed, and re-collared on October 19. By mid-

November, mp1350 was exhibiting dispersal behavior but remained within the Gila Wilderness. At the end of November, M1051 and AF1126 were exhibiting nuisance behavior near Gila Hot Springs, NM, being located near residences and livestock. The IFT set up turbo-fladry around domestic sheep pens. On November 28, members of the Coronado pack interacted with domestic dogs in Gila Hot Springs causing non-life threatening injuries. The following day, another wolf and domestic dog interaction occurred. The IFT intensively hazed the Coronado pack during both day and night; the wolves left the area on December 2. On December 9, the Coronado pack was located a few miles to the north of Gila Hot Springs. The IFT responded, and the wolves quickly moved out of the area. On December 22, AF1126 was located on mortality; the cause of death is still under investigation. By December 28, M1051 returned to the Gila Hot Springs area; IFT members responded for monitoring and hazing, but all radio-collared wolves had left the area. As of December 31, the Coronado pack consisted of four animals (M1051, mp1350, and two uncollared pups); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. Additionally, the IFT confirmed that at least one of the pups (mp1347) cross-fostered into the Dark Canyon pack was alive at year-end. The Coronado pack had confirmed nuisance behavior, one mortality, seven removals, one initial release, nine translocations, and no depredations in 2014.

Dark Canyon pack (AF923, AM992, M1293, mp1354)

In January, the Dark Canyon pack consisted of five animals: AF923, AM992, M1293, and two uncollared pups. Throughout the year, the IFT located the Dark Canyon pack within its traditional territory in the west-central portion of the Gila National Forest (GNF). In late-April, the IFT documented denning behavior in the Dark Canyon pack. On May 15, the IFT cross fostered one male (mp1347) and one female pup (fp1346) from the Coronado pack into the Dark Canyon den. AF923 had produced three pups (fp1352, fp1353, mp1354); all five pups were processed and placed back in the den within 30 minutes. On May 20, AF923 moved to a secondary den a short distance from the first. From July through late August, all five pups were documented alive via remote cameras. On August 25, an uncollared pup, confirmed to be mp1354, was captured, collared and released on site. On September 1, mp1354’s collar was chewed off by other pack mates; the collar was retrieved the following day. On December 15, an uncollared pup, confirmed again to be mp1354 was captured, re-collared, and released on site. As of December 31, the Dark Canyon pack consisted of seven animals: AM992, AF923, M1293, mp1354, and three uncollared pups; therefore, this pack was considered a “Breeding Pair” in 2014, per the definition in the Final Rule. The Dark Canyon pack had two translocations (i.e. cross fosters to the pack) and no confirmed depredations, removals, or documented mortalities in 2014.

Elk Horn pack (AF1294, M1342)

In January, the Elk Horn pack consisted of AM1287 and AF1294. During annual helicopter operations, AF1294 was captured and fitted with a new radio collar. Throughout the year, the IFT documented the Elk Horn pack in the northeastern portion of the ASNF in Arizona and the northwestern portion of the GNF in New Mexico. In late-April, the IFT documented denning behavior in the Elk Horn pack. On July 6, the IFT confirm the production of at least one pup via remote camera. On August 20, the IFT documented three pups via remote camera. On August 9, the IFT located AM1287 dead of unknown causes. In November, the IFT documented two uncollared pups traveling with AF1294. In December, M1342 from the Maverick pack was observed traveling with AF1294. As of December 31, the Elk Horn pack consisted of four animals: AF1294, M1342, and two uncollared pups; therefore, this pack was considered an “Operational Breeding Pair” in 2014. The Elk Horn pack had one mortality, and no confirmed depredations, removals, or translocations in 2014.

Fox Mountain pack (AM1158, AF1212, mp1384)

In January, the Fox Mountain pack consisted of AM1158, AF1212, M1276, two uncollared yearlings, and two uncollared pups. Throughout the year, the IFT located the Fox Mountain pack within the northeastern portion of the ANF. On January 19, a dead cow was investigated and a depredation was assigned to AM1158, AF1212 and one uncollared wolf. On February 1, four dead cows were investigated; three were confirmed wolf kills which were attributed to an uncollared wolf or wolves in Fox Mountain territory and one was determined to have probably been killed by wolves. In response, the USFWS issued a removal order for an uncollared wolf in the

Fox Mountain pack territory. On March 3, an uncollared wolf was captured, assigned studbook number mp1344, and was removed in accordance with the removal order. On March 7, a dead cow was investigated and determined to be a probable wolf kill. M1276 began displaying dispersal behavior and was last located on March 15. In mid-April, the IFT documented denning behavior in the Fox Mountain pack, but were not able to obtain a minimum pup count at this time. The IFT established a diversionary food cache in efforts to reduce the potential for depredation behavior. The wolves had not yet been documented using the food and on May 5, a depredation of a dead cow was investigated and assigned to AM1158 or an uncollared wolf. Following this depredation, the Fox Mountain pack began utilizing the established diversionary food cache. In June, M1276 had not been located for three months and was considered fate unknown. On June 19, four pups were documented via remote camera. On August 13, an injured calf was investigated; it was determined the calf was probably injured by wolves. During trapping operations on September 2, an uncollared pup was captured, collared, and assigned studbook number mp1384. On October 2, a dead cow was investigated; it was determined the cow was probably killed by wolves. In November, the IFT was documenting two uncollared pups via remote camera. In October, M1345 displayed dispersal behavior and was located with AF903 from the San Mateo pack. As of December 31, the Fox Mountain pack consisted of five animals (AM1158, AF1212, mp1384, and two uncollared pups); therefore, the Fox Mountain pack was considered a “Breeding Pair” in 2014, per the definition in the Final Rule. The Fox Mountain pack had two confirmed depredations, one removal, and no translocations or documented mortalities in 2014. Five additional confirmed depredations occurred in or adjacent to the Fox Mountain territory and were attributed to an uncollared wolf/wolves loosely associated with the Fox Mountain pack (likely dispersing animals not traveling with the breeding pair).

Hawks Nest pack (AM1038, AF1280, mp1383)

In January, the IFT documented Bluestem F1280 traveling with AM1038. On January 20, AM1038 was captured and re-collared. The pair continued to occupy traditional Hawks Nest territory throughout 2014. In late-April, documented denning behavior in the Hawks Nest pack. On August 12, the IFT confirmed the production at least one pup via remote camera. On August 24, an uncollared pup was captured, collared, and designated mp1383. On September 1, the IFT retrieved mp1383’s slipped collar. On September 16, mp1383 was re-captured and re-collared. On September 26, the IFT captured AM1038 and replaced its non-functional radio-collar. In November, the IFT documented the Hawks Nest Pack consisting of two adults and three pups. As of January 2015, the Hawks Nest pack consisted of AM1038, AF1280, mp1383, and two uncollared pups); therefore, the Hawks Nest pack was considered a “Breeding Pair” in 2014, per the definition in the Final Rule. The Hawks Nest pack had no confirmed depredations, removals, translocations, or documented mortalities in 2014.

Hoodoo pack (M1290)

In January, m1290 and F1218 were paired and held in a pen in Arizona within the Primary Recovery Area of the Blue Range Wolf Recovery Area. On April 2, the pair was translocated/released at Fish Bench. By April 5, the Hoodoo pack was no longer traveling together; the Maverick pack was documented in the general area which may have facilitated the Hoodoo pack splitting apart. M1290 made long distance movements to the north and was subsequently documented traveling with an uncollared wolf. On May 5, F1218 was located dead from an illegal gun shot. In May, M1290 was hazed away from livestock on the FAIR and later was observed with an uncollared wolf. Throughout fall, M1290 traveled between the northern portion of the FAIR and the north portion of the ASNF. The IFT confirmed that an uncollared wolf was still traveling with M1290 in November. As of January, 2015, the Hoodoo pack consisted of M1290 and an uncollared wolf; therefore, the Hoodoo pack was not considered a “Breeding Pair” in 2014. The Hoodoo pack had one mortality, one translocation, but no confirmed depredations or removals in 2014.

Iron Creek pack (AM1240 and AF1278)

In January 2014, M1240 was mostly located within New Mexico. F1278 traveled in western portions of the Gila national forest and was often located near dispersing male wolves. On February 24, M1240 and F1278 were

located together. After three continuous months of being located together, M1240 and F1278 were designated the Iron Creek pack and were located consistently in the western part of the Gila National Forest and into the Gila Wilderness. Denning behavior was observed by this pack; however, pup production was not documented until September. On September 28, one pup was documented via remote camera. On December 10, the IFTIFT obtained a visual of AM1240, AF1278 and one uncollared wolf. As of December 31, the Iron Creek pack consisted of three animals (AM1240, AF1278, and one uncollared pup); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The pack had no confirmed depredations, removals, translocations, or mortalities in 2014.

Lava pack (M1285 and F1295)

On January 15, M1282 was located traveling alone north of the BRWRA. On January 18, F1295 was located outside the BRWRA in the Malpais Conservation Area. Shortly thereafter, M1282 and F1295 were located together outside the BRWRA near the Malpais Conservation Area. On March 28, M1282 and F1295 were captured and removed from the wild for establishing outside the BRWRA. On June 18, M1282 and F1295, designated the Lava pack, were translocated to the Gila Flats site in the Gila Wilderness. The Lava pack did not remain together. M1282 left the area, traveling back to the Malpais Conservation Area and subsequently returning to its natal pack (San Mateo) in July; M1282 was last located in October. F1295 remained in the Gila Wilderness and on August 18 was located with M1285. In November, after being located with F1295 for three months, M1285 was considered a member of the Lava pack. As of December 31, the Lava pack consisted of two animals (M1285 and F1295); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The Lava pack had no confirmed depredations, removals, mortalities, or translocations in 2014.

Luna pack (AM1155, AF1115, and M1337)

In January, the Luna pack consisted of AF1115, AM1155, m1284, m1285, m1286, m1337, and two uncollared pups. Throughout the year, the IFT located the Luna pack within its traditional territory in the north-central portion of the GNF. In March m1285, and m1286 had not been located with the Luna breeding pair for three months and were considered single wolves. In late- April, the IFT documented denning behavior in the Luna pack. On May 19, a dead calf was investigated and a depredation was assigned to M1284 and any uncollared wolves traveling with it. In May, m1284 was considered a single animal; although it had been located within the Luna pack territory, it had been displaying dispersal behavior for 3 months during which time it was not located with the breeding pair. On August 20, three pups were documented via remote camera. A diversionary food cache was established in the Luna pack territory following a depredation investigation on August 3 of a dead cow attributed to uncollared wolves loosely associated with the Luna pack. On August 20, there was a probable wolf calf predation in the area of Collins Park attributed to a Luna uncollared animal, and the IFT adjusted the location of the diversionary food cache to increase its potential use. By late November, two uncollared wolves were regularly documented utilizing the diversionary food cache. As of December 31, the Luna pack consisted of five animals (AF1115, AM1155, M1337, and two uncollared pups); therefore, this pack was considered a “Breeding Pair” in 2014, per the definition in the Final Rule. The Luna pack had one confirmed depredation, and no removals, translocations, or documented mortalities in 2014.

Mangas pack (M1296)

In January, M1296 and San Mateo pack f1327 were traveling together; they were first located together in December 2013. In March, after M1296 and f1327 had been located together for three months, they were designated the Mangas pack. Throughout most of 2014, they established a territory around Mangas Mountain in the northeastern portion of the GNF. The Mangas pack exhibited denning behavior; however, no pups were documented. On June 24, f1327 was located dead from an illegal gunshot. For the rest of the year, M1296 was sporadically located in his territory but began making large movements throughout the GNF. On November 19, a dead cow was investigated and attributed to M1296. In December, M1296 was located a few miles west of the New Mexico border in Arizona. On December 29, M1296 was located with mp1384 from the Fox Mountain pack back in New Mexico. As of December 31, the Mangas pack consisted of one animal (M1296); therefore,

this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The Mangas pack had one confirmed mortality, one confirmed depredation, and no removals, or translocations in 2014.

Maverick pack (AM1183, AF1291, and f1335,)

In January, the Maverick pack consisted of six wolves (AM1183, AF1291, m1290, f1335, mp1336, and m1342). On January 20, m1290 was captured and removed from the wild to facilitate pair bonding and increase genetic diversity in the wild. Throughout 2014, the Maverick pack was located within their traditional territory on the FAIR as well as the central portion of the ASNF. On April 2, m1290 was translocated as a member of the Hoodoo pack. In late-April, the IFT located AF1291’s den and documented the production of at least two pups. On May 26, four pups were documented via remote camera. On October 30, M1342 was re-captured and re-collared; its radio collar had failed. During the early part of November, m1336 dispersed and began traveling with Rim AF1305 within the Rim pack’s traditional territory. Also in November, M1342 began making dispersal movements. In December, M1342 was documented traveling with AF1294 from the Elk Horn pack. As of December 31, the Maverick pack consisted of seven animals (AM1183, AF1291, F1335, four uncollared pups, and one uncollared juvenile); therefore, this pack was considered a “Breeding Pair” per the definition in the Final Rule. The Maverick pack had one removal, no confirmed depredations, mortalities, nor translocations in 2014.

Paradise pack (AF1056)

In January, M1249 continued to travel with AF1056 in Paradise pack territory in the northern portion of the ASNF. On January 20, the IFT captured both AF1056 and M1249. AF1056 was removed from the wild per a USFWS removal order issued September 2013. M1249 was removed from the wild to facilitate pair bonding with a genetically valuable female wolf (F1126). The Paradise pack had one removal, and no confirmed depredations, mortalities, or translocations in 2014.

Prieto pack (AF1251, AM1387, mp1386, fp1392)

In January, the Prieto pack consisted of AF1251 and an uncollared male wolf. Throughout the year, the Prieto pack was located in the north-central portion of the GNF. In mid-May, the IFT documented denning behavior in the Prieto pack. A diversionary food cache was established in the Prieto pack territory to reduce the potential for livestock depredations as the pack denned within an active grazing pasture. By early June, both AF1251 and the uncollared male were regularly utilizing the diversionary food cache. On July 1, one pup was documented via tracks. On July 20, injuries to two horses were investigated, confirmed wolf, and attributed to AM1387. On September 18, three pups were confirmed via remote camera. On September 22, an uncollared pup, assigned studbook number mp1386, was captured, collared, and released on site followed by an uncollared adult male, assigned studbook number AM1387, on September 25. On October 5, five wolves were photographed at the cache; three collared wolves and two uncollared pups. On November 9, an uncollared pup, assigned studbook number fp1392, was captured, collared, and released on site. As of December 31, the Prieto pack consisted of five animals (AF1251, AM1387, mp1386, fp1392, and one uncollared pup); therefore, this pack was considered a “Breeding Pair” per the definition in the Final Rule. The Prieto pack had one confirmed livestock injury, no removals, translocations, or documented mortalities in 2014.

Rim pack (AF1305)

In January, the Rim pack consisted of AM1107 and f1305. Throughout 2014, the IFT documented the Rim pack occupying traditional Rim pack territory in the center of the ASNF. In late-April, the IFT located AF1305’s den and documented the production of one pup. On November 18, AM1107 was found dead, from other wolves. Following AM1107’s death, Maverick m1336 was documented traveling with in the southern-central portion of the ASNF throughout the end of the year. Genetics resulted confirmed that m1336 and AF1305 were siblings from different litters; therefore, the decision was made to split the pair up during the January 2014 helicopter count and capture operations and temporarily hold them in captivity paired with genetically valuable wolves for future translocation. As of December 31, the Rim pack consisted of one animal (AF1305); therefore, this pack

was not considered a “Breeding Pair” per the definition in the Final Rule. The Rim pack had one mortality, no confirmed depredations, removals, or translocations in 2014.

San Mateo pack (AF903 and M1345)

In January, the San Mateo pack consisted of AF903, AM1157, m1282, f1327, and two uncollared yearlings. Throughout the year, the San Mateo pack was located within its traditional territory in the northern portion of the Apache National Forest (ANF). As early as December 2013, f1327 and m1282 were showing dispersal behavior. During these early dispersal movements, f1327 was located with single M1296; in April, they were designated the Mangas Pack. On January 15, M1282 was located traveling alone north of the BRWRA. Shortly thereafter, M1282 was located with single F1295 outside the BRWRA near the Malpais Conservation Area. In mid-March, M1282 had been located away from its natal pack for three months and was considered a single wolf. On March 28, M1282 and F1295 were captured and removed from the wild for persistence outside of the BRWRA. On June 18, M1282 was translocated as a member of the Lava pack, but by mid-July had rejoined AF903 and AM1157. In early-May, the IFT documented denning behavior in the San Mateo pack and confirmed pup tracks in the area on July 1. On August 19, one pup was observed traveling with the San Mateo pack. On August 6, a dead cow was investigated and assigned to AF903, AM1157, and M1282, which resulted in increased monitoring of the area. M1282 was last located on October 6. On October 14, AM1157 was located dead from an illegal gun shot. In November, AF903 was located with M1345 from the Fox Mountain Pack; the two remained together for the duration of the year. As of December 31, the San Mateo pack consisted of three animals (AF903, M1345, and one uncollared pup); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The San Mateo pack had one confirmed depredation, one mortality, and no removals or translocations in 2014.

Tsay-O-Ah pack (F1283, M1343)

In January, the Tsay-O-Ah pack consisted of two wolves (AM1253 and f1283). During January, f1283 began making dispersal movements away from the Tsay-O-Ah pack, traveling separately from AM1253. On January 22, the IFT captured and collared an uncollared adult male wolf, assigned it studbook number M1343. M1343 continued traveling with f1283 after capture. Throughout 2014, the Tsay-O-Ah pack occupied a territory almost exclusively located on the FAIR. On March 29, the IFT located AM1253 dead from cancer; it was later discovered that AM1253 was actually AM825, a previously identified wolf. Although AM825 was captured in the past; the IFT was unable to identify the animal during handling and it was assigned studbook number M1253. Following the death of AM1253/825, F1283 and M1343 retained the Tsay-O-Ah pack name. As of December 31, the Tsay-O-Ah pack consisted of two animals (F1283, M1343); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The Tsay-O-Ah pack had one mortality and no confirmed depredations, removals, or translocations in 2014.

Tse ighan lige (Diamond) pack (AM1249, f1388, fp1389)

On October 12 and 14, two previously uncollared wolves were captured and collared on the FAIR (f1388 and fp1389, respectively). M1249 was also captured on October 14 with the other animals. During the remainder of 2014, this pack resided on the FAIR. As of December 31, the Diamond pack consisted of three animals (AM1249, f1388, fp1389); therefore, this pack was not considered a “Breeding Pair” per the definition in the Final Rule. The Diamond pack had no confirmed depredations, removals, mortalities, or translocations in 2014.

Willow Springs pack (AM1185, AF1279, m1338, m1391, mp1385, and fp1390)

In January, the Willow Springs pack consisted of seven wolves (AM1185, AF1279, mp1329, mp1338, and three uncollared pups). Throughout the year the Willow Springs pack was located in the north-central portion of the GNF. On January 14, a private trapper caught an uncollared pup, which was collared, designated mp1338, and released on site. On March 10, a dead cow was investigated, confirmed wolf and attributed to AM1185 and

AF1279. On March 22, a private trapper captured AM1185, the IFT responded, processed, and released it onsite unharmed. On March 22, a dead cow was investigated and assigned to uncollared juveniles associated with the Willow Springs pack; location data revealed collared wolves were not in the area when the depredation occurred. On March 31, a dead cow was investigated, was confirmed wolf, and attributed to AM1185, AF1279, and mp1338. A diversionary food cache was established and the Willow Springs pack did not have any further depredations. mp1329 was last located January 23 and was considered fate unknown in April. On May 7, the IFT documented two additional uncollared wolves via remote camera; these wolves had not been documented at the end of 2013. In mid-April, the IFT documented denning behavior in the Willow Springs pack and in August documented at least two pups. On September 7, an uncollared pup, designated mp1385, was captured, collared and released on site; this wolf was incidentally re-captured and released on September 11. On September 20, five pups were documented via remote camera. During routine trapping, the IFT captured, processed, and collared one uncollared pup, designated fp1390 on October 20 and one uncollared subadult, designated m1391, on October 21. By early November, m1338 began showing dispersal behavior and roamed to Arizona before returning to the general Willow Springs territory. m1391 was last located in November. As of December 31, the Willow Springs pack consisted of AM1185, AF1279, m1338, mp1385, fp1390, m1391, and three uncollared pups; therefore, the Willow Springs pack was considered a "Breeding Pair" in 2014 per the Final Rule definition. The Willow Springs pack had three confirmed depredations, and no removals, translocations, or documented mortalities in 2014.

8. Individual Wolf Summaries

M1240

In January, M1240 was located traveling mostly within New Mexico. On February 24, M1240 and F1278 were located together. After three continuous months of being located together, M1240 and F1278 were named the Iron Creek pack and were located consistently in the western part of the Gila National Forest and into the Gila Wilderness.

M1244

On January 6, M1244 was located dead due to a mountain lion.

M1254

During 2014, M1254 was located traveling widely throughout the BRWRA, mostly within New Mexico. On October 20, M1254 was located dead from an illegal gun shot.

M1276

At the beginning of 2014, M1276 was still considered a member of the Fox Mountain pack but was exhibiting dispersal behavior, and was deemed a single wolf in March. He was last located on March 15, but was not located again. M1276 is currently considered fate unknown.

F1278

At the beginning of 2014, F1278 was still considered a single dispersing wolf. On February 24, M1240 and F1278 were located together. After three continuous months of being located together, M1240 and F1278 were designated the Iron Creek pack and were located consistently in the western part of the Gila National Forest and into the Gila Wilderness.

M1282

In January, M1282 was considered a member of the San Mateo pack; however, it began displaying dispersal behavior in December 2013. On January 15, M1282 was located traveling alone north of the BRWRA. Shortly thereafter, M1282 was located with Single F1295 outside the BRWRA near the Malpais Conservation Area. In mid-March, M1282 had been located away from its natal pack for three months and was a single wolf. On

March 28, M1282 and F1295 were captured and removed from the wild for persistence outside of the BRWRA. On June 18, M1282 was translocated as a member of the Lava pack, but by mid-July had rejoined AF903 and AM1157. M1282 was last located in October.

M1284

At the beginning of 2014, m1284 was a member of the Luna pack, but showed dispersal behavior and was considered a single wolf in May. Throughout the year, M1284 traveled widely through the BRWRA, mostly in New Mexico, and occasionally was located with his natal pack. Toward the end of 2014, he traveled widely through the Dark Canyon, Luna, and Canyon Creek territories. As of December 31, M1284 is still considered a single dispersing wolf.

M1285

At the beginning of 2014, m1285 was a member of the Luna pack, but showed dispersal behavior and was considered a single wolf in March. Throughout the year, M1285 traveled widely through the BRWRA, mostly in New Mexico. On August 18, M1285 was located with F1295, and in November was designated as a member of the Lava pack.

M1286

At the beginning of 2014, m1286 was a member of the Luna pack, but showed dispersal behavior and was considered a single wolf in March. Throughout the year, M1286 traveled widely through the BRWRA, mostly in New Mexico. M1286 was last located in June and in September was considered fate unknown.

F1295

At the beginning of 2014, F1295 was a single dispersing wolf traveling widely throughout and occasionally outside the BRWRA. On January 24, F1295 was located with M1282 in the Malpais outside of the BRWRA boundary. On March 28, M1282 and F1295 were captured and removed from the wild for persistence outside of the BRWRA. On June 18, F1295 was translocated as a member of the Lava pack.

M1296

In January M1296 and San Mateo pack f1327 were traveling together; they were first located together in December 2013. In March, after M1296 and f1327 had been located together for three months, they were designated the Mangas pack.

Appendix B. Summary of sighting reports received from the public from January 1 through December 31, 2014.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
No. AZ Reports	2	5	2	1	3	1	1	3	1	5	6	8	38
Known Wolf Reports	0	1	0	0	1	1	0	0	0	0	0	1	4
Unknown/Uncollared Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-wolf Reports	0	0	1	0	0	0	1	1	0	2	2	0	7
Probable Wolf Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Not Enough Information	2	4	1	1	2	0	0	2	1	3	4	7	27
No. NM Reports	2	1	1	0	4	0	0	1	1	1	3	3	17
Known Wolf Reports	2	0	0	0	1	0	0	1	0	0	2	0	6
Unknown/Uncollared Reports	0	0	0	0	1	0	0	0	0	0	0	0	1
Non-wolf Reports	0	1	1	0	0	0	0	0	0	0	1	3	6
Probable Wolf Reports	0	0	0	0	0	0	0	0	0	0	0	0	0
Not Enough Information	0	0	0	0	2	0	0	0	1	1	0	0	4
No. TX Reports: Non-wolf	0	0	0	0	0	0	1	0	0	1	0	0	2
Total Sightings per Month	4	6	3	1	7	1	2	4	2	7	9	11	57

9. Personnel

Arizona Game and Fish Department

Jeff Dolphin, Field Team Leader
Allison Greenleaf, Wolf Technician/Wolf Biologist
Ed Davis, Wolf Technician
Julia Smith, Wolf Technician
Brent Wolf, Wolf Technician
Mike Godwin, Wildlife Manager Supervisor
Joel Weiss, Wildlife Manager
Aaron Hartzell, Wildlife Manager
Tyler Richins, Wildlife Manager
Jason Capps, Wildlife Manager
Dave Cagle, Wildlife Program Manager
John Hervert, Wildlife Program Manager
Bill David, Chief Pilot
Basil Coffman, Pilot
Pete Applegate, Pilot
Steve Sunde, Pilot
Steve Dubois, Pilot
Preston Hunts, Pilot

New Mexico Department of Game and Fish

Agency cooperation ceased July 1, 2011; however, District officers remain involved in law enforcement issues.

Bobby Griego, Colonel – Field Operations Division
Mike Matthews, Lieutenant – Southwest area
K.C. Gehrt, Sargent – Reserve/Socorro district
Andrew Teaschner, Corporal – Socorro
Jordan Ducnan, District Officer – Reserve
Amos Smith, District Officer – Quemado
Justin Winter, District Officer – Datil
Derek Theobald, Sargent – Silver City
Matt Pengelly, Corporal – Cliff/Glenwood
Adan Jacquez, District Officer – Silver City

USDA-APHIS Wildlife Services

Sterling Simpson, Field Team Leader/Wolf Management Specialist
Bill Nelson, Wolf Depredation Specialist
Matt Ellis, Wolf Management Specialist
Chris Carrillo, District Supervisor
Rudolph Fajardo, District Supervisor
Mike Kelly, Wildlife Biological Science Technician
Jedediah Murphy, Wildlife Biological Science Technician
Phillip Hopper, Wildlife Biological Science Technician

U.S. Forest Service

Cathy Taylor – Forest Service Liaison to the Wolf Project (retired in June 2014)
Vicente Ordonez – Forest Service Liaison to the Wolf Project (detailed)

U.S. Fish and Wildlife Service

Sherry Barrett, Mexican Wolf Recovery Coordinator
Maggie Dwire, Assistant Mexican Wolf Recovery Coordinator
John Oakleaf, Senior Wolf Biologist/Interagency Field Projects Coordinator
Elizabeth Jozwiak, Wildlife Biologist
Melissa Kreutzian, Fish and Wildlife Biologist
Colby Gardner, Fish and Wildlife Biologist
Susan Dicks, Fish and Wildlife Biologist
Janess Vartanian, Wildlife Biologist
Allison Greenleaf, Wildlife Biologist
Justin Martens, Wildlife Biologist
Dewey Wesley, Biological Technician
Peter Fitzpatrick, Biological Technician

USFWS Interns

Ed Davis
Adam Mohr
Kaija Klauder
Charlotte Catalano
Carrie Kyle
Rebecca Lyon
Aaron Smethurst
Alex Hanrahan
Gael Sanchez
Dan Tomasetti

White Mountain Apache Tribe

Deon Hinton, Wolf Technician
Bobby Tobin, Wolf Technician
Joseph Perez, Wolf Technician
Manuelita Canty, Wolf Technician

Project Veterinarians

Dr. Ole Alcumbrac
Dr. Susan Dicks