Mexican Wolf Recovery Program:
Progress Report #11

Reporting Period: January 1 – December 31, 2008

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

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

Mexican Wolf M619. Mexican Wolf Interagency Field Team Photo.

Table of Contents

Foreword

The U.S. Fish and Wildlife Service (Service) is the lead agency responsible for recovery of the Mexican wolf *(Canis lupus baileyi),* pursuant to the Endangered Species Act. The Mexican Wolf Recovery Program essentially is separated into two, interrelated components: 1) Recovery – includes aspects of the program administered primarily by the Service that pertain to the overall goal of Mexican wolf recovery and delisting from the list of threatened and endangered species, and 2) Reintroduction – includes aspects of the program implemented by the cooperating States and Tribes 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, 2008.

Background

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

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

In March 1997, the Secretary of the Interior signed a Record of Decision approving the Service's preferred alternative in the EIS to release captive-reared Mexican wolves into a portion of the BRWRA. The Mexican wolf Final Rule - Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico (Final Rule) was published in the Federal Register on January 12, 1998, and provided regulations for how the reintroduced population would be managed (US Fish and Wildlife Service 1998). On March 29, 1998, the first Mexican wolves were released into the wild. All wolves within the BRWRA are designated as a nonessential experimental population under 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 of Game and Fish Department (AGFD), New Mexico Department of Game and Fish (NMDGF),

White Mountain Apache Tribe (WMAT), and U.S. Department of Agriculture-Wildlife Services (USDA-WS) has been formed to monitor and manage the reintroduced population.

Mexican wolf. Photo courtesy of Henry Fair and the Wolf Conservation Center.

PART A: RECOVERY ADMINISTRATION

1. Mexican Wolf Captive Breeding Program

a. Mexican Wolf Species Survival Plan

The 1982 Mexican Wolf Recovery Plan contains the objective of establishing and maintaining a captive breeding program as an essential component of recovery (US Fish and Wildlife Service 1982). A captive breeding program was initiated in 1977 through 1980 with the capture of the five remaining wild Mexican wolves in Mexico. The captive breeding program is managed for the Service under the American Zoological and Aquarium Association's (AZAA) Mexican Wolf Species Survival Plan (SSP) program. The SSP is a bi-national (United States and Mexico) captive breeding program. Its mission is to reestablish the Mexican wolf in the wild through captive breeding, public education, and research. The SSP designation is significant because it indicates to AZAA member facilities the need for the species to be conserved, and triggers internal support to member facilities to help conserve such imperiled species. Without the support of the SSP the recovery of the Mexican wolf would not be possible, because it is the sole source population to reestablish the species in the wild. The SSP has been extremely successful and has steadily expanded throughout the years. In 2008, there were approximately 340 captive Mexican wolves managed in 47 facilities in the United States and Mexico. The SSP members routinely transferred Mexican wolves to facilitate genetic exchange and maintain the health and genetic diversity of the captive population.

The SSP's goal of housing a minimum of 240 wolves ensures the security of the species in captivity and produces surplus animals for reintroduction. Potential Mexican wolf release candidates are sent to one of three 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 2008, the annual SSP meeting was held in Carlsbad, New Mexico and hosted by the Living Desert Zoo and Gardens.

b. Mexican Wolf Pre-Release Facilities

Mexican wolves are acclimated prior to release to the wild at these Service-approved facilities designed to house wolves in a manner that fosters wild characteristics and behaviors. These facilities are the Sevilleta and Ladder Ranch 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. They 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 Sevilleta and Ladder Ranch 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, and bones) from wild game/prey species only. Release candidates are given annual examinations to vaccinate for canine diseases (e.g., parvo, corona, adeno2, parinfluenza, distemper and rabies viruses, etc.) and to evaluate overall health conditions, and 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 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 2008 the staff of SNWR continued to assist in the maintenance and administration of the SWMF and conducted important public outreach related to the Mexican wolf recovery program. Through the course of the year, 31 individual wolves were housed at the SWMF. Of these, two wolves were released into the BRWRA, six were transferred to another pre-release facility, and three were retired into the SSP. At year's end, the SWMF housed 20 wolves.

Mexican Wolf F1028. Captured and radiocollared at SWMF prior to release into the BRWRA. USFWS photo.

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 managed and operated by an employee of the Turner Endangered Species Fund (TESF), though the facility is supported financially by the Service to keep it operating and available for housing and pre-conditioning release candidates. During 2008, 16 individual wolves were housed at the LRWMF. Of these, four wolves were released into the BRWRA, and two were retired into the SSP. At year's end, the LRWMF housed 10 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 acres 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 2008, WHI housed 13 individual Mexican wolves in the pre-release enclosures. None of these wolves were released into the BRWRA, six were transferred to a captive facility in Mexico as recommended by the SSP, and one animal was euthanized due to cancer. At year's end, WHI housed six Mexican wolves in the pre-release enclosures.

2. Recovery Planning

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

In response to these rulings, the Service placed the Southwestern DPS Recovery Team on hold, because its charge to develop a recovery plan for the Southwestern DPS was no longer valid since the DPS no longer existed. The Service instructed the Recovery Team that its work could not continue until legal issues were resolved at the national level. On December 16, 2005, the

Department of Interior issued a statement that the Service would not appeal the 2005 U.S. District Courts' decisions on the reclassification of the gray wolf. The Service's Southwest Region has not made any decisions to continue, discontinue, or redefine the purpose of the Recovery Team and the recovery planning effort because clear guidance at the national level has not been obtained.

Since the April 1, 2003, final rule was rendered invalid in 2005, the Service has been involved in several listing activities that have resolved neither the nationwide status of the gray wolf nor the listing status of the Mexican wolf. Most recently in December 2008, the Service was preparing a proposed rule to delist the gray wolf throughout the Western Great Lakes DPS and throughout the Northern Rocky Mountain DPS except for wolves in the State of Wyoming. This proposal is anticipated to be reviewed by officials of the incoming Obama Administration prior to publication. The potential date of publication is not known. Other listing activities are detailed below in the litigation section of this report.

In light of this uncertain status, the Service has not resumed recovery planning for the Mexican wolf, but did initiate a process to compile and assess the data generated by past recovery planning efforts. The result of this process will be the Mexican Gray Wolf Conservation Assessment, a non-regulatory document containing a synthesis and summary of data generated during all previous recovery planning for the Mexican wolf. Preparation of the Conservation Assessment began in April of 2008, and a release of a draft Conservation Assessment for public and peer review is anticipated during the first quarter of 2009. The data presented in the Conservation Assessment should streamline future recovery planning for the Mexican wolf.

3. Blue Range Wolf Reintroduction Project Structure

In 2003, the Mexican Wolf Recovery Program was restructured to allow States and Tribes to assume lead responsibility for implementing the BRWRA Reintroduction Project on lands under their jurisdiction. The Blue Range Reintroduction Project is managed jointly by the AGFD, NMDGF, USDA-Forest Service, USDA-WS, WMAT, and the Service. Other cooperators include Greenlee County, Arizona, Sierra County, New Mexico, and the New Mexico Department of Agriculture. The agencies work together under a Memorandum of Understanding which defines and formalizes the role of each cooperator in the program. An Adaptive Management Oversight Committee (AMOC), consisting of members from each of the cooperating agencies, provides guidance to the IFT on policy issues related to the management of Mexican wolves in the BRWRA and coordinates the BRWRA reintroduction project between the various entities and the public. The AMOC was chaired by AGFD in 2008. Under this structure the IFT is guided by 27 Standard Operating Procedures and provides management for the free-ranging wolf population. 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 2008 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 Blue Range Reintroduction Project can be found on AGFD's web page at: *http://azgfd.gov/wolf*.

An Adaptive Management Working Group (AMWG) has also been created and is comprised of any member of the interested public. The purpose of the AMWG is to provide a forum for all interested parties to participate in the BRWRA reintroduction project. Specifically, AMWG functions to enhance communication between management agencies and interested parties and create opportunities for participants to identify local issues and concerns and provide input regarding the management effectiveness of the BRWRA project. AMWG meetings are hosted quarterly throughout the year by the AMOC in an open forum accessible to any interested party to discuss pertinent Mexican wolf management issues specific to the BRWRA. Meetings alternate between Arizona and New Mexico.

4. Cooperative Agreements and Contracts

In 2008, the Service sustained cooperative agreements with AGFD, NMDGF, TESF, WMAT, and the San Carlos Apache Tribe (SCAT) via formal agreements with each entity. Agreements with AGFD and NMDGF have been matching agreements where the Service provides 75% of costs and each state agency provides 25%. The Service no longer funds USDA-WS because of the Congressional funding they now receive for responding to livestock conflict situations caused by Mexican wolves in the BRWRA.

Cooperator	Amount Funded by USFWS from Mexican Wolf Project Funds
AGFD	$125,000
NMDGF	$ 100,000
WMAT	$ 195,000
SCAT	$ 40,000
TESF	$ 29,000

In addition to the above contracts, the Service also provided funding to the following: Mexican Wolf SSP for captive management related activities; University of New Mexico for curatorial services for Mexican wolf specimens; Tracy Melbihess for the Conservation Assessment; and several miscellaneous contracts for veterinary and other services.

5. 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 continued reproductive research on Mexican wolves in 2008. In 1991, the Mexican Wolf Recovery Team selected the Saint Louis Zoo to establish and maintain a semen bank to preserve germplasm of genetically important males. Since that time the lab has been collecting, evaluating and freezing semen samples from individual wolves as directed by the Service and the SSP. As part of their ongoing reproductive research efforts, several projects were studied during 2008. These included anesthesia effects on semen collection, semen cryopreservation, oocyte vitrification (flash freezing), ovulation induction with Ovuplant (improves predictability in ovulation), artificial insemination, and Deslorelin (Suprelorin) for use as a contraceptive.

Dr. Dan Moriarty, University of San Diego, and Lowell Nicolaus, Northern Illinois University, began work analyzing Thiabendezole as an aversion agent for use in Mexican wolves. This research focuses on the potential to mitigate wolf conflicts with domestic livestock via conditioned taste aversion. The captive application of the study was completed at the California Wolf Center, near Julian, CA in October, 2008. The study was performed on generic gray wolves and has the support of the Humane Society of the United States. Preliminary results demonstrate the safety and efficacy of Thiabendazole-based aversions in a captive setting.

Dr. Krista Wenning, USDA Wildlife Services continued research efforts to determine the efficacy of various rabies vaccines used in gray wolves by correlating rabies antibody titer levels with the known vaccination history for each animal. Currently, there is no rabies vaccine labeled for gray wolves. During 2008 facilities participating in the Mexican Wolf SSP continued to collect data (wolf ID, age, sex, vaccination history, route of administration, etc.) and serum for use in this study.

b. Carnivore-Cattle Studies

In 2007 the San Carlos Apache Tribe's Recreation of Wildlife Department received funding from the Service to initiate a research study on the San Carlos Apache Reservation (SCAR) in an attempt to understand the dynamics of cattle predation in an area of sympatric carnivores (wolves, bears, mountain lions, and coyotes). A field portion of the study has been completed, though the information is proprietary and is not discussed here.

c. Noninvasive Monitoring Studies

C.A. Cariappa and Warren Ballard, Texas Tech University, and Stewart Breck, National Wildlife Research Center, are attempting species and individual identification using DNA extracted from wolf scat as a potential noninvasive technique to estimate population size. The lab tested the ability to identify individual Mexican wolves using scat collected from eight wolves at the SWMF and was successful in obtaining individual genotypes for all eight wolves. In September 2007 scat was collected within an area of the BRWRA known to share occupancy of four wolf packs. The area was surveyed again in late 2007, February 2008, and April 2008.

Sarah Rinkevich, Graduate Student at the University of Arizona's School of Natural Resources, continued her work using non-invasive genetic sampling to obtain a population size estimate of Mexican wolves on the Fort Apache Indian Reservation (FAIR). Tribal members were hired as field technicians, and scat samples from large carnivores have been collected utilizing scat detection dogs. A total of 378 scat samples were collected from June 25 through August 9, 2008, within the eastern portion of the FAIR. Lab work is on-going and a second field season of data collection is expected to begin in April 2009.

6. Litigation

a. Wild Earth Guardians and Rewilding Institute Lawsuit

On December 12, 2007, Forest Guardians and Sinapu (later merged and renamed "WildEarth Guardians") issued a 60-day Notice of Intent to sue the Service for failure to actively further the conservation of Mexican gray wolf. On April 30, 2008, WildEarth Guardians and the Rewilding Institute filed a lawsuit in the U.S. District Court for the District of Arizona alleging that the Service and the USDA-Forest Service had failed to meet the requirement of Section 10(j) of the Endangered Species Act that any release of an experimental population of an endangered or threatened species will further the conservation of such species (*WildEarth Guardians v U.S. Fish and Wildlife Service*, 2:08-CV-820, D. AZ, 2008).

b. Defenders of Wildlife Lawsuit

On May 1, 2008, Defenders of Wildlife and ten other conservation non-governmental organizations filed a lawsuit in the U.S. District Court for the District of Arizona alleging that the Service violated the National Environmental Policy Act, Endangered Species Act and Administrative Procedures Act in creating AMOC and authorizing Standard Operating Procedure 13, which requires permanent removal of wolves that have engaged in three livestock depredation incidents during a one-year period (*Defenders of Wildlife v Hall*, 4:08-CV-289, D.AZ. 2008).

On July 21, 2008, the court consolidated the WildEarth Guardians and Defenders of Wildlife cases due to their similarity. From July 28 through October 20, 2008, the parties filed briefs in response to the Service's motion to dismiss. At year's end, the court was still considering the motion to dismiss.

c. Gray Wolf Reclassification Lawsuits

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

In 2005, the Service lost the lawsuits and the 2003 reclassification was invalidated. The Service reverted to the 1978 gray wolf listing. The Service announced on December 16, 2005 that it would not appeal the U.S. District Court decisions and further, planned to issue separate, proposed rules to delist new DPS's of gray wolves in the northern Rocky Mountains and the Great Lakes as early as possible in 2006.

On March 27, 2006, the Service published a proposal (71 Federal Register 15266-15305) to designate a Western Great Lakes DPS of the gray wolf, to remove the Western Great Lakes DPS

from the protections of the Endangered Species Act, to remove the designated critical habitat for the gray wolf in Minnesota and Michigan, and to remove special regulation for the gray wolf in Minnesota. The *Final Rule Designating the Western Great Lakes Distinct Population Segment; Removing the Western Great Lakes Distinct Population Segment of Gray Wolf from the List of Endangered and Threatened Wildlife*, was published on February 8, 2007. The February 8, 2007, Final Rule did not affect the status of the Mexican wolf.

On April 16, 2007 The Humane Society and two other parties filed a lawsuit challenging the February 8, 2007, Final Rule. The U.S. District Court for the District of Columbia ruled in favor of the plaintiffs on September 29, 2008, and the February 8, 2007, Final Rule was remanded (*Humane Society of the United States v. Kempthorne*, 1:07–CV–00677 (D. Columbia). The gray wolf in Wisconsin and Michigan was returned to endangered status, critical habitat for the gray wolf was reestablished in Minnesota and Michigan, and the gray wolf in Minnesota was returned to threatened status.

On February 27, 2008, the Service published a Final Rule (73 Federal Register 10514-10560) designating a Northern Rocky Mountain DPS of the gray wolf encompassing the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming and removing the Northern Rocky Mountain DPS from the Federal List of Endangered and Threatened Wildlife. On April 28, 2008, Defenders of Wildlife and eleven other parties filed a lawsuit in the U.S. District Court for the District of Montana opposing the February 27, 2008, Final Rule (*Defenders of Wildlife v Hall*, 9:08-CV-056, D.MT. 2008). On July 18, 2008, the U.S. District Court for the District of Montana enjoined the Service's implementation of the February 27, 2008, final rule and ordered the reinstatement of Endangered Species Act protections for the northern Rocky Mountain gray wolf. At the Service's request, the court issued an order on October 14, 2008, that vacated the final delisting rule and remanded it back to the Service for further consideration. On December 11, 2008, the Service published a Final Rule (73 Federal Register 75356-75371) formally reinstating regulatory protections of the Northern Rocky Mountain and Western Great Lakes DPS of the gray wolf under the Endangered Species Act of 1973 in compliance with the court orders described above. This Final Rule did not affect the status of the Mexican wolf.

7. <u>Rule Amendment and Environmental Impact Statement</u>

On August 7, 2007, the Service issued a notice of scoping meetings and intent to prepare an EIS and socio-economic assessment for the proposed amendment of the rule establishing a nonessential experimental population of the Arizona and New Mexico population of the gray wolf (72 Federal Register 44065-44069). The Service held scoping meetings in 12 Arizona and New Mexico communities in 2007, and received approximately 13,500 written comments from the public, non-governmental organizations and government agencies at the local, state and federal levels. In response to considerable interest in cooperating agency status among Arizona and New Mexico counties, the Service held a welcome and kick-off meeting for parties that had requested or obtained cooperating agency status on the EIS project in Albuquerque, New Mexico on September 10, 2008. The meeting was attended by thirty-five people representing four military organizations, fifteen Arizona and New Mexico counties, four federal agencies and one

Native American tribe. Work has been temporarily suspended on the EIS pending resolution of the nationwide status of the gray wolf and the status of the Mexican wolf.

8. 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. 2003, Final Rule To Reclassify and Remove the Gray Wolf From the List of Endangered and Threatened Wildlife in Portions of the Conterminous United States; Establishment of Two Special Regulations for Threatened Gray Wolves, 68 *Federal Register* 15803-15875.

US Fish and Wildlife Service. 2006, Proposed Rule, Western Great Lakes Population of Gray Wolves, 71 *Federal Register* 15265-15305.

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

Mexican Wolf Blue Range Reintroduction Project[1]
Interagency Field Team Annual Report
Reporting Period: January 1 – December 31, 2008

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

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

Introduction

This report summarizes results of Mexican Wolf Interagency Field Team (IFT) activities during 2008. The IFT operates under guidance from an interagency Adaptive Management Oversight Committee (AMOC), which is comprised of representatives from the six Lead Agencies listed above. The Blue Range Reintroduction Project (Project) is part of a larger recovery program that is intended to reestablish the Mexican wolf (*Canis lupus baileyi*) across its historical range.

The Project is conducted in accordance with a nonessential experimental population final rule (USFWS 1998) that established the 6850 mi^2 (17,740 km^2) Blue Range Wolf Recovery Area (BRWRA) (Fig. 1). In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow free-ranging Mexican wolves to inhabit the Fort Apache Indian Reservation (FAIR). In 2002, the WMAT signed an agreement with the U.S. Fish and Wildlife Service (USFWS) that enabled direct release and translocation of Mexican wolves on the FAIR. This added an approximately 2440 mi^2 (6319 km^2) area available for Mexican wolf reintroduction, bringing the total to 9290 mi^2 (24,059 km^2). The reintroduction area lies within the Alpine, Clifton, and Springerville Ranger Districts of the Apache-Sitgreaves National Forests (ASNF) and the FAIR in east-central Arizona, and the Gila National Forest (GNF) in west-central New Mexico.

In March 1998, the first release of Mexican wolves occurred on the Alpine and Clifton Ranger Districts of the Apache National Forest, Arizona. At the end of 1998, the wild population in Arizona and New Mexico consisted of four wolves in two packs. At the end of 2008, the wild population in Arizona and New Mexico had grown through natural reproduction, translocations, and initial releases, to a minimum of 52 wolves and ten packs.

[1]The Reintroduction Project is a state- and tribally-led collaborative effort among six Lead Agencies and five Signatory Cooperators. Lead Agencies are: Arizona Game and Fish Department (AGFD); New Mexico Department of Game and Fish (NMDGF), USDA-APHIS Wildlife Services (WS), U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), and White Mountain Apache Tribe (WMAT). Signatory Cooperators are: Graham, Greenlee, and Navajo counties, Arizona; New Mexico Department of Agriculture; and Sierra County, New Mexico.

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)

Methods
The IFT followed Standard Operating Procedures (SOPs) approved by AMOC and the Directors of the six cooperating agencies (i.e. the "Lead Agencies"). These SOPs can be found at http://azgfd.gov/wolf. 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).
>
> *Wolf pack:* two or more wolves that maintain an established territory. In the event one of the two alpha (dominant) wolves dies, the remaining alpha wolf, regardless of pack size, retains the name.
>
> *Releases:* wolves released directly from captivity, with no previous free-ranging experience. These "initial releases" may only occur in the Primary Recovery Zone, which is entirely within Greenlee County, Arizona (see Fig. 1 and Fig. 2).
>
> *Translocations:* free-ranging wolves that are captured and moved to a location away from their site of capture; this includes captured free-ranging wolves that have been temporarily placed in captivity. Unlike initial releases, translocations can occur in the Primary Recovery Zone or in the Secondary Recovery Zone (Fig. 1). The Secondary Recovery Zone contains portions of Apache and Greenlee counties in Arizona, and portions of Catron, Sierra, and Grant counties in New Mexico (Fig. 2).
>
> *Depredation:* confirmed killing or wounding of lawfully-present domestic livestock by one or more wolves (USFWS 1998).
>
> *Depredation incident:* 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 (SOP 13.0).

Releases and Translocations
Initial release candidates are selected based on genetic makeup in relation to the captive and wild populations (i.e. genetically surplus to the captive population and underrepresented in the wild). Once selected for release, wolves are acclimated in USFWS-approved facilities prior to release.

These facilities include the Ladder Ranch Wolf Management Facility, managed by the Turner Endangered Species Fund, and the Sevilleta Wolf Management Facility, managed by the USFWS at Sevilleta National Wildlife Refuge. Both facilities are located in New Mexico.

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

Wolves are released using either a soft release or a hard release method. The soft release method holds wolves at the release site until they are released by the IFT. Wolves are held from 1 day to several months to acclimate them to the specific area. Soft release pens are constructed of chain link and are approximately 0.33 acres (1335 m^2) in size. A modified soft release consists of placing the wolves in an acclimation pen approximately 0.13 acres (526 m^2) in size and built of nylon mesh, with electric fencing interwoven into the structure. Flagging is also attached to the pen walls approximately every 2 feet, as a visual barrier to discourage wolves from running into, or jumping at, the pen walls. Wolves in modified soft pens 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).

Adult and subadult wolves selected for initial release or for translocation are radio-collared and given complete physical examinations before they are moved to the initial release or translocation site. Pups are also given complete physicals, but radio collars are not generally affixed to pups less than 5 months old due to their small size (< 20 pounds). Carcasses of native prey or commercially processed canine "meat logs" and fresh water are provided as needed in the initial release/translocation pen. If deemed necessary, areas within approximately 1 mi (1.6 km) of a pen can be posted "closed to the public," by the USFS. IFT personnel camp nearby to maintain additional security and monitor the wolves.

Following release, wolves are provided road-killed elk and deer, or meat logs, as supplemental food. The duration of supplemental feeding varies, depending on time of year, availability of vulnerable prey, and whether pups are present. Supplemental feeding is gradually discontinued as wolves become self-sufficient, usually within 1 to 2 months after release. Monitoring is most intense immediately after release, to determine when wolves begin killing prey and to keep track of movements and behavior.

Radio Telemetry Monitoring

In 2008, all radio-collared wolves were monitored by standard radio telemetry from the ground, as opportunity allowed, and once weekly from the air. Visual observations, wolf behavior, evidence of a kill site, associated uncollared wolves, and fresh sign were also noted at each location. Location data were entered into the Project's Access database for analysis.

Aerial locations of wolves were used to develop home ranges (White and Garrott 1990), which were calculated based on the definition in the final rule (USFWS 1998). Home ranges were calculated using ≥20 individual aerial locations on a pack, pair, or single wolf exhibiting territorial behavior over a period of ≥ 6 months. To maximize sample independence, individual radio-collared wolf locations were included in home range calculations only if individual wolf locations were spatially or temporally separated from other radio-collared pack members. This limited pseudo-replication of locations. Home range polygons were generated at the 95% confidence level, using the minimum convex polygon (MCP) method (White and Garrott 1990) in the animal movement extension in the program ArcView (Hooge et al. 1999; ESRI, Redlands, CA, USA). Home ranges were not calculated for wolves that had <20 aerial radio locations, displayed dispersal behavior, or exhibited non-territorial behavior during 2008.

Occupied Range

Occupied wolf range was calculated based on the definition in the Final Rule (USFWS 1998) and using the following criteria: (1) a 5 mi (8 km) radius around all locations of non radio monitored wolves and wolf sign occurring in an area consistently used over a period of at least 1 month; (2) a 5 mi (8 km) radius around radio locations of resident wolves when < 20 radio locations are available (for radio monitored wolves only); (3) a 5 mi (8 km) radius around radio monitored wolf locations (for wolves exhibiting dispersal or non-territorial behavior); and (4) a 3 mi (5 km) radius around the convex polygon developed from ≥20 radio locations of a pack, pair, or single wolf exhibiting territorial behavior.

Predation and Depredation Investigations

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

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

Wolf Management

The IFT hazed (purposefully harassed) wolves on foot or by vehicle if the wolves localized near areas of human activity or were found feeding on, chasing, or killing livestock. When necessary, the IFT used rubber bullets, cracker shells, and fladry to encourage aversive response to humans and to discourage nuisance and depredation behavior. If hazing was not effective, the IFT may capture and retain or re-release the wolf (or wolves) pursuant to SOP 13.0. The IFT captured wolves with leg hold traps; and occasionally used darts and nets shot from helicopters. In

addition, wolves that established themselves wholly outside the BRWRA were captured and brought back into the BRWRA or temporarily held in captivity, per the final rule (USFWS 1998).

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

> *Turbo Fladry*: electric fence with red flagging installed around livestock holding pastures and private property to discourage wolf utilization inside the perimeter.
>
> *Hay*: feed purchased for livestock owners who opted to keep livestock on private property during calving season.
>
> *Range Riders*: contract employees with radio telemetry equipment to assist stakeholders in monitoring wolf movements in relation to cattle on USFS grazing allotments.
>
> *Livestock Grazing Rotation*: moving livestock between different USFS grazing pastures or allotments in order to avoid areas of high wolf use including den and rendezvous sites.
>
> *Exclusionary Fencing*: 8 foot high fence enclosing areas of private property.
>
> *Radio Telemetry Equipment:* monitoring equipment issued to stakeholders to facilitate their own proactive management activities and aid in the detection and prevention of depredations.

Population Estimation
The IFT maintained the expanded efforts that were initiated in 2006 to make the 2008 year-end population estimate more comprehensive. Actions included increased ground surveys and trapping for uncollared wolves, increased flight hours for helicopter operations, greater coordination of wolf sightings by the public and other agencies, and use of remote cameras.

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

In January 2009, aircraft were used to document free-ranging wolves for the end-of-year 2008 population count and to capture wolves as necessary to affix radio-collars. Including January data in the December 31 end-of-year count (and in this 2008 annual report) is appropriate, because wolves alive in January were also alive in December (i.e. whelping does not occur until April or May and we do not count wolves that are released or translocated into the population during January). Fixed-wing aircraft were used to locate collared wolves and assess the potential

for darting them 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, wolves with old collars, or wolves outside the 10j boundary) where the terrain allowed.

As part of the 2008 population estimate, members of the local public were also surveyed for possible wolf sightings. Ranchers, private landowners, wildlife managers, USFS personnel, and others were contacted to develop a wolf-sighting database. Sighting reports from agency cooperators were also collected. All sightings were analyzed to determine those that most likely represented unknown wolves or packs.

Remote digital cameras (regular flash and infrared) were used to document wolf presence. Information gleaned from photographs, public reports, surveys, and wolf sign were used to guide IFT efforts to trap uncollared single wolves or groups. The objective was to have at least one member of each pack collared. Using these methods, the IFT counted the number of uncollared wolves not associated with collared wolves.

Mortality

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

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

Outreach

The IFT outreach efforts affirm the Project's commitment to engage in effective communication, identify various outreach mechanisms, and standardize certain outreach activities. These goals help ensure timely, accurate, and effective two-way communication between, and among, cooperating agencies and the public. Project personnel conducted outreach activities on a regular basis, as a means of disseminating information to stakeholders, concerned citizens, and government and non-government organizations. Outreach efforts were facilitated through

monthly updates, field contacts, handouts, informational display booths, Web page updates and phone contacts. The IFT gave formal presentations at quarterly Adaptive Management Work Group meetings and conducted one public meeting to gather comment on proposed Mexican wolf initial release and translocation actions within the BRWRA. This was the first full year since 2004 in which the IFT did not utilize a dedicated outreach coordinator to organize and present outreach activities for the Project. Instead, all Project personnel participated in various outreach activities in a cooperative effort to achieve the overall goals.

The IFT conducted outreach activities consistent with the Mexican Wolf Blue Range Reintroduction Project Outreach Plan developed during 2007. The plan provides an outline of activities AMOC and the IFT use to inform various target audiences about the reintroduction project and stimulate productive dialogue between stakeholders and cooperating agencies. The outreach plan was incorporated into the Mexican Wolf Interagency Field Team 2008 Annual Work Plan, which described and prioritized IFT outreach activities.

During 2008, the IFT posted Mexican wolf reintroduction project updates within the BRWRA once each month, at places such as USFS offices, US post offices, and libraries, as well as on the AGFD Mexican wolf Web site at http://azgfd.gov/wolf and the USFWS Mexican wolf Web site at http://www.fws.gov/southwest/es/mexicanwolf. Interested parties could sign up to receive the update electronically by visiting the AGFD Web site at http://azgfd.gov/signup. The IFT faxed monthly Project updates to primary cooperating agencies, stakeholders and interested citizens.

The IFT produced a location map to inform cooperators and the public of areas occupied by wolves. The map was updated quarterly and contained the previous 3 months of wolf aerial locations. The map was posted on the AGFD Web site at http://azgfd.gov/wolf. In addition to the map, a description of wolf locations from weekly flights was posted to this Web site within 48 hours of each flight per SOP 26. IFT personnel conducted weekly contacts of specific grazing permittees to provide the general locations of wolves on or adjacent to their grazing allotments or private lands.

Project personnel made contact with campers, hunters, and other members of the public within the BRWRA and provided them with information about the wolf project. These contacts advised the public of the potential for encountering wolves, provided general recommendations for recreating in wolf-occupied areas and explained legal provisions of the non-essential experimental population rule (USFWS 1998). The IFT collected information on wolf sightings, tracks and scat from these public contacts.

Results

Information on the specific number of wolves per pack and specific locations from the FAIR and the San Carlos Apache Reservation (SCAR) is not included in this report in accordance with Tribal agreements. However, wolves from FAIR and SCAR are incorporated into total population statistics (i.e. total number of wolves, number of packs, and number of breeding pairs) for the population.

Population Status
At the end of 2008, 52 wolves were documented in the Mexican Wolf Nonessential Experimental Population Zone (MWNEPZ): 29 radio-collared wolves (23 adults, 2 subadults, and 4 pups) and 23 uncollared wolves were documented in the (note: an uncollared wolf captured during the January 2009 helicopter operation was included as an uncollared animal associated with a known pack above). Nine of the 23 uncollared wolves, including seven pups of the year, were associated with ten radio-collared packs at the end of 2008, five in Arizona and five in New Mexico (Table 1). In addition, there were six known single wolves (two in Arizona and four in New Mexico). Approximately 76% (22 out of 29 wolves) of the radio-collared individuals and 87% (45 out of 52 wolves) of all documented wolves were born in the wild.

One natural pairing occurred in the wild during 2008. AF758 of the Paradise Pack died from unknown causes and was replaced via natural dispersal by AF1056 of the Lofer Pack in December. Observed sign suggests additional uncollared wolves still remain in the Lofer Pack territory. Other observed sign on the FAIR indicates potential for two additional uncollared groups. Furthermore, the IFT observed sign from a pair of wolves in the Johnson Basin area of New Mexico. These areas will be priorities for IFT trapping efforts in the spring and summer of 2009. No additional natural pairings were detected in 2008. In comparison, five natural pairings occurred in the wild in 2007.

Reproduction
In 2008, seven packs (Bacho, Dark Canyon, Fox Mountain, Hawks Nest, Middle Fork, Paradise, and Rim) produced wild-conceived, wild-born litters. The IFT documented a minimum of 18 pups born with a minimum of 11 surviving in the wild at year's end (Table 1). This marked the seventh consecutive year in which wild born wolves bred and raised pups in the wild. Of the ten known packs at the end of 2008, eight were composed of at least one wild-born wolf and all ten of these pairs formed naturally in the wild.

Releases and Translocations
The IFT conducted 1 soft release translocation of a new pack, 1 soft initial release and translocation of a new pack, and 3 hard release translocations of single wolves in 2008 in an attempt to increase genetic diversity, the number of breeding pairs, and the number of wolves in the wild.

On January 19, the IFT captured M1039 during the annual population count and helicopter capture for persisting outside the BRWRA boundary. This wolf was translocated to the Gila Flat translocation site in New Mexico via hard release.

On June 16, the IFT translocated the Laredo Pack (AM1008, AF1028) from the Sevilleta Wolf Management Facility to McKenna Park in New Mexico via a soft release. AM1008 was found dead in August (cause of death: gunshot). AF1028 remained in the wild at year's end.

On October 23, the IFT translocated M922 from the Ladder Ranch Wolf Management Facility to Burnt Corral Canyon in New Mexico via a hard release. M922 was found dead 9 days later (cause of death: necropsy pending).

On November 17, the Moonshine Pack (AF836 [initial release], AM1039 [translocation]) was transported from the Ladder Ranch Wolf Management Facility to the Middle Mountain initial release site in Arizona and placed in a temporary soft pen. The Moonshine Pack self released from the pen on November 18. The pair separated several days later, but both animals were in the wild at year's end.

On December 19, the IFT translocated f1106 from the Ladder Ranch Wolf Management Facility to Ghost Lake in New Mexico via a hard release. At the end of 2008, f1106 continued to roam the GNF.

Home Ranges and Movements

The IFT calculated home ranges for 11 packs exhibiting territorial behavior. The MCP method produced an average home range size of 195 mi^2 (505 km^2), with home ranges varying from 60 mi^2 to 503 mi^2 (155 km^2 to 1302 km^2) (Fig. 4, Table 3). Home ranges were not calculated for nine wolves (F1028, M1008, M922, M1039, F836, F1115, M619, f1106, f1113) that dispersed or traveled alone during 2008 (see Appendix A for detailed summaries of these individuals).

Mexican wolves occupied 5164 mi^2 (13,376 km^2) of the Mexican Wolf Nonessential Experimental Zone (MWNEPZ) during 2008 (Fig. 5). Seventy percent of the occupied range (3593 mi^2 [9305 km^2]) occurred in the BRWRA and 15% of the occupied range (777 mi^2 [2012 km^2]) occurred on the FAIR. One percent of the occupied range (58 mi^2 (149 km^2) occurred on SCAR. Fourteen percent of the occupied range (736 mi^2 (1906 km^2) fell outside the BRWRA, FAIR, and SCAR. In comparison, Mexican wolves occupied 6469 mi^2 (16,755 km^2) of the MWNEPZ during 2007.

Mortality

The IFT has documented 66 wolf mortalities in the wild since 1998 (Table 4), 13 of which occurred in 2008 (Table 5). Mortalities in 2008 included: fp1104 and mp1109 (uncollared) from vehicle collision; AF1111, AF1112, f1113, AM1008, and mp1159 from illegal shooting; AM583 and AF758 from unknown causes; mp1116 (uncollared) and mp1117 (uncollared) from natural causes; and results for M922 and mp1160 were unknown at year's end pending necropsy reports. The listed mortalities should be considered a minimum estimate, since some pups and uncollared wolves die without being documented. One wolf (AM1045) is "fate unknown" and not likely to be alive.

The IFT monitored 39 individual radio-collared wolves for a total of 8,727 radio days during 2008. A total of 12 radio-collared wolves were considered removed (n = 2), dead (n = 9), or missing (n = 1). The overall survival rate was 0.60, or a corresponding failure rate of 0.40. The overall failure rate was composed of the human caused mortality rate (0.20; n = 6), unknown/awaiting necropsy mortality rate (0.10; n = 3), boundary removal rate (0.07; n = 2), missing radio-collared wolves rate (0.03; n = 1), cattle depredation removal rate (0.00; n = 0), nuisance removal rate (0.00; n = 0), and other removal rate (0.00; n = 0).

Predation
A total of nine carcasses were investigated opportunistically. All investigated carcasses were elk. Age determinations of the elk revealed: 5 adults, 3 yearlings, and 1 calf. Sex determinations of elk revealed 5 females, 2 males and 2 of unknown sex.

Of the nine elk carcasses investigated: 4 were confirmed or probable wolf kills; 1 was a possible wolf kill; 1 likely died as a result of infection and was subsequently scavenged; 1 was a confirmed mountain lion kill; 1 was a probable coyote kill and 1 was undetermined.

Wolf Depredation
USDA-WS members of the IFT completed 83 investigations with potential Mexican wolf involvement. Of these 83 investigations, 77 involved livestock including cattle (*n* = 72), horses (*n* = 3) and sheep (*n* = 2). In addition, the IFT conducted six non-livestock investigations involving dead or injured alpacas, chickens, and goats. Average IFT response time between the reporting of an incident to the initiation of an on-site investigation was < 20 hours.

Of the 77 individual livestock investigated, 38% (*n* = 29) were determined to have confirmed or probable wolf involvement resulting in livestock injury or death, 38% (*n* = 29) had confirmed or suspected cause of death or injury other than wolf, and 24% (*n* = 19) were classified as unknown. Twenty-one investigations of livestock fatalities were classified as confirmed (*n* = 20) or probable (*n* = 1) wolf-caused mortalities (Table 6, Table 7). Also, seven confirmed injuries and one probable livestock injury were investigated. Fifty-two percent (*n* = 11) of the livestock fatality investigations determined to have confirmed or possible wolf involvement occurred in New Mexico and 48% (*n* = 10) occurred in Arizona (Table 7). Seven of the eight IFT investigations involving wolf-caused injuries occurred in New Mexico (Table 7). Seven separate mortality causes were identified in the non-wolf related investigations, including: coyote (*C. latrans*) (*n* = 9), natural causes (*n* = 3), black bears (*Ursus americanus*) (*n* = 3), lightning (*n* = 3), accidents (*n* = 3), suspected plant poisoning (*n* = 1), and unknown (*n* = 18). Three separate injury causes were identified in non-wolf related investigations, including: coyotes (*n* = 2), black bear (*n* = 1), and unknown (*n* = 1).

Eighty-two percent (*n* = 68) of the 83 livestock investigations conducted were in response to reports from ranchers and the public and 18% (*n* = 15) were initiated by the IFT. In addition, the IFT found and reported 10% (*n* = 2) of the confirmed or probable wolf-caused livestock mortalities (Table 7).

In total, ten of the 20 (50%) confirmed depredations involved uncollared wolves. Seven of the 27 (26%) confirmed injuries and depredations involved M1114 (Table 7). No wolves were permanently removed in 2008 due to repeated depredations. The confirmed killed cattle rate for 2008 extrapolates to 36.5 depredations/100 wolves using the number of confirmed killed cattle (*n* = 19; table 7) compared to the final population count (*n* = 52). This projected number of depredations was slightly higher than the 1-34 confirmed killed cattle per 100 wolves predicted in the FEIS.

In 2008, Defenders of Wildlife (Defenders) paid $5,878 to four individuals who filed wolf-related depredation claims.

Management Actions

Twenty different wolves were captured and/or removed a total of 21 times. Nineteen wolves were captured, collared, processed, and released on site for routine monitoring purposes (Table 8). One wolf (M1039) was captured twice outside the boundary of the BRWRA. The first capture occurred on January 19 near Grants, NM. The wolf was translocated back into the BRWRA boundary and released at Gila Flat, NM. On February 12, the IFT was informed M1039 was accidentally trapped by a private individual with a legally set coyote trap on private land and had subsequently escaped with the trap on its foot. The wolf carried the trap on its foot until it was captured via a helicopter darting operation on February 17 and transported to the Project veterinarian for treatment. Following recovery, M1039 was transported to the Ladder Ranch Wolf Management Facility. M1039 was re-released into the BRWRA in November as part of the Moonshine Pack.

On September 12, the USFWS issued a Management Decision to translocate AM1114 of the San Mateo Pack to the Gila Wilderness after four confirmed depredations and three injuries to cattle. The IFT attempted to trap and/or dart AM1114 for 45 days without success. The USFWS extended the Management Decision for an additional 14 days; however, trapping and darting attempts were not successful. The Management Decision was then rescinded due to unfavorable trapping conditions brought on by cold weather and the fact that no additional depredations occurred during the 59 days of the management action. Furthermore, no additional depredations or injuries associated with M1114 were reported for the remainder of the year.

No wolves were lethally or permanently removed by IFT management actions in 2008. One wolf was temporarily placed in captivity and subsequently released in November. Five wolves were translocated (M922, M1008, F1028, M1039 (twice), f1106) for a total of six translocations, and one wolf (F836) was initially released. Two of the wolves died (M922, M1008). M1008 was illegally shot. The necropsy report for M922 is still pending and the death is under investigation. Four of the released or translocated wolves (F836, F1028, M1039, f1106) remained in the wild at the end of 2008.

The IFT conducted management actions in response to ten cases of nuisance behavior (Table 9). Most nuisance reports involved wolves near campgrounds or residences. Four of the ten reports involved the Laredo Pack (M1008, F1028). The IFT initiated hazing efforts to eliminate the Laredo Pack's nuisance behavior during July and August. Nuisance behavior ceased when F1028 began traveling widely throughout the GNF following the illegal shooting death of M1008 in August. Two of the ten reports involved F836 and M619. The IFT conducted intensive monitoring of F836 and M619 and installed turbo fladry in the corral area where wolf tracks were observed. Following the installation of turbo fladry, no further nuisance behavior involving F836 and M619 was reported. The remaining four reports of nuisance behavior involved uncollared wolves or domestic dogs. The IFT also issued cracker shells to private individuals who reported wolves in close proximity to residences. The IFT utilized trail cameras, tracking, and intensive radio telemetry monitoring to gather evidence regarding the reported nuisance behavior.

Proactive Management Activities

The IFT, working with Non Governmental Organizations (NGO), utilized proactive management to assist in eliminating or reducing wolf livestock conflicts in the BRWRA (Table 10). The Project and NGOs spent approximately $134,400 on proactive management activities affecting an estimated 12,000 livestock. This represented approximately 25% of the permitted livestock grazing in the BRWRA. The IFT and agency contract employees spent approximately 4000 hours implementing proactive management activities.

The IFT installed and maintained turbo fladry for five stakeholders (two in Arizona, three in New Mexico) to protect livestock, dogs, goats, and chickens on both public lands and private property. No livestock depredation incidences occurred within the fenced areas following the installation of the turbo fladry.

The Project and NGOs purchased hay during the calving season for three stakeholders (one in New Mexico, two in Arizona). No livestock depredation incidences occurred during calving season on these three ranches.

The Project contracted three range riders to assist three stakeholders (one in Arizona, two in New Mexico) in monitoring wolves in relation to cattle. Range riders monitored approximately 3380 livestock within three wolf pack home ranges. One livestock depredation incident occurred in Arizona while a range rider was monitoring livestock and collared wolves. The livestock depredation incident was associated with uncollared wolves.

The Project and NGOs provided funding to a stakeholder in New Mexico to assist with moving livestock. Livestock were moved to a different pasture when wolves denned in an active USFS grazing allotment. No livestock depredation incidences occurred within denning and rendezvous areas associated with this proactive management activity.

The Project and NGOs provided funding to construct a permanent exclusionary fence for livestock protection on private property in New Mexico. The exclusionary fence is approximately 2 miles in length and protects approximately 3000 livestock.

The IFT issued radio telemetry equipment to stakeholders in areas where wolf/livestock conflicts were prevalent. Four sets of telemetry equipment have been issued to ranches in Arizona, while nine sets of telemetry equipment have been issued in New Mexico. The IFT trained stakeholders to use the telemetry equipment to monitor wolves in the vicinity of cattle or residences. The IFT instructed stakeholders on non-injurious hazing techniques. Stakeholders were encouraged to contact the IFT for assistance and report any wolf livestock conflicts requiring intensive hazing efforts.

Non-IFT Wolf Sighting Reports

The IFT received a total of 37 wolf sighting reports from the public, including 30 reports from Arizona and seven reports from New Mexico (Appendix B). The IFT determined 16 reports were non-wolf sightings (coyote, dogs, etc.), 8 reports were sightings from known wolves within established territories (Arizona, $n = 8$), 5 reports were probable wolf sightings (wolves located in area; however sighting description weak) (Arizona $n = 5$), 4 reports were likely

uncollared/unknown wolves (Arizona, n = 3; New Mexico n = 1), and 4 reports did not have enough information to make a determination. To report a sighting of a Mexican wolf, please call 1-888-495-WOLF (9653). The public is encouraged to report Mexican wolf sightings to help the IFT locate undocumented packs and track movements of wolves within and around the BRWRA.

Uncollared wolf sign

The IFT used uncollared wolf sign and sighting reports to target eight core areas (Fig. 6) in an effort to document and/or radio collar unknown wolves in and around the BRWRA. The IFT searched a total of 2836 mi (4564 km) of roads and trails. Three single wolves and one group of two wolves were documented in New Mexico (Fig. 7). Four wolves traveling together were documented in Arizona utilizing an area located on both the ASNF and the FAIR.

Outreach

The IFT and other Project personnel gave 29 presentations and status reports to approximately 548 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-three percent of the presentations were for the BRWRA target audience. These included IFT presentations at quarterly Adaptive Management Work Group (AMWG) meetings. In addition, 4361 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 9000 people a month. Outreach presentations can be scheduled by contacting the IFT at 1-888-495-WOLF (9653).

At available USFS kiosks and various road pull-outs in the BRWRA, the IFT maintained metal signs and laminated posters that provide information on how to minimize conflicts with wolves. The IFT also replaced 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.

Summary

The 2008 end-of-year count confirmed 29 radio-collared (23 adults, 2 subadults, and 4 pups) and 23 uncollared wolves, including documented uncollared singles and groups, for a total of 52 documented wolves in the MWNEPZ. The population consisted of ten packs (five in Arizona and five in New Mexico) and six single wolves (two in Arizona, four in New Mexico). There are likely more undocumented, free-ranging wolves in the population, but most of these are likely single animals, as a wolf pack usually leaves more sign and its existence is easier to document.

The IFT conducted 1 soft release translocation of a new pack, 1 soft initial release and translocation of a new pack, and 3 hard release translocations of single wolves in 2008 in attempt to increase genetic diversity, the number of breeding pairs, and the number of wolves in the wild. Two of these seven wolves were dead by the end of the year.

Seven packs produced wild-conceived, wild-born litters. This is the seventh consecutive year wild-born Mexican wolves bred and raised pups in the wild. In addition, 76% of the radio-collared individuals and 87% of all documented wolves were wild-born.

The IFT documented 13 mortalities of free-ranging wolves in 2008, including 6 adults, 1 subadult and 6 pups. This is the highest annual incidence of known mortality since releases began in 1998.

Home ranges were calculated for 11 packs, producing an average home range size of 195 mi^2 (505 km^2), with home ranges varying in size from 60 mi^2 to 503 mi^2 (155 km^2 to 1302 km^2).

Native prey used by wolves consisted primarily of elk; however, there were also 20 confirmed livestock depredations and one probable livestock depredation. The IFT also attributed seven confirmed livestock injuries and one probable livestock injury to wolves.

The IFT captured 20 wolves a total of 21 times for routine monitoring (n = 19), persistence outside the BRWRA boundary (n = 2). The same wolf (M1039) accounted for both the boundary violations. M1039 was captured outside of the boundary and translocated to a pre-approved translocation site within the Gila Wilderness. Subsequently, M1039 was caught a second time outside the boundary by a private trapper, and was temporarily placed in captivity before being released in November as part of the Moonshine Pack.

The IFT analyzed 37 reports of wolf sightings from the public; 43% of these reports were non-wolf sightings (coyote, dogs, deer, etc.), 22% were sightings of known wolves within established territories, 13% were probable wolf sightings, 11% were likely uncollared/unknown wolves, and the remaining 11% was categorized as unknown due to insufficient information. In response to these sightings, the IFT searched 2836 mi (4564 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 pack and one pair of previously unknown or uncollared wolves and three single animals through increased field search efforts.

Project personnel gave 29 presentations and status reports to more than 548 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, 4361 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 9000 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 Project during this reporting period. Individuals listed in Appendix C collected data or provided other information for this report.

Discussion

The IFT documented the Mexican wolf population maintained its numbers at a minimum population of 52 wolves in 2007 and 2008 (Table 1, Fig. 8*)*. However, the number of breeding pairs decreased from a minimum of four breeding pairs in 2007 to a minimum of two in 2008 (Table 1, Fig. 4). The total number of pups alive at the end of the year was higher (n = 11 (Table 1)) than the previous year (n = 9) yet, the number of mortalities increased from four in 2007 to 13 in 2008 (Table 4). Wild-born wolves in six packs (Bacho, Dark Canyon, Fox Mountain, Hawks Nest, Paradise, and Rim) successfully reproduced in 2008. However, the wolf population displayed

disappointing natural pair formation in the wild (only the pairing of AM795 (Paradise Pack) and AF1056 (Lofer Pack) occurred). The population contained six collared single wolves available for pairing, and the Fox Mountain Pack was absent a breeding female. The low number of natural pair formations may be an indication that fewer adult wolves were available in 2008 than in 2007 when five packs formed naturally. Fewer adult wolves available for pair formation is likely a compounding result of only nine pups surviving to the end of 2007, three of which are known to have died in early 2008.

Based on meta-analysis of gray wolf literature, Fuller et al. (2003) identified a 0.34 mortality rate as the inflection point of wolf populations. Theoretically, wolf populations below a 0.34 mortality rate would increase naturally, and wolf populations above a 0.34 mortality rate would decrease. The Mexican wolf population had an overall failure (mortality plus removal) rate of 0.40 in 2008, which is too high for natural (unassisted) population growth. This suggests the Project must reduce mortality and management related losses (e.g. removals) and/or release and/or translocate more wolves in 2009 to provide for desired population increase. However, the Project had few management removals in 2008 (n = 2) relative to 2007 (n = 31), primarily due to fewer depredation incidents. While the reduction in the number of management removals is encouraging, the majority of the population losses in 2008 were due to human-caused mortalities rather than removals. The Project will continue attempts to reduce the level of mortality, as well as continue replacing the animals lost through initial releases and translocations.

The 2008 confirmed killed cattle rate extrapolates to 36.5 depredations/100 wolves using the number of confirmed killed cattle (n = 21) compared to the final 2008 population count (n = 52). This projected number of depredations was higher than the 1-34 confirmed killed cattle per 100 wolves predicted in the FEIS. It is important to note the standard for extrapolating the annual confirmed killed cattle rate/100 wolves uses the end of year wolf population count, which does not include wolves that died during 2008. Thus, the confirmed killed cattle rate per 100 wolves, as a matter of practice, underestimates 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 2009 should result in an increase in the Mexican wolf population. The Project management objective for 2009 is a 10% increase in the minimum wolf population counts and/or the addition of at least one breeding pair, while minimizing negative impacts of wolves. Critical suggested changes to the Project are outlined in the Five Year Review. The IFT and AMOC will continue to work on implementing these improvements in 2009.

Literature Cited

Heisey, DM and TK Fuller. 1985. Evaluation of survival and cause-specific mortality rates using telemetry data. Journal of Wildlife Management 49:668-674.

Hooge, PN, W Eichenlaub, and E Solomon. 1999. The animal movement program. USGS. Alaska Biological Science Center.

Fuller, TK, LD Mech, and JF 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.

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, PC, J Vucetich, ML 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.

US 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.

US Fish and Wildlife Service. 1998. The final Mexican wolf experimental rule. 63 Federal Register. Pp 1763-1772.

White, GC and RA Garrott. 1990. Analysis of wildlife radio-tracking data. Academic Press Incorporated, New York, New York, USA.

Table 1. Status of Mexican wolf packs present in 2008 in Arizona and New Mexico, as of December 31, 2008.

Pack	Wolf ID	Reproduction[a]	Pups at Year End[b]	No. Collared	No. Uncollared	Min Pack Size[c]
Bacho, FAIR*	AM990, fp1154	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]
Bluestem, AZ	AM806, AF521, F1042, f1113[e]	0	0	3	0	3
Dark Canyon, NM	AM992, AF923, mp1160[e]	2	1	2	1	3
Elk Mountain, NM[f]	AM1045[g], AF1112[e]	0	0	0	0	0
Fox Mountain, NM	AM1038, AF1111[e], mp1157, mp1158, mp1161[h]	3	3	3	1	4
Hawks Nest, AZ*	AM1044, AF1110, mp1155	2	2	3	1	4
Lofer, FAIR[f]	AF1056	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]
Laredo, NM[f]	AM1008[e], AF1028	0	0	1	0	1
Luna, NM	AM583[e], M1156, f1118	0	0	2	0	2
Middle Fork, NM	AM871, AF861	2	1	2	1	3
Moonshine, AZ[f]	AM1039, AF836	0	0	2	0	2
Paradise, AZ	AM795, AF758[e], mp1116[e], fp1117[e]	2	0	1	0	1
Rim, AZ	AM1107, AF858, fp1104[j], mp1109[j], mp1159[e]	4	1	2	1	3
San Mateo, NM	AM1114, AF903	0	0	2	1	3
Single wolf, NM	M922[e]	0	0	0	0	0
Single wolf, NM	f1106	0	0	1	0	1
Single wolf, AZ	M619	0	0	1	0	1
Single wolf, NM	F1115	0	0	1	0	1
Johnson Basin, NM	uncollared wolves	0	0	0	2	2
Toriette Lakes, NM	uncollared wolf	0	0	0	1	1
Ghost Lake, NM	uncollared wolf	0	0	0	1	1
Bear Canyon, NM	uncollared wolf	0	0	0	1	1
FAIR	uncollared wolves	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]
Totals[i]		18	11	29	23	52

[a]Reproduction-maximum number of pups documented in 2008.
[b]Pups at year end-pups documented surviving until December 31, 2008.
[c]Min pack size-total number of wolves (collared, uncollared, pups) documented at year end.
[d]Wolf numbers on FAIR are proprietary and therefore not displayed.
[e]Died during 2008.
[f]Pack considered defunct due to lost collars, dispersal, removal or death.
[g]Fate unknown during 2008.
[h]mp1161 was captured and assigned a studbook number in January 2009 but considered an uncollared wolf on 12/31/08.
[i]Totals include wolves occurring on FAIR.
[j]Pup born in 2007 but died prior to one year birth date
*A pack that meets the definition of a breeding pair per the final rule.

Table 2. Mexican wolves initially released or translocated from captivity or the wild in Arizona and New Mexico during January 1 – December 31, 2008.

Wolf Pack	Wolf #	Release Site	Release Date	Released or Translocated
Single	M1039	Gila Flat, NM	January 19	Translocation
Laredo	AF1028, AM1008	McKenna, NM	June 19	Translocation
Single	M922	Burnt Corral, NM	October 23	Translocation
Moonshine	AF836, AM1039	Middle Mountain, AZ	November 18	Release/Translocation
Single	F1106	Ghost Lake, NM	December 19	Translocation

Table 3. Home range sizes of free-ranging Mexican wolf packs in Arizona and New Mexico, January 1 – December 31, 2008.

Pack/Group	Home Range Size 95% Min. Convex Polygon mi^2 (km^2)	Number of Independent Aerial Locations	Duration of Time Radio Locations were Available during 2008
Bacho	60 (155)	47	12 months
Bluestem	297(769)	49	12 months
Dark Canyon	99 (256)	49	12 months
Fox Mountain	120 (311)	54	12 months
Hawks Nest	92 (239)	54	12 months
Lofer	153 (396)	40	11 months
Luna	264 (684)	41	12 months
Middle Fork	201 (520)	59	12 months
Paradise	503 (1302)	46	12 months
Rim	82 (214)	47	12 months
San Mateo	269 (696)	60	12 months
Average[a]	**195 (505)**	**50**	**12 months**

[a]Averages were based on packs with enough locations to calculate home ranges.

Table 4. Wild Mexican wolf mortalities documented in Arizona and New Mexico, 1998-2008.

Year	Illegal shooting	Vehicle collision	Natural[a]	Other[b]	Unknown	Awaiting necropsy	Annual Total
1998	4	0	0	1	0	0	5
1999	0	1	2	0	0	0	3
2000	1	2	1	0	0	0	4
2001	4	1	2	1	1	0	9
2002	3	0	0	0	0	0	3
2003	7	4	0	0	1	0	12
2004	1	1	1	0	0	0	3
2005	3	0	0	0	1	0	4
2006	1	1	1	1	2	0	6
2007	1	0	1	0	2	0	4
2008	5	2	2	0	2	2	13
Total	**30**	**12**	**10**	**3**	**9**	**2**	**66**

[a]Includes 3 wolves lost to predation, 2 to starvation, 2 to disease (canine parvovirus and chronic bacterial pleuritis), and 1 each to asphyxiation (snake bite), euthanasia, and toxemia.
[b]Includes two capture-related mortalities and one legal public shooting.

Table 5. Mexican wolf mortalities documented in Arizona and New Mexico during January 1 - December 31, 2008.

Wolf ID	Pack	Age (years)	Date Found	Cause of Death
fp1104	Rim	<1	January 1	Vehicle collision
mp1109	Rim	<1	January 14	Vehicle collision
AF1112	Elk Mountain	2	April 21	Illegal shooting
f1113	Bluestem	< 2	April 30	Illegal shooting
AM583	Luna	9	May 13	Unknown
AF758	Paradise	6	June 7	Unknown
mp1116	Paradise	~6 weeks	June 8	Natural (starvation)
mp1117	Paradise	~6 weeks	June 8	Natural (starvation)
AF1111	Fox Mountain	2	June 24	Illegal shooting
AM1008	Laredo	3	August 6	Illegal shooting
mp1159	Rim	<1	October 13	Illegal shooting
M922	Single	3	November 15	Awaiting necropsy
mp1160	Dark Canyon	<1	December 18	Awaiting necropsy

Table 6. Mexican wolf depredations of livestock documented in Arizona and New Mexico during January 1 – December 31, 2008.

	Confirmed	Probable	Total
Fatal	20	1	21
Injury	7	1	8

Table 7. Investigations of Mexican wolf-caused confirmed and probable depredation and injuries to cattle, sheep, and horses during 2008 in Arizona and New Mexico. Depredation incidents are defined within SOP 13.0 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	1056	July 15	No	Cattle	AZ	Killed	Confirmed	F1056	Yes	1	Monitoring
2	1114	July 13	No	Cattle	NM	Killed	Probable	1114	No	2[a]	Monitoring
3	1114	July 30	No	Cattle	NM	Injured	Confirmed	1114	No	2[a]	Monitoring
4	1114	August 4	No	Cattle	NM	Injured	Confirmed	1114	No	2[a]	Monitoring
5	1114	August 15	No	Cattle	NM	Injured	Confirmed	1114	No	2[a]	Monitoring
6	1114	September 8	No	Cattle	NM	Killed	Confirmed	1114	Yes	3	Intensive monitoring; set trail camera. Management decision for translocation. Attempted trapping/darting for 59 days with no success.
7	1114	September 8	No	Cattle	NM	Killed	Confirmed	1114	Yes	4	Intensive monitoring; set trail camera. Management decision for translocation. Attempted trapping/darting for 59 days with no success.
8	1118, unknown	August 6	No	Cattle	NM	Killed	Confirmed	1118, unknown	Yes	1	Monitoring
9	Bluestem	September 10	No	Cattle	AZ	Killed	Confirmed	521, 806, 1042	Yes	1	Monitoring
10	Dark Canyon	July 16	No	Cattle	NM	Injured	Confirmed	923, 992	No	0	Monitoring
11	Dark Canyon	July 16	No	Cattle	NM	Injured	Confirmed	923, 992	No	0	Monitoring
12	Dark Canyon	July 16	No	Cattle	NM	Injured	Probable	923, 992	No	0	Monitoring
13	Rim	March 12	No	Cattle	AZ	Killed	Confirmed	858, 1107	Yes	1	Monitoring

	Wolves in Area	Investigation Date	Located By IFT	Species	State	Killed/ Injured	Call	Wolves Responsible	Depredation Incident?	No. of Incidents	Management Action
14	Rim	March 12	No	Cattle	AZ	Killed	Confirmed	858,1107	No	1[b]	Monitoring
15	San Mateo	March 29	No	Cattle	NM	Killed	Confirmed	903, 1114	Yes	1	Monitoring
16	San Mateo	June 27	Yes	Cattle	NM	Killed	Confirmed	903, 1114	Yes	2	Monitoring
17	Middle Fork	April 7	No	Cattle	NM	Killed	Confirmed	861, 871, 1115	Yes	1	Monitoring
18	Unknown	January 7	No	Horse	AZ	Injured	Confirmed	Uncollared	No	0	Search area for trapping opportunity
19	Unknown	January 16	No	Horse	AZ	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity. Set trail camera.
20	Unknown	April 22	No	Cattle	NM	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
21	Unknown	April 29	Yes	Cattle	AZ	Killed	Confirmed	Uncollared	Yes	1	Searched area for trapping opportunity
22	Unknown	April 30	No	Cattle	AZ	Killed	Confirmed	Uncollared	Yes	2	Searched area for trapping opportunity
23	Unknown	May 7	No	Cattle	AZ	Killed	Confirmed	Uncollared	Yes	3	Searched area for trapping opportunity
24	Unknown	May 7	No	Cattle	AZ	Killed	Confirmed	Uncollared	No	3[b]	Searched area for trapping opportunity
25	Unknown	May 22	No	Cattle	NM	Injured	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
26	Unknown	July 5	No	Cattle	NM	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
27	Unknown	July 16	No	Cattle	NM	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
28	Unknown	August 12	No	Cattle	AZ	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity
29	Unknown	September 11	No	Cattle	NM	Killed	Confirmed	Uncollared	No	0	Searched area for trapping opportunity

[a]No depredation incident was assigned. Wolf carrying two strikes from March and June.
[b]No depredation incident was assigned. Livestock was killed within the same 24 hour period as the preceding entry.

Table 8. Mexican wolves captured in Arizona and New Mexico from January 1, 2008 – December 31, 2008.

Pack	Wolf ID	Capture Date	Reason for Capture
Hawks Nest	AF1110	January 17	Helicopter capture, collared and released
Luna	AM583	January 18	Helicopter capture, collared and released
Single	M1039	January 19	Persistence outside BRWRA boundary. Helicopter capture, collared and released inside boundary at pre-approved translocation site.
Fox Mountain	AF1111	January 19	Helicopter capture, collared and released
Elk Mountain	AF1112	January 19	Helicopter capture, collared and released
Rim	AF858	January 20	Helicopter capture, collared and released
Bluestem	f1113	January 20	Helicopter capture, collared and released
San Mateo	AM1114	January 20	Helicopter capture, collared and released
Middle Fork	AF861	January 22	Helicopter capture, for veterinary care. Released into territory on February 1
Middle Fork	F1115	January 22	Helicopter capture, collared and released
Single	M1039	February 17	Helicopter capture for veterinary treatment
Paradise	AM795	June 3	Routine monitoring purposes. Captured, collared and released on site
Luna	f1118	June 14	Routine monitoring purposes. Captured, collared and released on site
Bacho	fp1154	August 21	Routine monitoring purposes. Captured, collared and released on site
Hawks Nest	mp1155	September 7	Routine monitoring purposes. Captured, collared and released on site
Luna	AM1156	September 15	Routine monitoring purposes. Captured, collared and released on site
Luna	f1118	September 15	Routine monitoring purposes. Recaptured and released on site.
Fox Mountain	mp1157	September 18	Routine monitoring purposes. Captured, collared and released on site
Fox Mountain	mp 1158	September 20	Routine monitoring purposes. Captured, collared and released on site
Rim	mp 1159	September 22	Routine monitoring purposes. Captured, collared and released on site
Dark Canyon	mp 1160	October 5	Routine monitoring purposes. Captured, collared and released on site

Table 9. IFT management actions resulting from Mexican wolf nuisance activities in Arizona and New Mexico during 2008.

Date	Wolf Pack or #	General Location	Type of Activity	IFT Response	Management Result
May 12	Uncollared	Railroad Canyon, NM	Tracks in close proximity to residence.	Investigated, searched area for tracks. Found single set of tracks.	Wolf left the area until late May.
May 26	Uncollared	Railroad Canyon, NM	Tracks in close proximity to residence.	Investigated, searched area for tracks. Found single set of tracks.	No further nuisance activity reported.
July 1 to July 3	Laredo	Gila Cliff Dwellings, NM	Close proximity to campground.	Intensive monitoring and hazing.	Wolves left campground, but remained in the area.
July 12 to July 16	Laredo	Gila Cliff Dwellings, NM	Close proximity to campground.	Intensive monitoring and hazing.	Wolves left campground, but remained in the area.
July 21 to July 26	Laredo	Gila Cliff Dwellings, NM	Close proximity to campground.	Intensive monitoring and hazing.	Wolves left the campground area.
July 29 to August 4	Laredo	Gila Cliff Dwellings, NM	Close proximity to campground.	Intensive monitoring and hazing.	Wolves left campground, but remained in the area.
August 22	Uncollared	Apache Creek, NM	Chicken interaction (fatal), proximity to residence.	Investigated - determined probable wolf or domestic dog involvement. Turbo Fladry and trail camera installed.	No further nuisance activity reported.
November 13	Unknown	Beaver Creek, AZ	Close proximity to residence.	Investigated, issued cracker shells to landowner for hazing.	Wolves left the area, no further nuisance activity reported.
December 19	F836, M619	Antelope Mountain, AZ	Tracks observed in close proximity to livestock corral on private property.	Investigated, searched area for tracks, and conducted intensive monitoring in the area.	Wolves left the livestock corral area, but remained in the general vicinity.
December 28	F836, M619	Antelope Mountain, AZ	Tracks observed in close proximity to livestock corral on private property.	Investigated, searched area for tracks, conducted intensive monitoring in the area Installed Turbo Fladry around corral area.	Wolves left the general area. No further nuisance activity reported.

Table 10. IFT proactive management activities in Arizona and New Mexico during 2008.

Proactive Management Activity	Purpose	Date	Location	Wolf Pack or #	Management Result
Fladry – 3 miles	Reduce the probability of livestock depredation within a small area.	May to October	Sheep Springs, AZ	Paradise	No livestock depredation occurred.
Fladry – 1.5 miles	Reduce the probability of livestock depredation within a small area.	May to November	East of Greens Peak, AZ	Paradise	No livestock depredation occurred.
Fladry – 0.25 mile	Reduce the probability of livestock depredation within a small area.	January to May	Antelope Mountain, AZ	Paradise	No livestock depredation occurred.
Hay	Reduce the probability of livestock depredation during vulnerable calving season.	January to March	Blue River, AZ	Uncollared Wolves	No livestock depredation occurred.
Hay	Reduce the probability of livestock depredation during vulnerable calving season.	January to March	Blue River, AZ	Uncollared Wolves	No livestock depredation occurred.
Hay	Reduce the probability of livestock depredation during vulnerable calving season.	January to March	Corner Mountain, NM	Dark Canyon	No livestock depredation incidences.
Livestock Grazing Rotation	Reduce the probability of livestock depredation during wolf denning season.	April to July	Corner Mountain, NM	Dark Canyon	No livestock depredation incidences occurred.
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	June to August	Corner Mountain, NM	Dark Canyon	No livestock depredation incidences occurred.
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	July to October	Greens Peak, AZ	Paradise Uncollared Wolves	One depredation incident occurred.
Range Rider	Reduce the probability of predator depredation on free-ranging livestock.	April to August	Black Mountain, NM	Middle Fork	No livestock depredation occurred.
Exclusionary Fencing	Reduce the probability of livestock depredation and nuisance within fenced areas of private property.	September to December	Negrito, NM	Luna Dark Canyon	No livestock depredation occurred within the exclusionary fence area.
Fladry - 0.25 mile	Reduce the probability of chicken interactions within a small area.	September to December	Apache Creek, NM	Uncollared wolf or dogs	No chicken-wolf interactions reported.
Fladry - 0.25 mile	Reduce the probability of dog interactions within a small area.	July to August	Gila Hot Springs, NM	Laredo	No dog – wolf interactions.
Fladry - 0.25 mile	Reduce the probability of goat interactions within a small area.	July to August	Gila Hot Springs, NM	Laredo	No goat-wolf interactions.
Fladry -1 mile	Reduce the probability of livestock depredation within a small area	December	Antelope Mountain, AZ	F836, M619	No livestock depredation occurred.

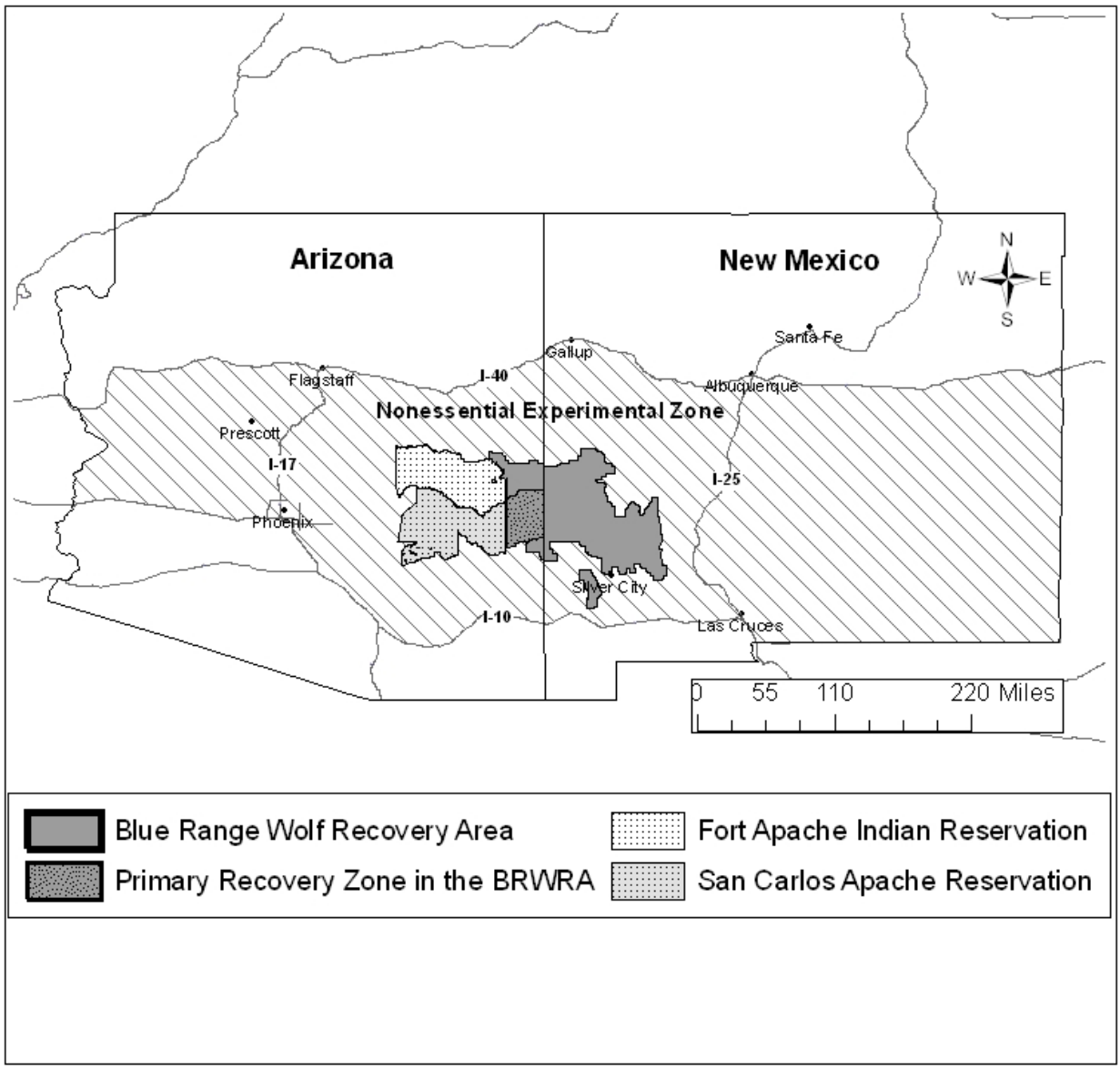

Figure 1. The Blue Range Wolf Recovery Area and Mexican wolf nonessential experimental zone (cross-hatched area) in Arizona and New Mexico.

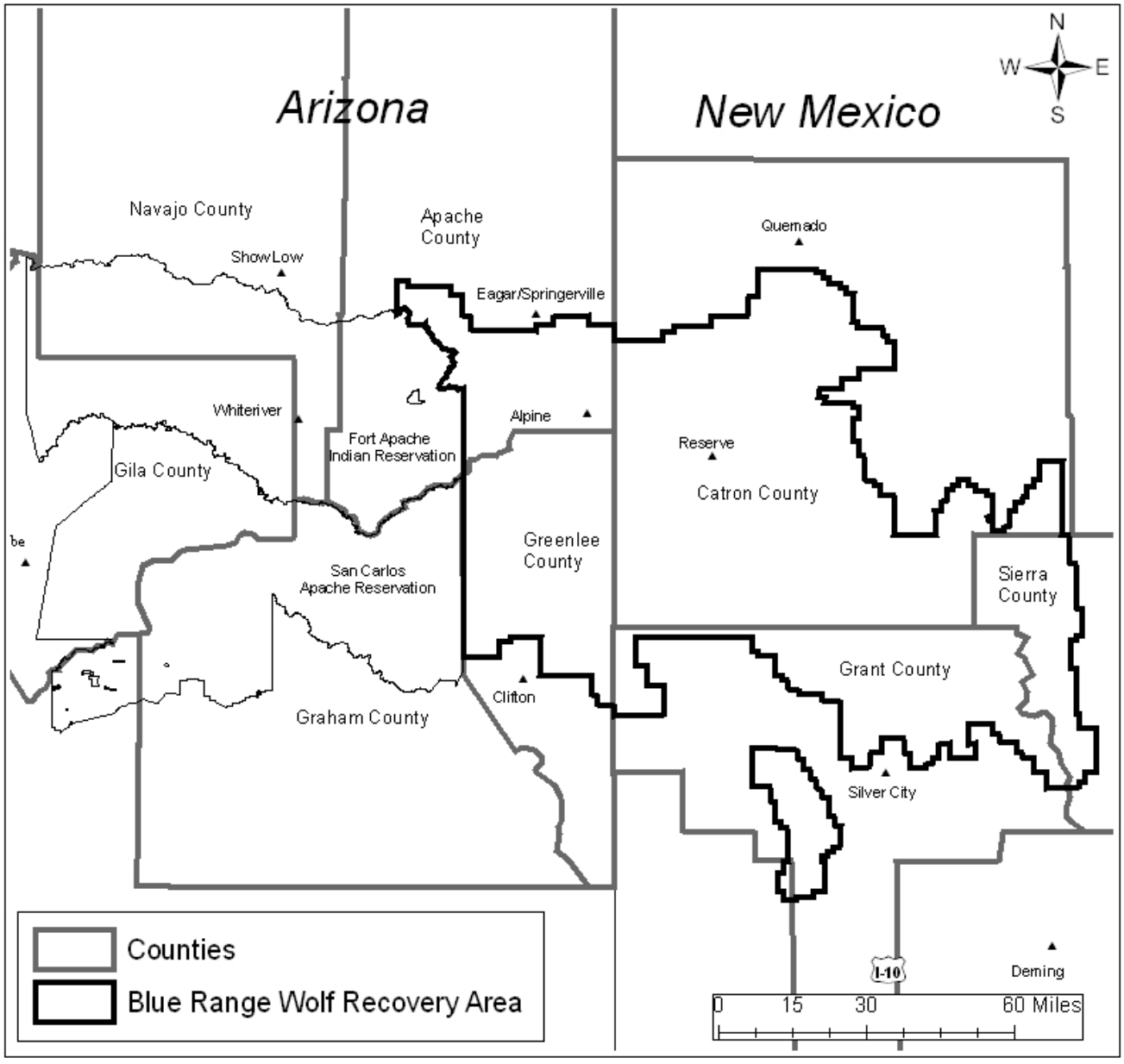

Figure 2. Counties that occur in or adjacent to the Blue Range Wolf Recovery Area in Arizona and New Mexico.

Figure 3. Translocation sites used during 2008 in Arizona and New Mexico within the Blue Range Wolf Recovery Area.

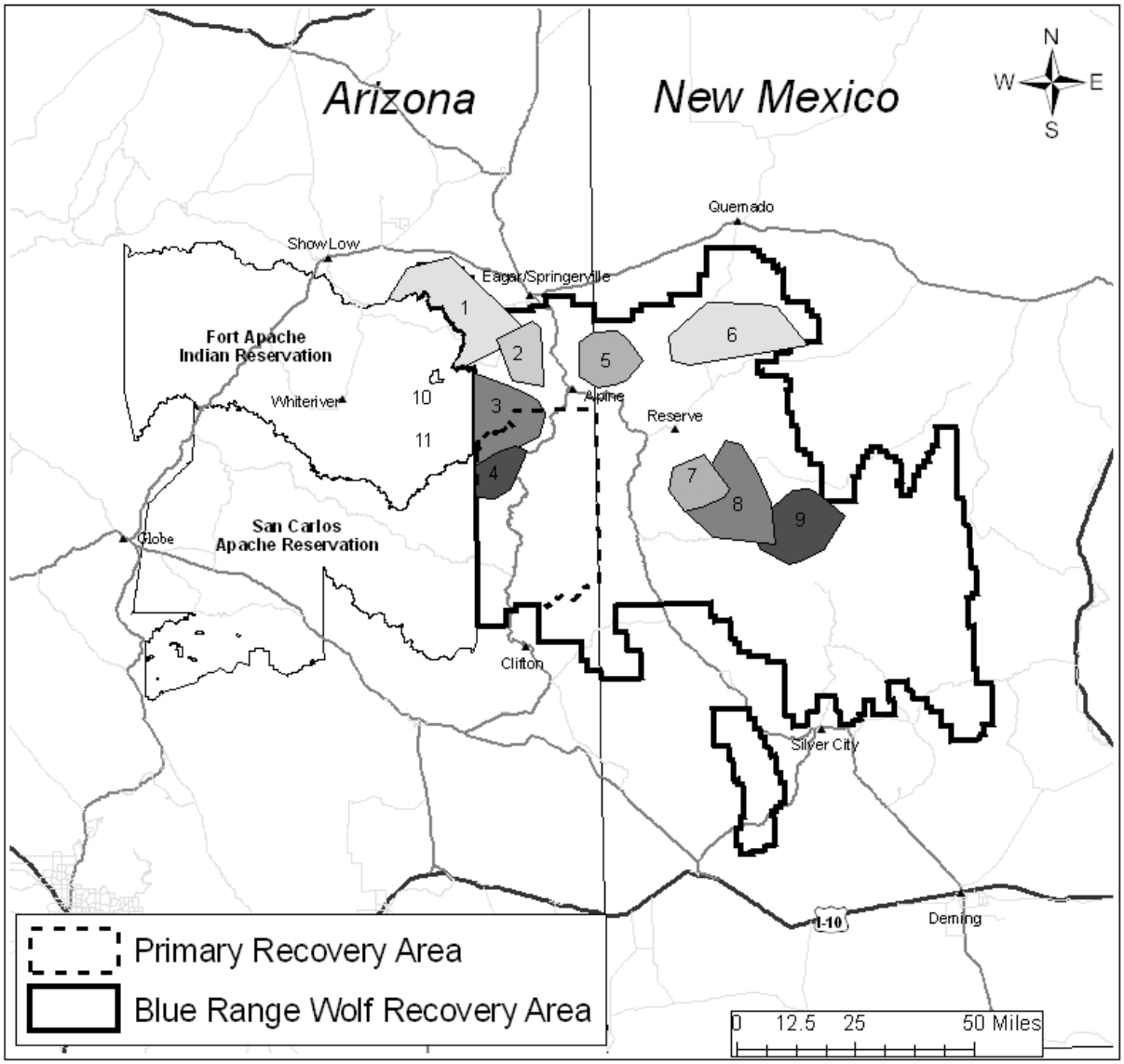

Figure 4. Mexican wolf home ranges for 2008 in Arizona and New Mexico. The shaded polygons and corresponding numbers on the map represent wolves having >20 independent radio locations and exhibiting movement characteristics consistent with a home range during 2008. See the following page for information regarding the wolf packs and home ranges.

Figure 4. Continued.

Map Number	Wolf Pack or Wolf ID	Number of Wolves	Wolf Fate at the End of 2008	Breeding Pair Status	Home Range Size (mi^2)
1	Paradise	2	Free-ranging	No	503
2	Hawks Nest	4	Free-ranging	Yes	92
3	Bluestem	3	Free-ranging	No	297
4	Rim	3	Free-ranging	No	82
5	Fox Mountain	4	Free-ranging	No	120
6	San Mateo	3	Free-ranging	No	269
7	Dark Canyon	3	Free-ranging	No	99
8	Luna	2	Free-ranging	No	264
9	Middle Fork	3	Free-ranging	No	201
10	Lofer	NA[b]	Defunct, joined Paradise	No	153
11	Bacho	NA[b]	Free-ranging	Yes	60

[a] <20 independent aerial locations were available for these packs therefore, no home ranges were calculated.
[b]Wolf information (including numbers) on the Fort Apache Indian Reservation and the San Carlos Apache Reservation is proprietary and is not displayed.

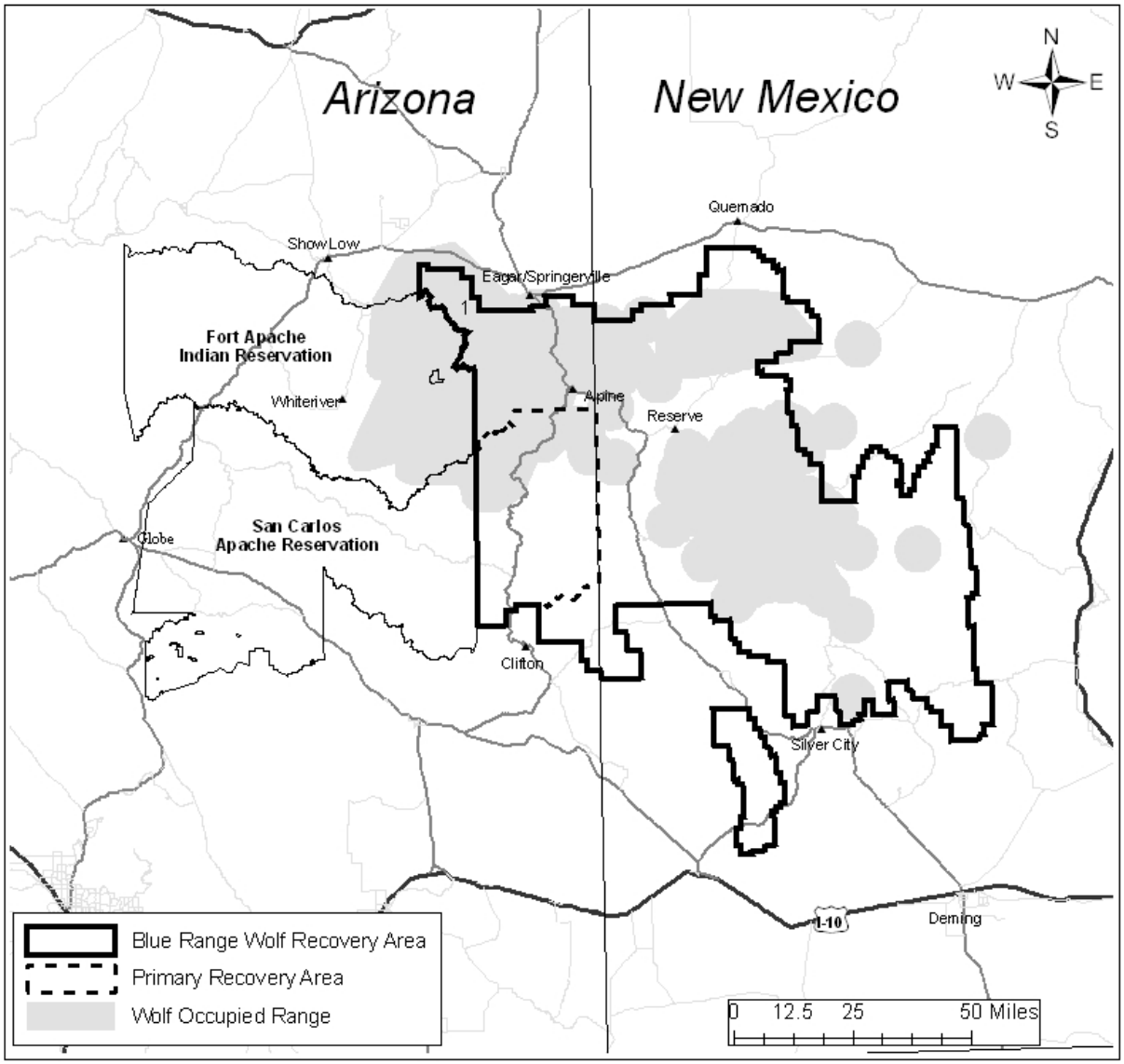

Figure 5. Mexican wolf occupied range in Arizona and New Mexico within the Mexican Wolf Nonessential Experimental Zone as defined in the Final Rule (USFWS 1998).

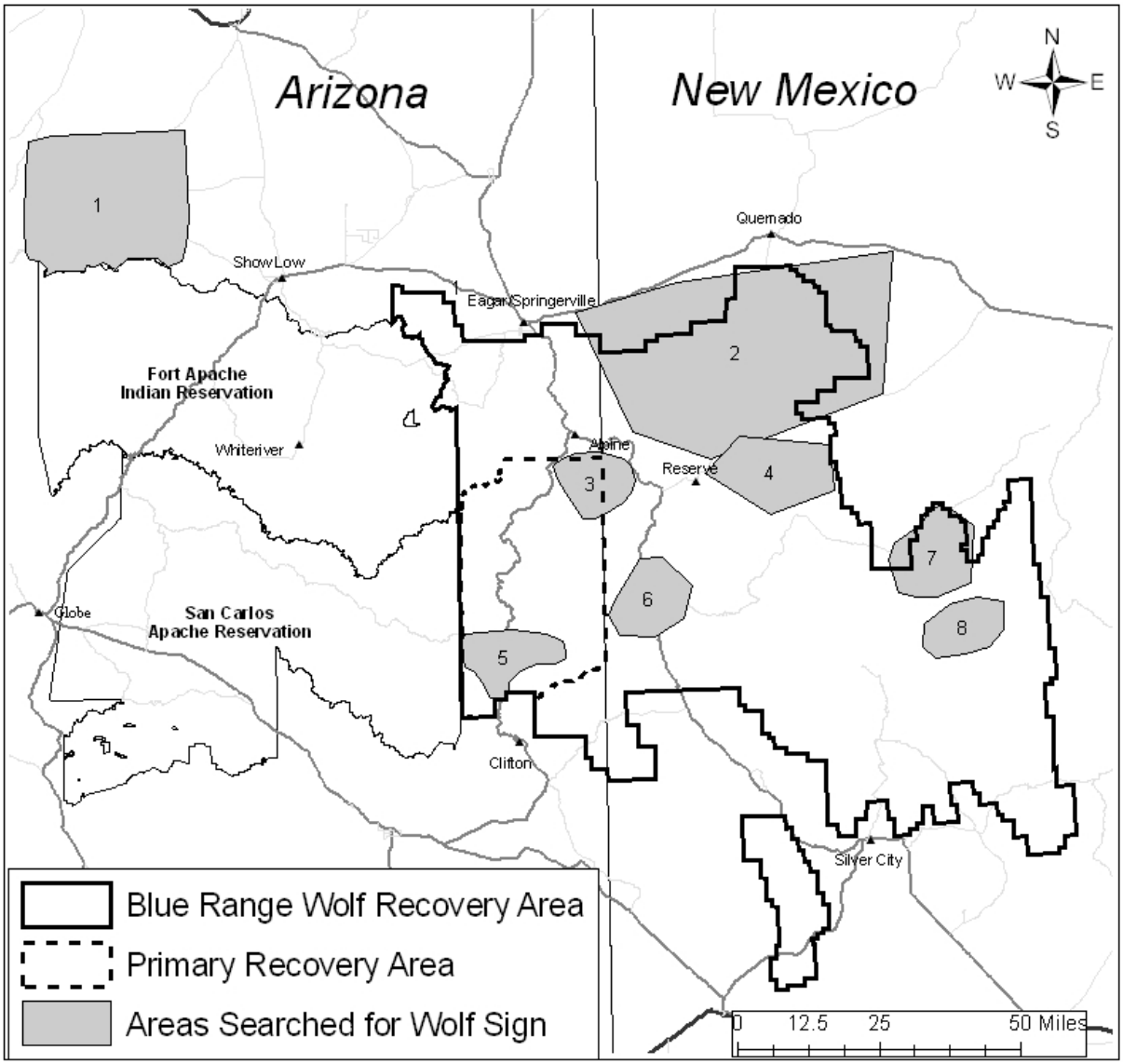

Figure 6. Areas searched and corresponding miles searched (driven or hiked) for uncollared wolf sign in Arizona and New Mexico. Search areas corresponding to "map numbers" as follows:

Map Numbers	Search Area	Miles Searched in AZ	Miles Searched in NM
1	Phoenix Park	110	0
2	Northern Gila National Forest	0	866
3	Coleman Creek – Maness Area	630	348
4	Tularosa Mountains	0	182
5	No Bar Mesa	135	0
6	Glenwood	0	255
7	Indian Peaks Area	0	279
8	Lookout Mountain	0	31
	Total	**875**	**1533**
	Grand Total for AZ and NM	**2836**	

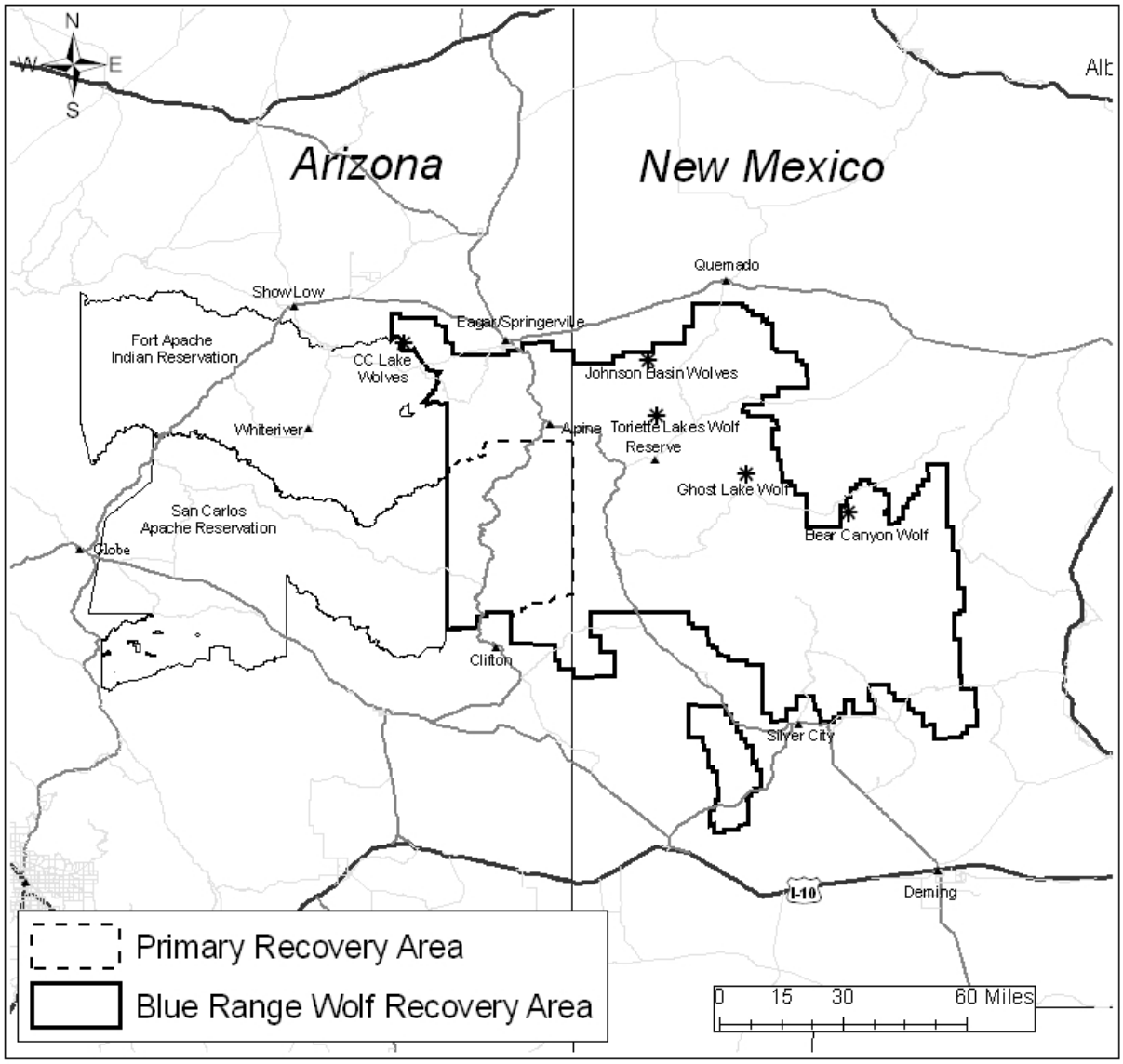

Figure 7. Uncollared wolves documented and counted in the 2008 wolf population in Arizona and New Mexico.

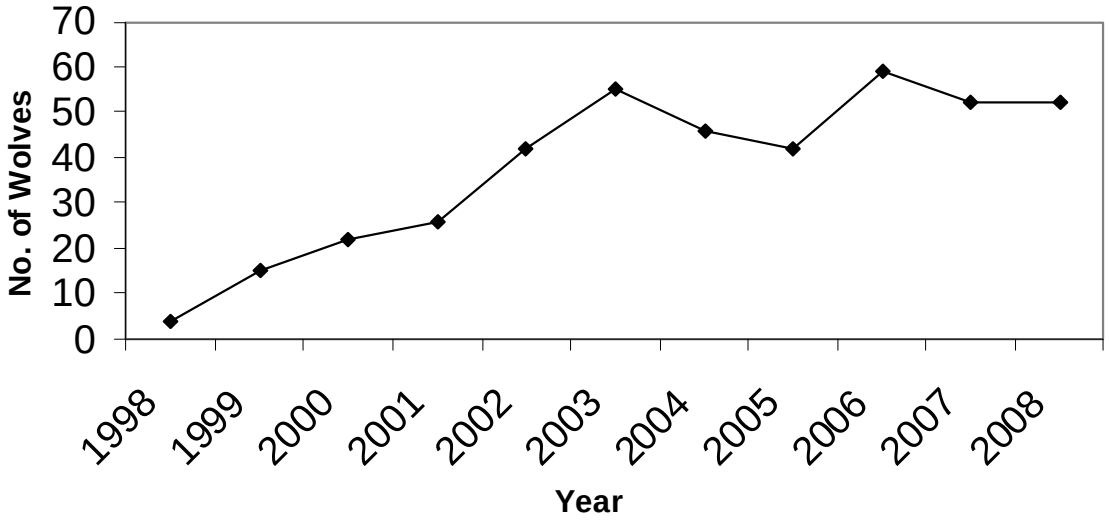

Figure 8. Mexican wolf minimum population estimates from 1998 through 2008 in Arizona and New Mexico.

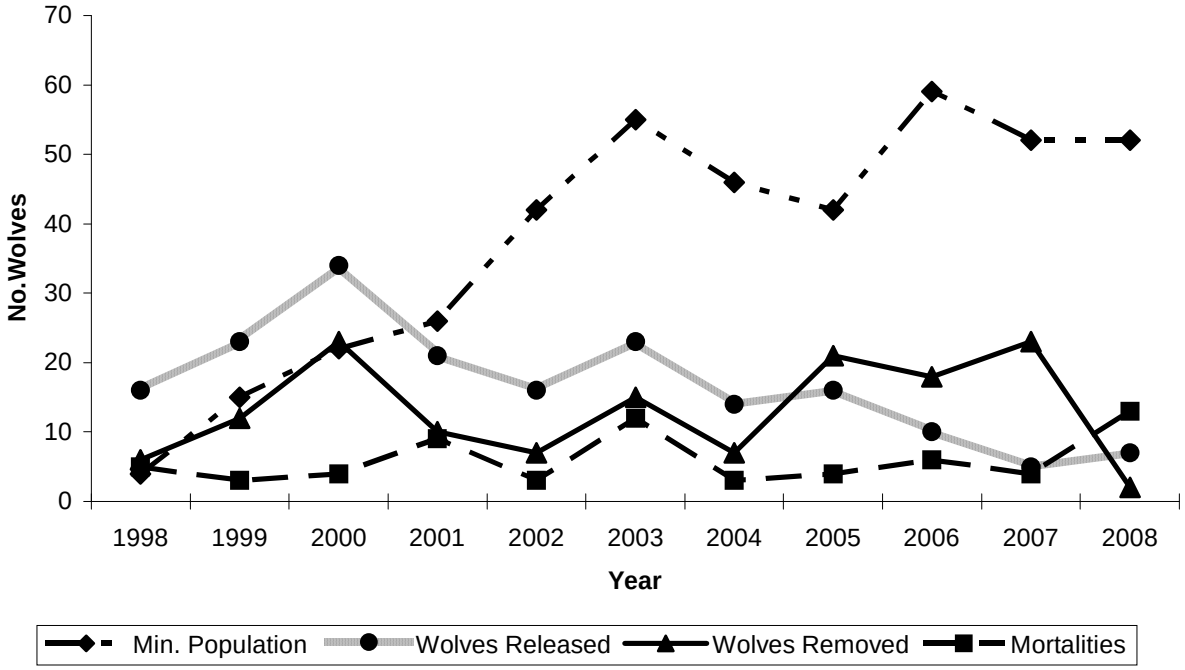

Figure 9. Mexican wolf population estimates and associated population parameters. Wolves released included: translocations (wolves re-released from captivity back into the wild) and initial releases (wolves released with no wild experience). Lethal control of wolves was counted within the wolves removed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

Appendix A. 2008 Pack and Single Wolf Summaries.

Pack Summaries

Bacho Pack (AM990 and fp1154)

In January, the Bacho Pack consisted of AM990. The pack utilized their traditional territory on the FAIR. Several other wolves were observed with the Bacho Pack during the summer months. In August, the IFT trapped and collared a female pup and assigned it studbook number fp1154. Specific wolf information (including numbers or home ranges) on WMAT lands is proprietary and therefore not discussed in detail within this report. The Bacho Pack was considered a "Breeding Pair" per the definition in the Final Rule (USFWS 1998). No confirmed depredations, removals or translocations involving the Bacho Pack occurred in 2008.

Bluestem Pack (AF521, AM806, F1042, f1113)

In January, the Bluestem Pack consisted of six wolves; three with functioning radio collars (AF521, AM806, F1042) and three uncollared individuals observed during the annual population count. On January 20, the IFT captured, collared and assigned a female wolf studbook number f1113. Beginning late January to March, f1113 began making dispersal movements. By the end of March, f1113 was considered a single wolf. On April 30, the IFT heard a mortality signal for f1113. Necropsy results indicated f1113 was killed by illegal gunshot. Denning behavior was not documented. On September 10, the IFT confirmed a depredation near the Campbell Blue River. The depredation incident was assigned to AF521, AM806 and F1042. This was the first depredation incident in 365 days. On November 22, the IFT documented the Bluestem Pack interacting with the Moonshine Pack near the Middle Mountain release site forcing the Moonshine Pack apart. Following this interaction and throughout the year the Bluestem Pack utilized their traditional territory in the central portion of the ASNF and the FAIR. The IFT was unable to observe any uncollared wolves in the Bluestem Pack for the remainder of the year. As of December, the Bluestem Pack was confirmed to consist of three animals including AF521, AM806, and F1042. Therefore, the Bluestem Pack was not considered a "Breeding Pair" per the definition in the Final Rule (USFWS 1998). No removals or translocations involving the Bluestem Pack occurred in 2008.

Dark Canyon Pack (AF923, AM992, mp1160)

The Dark Canyon Pack consisted of AM992 and AF923. Throughout the year, the Dark Canyon Pack remained in its traditional territory in the west-central portion of the GNF. In May, the IFT documented denning behavior. On July 16, the IFT investigated a report of three injured calves near Deep Creek Divide in the Dark Canyon Park territory. The IFT confirmed two of the calves as wolf caused injuries. The remaining calf sustained probable wolf-caused injuries. All calves survived their injuries; therefore, no depredation incidents were assigned. On October 6, the IFT trapped an uncollared male pup. The pup was collared and assigned studbook number mp1160. The IFT found mp1160 dead on December 17. The death is under investigation. Necropsy report pending. During the January 2009 annual population count, an uncollared pup was spotted with AM992 and AF923. However, per the definition in the Final Rule, the Dark Canyon Pack was not considered a "Breeding Pair" in 2008 (USFWS 1998). No confirmed depredations, removals or translocations involving the Dark Canyon Pack occurred in 2008.

Elk Mountain (AM1045, AF1112)
M1045 was seen with an uncollared wolf during the annual population count. On January 19, the IFT captured, collared and assigned it studbook number F1112. The pair, designated the Elk Mountain Pack, established a home range within the central portion of the GNF. AM1045 was last located on March 27. A weak signal from its radio collar suggested battery failure. The IFT continued to search for AM1045 throughout April. On April 21, the IFT heard a mortality signal from AF1112's radio collar. Necropsy report states AF1112 was killed by illegal gunshot. At the end of the year, there still remains no radio contact with AM1045 and, as a result, designated as "fate unknown". The Elk Mountain Pack is considered defunct. Therefore, per the definition in the Final Rule, the Elk Mountain Pack was not considered a "Breeding Pair" in 2008 (USFWS 1998). No confirmed depredations, removals or translocations involving the Elk Mountain Pack occurred in 2008.

Fox Mountain (AM1038, AF1111, mp1157, mp1158, mp1161)
In January, AM1038 was observed with an uncollared animal. On January 19, an adult female was captured, collared and assigned studbook number AF1111. The pair, designated the Fox Mountain Pack, established a territory in the northwest portion of the GNF. In May, the IFT documented denning behavior. On June 23, the IFT observed three pups. On June 24, the IFT heard a mortality signal for AF1111. The IFT established a food cache that afternoon near the Fox Mountain den site to assist AM1038 in feeding the pups. Necropsy results indicated AF1111 was killed by illegal gunshot. Photos taken by a trail camera at the food cache indicated AM1038 had an injured rear leg. In August, the IFT continued to document three wolf pups. On September 18, the IFT captured and collared a male wolf pup. The pup was assigned studbook number mp1157. On September 20, the IFT captured and collared a second male wolf pup. The pup was assigned studbook number mp1158. Per the definition in the Final Rule, the Fox Mountain Pack was not considered a "Breeding Pair" in 2008 due to the loss of AF1111 (USFWS 1998). No confirmed depredations, removals or translocations involving the Fox Mountain Pack occurred in 2008.

Hawks Nest Pack (AM619, AF1110, AM1044, mp1155)
In January, the Hawks Nest Pack consisted of AM619 and an uncollared animal observed during the annual population count. On January 17, the IFT captured, collared, and assigned the female wolf studbook number F1110. No visual observations of uncollared AF486 were obtained during the helicopter operation; therefore, the IFT believes F1110 replaced AF486 as the alpha female. Throughout January, AM619 was located with AF1110 in the Hawks Nest traditional home range. In February, M1044 a single dispersing wolf from the Paradise Pack was located traveling with AF1110, while AM619 traveled alone within the Hawks Nest home range. Throughout March, AF1110 continued to be located with M1044. AM619 began making dispersal movements outside the Hawks Nest home range. At this time, the IFT considered M619 to be a single wolf and AM1044 to be the new alpha male of the Hawks Nest Pack. The IFT documented denning behavior and a minimum of two pups in July. In September, the IFT trapped and collared a male pup. The pup was assigned studbook number mp1155. In January 2009, during the annual population count, the IFT observed a second pup; therefore the Hawks Nest Pack was considered as a "Breeding Pair" per the definition in the Final Rule (USFWS 1998). No confirmed mortalities, depredations, removals, or translocations involving the Hawks Nest Pack occurred in 2008.

Laredo (AM1008, AF1028)
AM1008 and AF1028 were moved from Sevilleta Wolf Management Facility and transferred into a temporary translocation pen at McKenna Park in the Gila Wilderness on June 17. On June 19, the Laredo Pack chewed through the soft pen. The IFT located the pack within the Gila Wilderness throughout the remainder of June, July and August. In July, the IFT intensively hazed the wolves at the campgrounds near the Gila Cliff Dwellings. IFT personnel heard a mortality signal on AM1008 on August 6. The body was recovered. Necropsy results indicated AM1008 was killed by illegal gunshot. Despite several attempts, the IFT was unable to document F1028 with any other wolves. F1028 traveled extensively in the Gila Wilderness and GNF without establishing a territory. Due to the death of AM1008 and AF1028 not being pregnant at the time of release, the Laredo Pack was not considered a "Breeding Pair" in 2008 per the definition in the Final Rule (USFWS 1998). There were no confirmed depredations involving the Laredo Pack in 2008.

Lofer Pack (AF1056)
In January, the Lofer Pack consisted of AF1056 and several other uncollared wolves. On July 15, the IFT personnel confirmed a dead cow as wolf killed. The incident was assigned to AF1056. This was the first incident assigned to AF1056 in 365 days. In late November and into December AF1056 began traveling with AM795 from the Paradise Pack. The pair began utilizing the traditional Paradise territory on the northern portion of the FAIR and the ASNF. The IFT now considers the two wolves to be the alpha pair of the Paradise Pack. Specific wolf information (including numbers or home ranges) on WMAT lands is proprietary and therefore not discussed in detail within this report. Per the definition of the Final Rule, the Lofer Pack was not considered a "Breeding Pair" in 2008 (USFWS 1998). No mortalities, removals, or translocation involving the Lofer Pack occurred in 2008.

Luna Pack (uncollared AF562, AM583, f1118, M1156)
During the annual population count in January, the IFT observed four wolves (AM583 and three uncollared). On January 18, AM583 was captured to replace the existing collar. The IFT discovered AM583 dead on May 13 thereby losing radio contact with this pack. Necropsy results were inconclusive due to the condition of the body. On June 14, an adult female was captured in the traditional Luna Pack territory. The wolf was collared and assigned studbook number f1118. On July 10 and August 19, IFT personnel observed f1118 with an uncollared wolf north of Snow Lake and Negrito Mountain, respectively. On August 7, IFT personnel observed f1118 with two uncollared wolves chasing an elk near Ewe Canyon. No pups were observed during these sightings. IFT personnel confirmed a dead yearling cow near Snow Lake on August 7 as a wolf depredation. The incident was assigned to f1118 and an uncollared wolf associated with the Luna Pack. This was the first incident assigned to f1118 or any uncollared wolves in 365 days. On September 15, the IFT captured and collared an adult male wolf, again in the traditional Luna Pack territory. The wolf was assigned studbook number M1156. Genetic results are pending on f1118 and M1156. For the remainder of the year, f1118 and M1156 were located together. AF562 is considered "fate unknown". There has been no visual confirmation of AF562 and given its age, likely to have died. The IFT was not able to confirm the presence of pups. Per the definition in the Final Rule, the Luna Pack was not considered a "Breeding Pair" in 2008 (USFWS 1998). No removals or translocations involving the Luna Pack occurred in 2008.

Moonshine (AF836, AM1039)
On November 17, the Moonshine Pack was released into a soft pen at the Middle Mountain release site in Arizona. The wolves self released from the pen the next day and remained in the area of the pen for the following week. On November 22, the Bluestem Pack (AF521, AM806, F1042) traveled into the Middle Mountain release area and interacted with the Moonshine Pack. The following day AF836 began traveling widely in the northern areas of the GFN and ASNF. AM1039 remained in the release area for several weeks following the interaction but eventually traveled east into New Mexico. In December, F836 briefly paired with M619 in the northern ASNF while M1039 continue to travel alone. There were no mortalities or depredations involving the Moonshine Pack. The Moonshine Pack is considered defunct.

Middle Fork Pack (AF861, AM871, F1115)
In January, the Middle Fork Pack consisted of AF861, AM871 and three uncollared wolves observed during the annual population count. On January 22, the IFT captured AF861 and replaced the existing radio collar. AF861 was suffering from an old leg injury. The IFT transferred AF861 to the Project veterinarian for surgery. Also on January 22, an uncollared female wolf was captured, collared and assigned studbook number F1115. The IFT released AF861 on February 1 to rejoin the Middle Fork Pack. On April 7, the IFT investigated a reported calf depredation. The IFT determined the depredation was a confirmed wolf kill. Based on telemetry evidence at the site, the depredation incident was assigned to members of the Middle Fork Pack (AF861, AM871, F1115). This was their first depredation incident in 365 days. In May, the IFT documented denning behavior. On August 19, the IFT documented one pup based on a howling survey and obtained a visual on the three collared adults. In October, F1115 began traveling separate from AF861 and AM871 but continued to use the traditional Middle Fork territory. The movements indicated dispersal behavior. At the end of the year, the Middle Fork Pack consisted of AF861, AM871 and an uncollared wolf. Per the definition in the Final Rule, the Middle Fork Pack was not considered a “Breeding Pair” in 2008 (USFWS 1998). There were no removals or translocations involving the Middle Fork Pack in 2008.

Paradise Pack (AF758, AM795, M1044, mp1116, mp1117, AF1056 joined the pack in late November)
At the beginning of the year, the Paradise Pack consisted of AM795, M1044 and three uncollared wolves. In January, M1044 exhibited dispersal behavior and in late February became the alpha male of the Hawks Nest Pack. From late spring to early summer, the IFT documented denning behavior. Two pups were observed near the Paradise den area in May. On June 3, IFT personnel captured AM795 and replaced the collar. On June 7, the IFT found an adult female wolf dead in the area of the den. IFT established a food cache to assisted AM795 with the feeding of any remaining pups. Through genetic testing, the wolf was confirmed as AF758. On June 8, two pups were found dead near the den. Between June and September AM795 traveled throughout the Paradise home range. The IFT did not observe any uncollared wolves traveling with AM795. During October and November AM795 began traveling outside the Paradise home range to the south into the Lofer Pack home range. Eventually AM795 located AF1056, formerly the alpha female wolf of the Lofer Pack, from the FAIR. The two wolves are now considered the alpha pair of the Paradise Pack and utilized the traditional territory of the Paradise Pack through the end of 2008. The Paradise Pack was not considered a “breeding pair” in 2008 per the

definition in the Final Rule (USFWS 1998). No confirmed depredations, removals, or translocations involving the Paradise Pack occurred in 2008.

Rim Pack (AF858, AM1107, fp1104, mp1109, mp1159)

In January, the Rim Pack consisted of four wolves (AF858, AM1107, fp1104, mp1109). On January 1, the IFT received a report fp1104 had been struck by a vehicle on Highway 191 south of Alpine, Arizona. fp1104 died while in transit to the Project veterinarian for treatment. On January 14, an uncollared male wolf (mp1109) was killed by a vehicle within the Rim Pack home range. On January 20, the IFT captured AF858 and replaced the existing collar. On March 12, the IFT personnel confirmed a dead cow and calf as a wolf kill. The depredation was assigned to Rim Pack. This was the first depredation incident in 365 days. Because both depredations occurred within 24 hours, only one depredation incident was assigned. In May, the IFT documented denning behavior. Four pups were observed at the den in April. In September the IFT, trapped and collared a male pup. The pup was assigned studbook number mp1159. On October 13, mp1159 was found dead in the Rim Pack territory. Necropsy results indicated mp1159 was killed by illegal gunshot. Throughout the year, the Rim Pack was located within its traditional home range in the central portion of the ASNF. The end of the year count determined one uncollared wolf traveling with AF858 and AM1107. Therefore, The Rim Pack was not considered a "breeding pair" in 2008 per the definition in the Final Rule (USFWS 1998). No removals or translocations involving the Rim Pack occurred in 2008.

San Mateo Pack (AF903, AM1114)

On January 20, the IFT captured and collared an adult male wolf associated with AM903 and assigned it studbook number M1114. On March 29, the IFT investigated a freshly killed calf and confirmed wolves were responsible for the mortality. This was the first depredation incident for AM1114 and the second for AF903 in a 365 day period. On April 9, AF903 dropped from two depredation incidents to one depredation incident in a 365 day period. In April and May, the IFT documented possible denning behavior in this pack based on location data. On June 26, the IFT discovered a dead cow on private land near the San Mateo Pack. IFT personnel confirmed the dead cow as a wolf kill. This was the second depredation incident for AM1114 and AF903 in a 365 day period. On July 13, a 2 week old dead calf was discovered. Telemetry indicated only AM1114 in the area. IFT personnel determined this to be a probable wolf depredation. On July 30, an injured calf was found. IFT personnel confirmed the injuries as wolf caused. The calf remained alive following the injuries; therefore, no depredation incident was assigned. On August 4, an injured calf was discovered. AM1114 was in the area. The calf remained alive following the injuries; therefore, no depredation incident was assigned. On August 15, an injured calf was discovered. The injuries were to the same calf that was injured on July 30. AM1114 was in the area where the injuries occurred. The calf remained alive following the injuries; therefore, no depredation incident was assigned. On September 8, the IFT investigated a dead calf in the San Mateo Pack territory. WS personnel estimated the calf died on or around September 3 and confirmed the incident as a wolf depredation. The IFT assigned the depredation incident to AM1114. This was the third depredation incident assigned to AM1114 in a 365 day period. On September 8, the IFT investigated a dead calf. WS personnel estimated the calf died 12 hours prior to its discovery and confirmed it as a wolf depredation. The IFT assigned the depredation incident to AM1114. This was the fourth depredation incident assigned to AM1114 in a 365 day period. On September 12, the USFWS issued a 45 day management decision authorizing the

immediate translocation of AM1114 to the Gila Wilderness. If, following translocation, AM1114 returned to its prior home range where the depredation incidents occurred, it would be immediately removed. On October 27, the original management decision authorized by the USFWS to translocated AM1114 expired without it being captured. The USFWS Director extended the management decision for an additional 14 days. On November 10, the management decision on AM1114 ended without it being captured and translocated. During the January 2009 annual population count and helicopter capture, the IFT documented an uncollared wolf with AM1114 and AF903; however, the IFT was unable to confirm the presence of pups. Therefore, the San Mateo Pack was not considered a "Breeding Pair" per the definition in the Final Rule (USFWS 1998).

Individual Wolf Summaries

Single M619
In January, AM619 was the alpha male of the Hawks Nest Pack. AM619 was replaced as the alpha male in February by M1044, a dispersing male from the Paradise Pack. Throughout the year, M619 was located in the northern portion of the ASNF and the GNF. For a short period in December, M619 was located with single F836 (formerly of the Moonshine Pack); however, the pair separated. M619 ended 2008 traveling as a single wolf.

M922
M922 was removed from the wild as a dependent pup in summer 2005 and remained in captivity. On November 5, it was moved from the Ladder Ranch Wolf Management Facility and translocated the next day into the Gila Wilderness, New Mexico near Burnt Corral Canyon. A mortality signal was heard on 15 November. The incident is currently under investigation.

f1106
f1106 was born in the wild as a member of the Aspen Pack in 2007 but was transferred to captivity on November 26, 2007 for movements outside the BRWRA boundary and depredation incidences. It remained in captivity until December 19, 2008 at which time f1106 was moved from the Ladder Ranch Wolf Management Facility and translocated to the GNF, near Ghost Lake, in New Mexico. f1106 traveled on and off the GNF during December as a single wolf.

f1113
In January, f1113 was captured and collared as a member of the Bluestem Pack. During January and February, f1113 exhibited dispersal behavior. In March, the IFT considered f1113 a single wolf traveling in the northern portion of the ASNF. On April 30, f1113 was found dead from an illegal gunshot.

F1115
Formally of the Middle Fork Pack, F1115 began making dispersal movements in October but continued to use traditional Middle Fork territory. Throughout November and December, F1115 continued to travel separately from the other members of the Middle Fork Pack and remained in the Gila Wilderness. In December, the IFT considered this wolf a single animal.

Appendix B. Monthly summary of sighting reports received from the public from January 1, 2008 through December 31, 2008.

	J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**Total**
# AZ Reports	**3**	**0**	**5**	**1**	**1**	**0**	**4**	**0**	**0**	**4**	**5**	**7**	**30**
Known Wolf Reports	0	0	1	0	1	0	0	0	0	0	3	3	**8**
Unknown/Uncollared Reports	0	0	0	0	0	0	0	0	0	3	0	0	**3**
Non-wolf Reports	3	0	2	0	0	0	3	0	0	0	2	2	**12**
Probable Wolf Reports	0	0	1	1	0	0	0	0	0	1	0	2	**5**
Not Enough Information	0	0	1	0	0	0	1	0	0	0	0	0	**2**
# NM Reports	**0**	**3**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**7**
Known Wolf Reports	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Unknown/Uncollared Reports	0	0	0	0	0	0	0	0	0	0	1	0	**1**
Non-wolf Reports	0	1	0	2	0	0	0	0	0	0	0	1	**4**
Probable Wolf Reports	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Not Enough Information	0	2	0	0	0	0	0	0	0	0	0	0	**2**
Total Sightings per Month	**3**	**3**	**5**	**3**	**1**	**0**	**4**	**0**	**0**	**4**	**6**	**8**	**37**

Appendix C. Personnel.

Arizona Game and Fish Department
Mike Sumner, Acting Field Team Leader
Chris Bagnoli, Field Team Leader
Colby Gardner, Wolf Biologist
Jeff Dolphin, Wolf Technician
Beth Orning-Tschampl, Wolf Technician
Mike Godwin, Wildlife Manager Supervisor
Mike Sumner, Wildlife Manager
Joel Weiss, Wildlife Manager
Aaron Hartzell, Wildlife Manager
Dave Cagle, Wildlife Program Manager
John Hervert, Capture Specialist
Bill David, Chief Pilot
Basil Coffman, Pilot
Steve Sunde, Pilot
Steve Dubois, Pilot

New Mexico Department of Game and Fish
Ken Mills, Field Team Leader
Paula Capece, Field Team Leader
Ellen Heilhecker, Wolf Biologist
James Waddell, Wolf technician
Beth Wojcik, Wolf technician
Leon Redman, District Supervisor
Bobby Griego, District Supervisor
Ray Aaltonen, District Supervisor
Mischa Larisch, District Officer
K.C. Gehrt, District Officer
Jamie Frederick, District Officer

USDA-APHIS Wildlife Services
Sterling Simpson, Wolf Management Specialist
Armando Orona, Wolf Management Specialist
J.R. Murdock, Wildlife Specialist
Chris Carrillo, District Supervisor
Bill Nelson, Wolf Depredation Specialist
Mike Kelly, Wildlife Biological Science Technician
Jedediah Murphy, Wildlife Biological Science Technician
Keel Price, District Supervisor

U.S. Forest Service
Cathy Taylor – Forest Service Liaison to the Wolf Project

U.S. Fish and Wildlife Service
John Morgart, Mexican Wolf Recovery Coordinator
Maggie Dwire, Assistant Mexican Wolf Recovery Coordinator
John Oakleaf, Mexican Wolf Field Projects Coordinator
AnnMarie Houser, Wildlife Biologist
Melissa Kreutzian, Wildlife Biologist
Susan Dicks, Wildlife Biologist
Ryan Gordon, Detailed Biologist
Dewey Wesley, Biologist
Jim Ashburner, Lead Special Agent
Allison Greenleaf, Biological Science Technician

White Mountain Apache Tribe
Krista Beazley, Field Team Leader
Deon Hinton, Wolf Technician
Ivan Kasey, Wolf Technician
Travis Clarkson, Wolf Technician

USFWS Volunteers
Cheyenne Burnett
Ben Cook
Carrie Cook
Allison Greenleaf
Rebecca Mowry
Barbara Romero
James Waddell
Linda WhiteTrifaro
Beth Wojcik

Project Veterinarians
Dr. Ole Alcumbrec
Dr. Susan Dicks