

Mexican Wolf Recovery Program: Progress Report 5

Reporting Period: January 1 – December 31, 2002

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

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



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INTRODUCTION

The Mexican wolf project is a multi-agency cooperative effort between the U.S. Fish and Wildlife Service (Service), Arizona Game and Fish Department (AGFD), New Mexico Department of Game and Fish (NMDGF), USDA-APHIS Wildlife Services (USDA-WS), U.S. Forest Service (USFS), the White Mountain Apache Tribe (WMAT), and other supporting organizations including the Turner Endangered Species Fund (TESF) and Defenders of Wildlife (DOW).

This report is divided into two main sections as follows: Part A (Recovery), indicating aspects of the Mexican wolf program administered by the Service; and Part B (Reintroduction), indicating those aspects of the program related to the management of the reintroduced Mexican wolf population. Part B of this report is taken directly from the Mexican Wolf Reintroduction Project Interagency Field Team Annual Report.

PART A: RECOVERY

A. BACKGROUND

The Mexican wolf is the southernmost and most genetically distinct subspecies of the North American gray wolf. Mexican wolves were extirpated from the wild in the United States by 1970 as a result of a concerted effort to eradicate them due to livestock conflicts. As a result, they were listed as endangered in 1976. Five wolves were captured in Mexico between 1977 and 1980. These wolves were the stock for a captive breeding program managed for the Service under a bi-national Species Survival Plan program between the United States and Mexico.

The Mexican Wolf Recovery Team was formed in 1979 and prepared the Mexican Wolf Recovery Plan, which contains the objectives of maintaining a captive population and re-establishing Mexican wolves within their historic range. In June 1995, the Service released the 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 Blue Range Wolf Recovery Area, which consists of the entire Apache and Gila National Forests in Arizona and New Mexico. The Mexican wolf Final Rule (Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico, 63 Federal Register 1763-1772; 50 CFR Section 17.84(k)) was published in the Federal Register on January 12, 1998 and provides regulations for how the reintroduced population will be managed. On March 29, 1998, the first Mexican wolves were released into the wild. All wolves within the BRWRA are designated as a non-essential experimental population under the Endangered Species Act which allows

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for greater management flexibility. An Interagency Field Team (IFT) comprised of members from the Service, AGFD, NMDGF, WMAT, and USDA-WS has been formed to monitor and manage the reintroduced population.

B. RECOVERY ADMINISTRATION

a. Mexican Wolf Captive Breeding Program

Mexican Wolf Species Survival Plan Captive Breeding Program

The current recovery plan for the Mexican wolf (USFWS 1982) stipulates that a captive population of Mexican wolves is an essential component of recovery. A captive breeding program was initiated in 1977 with the capture of the last remaining Mexican wolves in the wild in Mexico and is managed for the Service under the American Zoological and Aquarium Association's Mexican Wolf Species Survival Plan program (SSP). The SSP designation is significant as it indicates to AZA 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 Mexican wolf SSP program, reintroduction and recovery of Mexican wolves would not be possible. In 2002, there were approximately 242 Mexican wolves managed in captivity in over 40 facilities in the United States and Mexico.

The Mexican wolf captive breeding program holds an annual, bi-national meeting to plan wolf breeding and transfers between facilities for the coming year, and to coordinate and plan related activities. The location of these meetings alternate between Mexico and the United States. In 2002, the annual SSP meeting was held in San Diego, California, USA and was hosted by the California Wolf Center. Throughout the year, the Service coordinated with the Mexican wolf SSP program coordinator on myriad issues.

Captive Management of Pre-Release Mexican Wolf Facilities

One of the primary goals of the Mexican wolf SSP captive breeding program is to provide wolves for the Service for reintroduction purposes. Captive Mexican wolves are selected for release based on their genetic makeup, reproductive performance, behavioral criteria, physical suitability, and response to the adaptation process. All wolves selected for release are genetically redundant to the captive population (i.e., their genes are already well-represented) to minimize any adverse effects on the genetic integrity of the remaining captive population in the event those wolves released to the wild do not survive.

Release candidate Mexican wolves are acclimated prior to release in Service-approved facilities designed to house wolves in a manner that fosters wild characteristics and behaviors. They include the Sevilleta Wolf Management Facility, the Ladder Ranch Wolf Management Facility, and Wolf Haven International and are described below. Wolves at these facilities are managed in a manner that minimizes human contact in order to promote the development of wolf behaviors such as pair bonding, breeding, pup

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rearing, and pack structure development. Additionally, limiting the wolves' exposure to humans also serves to promote avoidance behavior.

Release candidate Mexican wolves are sustained on a zoo-based diet of carnivore logs and a kibble diet formulized for wild canids. Additionally, carcasses of road-killed native ungulate species, such as deer and elk, are supplemented when available to mimic prey items the wolves would encounter in the wild. Mexican wolves held at pre-release facilities are given an annual exam to vaccinate for canine diseases 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 near Socorro, New Mexico and is the only Mexican wolf pre-release facility managed by the Service. There are a total of seven enclosures, ranging in size from $\frac{1}{4}$ of an acre to approximately $1\frac{1}{4}$ acre, plus an additional quarantine pen. During 2002, the staff of SNWR continued to assist in the maintenance and administration of the SNWR wolf facility and conducted important outreach related to the Mexican wolf recovery program.

Ladder Ranch Wolf Management Facility (LRWMF)

The LRWMF is located on the Ladder Ranch near Truth or Consequences, New Mexico. There are a total of five enclosures, ranging in size from $\frac{1}{4}$ acre to 1 acre. Management of this facility is supported solely by TESH.

Wolf Haven International (WHI)

WHI is located in Tenino, Washington. There are a total of two pre-release enclosures at the facility for housing Mexican wolves, each just over $\frac{1}{2}$ -acre in size. Management of this facility is supported solely by WHI.



Figure 1. Sevilleta Wolf Management Facility, Sevilleta National Wildlife Refuge.

b. Service Partnerships in Administering the BRWRA Reintroduction

In 2002, the Service sustained partnerships with AGFD, NMDGF, Texas Tech University, TESH, USDA-WS, and WMAT via formal agreements with each entity. Each of these cooperators provided at least one employee to serve on the BRWRA Interagency Field Team (IFT) during 2002, or, in the case of Texas Tech University provided a graduate student to work in conjunction with the IFT.

Agreements with AGFD and NMDGF are matching agreements where the Service provides 75% of costs and each state agency provides 25%. The TESH provided all costs to maintain the Ladder Ranch captive Mexican wolf facility and for salary and supplies for their member of the IFT during 2002. All other listed cooperators received 100% of their funding for involvement in the Mexican wolf program from the Service during 2002.

In March of 2002, at a signing ceremony on the White Mountain Apache Reservation, the Service and WMAT signed a 5- year cooperative agreement to implement the Tribe's Service-approved Mexican Wolf Management Plan. Prior to this, the Service and Tribe were working under an interim agreement signed in 2000 that provided a mechanism and funding for the Tribe to hire a tribal wolf biologist to work with the IFT to learn the Mexican wolf program and begin taking the lead on wolf issues on the WMAT reservation. This agreement is significant in that it reflects the Service's and Tribe's desire to have the Tribe assume a significant component of the recovery of Mexican wolf by conserving wolves on the Tribe's approximately 1.6 million acres.



Figure 2. Mexican gray wolf. Photo courtesy of the New York Wolf Center.

c. Restructuring of the Mexican Wolf Recovery Program

In 2002, the Service received Congressional direction to further review the three-year review that was conducted in 2001 by the Conservation Breeding Specialist Group and an independent body of scientists. This direction came from Congressman Skeen who was concerned about the objectivity of the scientists who conducted the review since all of them had worked on wolf research and recovery efforts prior to conducting the Mexican wolf program's review. At the Service's request, the states of Arizona and New Mexico agreed to conduct the independent review requested by Congress. The outcome of their review determined the need to restore the State's roles in order to enhance public trust in the program's ability to be responsive to wolf management needs and operational issues. Following the State's review, the Service granted the States and Tribes to assume lead responsibility for implementing the reintroduction of Mexican wolves into the BRWRA. Under this new organization, the Service remains the lead for overall recovery of the Mexican wolf, while the States and Tribes have the lead for monitoring and management of the free-ranging Mexican wolf population in the BRWRA. In the Fall of 2002, the Service worked closely with program cooperators to transition into this structure which is being formalized in a Memorandum of Understanding (MOU) which will re-define and re-formalize the roles of all cooperators in the Program. The MOU was not completed by the end of this reporting period.

d. Interagency Management Advisory Group

In 2001, the Service and its partners in the BRWRA reintroduction program initiated a new and proactive application of Adaptive Resource Management (ARM) starting with the program's three-year review. As stated in the findings of the three-year review, one challenge of the new approach was to sustain the commitment to stakeholder involvement in 2002.

The first Mexican Wolf Interagency Management Advisory Group (IMAG) meeting of 2002 was held in Truth or Consequences, New Mexico and was open to the public. This was the first time in the history of the program that an IMAG meeting had been opened to the public to allow for input from those directly affected by Mexican wolf reintroduction. At this meeting, a proposal to expand potential release sites in New Mexico was discussed. Many attendees at this meeting voiced extreme opposition to this proposal. Due to this feedback, and due to the fact that there was agreement to use previously approved release sites within New Mexico, the Service decided to withdraw its proposal due to stakeholder feedback. Part of this agreement was that additional release sites in NM would only be considered after a stakeholder advisory group could be formed and agreement could be reached on release site locations. The formation of such a group was a recommendation of the stakeholder workshop that followed completion of the three-year review in 2001.

The second IMAG meeting of 2002 was held in Reserve, NM in April. The purpose of this meeting was to follow-up on the February meeting and the commitment made then to form a stakeholder task force. After much discussion, a list of groups and interests that

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needed to be represented on the task force was completed. What was not resolved at the April meeting was how the group would function and meet. Several alternatives were discussed and the public suggested that before deciding that the Service and its partners explore similar efforts with other species that were successful. Concerns about violating the Federal Advisory Committee Act (FACA) were voiced by members of the public and agencies. Alternatives to address this concern included sanctioning the group under FACA, making the task force part of the Mexican Wolf Recovery Team (recovery teams are exempt from FACA), or convene the group under some non-Federal authority.

The third IMAG meeting of 2002 was scheduled to be held in Clifton, AZ in July. However, due to the Rodeo fire in Eastern Arizona, the Service, in consultation with IMAG members and members of the public, agreed to cancel the meeting pending the end of fire season. By fall of 2002, the Service and its state partners had agreed that the States of Arizona and New Mexico and the WMAT would assume the implementation lead for Mexican wolf reintroduction in the BRWRA, and no more IMAG meetings were held by the Service in 2002.



Figure 2. Mexican gray wolf. Photo courtesy of the Minnesota Zoo.

e. Research

Mexican Wolf Captive Breeding Program

The Mexican wolf SSP program conducts a variety of research on behalf of the conservation of Mexican wolves in captivity. Several ongoing reproductive, artificial insemination, and semen collection research projects continued in 2002.

Mexican Wolf Food Habits Study

In 2000, Ms. Janet Reed, a Master of Science candidate under the direction of Dr. Warren Ballard at Texas Tech University, began a research project to determine the food habits of wild Mexican wolves in Arizona and New Mexico by collecting scat throughout the BRWRA for macroscopic and microscopic analysis. The efforts of Ms. Reed and Dr.

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Ballard continued in 2002. In 2001 field work on this study was completed and laboratory work commenced in 2002. Specific efforts in 2002 included genetic identification of scats and quantification of the contents of the scats collected. Completion of this project is expected during 2003; however, the data suggests that wolves are feeding primarily on elk (*Cervus elaphus*).

Other Research

In May of 2002, the Service met with researchers from Dr. Warren Ballard of Texas Tech University and Dr. Eric Gese of Utah State University to discuss research on undocumented loss of livestock to wolf predation. This was an issue of concern raised by many livestock owners in the reintroduction area who felt that more losses of livestock were occurring due to wolf predation than were being found and compensated. Both researchers expressed an interest in conducting the research and initial planning regarding budget and sample sizes were discussed. Likewise, next steps were identified to be: meeting with potential permittees, drafting a proposal, and securing funding.

f. Litigation

On April 17, 2002, the Center for Biological Diversity (CBD) filed a sixty-day Notice of Intent (NOI) to sue the U.S. Forest Service and the Bureau of Land Management for violation of the Endangered Species Act for failing to take measures (i.e., removal of livestock carcasses and/or render them unpalatable) that would prevent Mexican wolves from feeding on livestock carcasses, thus leading to the wolves' removal from the wild. No further legal action on the NOI occurred in 2002.

On May 22, 2002, the Coalition of Arizona and New Mexico Counties for Stable Economic Growth, the New Mexico Cattle Growers Association, and the Gila Permittees Association (collectively the "Coalition") filed a sixty-day NOI to sue the Service for violations of the Endangered Species Act and the National Environmental Policy Act relating to the reintroduction of the Mexican wolf into the southwestern United States. One of the primary premises of the NOI is that the Service has failed to protect the genetic purity of Mexican wolves in the wild due to the Pipestem alpha female breeding with a domestic dog in 2002 (See Part B of this report for further details). No further legal action on the NOI occurred in 2002.

PART B: REINTRODUCTION

**Mexican Wolf Reintroduction Project
Interagency Field Team Annual Report
Reporting Period: January 1 – December 31, 2002
November 2003**

Prepared by:

Arizona Game and Fish Department and U.S. Fish and Wildlife Service

Cooperators:

U.S. Fish and Wildlife Service (USFWS)
Arizona Game and Fish Department (AGFD)
New Mexico Department of Game and Fish (NMDGF)
USDA Wildlife Service (USDA-WS)
US Forest Service (USFS)
White Mountain Apache Tribe (WMAT)
Turner Endangered Species Fund (TESF)
Defenders of Wildlife (DOW)

A. INTRODUCTION

Herein we report the progress of field efforts during 2002 to reestablish Mexican wolves (*Canis lupus baileyi*) into the Blue Range Wolf Recovery Area (BRWRA), (Fig. 1). In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow wolves to inhabit reservation lands, adding approximately 2,440 square miles (mi²) to the recovery area. In 2002, the WMAT signed on as a primary cooperator, providing the potential for wolves to be directly released on tribal lands. The recovery area encompasses approximately 9,290 mi², composed of the Apache-Sitgreaves National Forests (A-SNF) and the Fort Apache Indian Reservation (FAIR) in east-central Arizona and the Gila National Forest (GNF) in west-central New Mexico. The primary goal of this reintroduction effort is to restore a self-sustaining population of about 100 wild Mexican wolves distributed across the BRWRA. In January 1998, the first Mexican wolves were released into the Alpine District of the A-SNF of Arizona. At the end of 2002, approximately 41 wolves in 8 packs inhabited areas of both Arizona and New Mexico. In addition, there were a few other wolves whose status was considered unknown because their deaths or free-ranging existence could not be documented.

Abbreviations used in this document:

Wolf age and sex:

A = alpha

M = adult male (> 2 years old)

F = adult female (> 2 years old)

m = subadult male (1-2 years old)

f = subadult female (1-2 years old)

mp = male pup (< 1 year old)

fp = female pup (< 1 year old)

B. METHODS

The following methods section is primarily taken from previous Mexican wolf annual reports (USFWS Mexican Wolf Annual Reports 1998-2000). For the purposes of this project, “releases” are defined as wolves being released directly from captivity, with no previous free-ranging experience, into the Primary Recovery Zone. “Translocations” are defined as a project activity where free-ranging wolves are trapped and moved to an area outside of their traditional home range. This includes wolves that have been temporarily placed in captivity after they have been free-ranging. All other management actions that include transporting a wolf to another location within its established home range is defined simply as a “movement”.

Release candidate wolves were acclimated prior to release in USFWS approved facilities where contact between wolves and humans was minimized and carcasses of road-killed native prey species (mostly deer and elk) supplemented their routine diet of processed canine food. These included the Ladder Ranch Captive Management Facility managed by the TESH (Ladder Ranch), the Sevilleta Captive Management Facility managed by the USFWS at Sevilleta National Wildlife Refuge (Sevilleta), and the Wolf Haven Captive Management Facility managed by Wolf Haven International (Wolf Haven). Specific information on the captive breeding program can be found in Appendix C. Sevilleta and the Ladder Ranch are in New Mexico and the Wolf Haven facility is in northwestern Washington. Genetically and socially compatible breeding pairs were established and evaluated for physical, reproductive, and behavioral suitability for direct releases into the wild. Some pairs produced pups in captivity before release, and their pups and occasionally yearlings were included in the release group.

Wolves selected for release were radio-collared and given complete physical examinations prior to being moved to the release locations. Caretaker camps were established approximately 0.5 miles away from pen sites. Carcasses of native prey and fresh water were provided as needed. When necessary, security was maintained by posted USFS closures of areas within approximately 0.5 mi of each pen.

Releases and translocations of wolf packs in 2002 utilized plastic mesh acclimation pens approximately 0.33 acres in size. The release occurred at the Fish Bench site (Fig. 2), on the A-SNF in Arizona. The 2 translocations of packs occurred at the Lilly Park and McKenna Park sites (Fig. 2), on the GNF in New Mexico.

All wolves were provided with supplemental road-killed elk and deer, or occasionally commercially produced “meat logs” for wild carnivores after release. The duration of supplemental feeding varied, depending on time of year, availability of vulnerable prey, and whether pups were present. Supplemental feeding was gradually discontinued when wolves began killing prey.

Monitoring was most intensive during the initial weeks after release to determine when wolves began hunting. Wolves were monitored using standard radio telemetry techniques

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from the ground and once or twice weekly from the air. Visual observations and fresh sign were also noted. Location data were entered into the project's Access database for analysis.

Range maps in this document were generated using ArcView software, based on aerial telemetry locations. Home range sizes and locations were displayed using 2 different methods. Minimum convex polygons were generated based on 95% of all aerial locations with a "buffer" of either 3 or 5 miles, depending upon the number of locations used, either < 20 or ≥ 20 , respectively. This method was based on the definition of occupied wolf range in the Federal rule for the nonessential experimental Mexican wolf population. In addition, all locations of wolves were plotted with a 3- or 5-mile buffer depending on the number of locations gathered for each wolf. This figure also included non-territorial dispersing wolves. The maps are intended to describe the range and movements of wolves after release, and in some cases, movements in response to management actions or other significant events, such as the death of a mate. They are not intended as formal analysis of home range size.

Project personnel investigated wolf killed ungulates as they were found, analyzing the carcasses to determine sex, age, health, and whether or not the carcass was scavenged or was an actual wolf kill. USDA-WS wolf specialists investigated suspected wolf depredations on livestock as soon as the reports were received, most often within 24-hrs. Results of all investigations were reported to the cooperators and to DOW, a non-profit organization that compensates livestock owners for depredations when wolves are probably involved. Unfortunately, not all wolf-killed livestock are found in time to document the wolves' involvement. Thus, depredation levels in this report represent the minimum number of livestock killed by wolves.

If wolves localized near areas of human activity or were found feeding on cattle they were hazed by chasing on foot, horseback, or all-terrain vehicles. When necessary, rubber bullets, cracker shells, radio-activated guard (RAG) boxes and other pyrotechnics were used to encourage a flight response to humans and discourage the nuisance behavior that the wolves were displaying. Under circumstances where wolves were not responding to aversive conditioning attempts, animals were captured and either removed from the wild or translocated into other areas within the recovery area. Capturing primarily occurs through the use of leghold traps, however occasionally conditions require the use of helicopters. In addition, wolves that localized outside of the BRWRA were captured and brought back into the BRWRA in attempts to make them productive members of the population. Monitoring is enhanced by increasing the number of radio-collared wolves, identifying and marking unknown wolves, and inspecting the health and condition of wolves in the wild.

Project personnel conducted outreach activities on a regular basis, as a means of disseminating information from the field team to stakeholders, concerned citizens, and government and non-government organizations. This was facilitated through bi-weekly updates, field contacts, handouts, informational display booths and formal presentations.

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Information from the Fort Apache Indian Reservation (FAIR) was not included in this report in accordance with an agreement with the WMAT.

C. RESULTS

a. Population status

At the end of 2002, there were 25 radio-collared wolves and approximately 16 uncollared wolves free ranging within the BRWRA, documented through telemetry, visual observations, and other evidence (Table 1), (Fig. 3). The population consisted of 8 packs (6 in Arizona and 2 in New Mexico) and 2 dispersing wolves. In addition there were a few other wolves whose status was considered unknown because their deaths or free-ranging existence could not be documented.

In 2002, project personnel documented all 8 packs producing pups and 7 of the 8 packs had pups survive into 2003. Five packs (Hawks Nest, Cienega, Francisco, Saddle, and Bonito Creek) produced wild conceived and wild born litters.

Wild born wolves bred and raised their own litter of pups for the first time in 2002. Hawk's Nest M674, a wild born pup from 2000, pair bonded with Francisco F587 to form the Bonito Creek pack in 2001. The pair successfully bred and produced at least 3 pups in 2002. The Bonito Creek AM674 was killed in the fall of 2002. Soon after AM674's death, m794 began traveling with Bonito Creek AF587. This provides the potential for natural pack formation to occur for the second time, if m794 bonds with F587. Wolf 794 is also a wild born wolf, which provides the possibility for 2003 to be the 2nd consecutive year of wild born wolves being recruited into the breeding population.

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Table 1. Mexican wolf population estimates as of December 31, 2002.

Pack	Wolf ID	Recruitment^a	Number of Collared Wolves	Min Pack Size^b
Hawks Nest	AF486, AM619	2	2	4
Cienega	AM194, AF487, mp795, mp796*, F621* (fate unknown)	3	4	6 one uncollared pup from 2001
Francisco	AF511, AM509, F644*, m794, fp797, mp798, fp799, fp800, mp801	5	9	11 two uncollared wolves
Bonito Creek	AF587	3	1	4
Saddle	AF510, AM574	0	2	2
Bluestem	AF521, AM507, M639	4	3	7
Gapiwi	AF624, AM584	1	2	3
Luna	AF562, AM583	2	2	4
Totals		20	25	41

^a Recruitment - number of pups documented to survive through their 1st year

^b Min. Pack Size – total number of wolves (collared, uncollared, pups) documented at year end

*Disperser – wolves traveling primarily apart from their pack of origin

b. Releases and Translocations

In 2002, there was 1 wolf pack released into the Primary Recovery Zone, in the A-SNF of Arizona (Fig. 2). On July 11, 2002 the Bluestem pack was released into the Fish Creek pen on the Alpine Ranger District and the pack broke out of the pen on the same day (Table 2).

There were also 2 packs translocated from captivity back into the GNF (Table 3), (Fig. 2). On April 4, 2002, the Luna Pack was transported into the Lilley Park site and broke out of the pen the same day. AF562 was bred in captivity and was pregnant at the time of the release. The Gapiwi pack was also transported on April 4, 2002, into the McKenna Park pen. The Gapiwi pack stayed in their pen for 2 weeks before project personnel decided to release them, on April 18, 2001. AF624 had been bred in captivity and was pregnant at the time of release. In addition, 1 wolf was translocated back into the BRWRA after it had traveled outside of the BRWRA and began feeding on livestock

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(Table 3). An additional 2 wolves were removed from the San Carlos Apache Reservation (SCAR) and moved to a portion of their home range on the adjacent A-SNF.

Table 2. Mexican wolves released from captivity without any prior history in the wild during January 1- December 31, 2002.

Pack	Wolf #s	Release Site	Release Date	Acclimation Facility
Bluestem	AM507, AF521, F637, M639, mp754, mp755, mp756, fp757, fp758	Fish Bench, AZ	06/11/2002	Sevilleta NWR

Table 3. Mexican wolves translocated from captivity or the wild during January 1 – December 31, 2002.

Pack	Wolf	Release Site	Release Date	Reason for Translocation
Luna	AM583, AF562 (pregnant)	Lilly Park, NM	04/04/2002	Stimulate population growth in New Mexico
Gapiwi	AM584, AF624 (pregnant)	McKenna Park, NM	04/18/2002	Stimulate population growth in New Mexico
Lupine	M632	Engineer Springs, AZ	01/17/2002	Feeding on domestic livestock; out of the BRWRA

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c. Mortality

Since 1998, 24 wolf mortalities have been documented, 3 of which occurred in 2002 (Fig. 4). This is the lowest number of mortalities to occur in a year since the inception of the project. However, this should be considered a minimum estimate of mortalities since pups and uncollared wolves can die and not be documented by project personnel. The majority of mortalities in 2002 were human caused (Table 4), similar to previous years.

Table 4. Mexican wolf mortalities documented during January 1 – December 31, 2002.

Wolf ID	Pack	Age	Date Found	Cause of Death
F646	Saddle	2.6	12/02/2002	Illegal Shooting
m647	Saddle (dispenser)	1.7	02/04/2002	Unknown
AM674	Bonito Creek	2.5	10/21/2002	Illegal Shooting

d. Home Ranges and Movements

Most wolves exhibited normal home range use except for 4 subadult wolves that exhibited typical dispersal behavior. Home ranges were plotted for general reference with a 3-mile buffer as described in the nonessential experimental rule (Fig. 5). Home range sizes were calculated using the 95% convex polygon method and revealed a range from 88 mi² to 317 mi² (Table 5). Known locations of the dispersing wolves were also plotted with a 5-mile buffer using aerial and ground locations (Fig 6). For reference, territorial packs are also included.

Table 5. Home range sizes of free-ranging Mexican wolves in Arizona and New Mexico.

Pack	No. of Aerial Locations	Home Range Size (mi²)
Hawk's Nest	62	88
Cienega	150	78
Francisco	237	227
Bonito Creek	127	197
Bluestem	75	317
Saddle	164	218
Gapiwi	96	92
Luna	96	108
Average	104	166

e. Wolf Predation

Predator-prey relationships involving Mexican wolves have not yet been intensively studied by the project. During 2000 and 2001, a dietary study was conducted by Texas Tech. University, in association with the wolf project. Scat was collected throughout the Primary Wolf Recovery Area for macroscopic and microscopic analysis to determine feeding habits. Laboratory analysis is still ongoing with only preliminary results available. Even though the results are not yet conclusive, the data reveals that wolves are feeding primarily on elk (*Cervus elaphus*). Conservative estimates reveal that 75% of the wolves' diet consists of elk, an estimate that is not consistent with predictions made in the Final Environmental Impact Statement (FEIS). Initial predictions assumed that mule deer (*Odocoileus hemionus*) would be the primary prey base of wolves due to their high densities, 3-4 times greater than elk, prior to the inception of the project in 1998. However, due to reasons unrelated to wolves, deer densities within the primary recovery have dropped considerably while elk densities have increased to the point that elk now constitute the primary prey base available to wolves. Elk were also the most commonly documented wolf kills, however the number of carcasses collected was not large enough to produce any statistically significant results.

f. Wolf Depredation

The FEIS predicted that there would be 1-34 cattle depredations per year when the Mexican wolf population reaches the reintroduction goal of about 100 wolves. This represents < 0.05% of all cattle present on the range, which is only a fraction of the impact that other predators have on ranching within the Southwest.

During 2002, there were 17 confirmed and 1 possible depredations (Table 6). This is consistent with depredation levels predicted by the FEIS for a wolf population of this size (17-29). However, as stated previously, this should only be considered a minimum estimate as some depredations may go undocumented. In 2002 project personnel and USDA-WS captured and translocated 2 wolves into captivity as a result of wolves localizing on private land and their direct association with repeated depredations. DOW paid \$5,660 to livestock producers for losses due to wolves in 2002.

Table 6. Wolf depredations occurring during January 1 – December 31, 2002.

	Confirmed Depredation	Possible Depredation
Fatality	3 cows 8 calves 1 dog	1 cow
Injury	1 mule colt 1 horse 3 dogs	

g. Management Actions

The capturing of wolves is a necessary management action that occurs annually to enhance the project's monitoring capabilities, as well as remove problem animals or wolves that have localized outside of the BRWRA, on private land or on the San Carlos Apache Reservation (SCAR). These actions are authorized under the Special Rule for the Nonessential Experimental population.

In 2002, there were 11 wolves captured, collared, and processed for routine monitoring purposes (Table 7). Some wolves were captured multiple times. In addition, there were 5 wolves removed from the population and placed in captivity. The removal of M632, AM190 and AF628 involved a helicopter capture. There were also 2 wolves removed from the SCAR and moved into a portion of their home range on the adjacent A-SNF. Three pups were caught in attempts to capture adults and subadults identified for removal from the SCAR.

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Table 7. Mexican wolves captured during January 1 – December 31, 2002

Pack	Wolf ID	Capture Date	Reason for Capture
Francisco	AM509	10/07/02	Removed from SCAR; moved to A-SNF; Collared/processed
Francisco	m794	07/28/02	Routine monitoring, Collared/processed; released on site (SCAR)
Francisco	fp797	09/15/02	Routine monitoring, Collared/processed; released on site (SCAR)
Francisco	fp797	09/17/02	Routine monitoring; released on site (SCAR)
Francisco	fp797	11/11/02	Removed from SCAR; re-collared; moved to A-SNF
Francisco	mp798	10/05/02	Collared/processed; Released on site (SCAR)
Francisco	mp798	11/09/02	Released on site; (SCAR)
Francisco	fp799	10/07/02	Collared/processed; released on site; (SCAR)
Francisco	fp799	11/10/02	Released on site; (SCAR)
Francisco	fp800	10/09/02	Collared/processed; released on site;
Francisco	mp801	10/09/02	Collared/processed; released on site (A-SNF)
Cienega	AM194	09/07/02	Routine monitoring, re-collared; released on site (A-SNF)
Cienega	AF487	08/31/02	Routine monitoring, re-collared; released on site (A-SNF)
Cienega	AF487	09/09/02	Routine monitoring, released on site (A-SNF)
Cienega	mp795	09/02/02	Routine monitoring, Collared/processed; released on site (A-SNF)
Cienega	mp796	09/09/02	Routine monitoring, Collared/processed; released on site (A-SNF)
Wildcat	M578	03/18/02	Out of BRWRA; returned to captivity
Lupine	M632	04/11/02	Out of BRWRA; helicopter capture; returned to captivity
Pipestem	AM190 AF628	05/10/02	Out of BRWRA; associated with cattle depredation; helicopter capture; returned to captivity
Bluestem	f637	07/15/02	Nuisance behavior; returned to captivity

The Pipestem pair was intensively monitored from the end of January until they were captured on May 10, 2002, due to their proximity to cattle and possible association with cattle depredation. Throughout the 3.5 months period project personnel attempted to aversively condition the pack with RAG boxes and pyrotechnics. However, the wolves did not leave the area. In the process of capturing the alpha pair, their pups were also removed from their den. Upon examination, at least 1 of the pups displayed abnormal physical characteristics so genetic tests were performed on the entire litter. Results showed that the pups were offspring of the Pipestem female AF628 and another dog or wolf/dog hybrid and not the Pipestem male AM190. The pups were humanely euthanized to prevent distribution of Mexican wolf/dog hybrid genotypes.

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Aversive conditioning was also used on the Bluestem pack and members of the Francisco pack. RAG boxes and pyrotechnics were used on the Bluestem pack after they were confirmed to have killed 2 cows and a ranch dog. Aversive conditioning attempts occurred for approximately a month during the summer and eventually the pack moved out of the area. On a separate occasion Bluestem f637 was aversively conditioned with rubber bullets, due to nuisance behavior. The effort was successful and she immediately moved out of the area. Pyrotechnics were successfully used on members of the Francisco pack, although the effect was only short term.

h. Outreach

During 2002, project updates were posted locally approximately every 2 weeks in the wolf recovery area (Alpine, Nutrioso, and Springerville) in various places such as the U.S. Post Offices, libraries, USFS offices, and the USFWS Mexican wolf web site. Project updates were also emailed and faxed to numerous stakeholders and interested citizens.

The Mexican Wolf Interagency Reporting Hotline, 1-888-459-WOLF (9653), was maintained for citizens to report sightings, harassment, taking of Mexican wolves, or to report livestock depredations.

Project personnel regularly contacted campers, hunters, and other recreationists in the wolf-occupied recovery area to deliver information and answer questions about the Mexican wolf project. Direct mailings were sent to 4,375 hunters who drew permits to hunt big game in the Arizona portion of the wolf recovery area. These notices advised hunters of the potential for encountering wolves, provided general recommendations for camping and hunting in wolf-occupied areas, and explained the legal provisions of the nonessential, experimental population rule. Project personnel gave more than 60 presentations and status reports to over 4,200 people in federal, state and tribal agencies, conservation groups, rural communities, guide/outfitter organizations, livestock associations, schools, and various other public and private institutions throughout Arizona and New Mexico.

In June 2002, the British Broadcasting Corporation (BBC) filmed footage of the soft release and compared the Mexican wolf reintroduction project with other reintroduction programs in North America. The documentary is scheduled to air sometime in 2003 on Animal Planet.

D. SUMMARY

At the end of 2002, there were 25 radio-collared wolves and approximately 16 uncollared wolves free ranging within the BRWRA. The population includes 8 packs (6 in Arizona and 2 in New Mexico) and 3 dispersing wolves. 2002 was the first year that wild born wolves survived to raise a litter of their own pups.

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There could be other undocumented wolves free-ranging whose radio-collars have failed or who were never radio-collared. However, the number of undocumented wolves is probably very small as all credible reports of wolf sightings are investigated and regular field operations has revealed no evidence of extra wolves traveling with established packs. Undocumented wolves are most likely loners, as wolf packs usually leave more sign that is easier to locate.

Since the inception of the project in 1998, there have been 24 wolf mortalities documented in the wild, 3 of which occurred in 2002. This is the least number of wolf mortalities documented during a calendar year. Wolves are still feeding primarily on elk, which is not consistent with predictions made in the FEIS. However, during 2002 there were also 17 confirmed and 1 possible depredations. This level of depredation is consistent with predictions in the FEIS for a wolf population of this size.

In 2002, there were 11 wolves captured for monitoring purposes, processed, and released on site. In addition, there were 5 wolves removed from the population and placed in captivity. Two wolves were removed from the SCAR and relocated into a portion of their home range on the A-SNF. During 2002, there were 3 packs and 1 dispersing wolf aversively conditioned with RAG boxes, pyrotechnics or rubber bullets. The aversive conditioning attempts temporarily moved wolves out of sensitive areas, however the effects were primarily short term and should not be considered a long-term solution.

Informational direct mailings were sent to 4,375 hunters who drew permits to hunt big game in the Arizona portion of the wolf recovery area. Project personnel provided Bi-weekly updates, maintained a project web-site, regularly contacted campers, hunters, and other recreationists, and gave more than 60 presentations and status reports to over 4,200 people in an attempt to keep the public, government agencies, and non-government organizations informed about the program.

E. DISCUSSION

Overall, progress in the field went as expected and outlined in the FEIS. Packs continued to form naturally on their own in the wild. For the first time in the project's history, a wild born wolf reproduced successfully in the wild. Compared to previous years, more wolves conceived and gave birth to pups in the wild, with a significant number surviving into their first year. Wolf mortality was relatively low during 2002 but 5 wolves needed to be recaptured and returned to captivity. Those wolves were captured in response to double the number of confirmed depredations from the previous year. Project personnel continued to respond and resolve major conflicts with livestock and nuisance wolves. Responsive management of depredating wolves should reduce the overall amount of depredation and prevent wolves in the future from becoming habituated to livestock. Continuation of existing procedures is recommended.

Mexican Wolf Blue Range Wolf Recovery Area

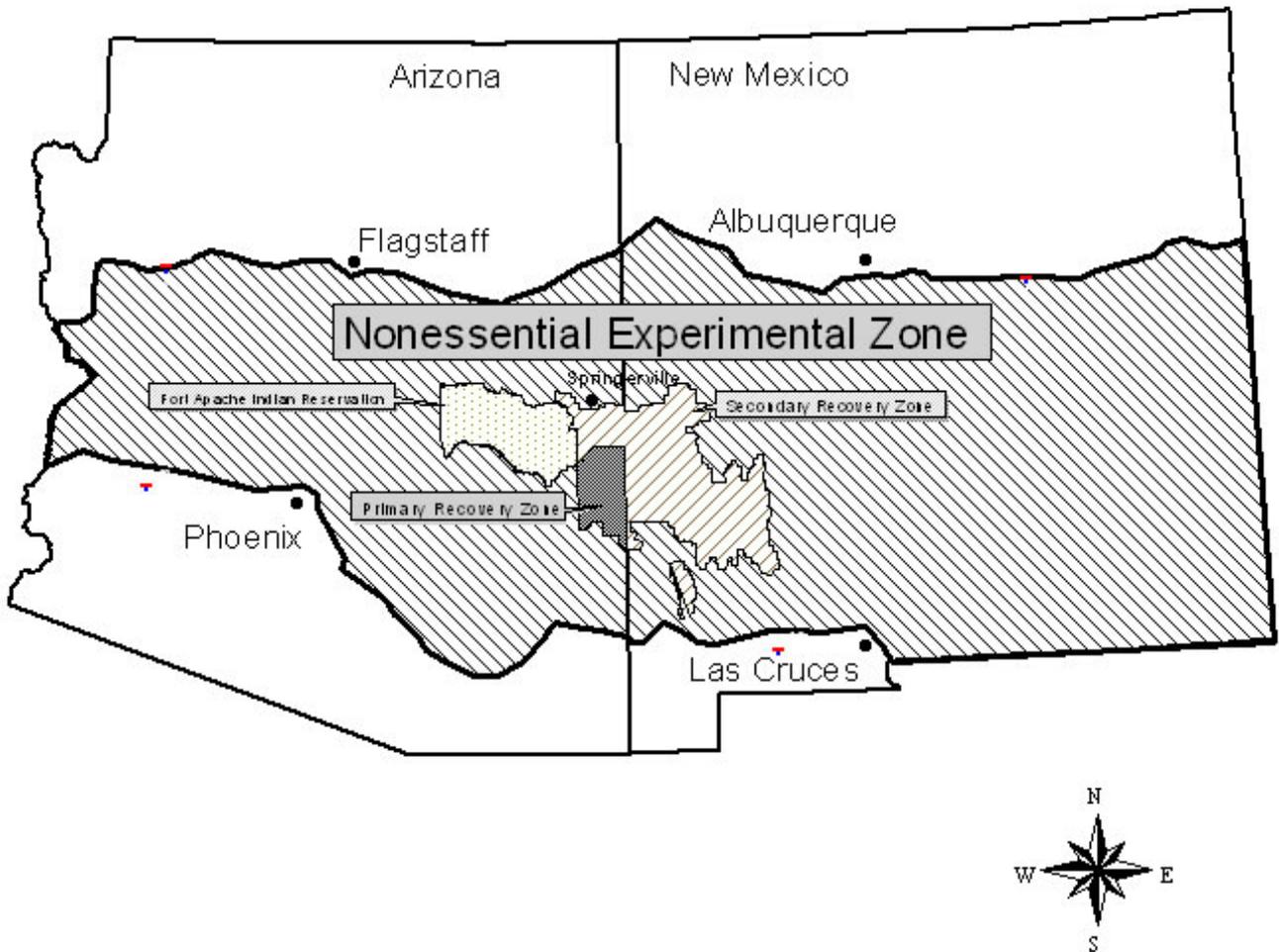


Figure 1. The Mexican Wolf Blue Range Wolf Recovery Area in Arizona and New Mexico.

2002 Release and Translocation Sites

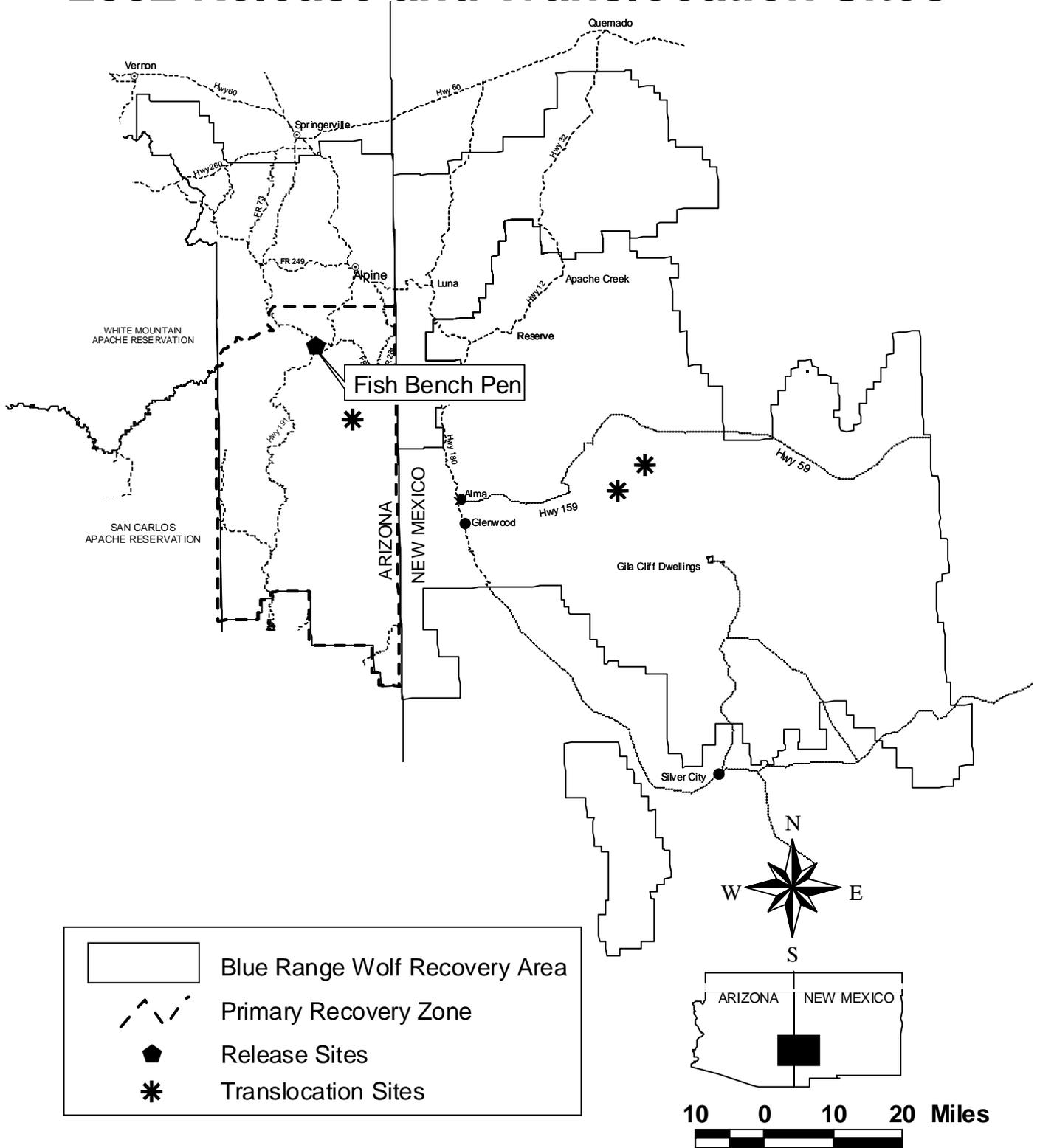


Figure 2. Release and translocation sites for Mexican wolves within the Blue Range Wolf Recovery Area in 2002.

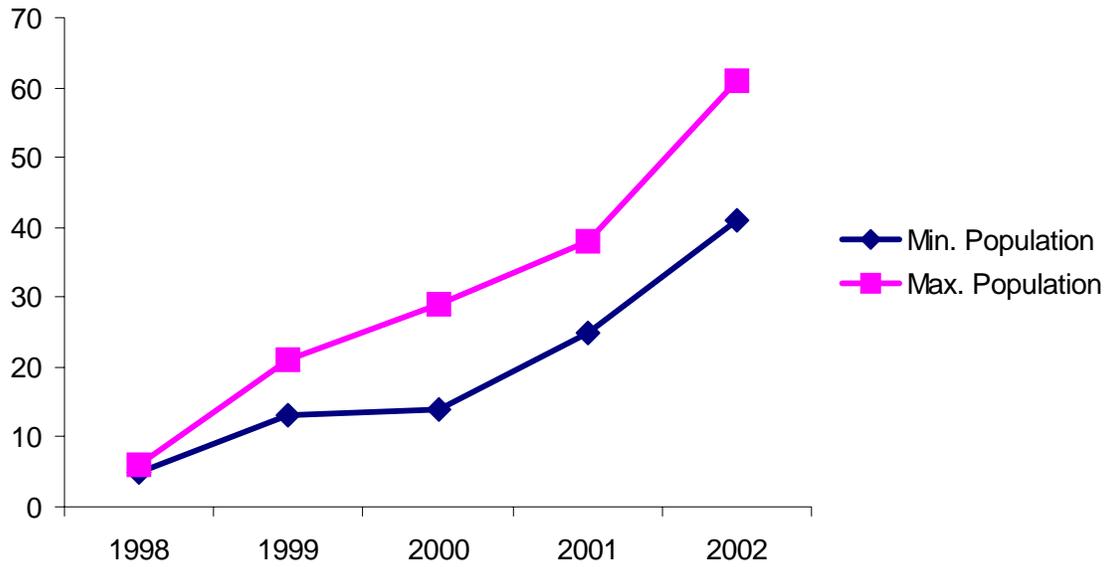


Figure 3. Mexican wolf population estimates from 1998 — 2002. The difference between the minimum and maximum population represents the number of wolves whose fate is unknown.

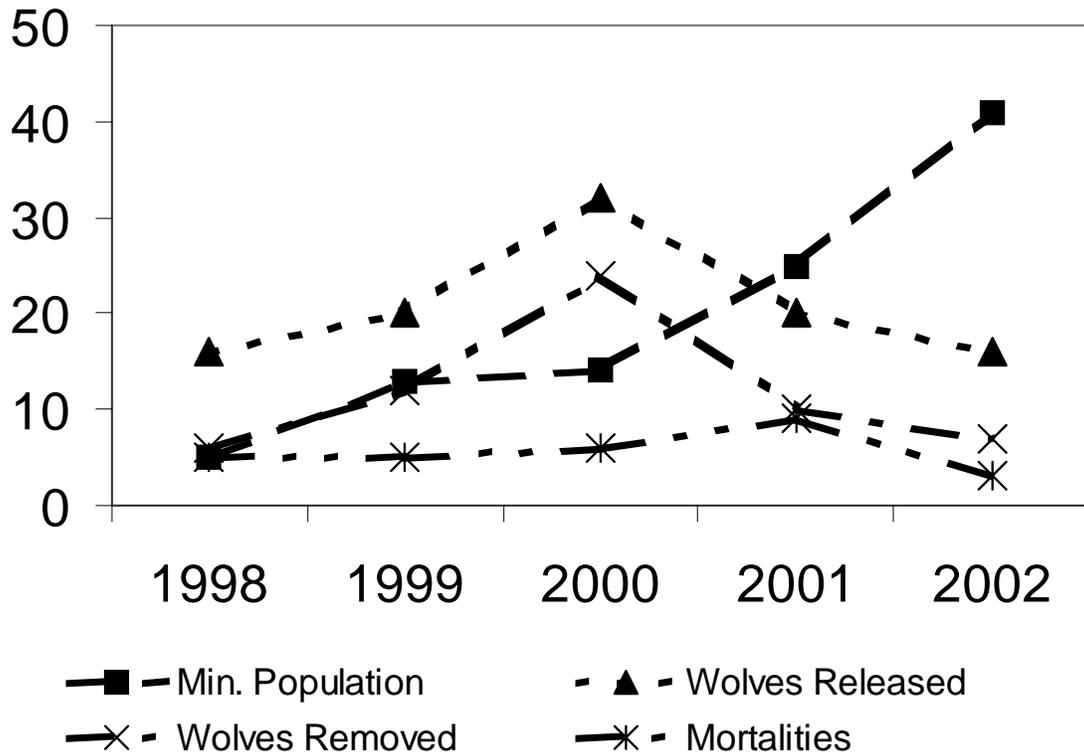


Figure 4. Mexican wolf population estimates and associated population parameters. Released wolves represents: pack translocations (wolves re-released from captivity back into the wild) and initial direct releases (wolves with no wild experience).

Mexican Wolf 202 Home Ranges

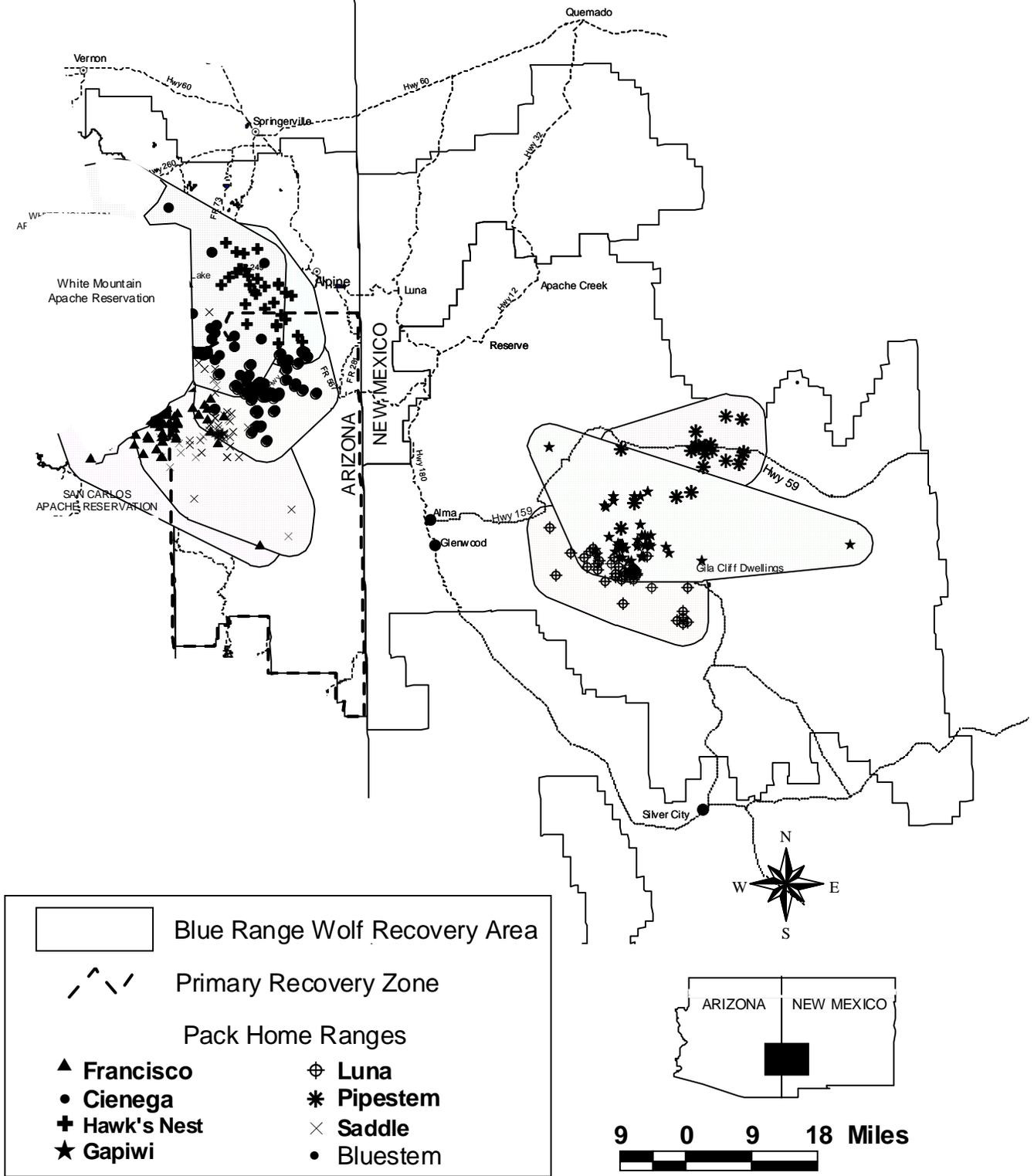


Figure 5. Home ranges and 3-mile buffer of territorial wolf packs in 2002.

2002 Wolf Locations

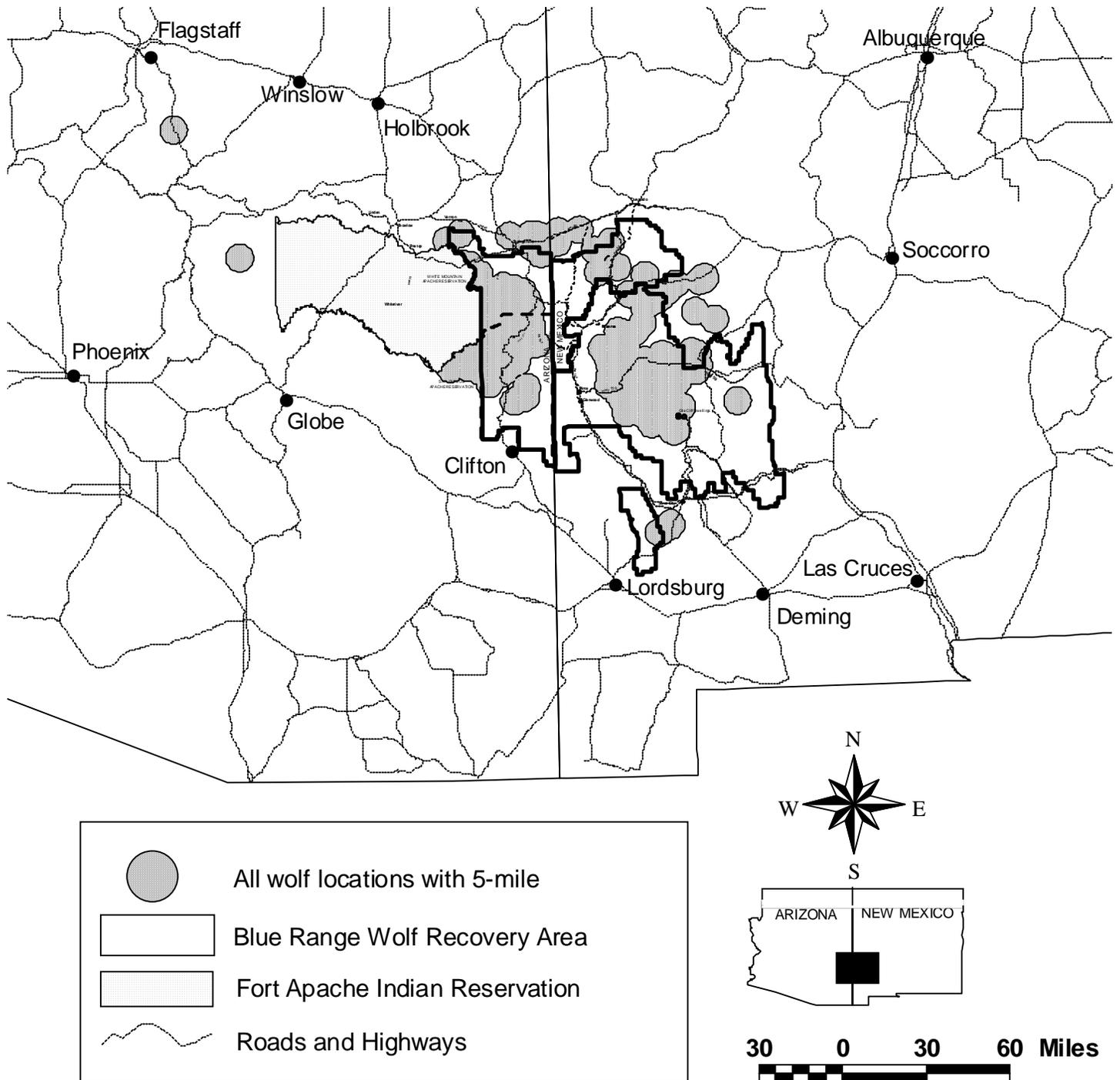


Figure 6. All Mexican wolf locations in 2002 (aerial and ground) with a 5-mile buffer.

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F. LITERATURE CITED

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G. PACK SUMMARIES

Bluestem Pack (AM507, AF521, F637, M639, mp754, mp755, mp756, fp757, fp758)

The Bluestem pack was released on June 11, 2002, at Fish Bench in Arizona. The pack consisted of the alpha wolves (AM507, AF521), 2 two-year old wolves (F637, M639), and 5 pups (mp754, mp755, mp756, fp757, fp758). The IFT continued supplemental feeding for approximately 1 month until the pack was documented killing ungulates. However, F637 dispersed from the pack shortly after the initial release to areas around Big Lake, and eventually to McNary. This animal was then removed on July 15, due to nuisance behavior. The rest of the pack remained together throughout the reporting period. The pack was involved in 2 depredations of cattle, and killed a domestic dog during the summer. However, during this time period the pack was primarily feeding on elk. During the time frame that the pack was in close proximity to residential areas and livestock, project personnel attempted to aversively condition the wolves, using pyrotechnics and RAG boxes. Aversive conditioning was successful, although the effects were only short term. Eventually the pack moved out of the area and resumed preying upon elk. At the end of the reporting period the Bluestem pack consisted of 3 adult wolves and 4 pups.

Saddle Pack (AM574, AF510, F646)

The Saddle pack initially consisted of 6 wolves (AM574, AF510, fp645, fp646, mp647, mp648) when first released on January 11, 2001. However, due to the dispersal of m647, the removal of m648, and the death of f645, there were only 3 collared wolves at the start of this reporting period. The alpha female has produced pups in each of the past 2 years, but no pups have been recruited to our knowledge. This pack has been primarily feeding on wild ungulates. However, 1 cattle depredation was recorded in October of 2002. F646

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was found dead on December 2, 2002 near the Bear Wallow Wilderness, in the A-SNF. Therefore, this pack now consists of only the alpha pair at the end of this reporting period. This pack will be closely monitored during the 2003 season for possible depredations and to determine if they successfully reproduce.

Hawks Nest Pack (AM619, AF486)

The Hawk's Nest pack has been one of the most successful packs in the BRWRA. They raised pups in 1999, 2000, and 2002. They also produced the first wild-conceived and wild-born pup in 2000. Equally important, this pack has never been documented to be involved with any depredation events. This year they raised a minimum of 2 pups through the end of this reporting period.

Bonito Creek Pack (AM674, AF587, m794)

The Bonito Creek pack formed from the dispersal of M674 from the Hawks Nest pack and the dispersal of F587 from the Francisco pack. These wolves first joined together just after the breeding season in 2001. AM674 was the first known wild born and conceived pup in the Mexican wolf project, and in 2002 he fathered the first second generation of wild-conceived and born pups on the White Mountain Apache Reservation. The IFT documented 3 pups that survived into early winter. However, AM674 was killed on October 22, from a gunshot. Shortly after the death of AM674, yearling m794 from the Francisco pack joined the Bonito Creek pack. It remains unclear if additional adult wolves joined the Bonito Creek pack in 2002. Although m794 was documented to be involved in depredations with the Francisco pack, the Bonito Creek pack has never been implicated in any depredations, despite the presence of cattle within their home range.

Cienega Pack (AM194, AF487, F621 mp795, mp796)

The Cienega pack was released in 2000 with the alpha pair (AM194, AF487) and 3 yearling wolves (m619, f620, f621). The death of a yearling and the dispersal of the other 2 resulted in the alpha pair being the only wolves left from the original release. However, this pack produced 2 known pups in 2001 and 3 known pups in 2002. Based on visual observation by the IFT, the current pack consists of at least 3 adults and 3 pups. The IFT captured and radio collared 2 of the 3 known pups that were born this year and placed new collars on both of the alpha wolves. Since their release in 2000, the Cienega pack has not been involved in any depredations or reported interactions with humans.

Francisco Pack (AM509, AF511, F644, m794, fp797, mp798, fp799, fp800, mp801)

The Francisco pack was released in July of 2000 with 4 adults (AM509, AF511, F587, M590) and 4 pups (mp641, mp642, mp643, fp644) that were 6 weeks old. Pups are too small to radio collar until they reach 30 pounds. As a result, these pups were released without radio collars and the fate of 3 out of the 4 pups is unknown. One of the pups (F644) was captured and radio collared in 2001. This wolf survived to adulthood with the Francisco pack and has since dispersed. This pack produced a minimum of 2 pups in 2001, with at least 1 surviving into 2002 (m794); who has since dispersed from the pack. In 2002, the Francisco pack produced 5 pups, with all of them surviving until the end of

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this reporting period. This represents the largest litter documented among Mexican wolves in the wild.

Although the Francisco pack has been successful in terms of pup production and dispersal of juvenile animals, their juxtaposition near the boundary of the wolf recovery area and their history with cattle depredations, has also made this pack one of the most contentious within the BRWRA. During 2002, the Francisco pack was documented to be involved in a minimum of 3 depredations on livestock, as well as 2 injuries to dogs, and 1 injury to a horse. Telemetry and visual evidence suggested that uncollared wolves in the pack were most likely involved in the cattle depredations. The Service issued a lethal control action in 2002, for 2 uncollared wolves. However, the depredations stopped and the suspected wolves were not observed in the area for several months. As a result, the Service rescinded the order for lethal take.

The Francisco pack occurs on the edge of the BRWRA. In the fall of 2002, the San Carlos Apache Tribe requested that the Service remove the Francisco pack from tribal land. Initially, the Service attempted to aversively condition the pack by both hazing (shooting shotgun cracker shells and rubber bullets) and trapping wolves that were on the reservation and moving them to another location within their territory, ½ mile outside of the reservation. However, these techniques proved only mildly successful as the wolves moved back onto the reservation immediately. The Service is currently removing any animal trapped on the reservation and placing them in captivity. Based on visual observations and telemetry data, the Francisco pack includes the alpha pair and 5 pups of the year at the end of this reporting period. These wolves continue to elude capture efforts.

Gapiwi Pack (AM584, AF624)

The Gapiwi pack was released on April 18, 2002 in Lilly Park of the Gila Wilderness in New Mexico. AF624 was pregnant at the time of release, and denned about a half mile from where the pair was released. The pair was supplementary fed road-kill elk and deer, and carnivore logs (a zoo diet formulated for captive carnivores). From the time of release until June 26, the food was packed in on mules and placed in the vicinity of the pair. Examination of scat and kills indicated that the pair was primarily consuming elk after supplemental feeding ended. In mid-August, the pair moved east about 6 miles to the Woodland Park area. They remained in this area until November when they moved across the Middle Fork of the Gila River to a known wintering elk ground in the vicinity of Loco Mountain and Snow Lake. Tracks, howling, and observations by the public indicated that the pair had 1 pup with them. The last observed sign of the pup was on December 20.

Luna Pack (AM583, AF562)

The Luna pack was released on April 4, 2002 in McKenna Park in the Gila Wilderness. AF562 was pregnant at the time of release. The pair separated for approximately 7 days after being released. AM583 remained in the release area while AF562 traveled about 5 miles to the head of Little Creek before returning and re-uniting with AM583. On or near April 17, AF562 denned about 1.5 miles east of the release site. The pair was

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supplementary fed road- kill elk and deer and carnivore logs from the time of release until June 26. The food was packed in on mules and placed in the vicinity of the pair. In mid-August, they moved west to the Langstroff, White Creek and Cub Creek area. They remained in this area until early November, when after some exploratory movements, they settled in a known wintering elk area in the vicinity of Brushy Mountain and Little Turkey Park. Two pups were observed with the pair in mid-October. Examination of scat indicated that the wolves were primarily consuming elk after supplemental feeding ended.

Pipestem Pack (AM190, AF628)

The Pipestem pack consisted of 2 wolves (AM190, AF628) and was the only pack in New Mexico prior to releases in April of 2002. This pair was intensively monitored from the end of January until their capture on May 10. The pair was captured because of their presence near livestock in the northeastern portion of the Gila National Forest near Beaverhead, New Mexico. Efforts to haze the wolves using pyrotechnics and a radio activated guard (RAG) box were not successful and they were confirmed to have killed 2 calves. Due to them spending time on private land outside the recovery area and the landowner's request to have the wolves removed, efforts were made to trap the wolves. After AF628 denned, seven pups were captured in the den on May 5, and placed in captivity. AM190 and AF628 were darted from a helicopter on May 10, and were reunited with the pups in captivity. The markings and coloration of the pups were inconsistent with wolf pups. Subsequent genetic analysis determined them to be hybrids, the result of AF628 breeding with most likely a domestic or feral dog. The pups were humanely euthanized on September 16, 2002.

H. INDIVIDUAL WOLF SUMMARIES

M632

On January 17, 2002, M632 was released from the Engineer Springs pen in Arizona after being captured on December 31, 2001 on the San Augustine Plain in New Mexico. In early February, he returned to the same private lands in New Mexico where he was caught earlier. On February 6, he was captured in a trap set for a coyote near a dead horse and was released onsite by a private trapper. After several days of trapping efforts by the IFT near the carcass, M632 moved back into and through the recovery area to the Coyote Hills area north of Springerville, Arizona. In April, M632 moved back to private lands immediately north of the area where he was trapped in February. With the aid of a helicopter, he was captured on April 11, and permanently removed from the wild due to management issues (history of scavenging on livestock, traveling outside of the recovery area, and blind in one eye). During the time he was in the wild, evidence suggested that he survived almost exclusively by scavenging on domestic livestock carcasses. The one exception was an observed attempt to kill a domestic calf just prior to his capture in December.

F621

F621 was released with the Cienega Pack in Arizona as a yearling in 2000. In 2001, she left the pack and spent several months in New Mexico before returning to Arizona and

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rejoining the pack. In January of 2002, she dispersed to New Mexico a second time. From January until early April, she remained in the vicinity of John Kerr Peak, near areas she used in 2001. During April, she moved south and was located in the higher country around Bear Wallow Mountain. F621 continued to travel in this general area and expanded her range into the Gila Wilderness in the vicinity of Mogollon Baldy Mountain and the Turkey Feather Mountains. In November, she moved north and was last located on November 19, east of the Negrito firebase. F621 has not been found since that date in spite of several search flights and continued routine monitoring.

M578

After being translocated into the primary recovery area in Arizona, in 2001, M578 traveled northeast into the Gila National Forest. He was documented in this area for several weeks. His radio collar signal was not located for approximately one month. After reports of a wolf being seen near the Tyrone Mine, he was located on an aerial flight near Silver City, New Mexico. On March 18, M578 was caught in a foothold trap set for a coyote by a contract trapper with the New Mexico Department of Game and Fish in the Burro Mountains of the Gila National Forest. He was returned to captivity due to constantly traveling outside of the recovery area.

m647

m647 was originally released as a member of the Saddle pack in Arizona in January of 2001. Shortly thereafter, he dispersed north onto the White Mountain Apache Reservation and eventually towards Highway 260 and then north of Springerville. m647 spent time near Cerro Montoso near Vernon, Arizona, and northwest of Snowflake, Arizona around Chevelon Lake. He then moved to the east and spent time in the area around Mormon Lake until he moved back towards Show Low, Arizona near Wishbone Mountain. On February 4, his collar was found near Young, Arizona. This wolf mortality is still under investigation.

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I. PERSONNEL

The following personnel were involved in the project during this reporting period. Individuals listed below collected data or provided other information for this report.

U.S. Fish and Wildlife Service

Brian Kelly, Mexican Wolf Recovery Coordinator
Colleen Buchanan, Assistant Mexican Wolf Recovery Coordinator
John Oakleaf, Mexican Wolf Field Coordinator (after Sep 2002)
Dan Stark, Assistant Mexican Wolf Field Coordinator
Maggie Dwire, Mexican Wolf Biologist
Theresa Olecksiew, Office Assistant

Arizona Game and Fish Department

Dan Groebner, Region I Nongame Specialist and AGDF Wolf Project Leader
Paul Overy, Field Team Leader (after Jun 2002)
Rich Bard, Wolf Technician (after Oct 2002)
Shawna Nelson, Wolf Technician (after Feb 2002)

New Mexico Department of Game and Fish

Nick Smith, Wolf Biologist

USDA-APHIS Wildlife Services

Alan Armistead, Wolf Management Specialist

Turner Endangered Species Fund

Melissa Woolf, Mexican Wolf Biologist

White Mountain Apache Tribe

Krista Beazley, Tribal Mexican Wolf Biologist (after Mar 2001)

Texas Tech. University

Janet Reid, Masters Student (Dietary Study)

Volunteers

Brandon Barr	Brad Bartett	Ryan Hilgris	Stephanie Provinsky
Barbara Trapp	Jon Trapp	Helen Trotman	