Mexican Wolf Recovery Program:
Progress Report #20

Reporting Period: January 1 – December 31, 2017

Prepared by: U.S. Fish and Wildlife Service

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

Table of Contents **Page**

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 of 1973, as amended (Act, or ESA). The Mexican Wolf Recovery Program has two interrelated components: 1) Recovery – includes aspects of the program administered 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) Monitoring and Management – includes aspects of the program implemented by the Service and cooperating States, Tribes, other Federal agencies, and counties that pertain to monitoring and management of the reintroduced Mexican wolf population in the Mexican Wolf Experimental Population Area (MWEPA). This report provides details on both aspects of the Mexican Wolf Recovery Program. The reporting period for this progress report is January 1 – December 31, 2017.

Background

The Mexican wolf is listed as endangered under the Act in the southwestern United States and Mexico (80 FR 2488-2512, January 16, 2015). It is the smallest, rarest, southernmost occurring, and most genetically distinct subspecies of the North American gray wolf.

Mexican wolves were extirpated from the wild in the southwestern United States by 1970, primarily as a result of a decades-long concerted effort to eradicate them due to livestock conflicts. Recovery efforts for the Mexican wolf began when it was listed as an endangered species in 1976. In the late 1970s and early 1980s, the initiation of a binational captive breeding program originating from just seven wolves saved the Mexican wolf from extinction.

As recommended in the Mexican Wolf Recovery Plan, First Revision, recovery efforts for the Mexican wolf focus on maintenance of the captive breeding population and the reestablishment of two Mexican wolf populations in the wild, one in the United States and one in Mexico.. Mexican wolves were first released to the wild in the United States in 1998. In Mexico, federal agencies initiated a reintroduction effort in 2011 pursuant to Mexico's federal laws and regulations.

Today, the wild population in the United States is managed and monitored by an Interagency Field Team (IFT) comprised of staff from the Service, Arizona Game and Fish Department (AGFD), White Mountain Apache Tribe (WMAT), US Forest Service, and U.S. Department of Agriculture-Wildlife Services (USDA-WS). The New Mexico Department of Game and Fish withdrew as a partner agency in 2011.

PART A: RECOVERY ADMINISTRATION

1. Mexican Wolf Captive Breeding Program

a. Mexican Wolf Species Survival Plan (SSP)

The SSP is a binational captive breeding program between the United States and Mexico for the Mexican wolf. Its mission is to reestablish the Mexican wolf in the wild through captive breeding, public education, and research. SSP members routinely transfer Mexican wolves among participating facilities for breeding to promote genetic exchange and maintain the health and genetic diversity of the captive population. Wolves in these facilities are rigorously managed in accordance with a Service-approved standard protocol.

This year, the SSP's binational meeting to plan and coordinate wolf breeding, transfers, and related activities among facilities was hosted by UMA Buenavista del Cobre and Grupo México, in association with the Secretaría de Medio Ambiente y Recursos Naturales, Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, Procuraduría Federal de Protección al Ambiente, and the Comisión Nacional de Áreas Naturales Protegidas. The meeting was held in Cananea, Sonora, Mexico. The meeting entailed updates on the reintroduced populations in the US and Mexico, discussion on the gamete banking plan for 2018, evaluation and selection of release candidates for both the United States and Mexico, and reports on research including advances in gamete banking, potential effects of a variety of contraception methods, and progress toward lifetime reproductive planning for female wolves.

As of July 2017, the SSP captive population includes approximately 281 captive Mexican wolves managed in 55 facilities in the United States and Mexico. This current population size is slightly above the SSP goal of housing a minimum of 240 wolves with a target population size of 300 to ensure the security of the species in captivity and produce surplus animals for reintroduction.

The SSP captive population was the sole source population to reestablish the species in the wild, as it was extirpated throughout its range in the United States and Mexico. In the United States, the SSP captive population is now the source for Mexican wolves released into the wild to improve gene diversity. Without the SSP, recovery of the Mexican wolf would not be possible. Wolves that are considered genetically well represented in the SSP population may be designated for release. Within that pool of wolves, suitable release candidates are determined based on criteria such as genetic makeup, reproductive performance, behavior, and physical suitability. Additional analyses are performed to ensure that the reintroduced population is receiving wolves of appropriate and balanced genetic history. 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. Based on these standards, this year the SSP identified two Mexican wolf pairs to breed at the Service-managed pre-release facilities in 2018 (see below).

b. Mexican Wolf Pre-Release Facilities

Mexican wolves are acclimated prior to release to the wild in captive facilities designed to house wolves in a manner that fosters wild characteristics and behaviors. The Service oversees the management at two of these facilities; the Ladder Ranch and Sevilleta Wolf Management Facilities, located in New Mexico within the MWEPA. 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. These facilities have been successful in breeding wolves for release and are integral to Mexican wolf recovery efforts. To further minimize habituation to humans, public visitation to the Ladder Ranch and Sevilleta facilities is not permitted.

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

Mexican wolves in the snow at the Sevilleta Wolf Management Facility. Photo credit: US Fish and Wildlife Service.

Sevilleta Wolf Management Facility

The Sevilleta Wolf Management Facility (Sevilleta) is located on the Sevilleta National Wildlife Refuge near Socorro, New Mexico and is managed entirely by the Service. There are a total of eight enclosures, ranging in size from 0.25 acre to approximately 1.25 acres, and a quarantine pen. In 2017 the refuge staff continued to assist Mexican Wolf Recovery Program staff in the maintenance and administration of the wolf pens. Through the course of the year, thirteen individual wolves were housed at Sevilleta. At the start of the year, five wolves were housed at Sevilleta. During the year four wolves were received from the MWEPA, one of which was

translocated back into the MWEPA. Nine wolves were transferred out of Sevilleta to participating SSP facilities in the United States. Four births and two deaths (two of the four pups died shortly after birth) occurred at Sevilleta in 2017. At year's end, the facility housed one wolf.

Ladder Ranch Wolf Management Facility

The Ladder Ranch Wolf Management Facility (Ladder Ranch), 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 0.3 acre to approximately 0.70 acre. The caretaking of wolves at the facility is carried out by an employee of the Turner Endangered Species Fund, though the facility is managed and supported financially by the Service. During 2017, a total of 11 individual wolves were housed at the Ladder Ranch. At the start of the year, four wolves were housed at the Ladder. Seven wolves were transferred to the Ladder from SSP facilities in the United States. Three wolves were transferred out to SSP facilities in the United States. No births or deaths occurred at the Ladder Ranch in 2017. At year's end, the Ladder Ranch housed eight Mexican wolves.

2. Recovery Planning

This year, the Service published the Mexican Wolf Recovery Plan, First Revision, completing its effort to revise the 1982 Mexican Wolf Recovery Plan. The Service invited participants from New Mexico Department of Game and Fish, Arizona Game and Fish Department, Utah Division of Wildlife Resources, Colorado Parks and Wildlife, federal agencies in Mexico, and independent scientists from the US and Mexico to assist us in gathering and assessing scientific information pertinent to our development of the revised recovery plan. The draft recovery plan and associated documents were made available for public and peer review prior to the issuance of the final document in November. The Service previously initiated the revision of the recovery plan, but did not produce an agency-approved draft or final plan.

Five Mexican wolves line the fence at the Sevilleta Wolf Management Facility. Photo credit: US Fish and Wildlife Service

3. Summary of Litigation

Plaintiffs: Center for Biological Diversity; Defenders of Wildlife
Defendants: Secretary of the Interior; US Fish and Wildlife Service
Intervenors: State of Arizona (Defendant)
Allegation: (APA) Violations of NEPA in revising the 10(j) Rule and issuance of associated 10(a)(1)(A) permit
Date NOI Filed: No NOI Filed on alleged APA violations; January 16, 2015 NOI pertaining to 10(a)(1)(A) permit
Date Complaint Filed: January 16, 2015; amended complaint filed March 23, 2015
Case Number/Court: 4:15-cv-00019-LAB (D. Ariz.)
Status: Ongoing

Plaintiffs: AZ and NM Coalition of Counties for Stable Economic Growth et al (18 plaintiffs)
Defendants: US Fish and Wildlife Service; Secretary of the Interior; Dan Ashe; Benjamin Tuggle
Intervenors: None
Allegation: Violations of APA, NEPA, Regulatory Flex Act. E.O. 12898 in implementing the Record of Decision/FEIS and 2015 10(j) Rule
Date NOI Filed: No NOI filed
Date Complaint Filed: February 12, 2015
Case Number/Court: 4:15-cv-00179-FRZ (D. Ariz.)
Status: Consolidated with District of Arizona case 4:15-cv-00019-JGZ

Plaintiffs: Wild Earth Guardians; New Mexico Wilderness Alliance; Friends of Animals
Defendants: Director of the US Fish and Wildlife Service; Secretary of the Interior
Intervenors: None
Allegation: Violation of ESA for not considering essential status for Mexican wolves; Violation of NEPA for not assessing revisions to final rule
Date NOI Filed: March 24, 2015
Date Complaint Filed: July 2, 2015
Case Number/Court: 4:15-cv-00285-JGZ (D. Ariz.)
Status: Consolidated with District of Arizona case 4:15-cv-00019-JGZ

Plaintiffs: Safari Club International
Defendants: Secretary of the Interior; US Fish and Wildlife Service
Intervenors: Center for Biological Diversity, Defenders of Wildlife (Defendants)
Allegation: Violations of ESA, APA, and NEPA promulgating the 2015 10(j) Rule and FEIS/ROD
Date NOI Filed: August 3, 2015
Date Complaint Filed: October 16, 2015
Case Number/Court: 4:16-cv-00094-JGZ (D. Ariz.)
Status: Ongoing

Plaintiffs: New Mexico Department of Game and Fish
Defendants: Secretary of the Interior; US Fish and Wildlife Service
Intervenors: Center for Biological Diversity, Defenders of Wildlife, WildEarth Guardians, New Mexico Wilderness Alliance (Defendants)
Allegation: Violations of State law and APA by failing to obtain importation and release permits
Date NOI Filed: N/A
Date Complaint Filed: May 20, 2016
Case Number/Court: 1:16-cv-00462-WJ-KBM (D. N.M.)
Status: Ongoing

Mexican wolf in crepuscular rays at the Sevilleta Wolf Management Facility. Photo credit US Fish and Wildlife Service.

4.Mexican Wolf Experimental Population Area Management Structure

The Memorandum of Understanding (MOU) that guides the reintroduction and management of the Mexican wolf population in the MWEPA is being revised to address the provisions of the revised 2015 10(j) Rule and Mexican Wolf Recovery Plan, First Revision. Signatories of the current MOU included AGFD, USDA-Forest Service, USDA-WS, WMAT, and the Service, as well as the cooperating counties of Gila, Graham, Greenlee, and Navajo in Arizona and the Eastern Arizona Counties Organization (ECO). A copy of this MOU can be found at *https://www.fws.gov/southwest/es/mexicanwolf/*.

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 MWEPA. The 2017 report is included as PART B of this document. Monthly MWEPA project updates are available at *https://www.fws.gov/southwest/es/mexicanwolf* or you may sign

up to receive them electronically by visiting *http://www.azgfd.gov/eservices/subscribe.shtml*. Additional information about the management of wolves in the MWEPA can be found on the Service's web page at: *https://www.fws.gov/southwest/es/mexicanwolf* or AGFD's web page at: *https://www.azgfd.com/wildlife/speciesofgreatestconservneed/mexicanwolves/*

5. Cooperative Agreements

In 2017, the Service funded cooperative agreements with AGFD, the Mexican Wolf Fund, Student Conservation Association, TESF, The Living Desert, University of Idaho, University of New Mexico, and WMAT. The Service also provides funding to AGFD through section 6 of the Act, which requires 25% percent matching funds from Arizona.

Cooperator	USFWS/Mexican Wolf Project Funds Provided in 2017
AGFD	$ 255,000
Mexican Wolf Fund	$40,000
Student Conservation Association	$ 24,143
TESF	$ 50,000
The Living Desert	$ 30,000
University of New Mexico	$ 15,000
University of Idaho	$ 10,000
White Mountain Apache Tribe	$ 225,000

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

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

6. Mexican Wolf/Livestock Council

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

The following table reflects disbursements of funds associated with the Fund from its initiation through the end of 2017. The Council continued implementation of its strategic plan, approved in 2014, focusing on reducing livestock/wolf conflicts and the need for management removals of depredating or nuisance wolves. More information can be found at *http://www.coexistencecouncil.org/*

Year	Direct Compensation for Livestock Lost	Payments for Wolf Presence	Total
2011	$18,181	N/A	$18,181
2012	$22,600	N/A	$22,600
2013	$27,594	$85,500	$113,094
2014	$63,724	$85,500	$149,224
2015	$107,703.90	$87,300	$195,003.90
2016	$73,826.18	$105,000	$178,826.18
2017	$56,613.02	2017 Payments TBD	TBD

Note, in 2017 the Arizona Livestock Loss Board (AZLLB) began providing direct compensation for livestock lost to wolf depredation in Arizona. The amount listed for 2017 accounts for $27,342.50 to livestock producers in New Mexico via the Mexican Wolf/Livestock Council, as well as $29,270.52 provided to producers in Arizona via the AZLLB.

7. 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. 1998, Final Rule. Establishment of a Nonessential Experimental Population of the Mexican Gray Wolf in Arizona and New Mexico, 63 *Federal Register* 1752-1772.

US Fish and Wildlife Service, 2013, Proposed Rule. Removing the Gray Wolf (Canis lupus) From the List of Endangered and Threatened Wildlife and Maintaining Protections for the Mexican Wolf (Canis lupus baileyi) by Listing It as Endangered, *78 Federal Register* 35664-35719.

US Fish and Wildlife Service, 2014. Final Environmental Impact Statement for the Proposed Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf. *79 Federal Register* 70154-70155.

US Fish and Wildlife Service, 2015. Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf. *80 Federal Register* 2512-2567.

US Fish and Wildlife Service, 2015. Endangered Status for the Mexican Wolf. *80 Federal Register* 2488-2512.

US Fish and Wildlife Service, 2017. Mexican Wolf Recovery Plan, First Revision, US Fish and Wildlife Service, Albuquerque, New Mexico.

PART B: REINTRODUCTION

Mexican Wolf Experimental Population Area
Interagency Field Team Annual Report
Reporting Period: January 1 – December 31, 2017

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

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

The 2017 annual report reflects the 2016 population parameters published in the 2016 annual report addendum (http://www.fws.gov/southwest/es/mexicanwolf/documents.cfm).

1. Introduction

This report summarizes results of Mexican Wolf Interagency Field Team (IFT) activities during 2017. The Mexican Wolf Reintroduction Project (Reintroduction Project) is part of a larger recovery program that is intended to reestablish the Mexican wolf (*Canis lupus baileyi*) within its historical range.

The 2017 Mexican Wolf Recovery Plan, First Revision (Recovery Plan) establishes several important matrixes for the project to measure relative to progress towards recovery. First, the recovery criteria call for an average of 320 wolves over 8 years in the United States population. Thus, a growing population is an important measure of success. Miller (2017) scenarios with mean adult mortality rates less than 25%, combined with mean sub-adult mortality rates less than 33% and mean pup mortality (for radio-marked pups greater than 4 months old) less than 13% resulted in an increasing population that meet the population abundance recovery criteria, under certain management regimes. In particular, Miller (2017) found that growth rates and recovery were sensitive to small changes in adult mortality rates. Thus, adult mortality rates will be an important metric for evaluation of the project. Finally, the recovery criteria call for 22 wolves released from captivity to survive for one (sub-adults and adults) to two (pups) years following release. This recovery criterion allows for the incorporation of under-represented genes from captivity into the wild population. Thus, the project will need to continually monitor releases from captivity and monitor the successful incorporation of animals into the population.

The Reintroduction Project is conducted in accordance with a nonessential experimental population Final Rule (USFWS 2015; 2015 10(j) Rule) that expanded the Mexican Wolf

Experimental Area (MWEPA) south of Interstate 40 to the United States-Mexico border, discontinued the designation of the Blue Range Wolf Recovery Area and White Sands Wolf Recovery Area, and established three management areas (Zone 1, 2, and 3: Figure 1) south of Interstate 40 in Arizona and New Mexico. These new designations resulted in a fourfold increase in suitable habitat that Mexican wolves can occupy (Zones 1-3) and a tenfold increase in areas that Mexican wolves can be released and/or translocated (Zone 1-2). Zone 1 includes all of the Apache-Sitgreaves and Gila National Forests; the Payson, Pleasant Valley and Tonto Basin Ranger Districts of the Tonto National Forest; and the Magdalena Ranger District of the Cibola National Forest. In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow free-ranging Mexican wolves to inhabit the Fort Apache Indian Reservation (FAIR). The FAIR is in east-central Arizona, and provides 2440 mi^2 (6319 km^2) of area that wolves may occupy.

In March 1998, the first release of Mexican wolves occurred on the Alpine and Clifton Ranger Districts of the Apache-Sitgreaves National Forest, Arizona. The wild population minimum count remained stable from 114 wolves in 2016 to 114 wolves in 2017. The low rate of increase was principally due to decreased pup survival in 2017 relative to 2016. The recruitment rate was the lowest observed in the population since 2009 and may be normal variation within the population. However, the decreased pup survival could also be due to an outbreak of canine distemper, which was the cause of death for three wolves in 2017. Four initial releases (cross-fostering of neonatal wolf pups into wild wolf packs) occurred in 2017. At the end of 2017, the wild population totaled a minimum of 114 wolves, and 23 packs; 13 of which produced at least one pup that survived to year-end, and three new pairs. More information on population statistics can be found at *http://www.fws.gov/southwest/es/mexicanwolf/* and *http://www.azgfd.gov/w_c/es/wolf_reintroduction.shtml*

Wolf age and sex abbreviations used in this document:
A = alpha/breeder (wolf that has successfully bred and produced/sired at least one pup)
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)

Specific information regarding wolves on the FAIR and the San Carlos Apache Reservation (SCAR) is not included in this report in accordance with Tribal agreements. However, wolves occurring on the FAIR and SCAR are included in total counts for depredations and population purposes.


Mexican wolf from the Bear Wallow Pack in the Mexican Wolf Experimental Population Area. Photo credit: US Fish and Wildlife Service.

2. Methods and Results

a. Population Status

Breeding pair: a pack that consists of an adult male and female and at least one pup of the year surviving through December 31.

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

New pair: a male and female wolf, traveling together for 1 month, that are likely to form a new pack.

Population Count

The year-end population count is derived from information gathered through a variety of methods that are deployed annually by the IFT from November through the year-end helicopter count. The IFT continued to employ comprehensive efforts initiated in 2006 to make the 2017 year-end population estimate more accurate, consistent, and repeatable. Management actions implemented to document Mexican wolves included surveys and focus on trapping for uncollared wolves, greater coordination and investigation of wolf sightings provided through the public and other

agency sources, deployment of remote trail cameras (blind and scented), and utilizing howl surveys and food caches in conjunction with remote cameras in areas of suspected uncollared wolf use.

Wolf sign (i.e. tracks, scats) was documented by driving roads and hiking canyons, trails, or other areas closed to motor vehicles. Confirmation of uncollared wolves was achieved via visual observation, remote cameras, howling, scats, and tracks. Ground survey efforts for suspected packs having no collared members were documented using global positioning system (GPS) and geographical information systems (GIS) software and hardware. GPS locations were recorded and downloaded into GIS software for analysis and mapping. Survey data were also recorded daily on forms and compiled in a database.

In January and February 2018, aircraft were used to document free-ranging wolves for the end-of-year 2017 population count and to capture wolves to affix radio collars. Including January and February data in the December 31 end-of-year count (and in this 2017 annual report) is appropriate and consistent with previous years' annual counts, because wolves alive in these months were also alive in the preceding December (i.e. whelping only occurs in spring, and any wolf added to the population via initial release or translocation after December 31 and before the end of the survey is not counted in the year-end minimum population count). Fixed-wing aircraft were used to locate wolves and assess the potential for darting wolves from the helicopter. A helicopter was used to obtain a visual count of the number of uncollared wolves associated with collared wolves in all areas and to capture target animals (e.g. uncollared wolves, injured wolves, or wolves with failed or old collars) where the terrain and land status allowed.

As part of the 2017 population year-end count, the IFT coordinated with and surveyed members of the local public to identify possible wolf sightings. Ranchers, private landowners, wildlife managers, USFS personnel, and other agency cooperators were contacted to increase wolf sighting data for the database. All such sightings were analyzed by the IFT to determine those that most likely represented unknown wolves or packs for purposes of completing the year-end count.

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

At the end of 2017, the minimum population count was 114 wolves. Pups comprised 23% of this population, which is lower than the previous year (44%). Thirteen packs were considered breeding pairs in 2017. The end-of-year population was composed of the highest number of adults and sub-adults (88) that have occurred during the course of the project.

At the beginning of 2017, the functioning collared population consisted of 44 wolves among 21 packs and two single wolves. At year-end, there were 65 collared wolves (35 adults, 20 subadults, and 10 pups) among 23 packs, two new pairs and nine single wolves were documented, which was an increase in the number of collared wolves from 2016.

A total of 49 uncollared or failed collared wolves were documented in the MWEPA at the end of 2017 (*note: all of the uncollared wolves captured during the January and February 2017*

helicopter operation were included as uncollared animals associated with known packs above). Thirty-three of the 49 uncollared wolves were associated with 14 packs and two pairs in which individuals were equipped with radio-collars (Table 1).

The IFT documented three uncollared groups of wolves (one in Arizona and two in New Mexico) and four uncollared single wolves (one in Arizona and three in New Mexico), which were not associated with collared packs. Additional uncollared animals were found on the FAIR in 2017. These areas will be priorities for IFT trapping efforts in 2018.

Eight natural pairings of breeding age wolves in the MWEPA population occurred in 2017. The natural pairings of dispersing or single wolves resulted in the designation of five new packs, Copper Creek, Frieborn, Pine Spring, Prime Canyon, and Saffel. Two new pairs formed toward the end of 2017 (Table 1). In addition, breeding animals were naturally replaced in four other packs five times (Bluestem, Dark Canyon, Prime Canyon, and SBP). In the Dark Canyon pack both breeding roles were replaced; M1354 replaced AM992 and F1456 filled the vacant role of former AF923 (deceased in 2016).

A total of 15 single wolves equipped with radio-collars (M1354, F1444, M1453, M1455, m1471, m1483, m1484, m1486, M1552, m1559, f1560, M1566, m1569, m1571, m1572) were part of the population for a portion of the year. Thirteen of these wolves (M1354, F1444, M1453, M1455, m1471, m1484, m1486, M1552, m1559, f1560, m1569, m1571, m1572) were alive at the end of the year. Most of the wolves that were alive at the end of the year ($n \approx 111$: see Releases and Translocation section for a description of the uncertainty associated with the number of cross-fostered pups that were alive at the end of the year) were born in the wild.

Mexican wolf in the Mexican Wolf Experimental Population Area. Photo credit: US Fish and Wildlife Service.

b. Reproduction

In 2017, 20 packs exhibited denning behavior, which included 10 packs in Arizona (Baldy, Bear Wallow, Bluestem, Elk Horn, Freiborn, Maverick, Hoodoo, Panther Creek, Saffel, and Tsay-O-Ah) and 10 packs in New Mexico (Copper Creek, Dark Canyon, Iron Creek, Lava, Leopold, Luna, Mangas, Prieto, San Mateo, and Sheepherder's Baseball Park Pack (SBP)). Of these packs, all but five (Copper Creek, Dark Canyon, Frieborn, Leopold, and Maverick) were confirmed to have produced wild-born litters. The IFT also cross-fostered a total of four pups into two wild wolf dens in Arizona (Panther Creek) and New Mexico (San Mateo). The IFT documented a minimum of 54 pups produced (20 pups in Arizona and 28 pups in New Mexico) with a minimum of 26 (15 pups in Arizona and 11 pups in New Mexico) surviving in the wild until year-end, which showed that only 48% of the pups documented in early counts survived until the end of the year (Table 1). Of the 15 packs that produced pups in 2017, 13 packs had at least one on pup recruited at the end of the year. New Mexico pup survival (39%) was much lower than what was seen in Arizona (75%). All packs at the end of 2017 were formed naturally in the wild.

Frieborn Pack in the Mexican Wolf Experimental Population Area. Photo credit: US Fish and Wildlife Service.

c. Releases and Translocations

Cross-Foster: the removal of offspring from their biological parents and placement with surrogate parents. If the offspring were in captivity at the time of the removal this is also an *Initial Release* (see definition below). If the offspring were in the wild at the time of their removal this is also a *Translocation* (see definition below).

Initial Releases: the release of Mexican wolves to the wild within Zone 1 (Figure 1), or in accordance with tribal or private land agreements in Zone 2 (Figure 1), that have never been in the

wild, or releasing pups that have never been in the wild and are less than 5 month old within Zones 1 or 2. The initial release of pups less than 5 months old into Zone 2 allows for the cross-fostering of pups from the captive population into the wild, as well as enables translocation-eligible adults to be re-released in Zone 2 with pups born in captivity (see 2015 10(j) Rule at http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf).

Translocations: the release of Mexican wolves into the wild that have previously been in the wild. In the MWEPA translocations will occur only in Zones 1 and 2 (Figure 1; see 2015 10(j) Rule at http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf).

Supplemental Food Cache: road-killed native prey carcasses or carnivore logs provided to wolves in order to assist a pack or remnant of a pack in feeding young of the year when extenuating circumstances reduce their own ability to do so (e.g. one animal raising young or just after initial releases and translocations).

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

In 2017, the IFT conducted two cross-foster events involving two packs (San Mateo in New Mexico and Panther Creek in Arizona), resulting in the initial release (Figure 2) of four neonatal wolf pups. Two pups were introduced into each den corresponding with whelp dates in April and May. The San Mateo den initially contained eight wild-born pups. Eight is the highest number of pups documented in a wild-born Mexican wolf litter. In accordance with protocol, two cross-fostered pups were added to the litter and two wild-born pups were removed to captivity to keep the total number of pups left in the den at eight. The Panther Creek den initially contained six wild-born pups. Because the wild-born Panther Creek litter was the result of full siblings mating, two cross-fostered pups were added to the litter and two wild-born pups were removed to captivity. Both of the cross-foster events resulted in pups from captivity introduced into wild dens by project personnel without abandonment of the den by the breeding pair). One of the four cross-fostered pups (San Mateo fp1578) was collared and confirmed alive during 2017. San Mateo had a minimum of three pups (fp1578, 2 uncollared pups one of which was likely mp1582 that slipped its radio collar in late 2017) survive until the end of 2017. However, it is unlikely (17% chance) that the uncollared pup is a cross-fostered pup simply based on probabilities (e.g., 1/6 uncollared pups were cross-fostered (not including fp1578 and mp1582) and only one uncollared pup survived). The Panther Creek pack had at least three pups survive until October 2017, but none were documented alive at the end of the year. Both of the packs involved in cross-fostering efforts received supplemental food caches to assist in raising the pups.

A yearling male from the Diamond pack, m1571, made a large dispersal movement north of the Apache-Sitgreaves National Forest onto the Navajo Nation north of Interstate 40. At the request of the Najavo Nation, the IFT captured, translocated, and released the wolf back within the MWEPA. Late in the year, m1571 was observed traveling with a subadult female from the Hoodoo pack (f1550) and in the north central portion of the Apache-Sitgreaves National Forest.

In 2017, a yearling male from the Diamond pack, m1572, was located lame and removed to captivity for veterinary care. After approximately a month in veterinary care, m1572 was

translocated back to within its natal territory in the Apache-Sitreaves National Forest. Following the translocation the wolf displayed normal movements and signs of recovered health.

d. Home Ranges and Movements

In 2017, all wolves equipped with radio-collars were monitored by standard radio telemetry from the ground and once every two weeks from the air as opportunity allowed. In addition, 55 wolves were equipped with GPS collars during all or portions of the year to provide more detailed location information. Visual observations, wolf behavior, evidence of a kill site, associated uncollared wolves, and fresh wolf sign were also noted when possible. Location data were entered into the project's database for analysis.

Aerial and satellite locations of wolves were used to develop home ranges (White and Garrott 1990). Until 2014, wolf home range polygons were generated using the minimum convex polygon (MCP) method (White and Garrott 1990). However, kernel methods can provide more accurate home range estimates than minimum convex polygon (MCP) models (Seaman and Powell 1996) and have shown to be robust to variation in the number of locations used to create the home range (Seaman et al. 1999). Thus, kernel density estimates were used to generate home range polygons for 2017.

Home ranges were calculated using ≥20 individual locations on a pack, pair, or single wolf exhibiting territorial behavior over a period of greater than six months. During 2017, the number of individual locations used ranged from 20 to 3017 locations, depending on the number of individual locations obtained throughout the year. To maximize sample independence, individual radio-collared wolf locations were included in home range calculations only if individual wolf locations were spatially or temporally separated from other pack members equipped with radio-collars. This limited pseudo-replication of locations. Individual point selection was accomplished with R (R Core Team 2015). Home range polygons were generated using the 95% fixed kernel method (Seaman and Powell 1996) in the Geospatial Modeling Environment platform in conjunction with ArcGIS 10 (Beyer 2014, ESRI 2011). Home ranges were not calculated for wolves that displayed dispersal behavior, or exhibited non- territorial behavior during 2017.

During 2017 the IFT calculated home ranges for 21 packs or individuals exhibiting territorial behavior. These home ranges ranged from 65 square miles for the Prime Canyon pack to 430 square miles for the Diamond pack, with an average home range size of 195.7 square miles. (Figure 3, Table 2).

e. Occupied Range

Occupied wolf range was calculated based on the following criteria: (1) a 10-mile (16 km) radius around all aerial or GPS locations of radio monitored wolves over the past year; (2) a 10-mile (16 km) radius around all uncollared wolf locations and wolf sign over the past year, and (3) per the 2015 10(j) Rule, occupied range does not include tribal lands or areas in Zone 3.

Mexican wolves occupied 17,431 mi^2 (45,147 km^2) of the MWEPA during 2017 (Figure 4). In comparison, Mexican wolves occupied 16,114 mi^2 (41,735 km^2) of the MWEPA during 2016.

Mexican wolf population continues to illustrate a general upward trend in occupied range area.

f. Mortality

Wolf mortalities were identified via telemetry, GPS collars, and public reports. Mortality signals from radio-collars were investigated within approximately 24 hours of detection to determine the status of the wolf. Carcasses were investigated by law enforcement agents and necropsies were conducted to determine proximate cause of death. Causes were summarized for all known wolf deaths (Table 3 and 4).

For wolves equipped with radio-collars, mortality, missing, and removal rates were calculated using methods presented in Heisey and Fuller (1985). Wolves not located or documented alive for three or more months are considered missing or "fate unknown." These wolves may have died, dispersed, or have a malfunctioned radio collar. The IFT calculated annual cause-specific mortality rates (i.e. human-caused versus natural/unknown mortality) for the population. Management removals can have an effect equivalent to mortalities on the free-ranging population of Mexican wolves (see Paquet et al. 2001). Thus, the IFT also calculated yearly cause-specific removal rates for wolves equipped with radio-collars. Wolves are removed from the population for three primary causes: (1) cattle depredations, (2) nuisance to humans, and (3) other (principally to pair with other wolves or to move a wolf to a more appropriate area without any of the other causes occurring first). Each time a wolf was moved, it was considered a removal, regardless of the animal's status later in the year (e.g. if the wolf was translocated or held in captivity). The IFT calculated an overall failure rate of wolves in the wild by combining mortality, missing (only those wolves that went missing under questionable scenarios), and removal rates to represent the overall yearly rate of wolves affected (i.e. dead, missing, or managed) in a given year. Uncollared/failed collared wolves that were found dead or removed were not included in the survival analyses because these wolves were not consistently monitored through time and thus do not represent a consistently monitored or observed sample of animals (e.g., many may die without being found and the individuals that are found are random occurrences that do not reflect population dynamics). In addition, wolves that died as a result of handling were right-censored at the time of their death (e.g., radio-days were counted until their death, but the death was not counted in survival estimates) in accordance with standard survival analyses methodology (Heisey and Fuller 1985).

The IFT has documented 150 wolf mortalities in the wild since 1998 (Table 3), 12 of which occurred in 2017 (Table 3 and 4). Six of the twelve documented wolf mortalities in 2017 were considered illegal, including: F1437, f1549, f1570, f1563, f1663, and f1675. AM992 died of natural causes. Three other wolves died of natural causes related to distemper (M1566, mp1568, and mp1573). Cause of death could not be determined for f1665. Finally, m1483 died from a vehicle strike. Other more frequent causes of death should be considered a minimum estimate of mortality, since pups and uncollared wolves may die without those mortalities being documented by the IFT. Nine wolves from Arizona (AM1341, AM1347, AF1445, fp1590, fp1591, fp1594, fp1595, fp1596, and fp1597) and nine wolves from New Mexico (F1397, f1551, m1554, mp1579, fp1580, mp1581, mp1583, mp1584, and mp1585) were listed as fate unknown (e.g., not observed via sightings, remote cameras, or radio telemetry for > 3 months) during portions of 2017. During the end of year count, AM1347 was captured and recollared. The majority of the wolves listed as fate unknown during 2017 were neonatal pups documented during cross-foster events. These individuals were never subsequently captured and collared; thus, were listed as fate unknown.

The IFT monitored 87 individual wolves equipped with radio-collars for a total of 22,054 radio days during 2017. A total of 25 wolves equipped with radio-collars were considered removed (*n* = 5), dead (*n* = 10), or missing (*n* = 10). Uncollared animals or wolves with failed collars that were documented dead or removed (F1437, f1530, and f1675) were not included in this analysis (See Table 4 for information on these animals). Only three (F1397, m1552, and m1554) of the ten wolves that went missing in 2017 were considered to have gone missing under questionable scenarios without documentation as being alive later in the year. Thus, these three animals were included as failures at the time of last location during 2017. The overall survival rate was 0.742, or a corresponding failure rate of 0.258. The overall failure rate was composed of the human caused mortality rate (0.072; *n* = 5), natural mortality rate (0.057; *n* = 4), unknown/awaiting necropsy mortality rate (0.014; *n* = 1), boundary removal rate (0.014; *n* = 1), missing wolves rate (0.043; *n* = 3), cattle depredation removal rate (0.043; n = 3), nuisance removal rate (0.000; *n* = 0), and other removal rate (0.014; *n* = 1). Much of the mortality was concentrated on sub-adult (radio days = 6,525, failures = 9, survival rate = 0.604), and pup (radio days = 3,104, failures = 6, survival rate = 0.494) components of the population relative to the adults (radio days = 12,425, failures = 3, survival rate = 0.916).

Mexican wolf in the Mexican Wolf Experimental Population Area. Photo credit: US Fish and Wildlife Service.

g. Predation

Throughout the year, project personnel investigated ungulate carcasses as discovered to determine sex, age, general body condition, and whether the carcasses had been scavenged or killed by wolves. In addition, the IFT continued to study Mexican wolf kill rates and prey selection within the MWEPA on non-tribal lands. GPS cluster analysis was conducted using data from downloadable GPS collars to detect predation events during a 30-day time period in winter (February/March) and summer (June/July). A GPS cluster was defined as a group of two or more

GPS points in which each point is <100m from its nearest neighbor (Sand et al. 2005, Ruth et al. 2010, Metz et al. 2012). GPS fix rates were set to one point every two hours in winter and every hour in summer to account for the rapid consumption of neonatal elk carcasses in the summer. To further reduce the potential of missing wolf killed prey, 25% of all single GPS points were randomly selected in ArcGIS for investigation (Sand et al. 2005). Identified GPS clusters were investigated within one week of determination, following abandonment by wolves; all points within a cluster were investigated regardless if a carcass was located at a previous GPS point (Ruth et al. 2010). The information gathered will be used to gain a more robust measure of the biomass required per wolf to sustain a viable wolf population, estimate kill rates of Mexican wolves on ungulates in the MWEPA, determine the prey characteristics (e.g. species, sex, age, and nutritional condition) selected by Mexican wolves, and assess kill site characteristics. All domestic livestock carcasses located via cluster analyses were reported to USDA-WS wolf specialists to initiate a depredation investigation.

The IFT combined the 2015 thru 2017 predation data for this report. Four packs containing at least one GPS collar were selected for the predation study in 2015, two in New Mexico (Luna and Single M1161) and two in Arizona (Bluestem and Hawks Nest). All four packs were studied during the 2015 winter period; however, due to collar failures in late winter, only Bluestem and Hawks Nest were studied in Arizona during the 2015 summer period. Six packs were selected for the predation study in 2016, three in New Mexico (Luna, Mangas, and Sheepherder's Baseball Park pack (SBP)), two in Arizona (Bluestem and Marble), and one pack (Buckalou) that bordered Arizona and New Mexico. Four of these packs (Luna, Mangas, Bluestem, and Marble) were studied during the 2016 winter period, and three (SBP, Bluestem, and Buckalou) during the 2016 summer period. Four packs (Bluestem, Hoodoo, Luna, and Saffel) and one single wolf (F1489) were selected for the predation study in 2017 in Arizona. Two of these packs (Hoodoo and Saffel) were studied during the 2017 winter period, and three (Bluestem, Hoodoo, and Single F1489) were studied during the 2017 summer period. Pack sizes during study periods varied from a minimum of one single adult to nine animals (adults, sub-adults and pups).

During the winter and summer study periods of 2015 through 2017 (a total of 357days; total study days for all packs across all study periods), we investigated 441single GPS point locations and 792 GPS cluster locations from nine wolf packs and two individual wolves. We located 162 ungulate prey carcasses including 153 elk, eight mule deer, and one Coues white-tailed deer. Of the carcasses investigated, 138 were considered confirmed or probable wolf kills, 13 were considered possible wolf kills, and 11 had an unknown cause of death. Elk comprised 94% and deer comprised the remaining 6% of carcasses investigated. Of the elk kills investigated, 60% were elk calves, 11% were yearlings, 8% were adult cows, 10% were adult bulls, and 11% were unknown age or sex. Kill rates were used to estimate the total number of prey killed/wolf/day and total kg biomass/wolf/day. Our combined results for 3 years indicate that a single Mexican wolf may impact ungulate populations equivalent to killing 13.79 cow elk, and 3.66 doe deer annually, which equates to 8.3kg/wolf/day. These data are slightly higher than the average, but within the range of similar studies conducted on northern gray wolves.

h. Wolf Depredation

USDA-WS wolf specialists investigated suspected wolf depredations on livestock, including dead and injured livestock located by the IFT, within 24 hours of receiving a report unless extremely rare circumstances prevent arrival within 24 hours. 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.

From 1998 to 2016, the mean number of cattle confirmed killed by wolves per year is 18, which extrapolates to 32.0 cattle killed per year per 100 Mexican wolves. The average of 32 cattle killed per year per 100 wolves is a useful for comparison purposes in 2017.

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

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

During 2017, USDA-WS and other members of the IFT completed a total of 89 investigations involving 98 animals reported as having potential Mexican wolf involvement. Of these 89 investigations, 86 involved cattle (n = 92 animals), one involved horses (n = 4), and two involved dogs (n = 2). Average IFT response time between the reporting of an incident to the initiation of an on-site investigation was < 24 hours.

Of the 89 investigations completed in 2017, 44 (49%) were determined to be wolf-related (confirmed or probable determination; Table 6). Thirty-six cattle deaths (two investigations had two dead cattle at the scene; Table 6) were confirmed as wolf depredations; nine cattle deaths were probable wolf depredations (one investigation had two dead cattle at the scene); zero injured cattle were confirmed as being wolf related; and zero cattle injuries had probable wolf involvement (Table 5). One dog injury was confirmed as wolf related and one dog injury was probably wolf related in 2017. Fifty-seven percent (n = 25) of the 44 investigations determined to be wolf related occurred in New Mexico and 43% (n = 19) occurred in Arizona (Table 6). Fifty-one percent (n = 45) of the total investigations were determined to be unknown or non-wolf related. These mortality causes included: unknown, black bear, coyote, and natural causes. Fourteen percent (n = 6) of the 43 investigations determined to be wolf related were found and reported by the IFT (Table 6).

New Mexico livestock owners applied for 17 confirmed cattle deaths, and five probable cattle deaths (22 out of 26 animals), and received $30,092.50 in compensation for the depredations from the Mexican Wolf/Livestock Council. Of the 22 cattle that were applied for, 12 were calves (55%), 8 were cows (36%), and two were bulls (9%). Arizona livestock owners applied for 18 cattle deaths (18 out of 19 animals) and received $28,525.35 in compensation for the depredations from the Arizona Livestock Loss Board.

In total, 16 of the 36 (44%) confirmed depredations, resulting in the death of livestock, involved

uncollared wolves, or wolves with failed collars, that were likely not associated with collared packs (Table 6). Three wolves from the Diamond pack, AM1249, AF1557, and m1558 were removed in 2017 for repeated depredations.

The depredation rate for 2017 extrapolates to 31.6 confirmed killed cattle/100 wolves using the number of confirmed killed cattle (n = 36; Table 6) compared to the final population count (n =114). The 2017 rate is below the previous 19 year (1998-2016) recovery program mean of 32.0 confirmed killed cattle/100 wolves/year, and well below the 2015 and 2016 rate of 50.5 and 43.4 confirmed killed cattle/100 wolves, respectively.

i. Management Actions

The IFT hazed wolves on foot or by vehicle in cases where wolves localized near areas of human activity, or if wolves were found feeding on, chasing, or killing livestock. When necessary, the IFT used rubber bullets, cracker shells, and fladry to encourage an aversive response to humans and to discourage nuisance and depredation behavior. The IFT captured wolves with foot-hold traps to collar or remove wolves from the wild for specific management purposes. In addition, wolves that established outside the MWEPA were captured and brought back into the MWEPA or temporarily held in captivity, per the 2015 10(j) Rule. One wolf (m1571) was translocated back into the MWEPA from north of I-40 under this provision in 2017.

In 2017, 48 different wolves were captured and/or removed a total of 57 times (Table 7). Twenty-two wolves were captured, collared for the first time, processed, and released on site for routine population monitoring purposes by the IFT (Table 7). Twenty-four wolves were captured, re-collared, processed and released on site, or simply released on site with the current collar (Table 7). In addition, four wolves were captured by private trappers. All four of these wolves were re-collared, processed and released on site by the IFT. Two wolves were captured to receive medical treatment or examination. In addition, five wolves were captured and removed from the wild pursuant to USFWS approved removal orders or translocated back inside the MWEPA (Table 7).

In 2017, the IFT investigated 33 reported instances of nuisance behavior (Table 8). The investigations were classified as in response to reports of potential wolves: near human dwellings/near people (n = 21), unacceptable behavior around humans (n = 6), and chasing/harassing/attacking livestock or pets (n = 6). Of the 33 reports, the IFT determined that 16 were likely or known to involve Mexican wolves (Table 8). Trail cameras, tracking, telemetry, howling, and trapping were used by IFT members during investigations to gather evidence of wolf involvement on reported nuisance problems. Hazing was used to move wolves away from residences and livestock. Electric charged turbo fladry and Radio Activated Guard (RAG) boxes were used to deter wolves from areas with livestock.

j. Proactive Management Activities

The IFT utilized various proactive management activities in an attempt to reduce wolf-livestock conflicts in the MWEPA during 2017. Proactive management approaches and tools available to the IFT include:

Permittee Flight Calls: Permittees with grazing allotments within occupied wolf range in Arizona and New Mexico that contact the IFT and request regular wolf location information are called every other week (after current gps data is collected and published) and provided general wolf locations that occurred on or near their allotment. The same wolf location information is used to update the public web based public location map.

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

Hay and Supplements: feed and mineral supplements purchased for livestock producers who opt to hold livestock (e.g. cows with young calves) on private property during livestock calving season or wolf denning periods in an effort to reduce potential for conflict with wolves on USFS grazing allotments.

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

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

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

Radio Telemetry Equipment: radio-collar monitoring equipment used by the IFT and in some cases issued to livestock producers to facilitate their own proactive management activities and aid in the detection and prevention of wolf depredations.

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

Supplemental Food Cache: road-killed native prey carcasses or carnivore logs temporarily provided to wolves in order to assist a pack or remnant of a pack in feeding young of the year when extenuating circumstances reduce their own ability to do so (e.g. after cross-fostering, one animal raising young or following initial releases and translocations).

The IFT, working with Non-Governmental Organizations (NGO), used proactive management to assist in reducing wolf-livestock conflicts in the MWEPA (Table 9). The Reintroduction Project and NGOs spent approximately $92,000 on proactive management activities affecting an estimated 14 grazing allotments in Arizona and 9 in New Mexico. The IFT, agency contract employees, and NGO contract employees spent approximately 13,591 hours implementing proactive management activities during 2017. In addition, the Mexican Wolf/Livestock Council distributed $105,000 in 2017 to 40 applicants in Arizona (17) and New Mexico (23) to partially

offset increased management costs (conflict avoidance) and other uncompensated cost (e.g., undetected kills, reduction of livestock weight gain/reproductive rates) to livestock producers in areas occupied by wolves during 2016 for the payment for wolf presence program.

The agencies and NGOs purchased hay and supplements during the calving season for one ranchers in Arizona to help prevent depredation of livestock. Project personnel met with U.S. Forest Service District Rangers, biologists and range staff to discuss livestock management options during the wolf denning season. The IFT coordinated with the Alpine, Black Mesa, Black Range, Clifton, Glenwood, Magdalena, Quemado, Reserve, Springerville, and Wilderness Ranger Districts and stakeholders in Arizona and New Mexico to address potential conflicts between livestock and wolves. In several of these cases, livestock were scheduled to graze in or near pastures where wolves were denning. In pursuing efforts to reduce interactions between livestock and denning wolves, the Districts and ranchers changed pasture rotations and moved livestock into alternate pastures during the denning season, where possible. The suggested livestock movements were voluntary for the ranchers.

During 2017, the Reintroduction Project and NGOs contracted 17 range riders (8 in Arizona, and 9 in New Mexico) to assist 17 stakeholders (8 in Arizona, 9 in New Mexico) in monitoring wolves in proximity to cattle. Range riders monitored approximately 23 allotments within 14 wolf pack home ranges and one uncollared/failed collar group of wolves. Range riders provided additional oversight of livestock and hazing of wolves when they were among or in close proximity to livestock. Eight confirmed depredation incidents and one probable depredation occurred on monitored allotments while ranger riders were under contract (Table 9). One of these incidents was associated with uncollared or failed collared wolves. Range riders and project personal have difficulty effectively preventing depredations from uncollared wolves because hazing and moving cattle are ineffective if wolf locations are unknown.

The IFT issued radio telemetry equipment to stakeholders (3 in Arizona, 11 in New Mexico) in areas where wolf-livestock conflicts were prevalent. Most of these equipment loans were in association with range riders. The IFT trained stakeholders to use the telemetry equipment to monitor wolves in the vicinity of cattle or residences, and instructed them on non-injurious hazing techniques.

Diversionary food caches are utilized to reduce potential conflicts between wolves and livestock, primarily in areas where depredations have occurred in the past. Diversionary food caches were established for eight packs during 2017. In New Mexico, diversionary food caches were established to reduce depredations within the territories of Luna, Lava, Mangas, Prieto, and SBP packs. In Arizona diversionary food caches were established within the territories of Diamond, Frieborn, and Saffel packs. In addition, the supplemental food caches established for Panther Creek and San Mateo packs in association with cross-fostering events in these packs, served the additional purpose of preventing depredations in the area.

k. Non-IFT Wolf Sighting Reports

In 2017, the IFT received a total of 57 wolf sighting reports from the public. Of the 57 sighting reports, the IFT determined 43 reports were non-wolf sightings (coyote, dogs, etc.), four reports were sightings of known wolves and 10 reports were likely uncollared/unknown wolves. 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 MWEPA, and are provided the 1-888-459-WOLF (9653) number to report Mexican wolf sightings.

The IFT analyzed areas without established wolf packs, uncollared wolf sign and sighting reports from the public to target 23 areas in Arizona and New Mexico (Figure 2) in an effort to document and/or radio collar unknown wolves in and around the MWEPA. Ten uncollared wolves in New Mexico and three uncollared or failed collared wolves in Arizona were documented in 2017 as a result of this effort (Figure 2, Table 10). As a result of these efforts 13 wolves where included in the annual population count (Table 1).

l. Public Outreach

The IFT outreach efforts affirm the project's commitment to engage in effective communication, identify various outreach mechanisms, and standardize certain outreach activities. These goals help ensure timely, accurate, and effective two-way communication between and among cooperating agencies and the public. Project personnel conducted outreach activities on a regular basis, as a means of disseminating information to stakeholders, concerned citizens, and government and non-government organizations. Outreach was facilitated through monthly updates, on-line Mexican wolf location maps, permittee flight calls, field contacts, handouts, presentations at meetings, field trips and workshops, informational display booths, web page updates, fielding information requests, visiting with parties filing sighting reports, responding to emails from the public and phone contacts. Mexican wolf project personnel provided formal presentations at local livestock producer meetings and conducted one public meeting in 2017 to develop proposed Mexican wolf initial release and translocation sites within the MWEPA.

During 2017, the IFT posted Mexican wolf reintroduction project updates within the MWEPA once each month at places such as USFS offices, U.S. post offices, community centers, libraries, and some local businesses as well as on the AGFD Mexican wolf web site at https://www.azgfd.com/wildlife/speciesofgreatestconservneed/mexicanwolves/ and the USFWS Mexican wolf web site at http://www.fws.gov/southwest/es/mexicanwolf. Interested parties could sign up to receive the update electronically by visiting the AGFD web site at http://azgfd.gov/signup. The IFT faxed monthly project updates to primary cooperating agencies, stakeholders and interested citizens.

The IFT also produced a wolf location map bi-weekly to inform cooperators and the public of areas occupied by wolves. The map was posted on at http://arcg.is/0iGSGH or http://www.fws.gov/southwest/es/mexicanwolf/RWL.cfms.

Project personnel made contact with campers, hunters, and other members of the public within the MWEPA and provided them with information about the wolf project. These contacts focused on

advising the public of the potential for encountering wolves, providing general recommendations for recreating in wolf-occupied areas and explaining legal provisions of the 2015 10(j) Rule. The IFT also utilized these contacts to collect information on wolf sightings, tracks and scat from the public.

Mexican wolf project personnel provided a total of 25 presentations and status reports to approximately 500 to 700 people in federal and state agencies, conservation groups, rural communities, schools, wildlife workshops, and various other public, private, tribal institutions throughout Arizona, New Mexico and White Mountain Apache Tribal lands. Ninety-two percent of the presentations were for the MWEPA target audience. In addition, biweekly contacts were made to cooperating agencies and stakeholders to inform stakeholders of wolf locations. Mexican wolf reintroduction project monthly updates were emailed to an average of 17,460 people a month. The AZGFD Mexican wolf website was visited 18,960 times during 2017. The AZGFD interactive map was viewed an average of 222 times a month. Comparable numbers were unavailable for the USFWS web site. Outreach presentations can be scheduled by contacting the IFT at 1-888-459-WOLF (9653).

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

Prieto Pack in the Mexican Wolf Experimental Population Area. Photo credit: US Fish and Wildlife Service.

3. Summary and Discussion

The IFT documented a minimum of 114 Mexican wolves in the MWEPA at the end of 2017 (Figure 5; Table 1*)*, and a minimum of 13 breeding pairs (Table 1). The minimum total number of pups alive at the end of the year was lower (n = 26; Table 1) than the previous year (n = 50) and pup survival (percent of pups alive of the total produced) was 48% at the end of the year. The number of known mortalities remained stable; 11, 13, 14, and 12 in 2014, 2015, 2016, and 2017, respectively (Table 3). These population parameters were more similar to 2015 rather than 2016. The result was a lull in population growth relative to the overall pattern observed from 2009 to 2014 (Figure 6). However, the population was composed of the highest number of adults and sub-adults (88) that have occurred during the course of the project. Canine distemper was the cause of death for three wolves in the winter of 2017. Low pup numbers could have been a result of an outbreak in the population. All of the documented animals that died from distemper were uncollared animals that were caught and vaccinated <1.5 months prior to death. This suggests that the animals were exposed to distemper prior to developing titers from the vaccines administered during the capture processing. We expect population growth in 2018 if pup recruitment is higher.

Based on meta-analysis of gray wolf literature, Fuller et al. (2003) identified a 0.34 mortality rate as the inflection point of wolf populations. Theoretically, wolf populations below a 0.34 mortality rate would increase naturally, and wolf populations above a 0.34 mortality rate would decrease. The Mexican wolf population had an overall failure (mortality plus removal plus missing rate) rate of 0.258 in 2017. This failure rate would predict an increasing population which was the case in 2017. Further, Miller (2017) found that population growth was particularly sensitive to adult failure rates, which were low (0.084) in 2017. The stability in the population was likely due to low failure rate in adults because the number of pups recruited decreased from 50 to 26 in 2016 and 2017, respectively. The failure rate remains low largely due to minimal (n = 5) management removals of radio-collared wolves from the population. While the minimal number of management removals has remained low in the recent past, the majority of the population losses in 2017 were either due to human-caused mortalities or missing animals rather than management removals. It is difficult to determine the effect on the population from missing animals because individuals could still be alive. Seven mortalities were human-caused (six of which are illegal mortalities), one died of natural causes associated with old age, one was unknown, and three died of canine distemper. This is the first time that the project has documented wolves dying of canine distemper in the wild (note: two wolves in 2000 died of distemper in captivity shortly after being exposed to the disease in the wild). Efforts to reduce the level of mortality will continue to be a priority in 2018.

The 2017 confirmed killed cattle rate extrapolates to approximately 30 depredations/100 wolves and is lower than the previous 19-year recovery program mean of 32 confirmed killed cattle per 100 wolves. This comparatively low level of depredation was last observed in 2014. It is important to note the standard for extrapolating the annual confirmed killed cattle rate/100 wolves uses the end of year wolf population count, which does not include wolves that died or were removed during 2017. Thus, the confirmed killed cattle rate per 100 wolves, as a matter of practice, underestimated the denominator, which inflates the total rate. Our goal is to maintain the depredation rate at or below the long-term average, which occurred in 2017. The IFT will continue to implement a variety of proactive and reactive methods to reduce the depredation rate in 2018.

Initial results from the Mexican Wolf Recovery Program have demonstrated that cross-fostering can be successful in releasing captive wolves that survive to breeding age. The IFT has conducted cross-fostering on 6 occasions, totaling 12 pups with 10 of these being moved from captive litters into wild dens. In 2014, the IFT fostered two pups from one wild litter (note: this litter was the result of a captive female breeding with a wild male and subsequent release in the spring; the male and female separated prior to the production of pups) to another wild litter. Both of the pups (AF1346 and AM1347) survived to breeding age, paired, and produced pups with other wolves in the wild. In 2016, the IFT fostered six pups from three captive litters into three wild litters (two pups into each wild litter) and documented that a minimum of two survived (mp1471 and an uncollared pup) to the end of the year. Male 1471 survived to breeding age and was paired at the end of 2017. In 2017, the IFT fostered four pups from two captive litters into two wild litters (two pups into each wild litter). One cross-fostered pup, fp1578, was radio-collared in 2017 and continued to travel with the wild pack; pups from the other cross-fostered pack did not survive to the end of the year. Collectively, these results indicate that: (1) in all six cross-fostering events (inclusive of 2017), human disturbance at the den site resulted in the adult wolves moving the den a short distance, but did not result in abandonment of the pups, (2) a minimum of five of the 12 cross-fostered pups from 2014-2017 survived to the end of the year, (3) three of eight cross-fostered animals that would be old enough to be considered "breeding age," are known to be surviving, and (4) all three cross-fostered animals that have reached breeding age have formed packs and either have successfully contributed genetically to the population (bred and raised pups) or are likely to contribute in the future, which is the ultimate goal of all release strategies. Collectively, these results are encouraging and suggest that the Mexican Wolf Recovery Program should continue to utilize cross-fostering as a strategy to manage genetic diversity of Mexican wolves in the wild. In addition, the results are consistent with expectations based on Mexican wolf pup survival rates.

A low adult mortality rate, offset by the low number of pups that survived to December 31, resulted in minimal population growth (1% in 2017). Thus, the population did not meet the management objective for 2017. The Reintroduction Project management objective for 2018 is a 10% increase in the minimum wolf population counts and/or the addition of at least two packs, through natural pairing of wild wolves, that produce a minimum of one pup that survives to December 31, while minimizing negative impacts of wolves and building social tolerance of Mexican wolves among stakeholders within the MWEPA. The IFT will continue to strive towards meeting the recovery goals outlined in the 2017 Mexican Wolf Recovery Plan, First Revision through cross-fostering efforts and population growth through wild reproduction in 2018.

4. Literature Cited

Beyer, Hawthorne. 2014. Geospatial Modeling Environment. http://www.spatialecology.com/gme. Accessed March 2014.

ESRI (Environmental Systems Research Institute). 2011. ArcGIS Desktop. Version 10.3. Environmental Systems Research Institute, Redlands, California.

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

Fuller, T. K., L. D. Mech, and J. F. Cochrane. 2003. Wolf population dynamics. Pages 161-191 *in* L. D. Mech and L. Boitani, editors. Wolves: behavior, ecology, and conservation. The University of Chicago Press, Chicago, Illinois, USA.

Metz, M. C., D. W. Smith, J. A. Vucetich, D. R. Stahler, and R. O. Peterson. 2012. Seasonal patterns of predation for gray wolves in the multi-prey system of Yellowstone National Park. Journal of Animal Ecology 81:553-563.

Mexican Wolf Blue Range Adaptive Management Oversight Committee and Interagency Field Team. 2005. Mexican Wolf Blue Range Reintroduction Project 5-year review. USFWS, Albuquerque, New Mexico, USA.

Miller, P.S. 2017. Population viability analysis for the Mexican wolf (*Canis lupus baileyi*). Integrating wild and captive populations in a metapopulation risk assessment model for recovery planning. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA.

Paquet, P. C., J. Vucetich, M. L. Phillips, and L. Vucetich. 2001. Mexican wolf recovery: three year program review and assessment. Prepared by the Conservation Breeding Specialist Group for the U.S. Fish and Wildlife Service, Albuquerque, New Mexico, USA.

R Core Team (2015). R: A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria. URL https://www.R-project.org/

Ruth, T. K., P. C. Buotte, and H. B. Quigley. 2010. Comparing ground telemetry and global positioning system methods to determine cougar kill rates. The Journal of Wildlife Management 74(5):1122-1133.

Sand, J., B. Zimmerman, P. Wabakken, H. C. Pedersen. 2005. Using GPS technology and GIS cluster analyses to estimate kill rates in wolf-ungulate ecosystems. Wildlife Society Bulletin 33(3):914-925.

Seaman, D. E., and R. A. Powell. 1996. An evaluation of the accuracy of kernel density estimators for home range analysis. Ecology 77:2075-2085.

Seaman, D. E., J. J. Millspaugh, B. J. Kernohan, G. C. Brundige, K. J. Raedeke, and R. A. Gitzen.

1999. Effects of sample size on kernel home range estimates. The Journal of Wildlife Management 63:739-747.

Singer, F. J., W. Schreier, J. Oppenheim, and E. O. Garton. 1989. Drought, fires, and large mammals. BioScience 39:716-722.

U. S. Fish and Wildlife Service. 1996. Final environmental impact statement for the reintroduction of the Mexican wolf within its historic range in the southwestern United States. USFWS, Albuquerque, New Mexico, USA.

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

U. S. Fish and Wildlife Service. 2015. The final Mexican wolf experimental rule. Federal Register. Pp .

White, G. C., and R. A. Garrott. 1990. Analysis of wildlife radio-tracking data. Academic Press Incorporated, New York, New York, USA.

Table 1. Status of Mexican wolf packs in Arizona and New Mexico, as of December 31, 2017.

Pack	Wolf ID	Reproduction[a]	Pups at Year End[b]	No. Collared	No. Uncollared	Min pack Size[c]
Baldy, AZ	AM1347[j], AF1445[f], mp1672	1	1	1	1	2
Bearwallow, AZ*	AM1338, AF1335, m1673	3	3	3	6	9
Bluestem, AZ*	AF1042[j], AM1341[f], F1489, AM1383[ij], f1563[e], m1568[e], m1573[e], fp1665[e]	4	2	1	4	5
Copper Creek, NM	M1386, F1444[j]		0	1	1	2
Dark Canyon, NM	AM992[e], M1354, F1456[i]		0	2	0	2
Diamond, AZ	AM1249[h], AF1557[h], mp1558[h], fp1570[e]		0	0	0	0
Elk Horn, AZ*	AF1294, AM1342[j], f1473, m1474[j], fp1668, mp1671	2	2	4	2	6
Frieborn, AZ	F1443, M1447	0	0	2	0	2
Hawks Nest, AZ	AM1038	0	0	1	0	1
Hoodoo, AZ*	AM1290, AF1333, f1549[e], f1550, f1663[e], mp1666	5	3	4	2	6
Iron Creek, NM*	AM1240, AF1278, m1555, m1556, f1670	4	1	5	1	6
Lava, NM	AM1285, AF1405	3	0	2	0	2
Leopold, NM	AM1293, AF1346, m1561	0	0	3	0	3
Luna, NM*	AM1158, AF1487, m1554[f], fp1662[k]		2	2	2	4
Mangas, NM*	AM1296, AF1439, fp1664	4	1	3	0	3
Maverick, AZ	AM1183[j], AF1291	0	0	1	1	2
Morgart's, NM	AM1155	0	0	1	0	1
New Pair, AZ	m1477	0	0	1	1	2
New Pair, NM	M1453	0	0	1	2	3
Panther Creek, AZ*	AF1339, AM1382, m1574, fp1590[f], fp1591[f], fp1594[f], fp1595[f], fp1596[f], fp1597[f], mp1598[h], mp1599[h]	6	0	3	0	3
Pine Spring, AZ	F1562	0	0	1	1	2
Pole Knoll Pair, AZ	F1437[e]		0	0	0	0

Pack	Wolf ID	Reproduction[a]	Pups at Year End[b]	No. Collared	No. Uncollared	Min pack Size[c]
Prieto, NM*	AF1251, AM1398, m1386[i], f1456[i], f1553[i], f1565, mp1669	2	2	4	1	5
Prime Canyon, AZ	m1471[i], F1488	0	0	2	0	2
Saffel, AZ*	AM1441[j], AF1567, mp1661	4	3	2	3	5
San Mateo, NM*	AM1345[j], AF1399, f1551[f], fp1578, mp1579[f], fp1580[f], mp1581[f], mp1582[k], mp1583[f], mp1584[f], mp1585[f], fp1586[h], mp1587[h]	8	3	2	3	5
SBP, NM*	AM1284, AF1553[i], mp1667	3	2	3	1	4
Willow Springs, NM	F1397[f]		0	0	0	0
Radio collared wolf, AZ	m1483[e]		0	0	0	0
Radio collared wolf, AZ	f1484	0	0	1	0	1
Radio collared wolf, AZ	f1530[h]					
Radio collared wolf, AZ	m1559	0	0	1	0	1
Radio collared wolf, AZ	f1560	0	0	1	0	1
Radio collared wolf, AZ	m1571[h]		0	1	0	1
Radio collared wolf, AZ	m1572[h]		0	1	0	1
Radio collared wolf, NM	M1455	0	0	0	1	1
Radio collared wolf, NM	m1486	0	0	1	0	1
Radio collared wolf, NM	M1552	0	0	1	0	1
Radio collared wolf, NM	M1566[e]		0	0	0	0
Radio collared wolf, NM	m1569	0	0	1	0	1
Uncollared wolf, AZ	f1675[e]		0	0	0	0
Black Canyon, AZ	Uncollared wolf	0	0	0	1	1
Steeple Creek, AZ	Uncollared wolves	0	0	0	2	2
Amen Canyon, NM	Uncollared wolf	0	0	0	1	1
Cout Lk, NM	Uncollared wolf	0	0	0	1	1
LaJolla, NM	Uncollared wolves	0	0	0	2	2
Pueblo Creek/Alma Mesa, NM	Uncollared wolf	0	0	0	1	1

Pack	Wolf ID	Reproduction[a]	Pups at Year End[b]	No. Collared	No. Uncollared	Min pack Size[c]
Willow Springs, NM	Uncollared wolves	0	0	0	2	2
FAIR	Uncollared wolves	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]
SCAR	Uncollared wolves	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]
Totals[m]		54	26	66	48	114

[a] Reproduction-maximum number of pups documented in 2017.
[b] Pups at year end documented surviving until December 31, 2017.
[c] Min pack size-total number of wolves (collared, uncollared, pups) documented at year end.
[d] Wolf numbers on FAIR and SCAR are not displayed at the request of the tribes.
[e] Died during 2017.
[f] Fate unknown during 2017.
[g]Radio collared wolf not missing for 3 months, but not located nor believed alive by IFT through December 31, 2017.
[h] Removed from wild for management purposes,includes 4 cross-foster and 2 that were re-released into the wild, during 2017.
[i] Dispersed and joined existing pack.
[j]Radio collar no longer functions; but, documented alive through December 31, 2017 and counted in "No. Uncollared" column.
[k]Radio collar slipped off; but, documented alive through December 31, 2017 and counted in "No. Uncollared" column. "
[l]Breeding wolf displaced from pack by other wolves; retains original pack name.
[m]Totals include wolves occurring on FAIR and SCAR.
*A pack that meets the definition of a breeding pair per the final rule.

Table 2. Home range sizes of free-ranging Mexican wolf packs in Arizona and New Mexico, January 1 – December 31, 2017**.**

Pack	Home range size mi^2 (km^2)	Number of individual locations	State
Bear Wallow	108 (281)	827	AZ
Bluestem	79 (204)	1540	AZ
Copper Creek	368 (954)	310	NM
Dark Canyon	99 (257)	381	NM
Diamond	430 (1114)	969	AZ
Elkhorn	166 (429)	1456	AZ
Frieborn	150 (389)	22	AZ
Hoodoo	139 (361)	3017	AZ
Iron Creek	86 (222)	749	NM
Lava	313 (812)	416	NM
Leopold	174 (452)	1449	NM
Luna	156 (405)	308	NM
Mangas	239 (620)	1620	NM
Maverick	260 (673)	20	AZ
Panther Creek	207 (535)	1233	AZ
Prieto	178 (462)	2049	NM
Prime Canyon	65 (168)	673	AZ
Saffel	79 (203)	1564	AZ
San Mateo	308 (797)	416	NM
SBP	128 (331)	620	NM
Tsay-O-Ah	253 (656)	58	AZ
Average	195.7 (506.9)	937.95	

Table 3. Wild Mexican wolf mortalities documented in Arizona and New Mexico, 1998-2017.

Year	Illegal Mortality[a]	Vehicle collision	Natural[b]	Other[c]	Unknown	Awaiting necropsy	Annual Total
1998	4	0	0	1	0	0	5
1999	0	1	2	0	0	0	3
2000	2	2	1	0	0	0	5
2001	4	1	2	1	1	0	9
2002	3	0	0	0	0	0	3
2003	7	4	0	0	1	0	12
2004	1	1	1	0	0	0	3
2005	3	0	0	0	1	0	4
2006	1	1	1	1	2	0	6
2007	2	0	1	0	1	0	4
2008	7	2	2	0	2	0	13
2009	4	0	4	0	0	0	8
2010	5	0	1	0	0	0	6
2011	3	2	3	0	0	0	8
2012	4	0	0	0	0	0	4
2013	5	0	0	2	0	0	7
2014	7	1	3	0	0	0	11
2015	8	1	2	0	1	1	13
2016	7	2	1	2	2	0	14
2017	6	1	4	0	1	0	12
Total	**83**	**19**	**28**	**7**	**12**	**1**	**150**

[a]Illegal mortality causes of death may include, but are not limited to known or suspected illegal shooting with a firearm or arrow, and illegal trap related mortalities by the public following necropsy.
[b]Natural causes of death may include, but are not limited to predation, starvation, interspecific strife, lightening, and disease.
[c]Other causes of death include capture-related mortalities. legal shootings and legal trap related mortalities by the public.

Table 4. Mexican wolf mortalities documented in Arizona and New Mexico during January 1 - December 31, 2017.

Wolf ID	Pack	Age (years)	Date Found	Cause of Death
F1437	Single	2	January 18	Illegal Mortality
M1566	Single	3	January 26	Natural causes – Distemper
AM992	Dark Canyon	13+	February 5	Natural causes
mp1568	Bluestem	<1	February 17	Natural causes – Distemper
mp1573	Bluestem	<1	March 19	Natural causes – Distemper
f1549	Hoodoo	1	March 31	Illegal Mortality
f1570	Diamond	1	May 9	Illegal Mortality
f1563	Bluestem	1	October 28	Illegal Mortality
m1483	Panther Creek	1	November 8	Vehicle Strike
f1663	Hoodoo	1	November 11	Illegal Mortality
f1665	Bluestem	1	November 16	Unknown
f1675	Single	1	December 5	Illegal Mortality

Table 5. Mexican wolf depredations of livestock documented in Arizona and New Mexico during January 1 – December 31, 2017.

	Confirmed	Probable	Total
Fatal	34	6	40
Injury	0	0	0

Table 6. Investigations of confirmed and probable depredations and injuries caused by Mexican wolves to livestock and dogs during 2017 in New Mexico and Arizona. Depredation incidents are defined as the aggregate number of livestock confirmed killed or mortally wounded by an individual wolf or a single pack of wolves at a single location within a 1-day (24-hour) period, beginning with the first confirmed kill, as documented in the initial IFT incident investigation pursuant to SOP 11.0. Number of depredation incidents on a given wolf at a given point in time is calculated based on the number of incidents in the preceding 365 days.

	Wolves in Area	Investigation Date	Located By IFT	Species	State	# Killed/ # Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents	Management Action
1	Uncollared	1/26/2017	No	Cattle	NM	2 Killed	Confirmed	Uncollared	Yes	1	Conducted grids with helicopter looking for uncollared
2	Uncollared	1/26/2017	No	Cattle	NM	1 Killed	Probable	Uncollared	No	1	Conducted grids with helicopter looking for uncollared
3	Uncollared	1/26/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared (possibly associated with Mangas)	Yes	1	Conducted helicopter counts and capture efforts on Magas Pack (no uncollared animals observed with pack)
4	Diamond	1/28/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (not 1249)	Yes	1	Diversionary feeding, hazing, cattle moved from area by producer, removal order issued and subsequent removal of 1249 and 1558 to captivity
5	Diamond	1/30/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond	Yes	2	Diversionary feeding, hazing, cattle moved from area by producer, removal order issued and subsequent removal of 1249 and 1558 to captivity
6	Diamond	1/30/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond	Yes	3	Diversionary feeding, hazing, cattle moved from area by producer, removal order issued and subsequent removal of 1249 and 1558 to captivity

	Wolves in Area	Investigation Date	Located By IFT	Species	State	# Killed/ # Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents	Management Action
7	Uncollared	2/7/2017	No	Dog	AZ	Injured	Probable	Uncollared	Yes	1	Hazing, deployed fladry and RAG boxes
8	Uncollared	2/25/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	None. Depredation was >10 days old.
9	Uncollared	3/6/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Increased monitoring and trail camera utilization
10	Uncollared	3/18/17	Yes	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Increased monitoring and trail camera utilization
11	1486	3/21/2017	Yes	Cattle	NM	1 Killed	Confirmed	1486	Yes	1	Hazing
12	1530	3/25/2017	No	Cattle	AZ	1 Killed	Confirmed	1530	Yes	1	Captured and relocated to captivity
13	1155	3/27/2017	Yes	Cattle	NM	1 Killed	Confirmed	1155	Yes	1	Hazing
14	Uncollared	4/11/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Hazing
15	Mangas	4/15/2017	No	Cattle	NM	1 Killed	Confirmed	Mangas (1296, 1439)	Yes	1	Increased monitoring, diversionary feeding
16	Uncollared	4/15/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Unsuccessful trapping initiated in the area.
17	Frieborn	4/25/2017	No	Cattle	NM	1 Killed	Probable	Uncollared	No	0	None. Only photographic evidence (picture of a wolf carrying a calf head) and blood at the scene. Full carcass never located.
18	Uncollared and 1569	5/9/2017	No	Cattle	NM	1 Killed	Confirmed	1569 or uncollared	Yes	1	Increased monitoring and trail camera utilization
19	Uncollared and 1569	5/9/2017	No	Cattle	NM	2 killed	Probable	1569 or uncollared	No	1	Increased monitoring and trail camera utilization
20	Mangas	5/16/2017	No	Cattle	NM	1 Killed	Confirmed	Mangas (1296, 1439)	Yes	1	Increased monitoring, diversionary feeding and trail camera utilization

	Wolves in Area	Investigation Date	Located By IFT	Species	State	# Killed/ # Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents	Management Action
21	Diamond	5/22/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (1557, 1559, 1560) or uncollared	Yes	4	Increased monitoring, and diversionary feeding
22	Diamond	5/22/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (1557, 1559, 1560) or uncollared	Yes	5	Increased monitoring and diversionary feeding
23	Diamond 1557	5/30/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (1557) or uncollared	Yes	6	Increased monitoring and diversionary feeding; removal order issued for 1557
24	Uncollared	6/22/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	2	Wolf likely left area.
25	Uncollared	6/27/2017	No	Cattle	NM	1 killed	Confirmed	Uncollared	Yes	3	Searched area for trapping opportunities
26	Hoodoo 1333	7/4/2017	Yes	Cattle	AZ	1 Killed	Probable	Hoodoo (1333)	No	0	Increased monitoring
27	Bluestem	7/11/2017	Yes	Cattle	AZ	1 Killed	Probable	Bluestem	No	0	Increased monitoring
28	1562	7/14/2017	No	Cattle	AZ	1 Killed	Confirmed	1562	Yes	1	Increased monitoring, removal authorized for 1562, trapping efforts initiated
29	1562	7/14/2017	No	Cattle	AZ	2 Killed	Confirmed	1562	Yes	2	Increased monitoring, removal authorized for 1562, trapping efforts initiated
30	Uncollared	7/24/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Increased monitoring
31	Diamond	8/2/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (1557, 1571, 1572 and either 1559 or 1560)	Yes	7	Diversionary feeding, hazing, trapping efforts
32	Diamond	8/2/2017	No	Cattle	AZ	1 Killed	Probable	Diamond	No	8	Diversionary feeding, hazing, trapping efforts
33	Diamond	8/3/2017	No	Cattle	AZ	1 Killed	Confirmed	Diamond (1557, 1571, 1572 and 1559 or 1560)	Yes	9	Diversionary feeding, hazing, trapping efforts, subsequent lethal

	Wolves in Area	Investigation Date	Located By IFT	Species	State	# Killed/ # Injured	Call	Wolves Responsible	Depredation Incident	No. of Incidents	Management Action
											removal of 1557 per removal order
34	1562	8/9/2017	No	Cattle	AZ	1 Killed	Confirmed	1562	Yes	3	Removal efforts discontinued, diversionary feeding and increased monitoring
35	Hoodoo	8/14/2017	No	Cattle	AZ	1 Killed	Confirmed	Uncollared associated with Hoodoo	Yes	1	Increased monitoring
36	Uncollared	9/22/2017	No	Cattle	AZ	1 Killed	Confirmed	Uncollared	Yes	1	Increased monitoring, trail camera utilization, diversionary feeding
37	Uncollared	9/28/2017	No	Cattle	AZ	1 Killed	Confirmed	Uncollared	Yes	2	Increased monitoring, trail camera utilization, diversionary feeding, cattle moved from area by producer
38	Iron Creek (1555)	11/1/2017	No	Cattle	NM	1 Killed	Probable	Iron Creek (1555)	No	0	Increased monitoring.
39	1155	11/3/2017	No	Cattle	NM	1 Killed	Probable	1155	No	1	Increased monitoring.
40	Uncollared	12/18/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared	Yes	1	Cameras placed in area.
41	SBP (1553 and 1667)	12/18/2017	Yes	Cattle	NM	1 Killed	Confirmed	SBP (1553 and 1667)	Yes	1	Increased monitoring.
42	San Mateo	12/27/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollated (possibly associated with San Mateo)	Yes	1	Hazing
43	Uncollared	12/27/2017	No	Dog	NM	1 Injured	Confirmed	Uncollared	No	0	Increased monitoring, hazing
44	Uncollared	12/28/2017	No	Cattle	NM	1 Killed	Confirmed	Uncollared (possibly associated with Mangas)	Yes	1	Hazing

Table 7. Mexican wolves captured in Arizona and New Mexico from January 1 – December 31, 2017.

	Pack	Wolf ID	Capture Date	Reason for Capture
1	Single	1566	January 5, 2017	Non-target caught by private trapper. Recollared and released on site.
2	Luna	1158	January 21, 2017	Non-target caught by private trapper. Recollared and released on site.
3	Single	1566	January 24, 2017	Captured to perform a medical evaluation. Moved to a captive facility to receive veterinary care.
4	Diamond	1249	January 26, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
5	Elk Horn	1473	January 26, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
6	Saffel	1567	January 27, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
7	Bear Wallow	1335	January 27, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
8	Hoodoo	1333	January 30, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
9	Panther Creek	1339	January 30, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
10	Bluestem	1568	January 30, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
11	Bluestem	1574	January 31, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
12	Diamond	1558	January 31, 2017	Helicopter capture. Moved to captivity.
13	Diamond	1249	January 31, 2017	Helicopter capture. Moved to captivity.
14	Prieto	1569	February 1, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
15	Prieto	1251	February 1, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
16	Single	1456	February 1, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
17	Leopold	1346	February 1, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
18	Luna	1487	February 2, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.

	Pack	Wolf ID	Capture Date	Reason for Capture
19	Lava	1285	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
20	Bluestem	1488	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, recollared, and released on site.
21	Bluestem	1573	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
22	Diamond	1570	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
23	Diamond	1572	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
24	Diamond	1571	February 3, 2017	Helicopter capture. Routine monitoring purposes. Captured, collared, and released on site.
25	Diamond	1572	March 3, 2017	Injured animal captured for medical evaluation and treatment.
26	Single	1530	March 26, 2017	Captured and moved to captivity
27	Bluestem	1563	June 3, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
28	Bluestem	1489	June 4, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
29	Luna	1662	August 13, 2017	Routine monitoring purposes. Captured, collared, and released on site.
30	Saffel	1661	August 15, 2017	Routine monitoring purposes. Captured, collared, and released on site.
31	Diamond	1557	August 23, 2017	Lethal removal of F1557 for livestock depredations.
32	Mangas	1439	August 28, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
33	Hoodoo	1663	August 28, 2017	Routine monitoring purposes. Captured, collared, and released on site.
34	Mangas	1664	August 29, 2017	Routine monitoring purposes. Captured, collared, and released on site.
35	Bluestem	1665	August 29, 2017	Routine monitoring purposes. Captured, collared, and released on site.
36	Hoodoo	1666	September 2, 2017	Routine monitoring purposes. Captured, collared, and released on site.
37	Panther Creek	1574	September 6, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
38	SBP	1667	September 10, 2017	Routine monitoring purposes. Captured, collared, and released on site.
39	San Mateo	1582	September 16, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
40	Elk Horn	1668	September 21, 2017	Routine monitoring purposes. Captured, collared, and released on site.
41	Prieto	1669	September 26, 2017	Routine monitoring purposes. Captured, collared, and released on site.

	Pack	Wolf ID	Capture Date	Reason for Capture
42	Prime Canyon	1488	September 30, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
43	Iron Creek	1556	October 8, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
44	Iron Creek	1670	October 8, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
45	Iron Creek	1555	October 9, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
46	Iron Creek	1556	October 10, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
47	Single	1571	October 10, 2017	Helicopter capture. Captured, recollared, and translocated into MWEPA.
48	Elk Horn	1671	October 20, 2017	Routine monitoring purposes. Captured, collared, and released on site.
49	San Mateo	1578	October 21, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
50	Baldy	1672	October 23, 2017	Routine monitoring purposes. Captured, collared, and released on site.
51	Bear Wallow	1673	October 24, 2017	Routine monitoring purposes. Captured, collared, and released on site.
52	Elk Horn	1477	October 24, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
53	Tsay-O-Ah	1674	November 5, 2017	Routine monitoring purposes. Captured, collared, and released on site.
54	Prieto	1669	November 11, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
55	San Mateo	1399	November 12, 2017	Routine monitoring purposes. Captured, recollared, and released on site.
56	Single	1453	December 26, 2017	Non-target caught by private trapper. Recollared and released on site.
57	Single	1569	December 30, 2017	Non-target caught by private trapper. Recollared and released on site.

Table 8. IFT management actions resulting from reported cases of potential Mexican wolf nuisance activities in Arizona and New Mexico during 2017.

Date Reported	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
January 15	N/A	Snowflake, AZ	Wolf seen near private land	IFT investigated and determined it was not a wild wolf	Not Mexican wolf
January 27	Mangas	N of Luna, NM	2 wolves observed near a house	IFT determined wolves were Mangas, but they had moved on by the time of the report	None
January 30	N/A	Alpine, AZ	Tracks observed near a turned over garbage can	IFT investigated and determined that it was not a wild wolf	Not Mexican wolves
January 30	N/A	Alpine, AZ	Fur and a couple of blood spots found between house and garage	IFT investigated and determined that it was not a wild wolf	Not Mexican wolves
February 3	Elk Horn	Nutrioso, AZ	Seven wolves observed near a residence. Observer scared the wolves away with a vehicle.	IFT responded to the area and hazed the wolves out of the area	Wolves moved away from the area of the incident
February 3	Unknown	Nutrioso, AZ	Probable injured dog. Injury took place on January 29 and owner thought it was a coyote. Based on presence of wolves on February 3 the owner thought it could be wolves and reported to IFT.	Dog was investigated by WS on February 7. Determined to be a probable wolf injury	Wolves had moved away from area by the time of the investigation
February 7	N/A	Vernon, AZ	Dog was let out of house and charged at a canid	IFT investigated and found coyote tracks in the location	Not Mexican wolf
February 8	New pair (1488 and failed collar)	Alpine, AZ	Two wolves observed on private land. Not disturbed when in truck, but ran when person yelled at the wolf.	IFT took report and investigated	Wolves had moved away from area by time of investigation
February 13	Hoodoo	Alpine, AZ	Dog barking and observer went outside and saw a collared wolf. Wolf ran off but came back after dog was put away.	IFT arrived approximately 40 minutes after the incident had occurred. Three sets of wolf tracks in snow	Wolves had already moved away
February 16	Elk Horn	Nutrioso, AZ	Heard wolves howling from a residence	IFT responded and hazed the wolves out of the area	Wolves left the area

Date Reported	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
February 17	Hoodoo	SW of Nutrioso, AZ	Observer was riding a horse with a dog. One wolf was closer and 2-3 were further behind. Observer road back to house with wolves trailing behind	IFT interviewed the observer. Wolves had moved from the area.	Wolves had already moved away
February 22	Elk Horn	Nutrioso, AZ	Observer saw 3 wolves traveling by a residence and shot a firearm to scare them away.	IFT deployed electric charged fladry fencing around the livestock pens and installed a radio activated guard box.	No further reports of nuisance in the area by the Elk Horn pack
March 20	1530	South of Wilcox, AZ	Well drillers saw a wolf approximately 40 m away. The wolf just laid down and watched them.	IFT was unable to investigate due to timing of the report.	None
April 22	Unknown	Concho, AZ	Observer saw one wolf near house with a turkey in its mouth in the light of the headlamp. The animal ran away.	IFT talked to reporting party on phone. IFT explained history of domestic hybrids in the area. Asked for reports and/or photos if the animal was seen again.	No further sightings in area
April 26	Unknown	East of Aragon, NM	Two wolves observed from a house	IFT investigated and found only coyote tracks in the area. Likely a coyote sighting.	Placed a camera in the area and only observed coyotes
June 7	Unknown	Water Canyon, AZ	Two to three wolves seen on 2 short sightings approximately 100 yards away. Yelled at wolves and they did not move away. Snarling/yapping after they moved away	IFT investigated. Probable unknown wolf.	No further incidents in area
June 7	Prime Canyon	Alpine, AZ	Observer described incidents over two days. During the first day, a wolf was seen near the residence and failed to retreat right away (20 seconds before retreat from 20 yards away. The following day wolves were observed 3 times from a moving vehicle.	IFT contacted reporting party and provided cell phone numbers for immediate response and hazing if observed again. Hazing of Prime Canyon occurred on June 8-13.	Number of nuisance incidents declined

Date Reported	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
June 7	Prime Canyon	Alpine, AZ	Observed two wolves moving through a residential area from inside house	IFT contacted reporting party and provided cell phone numbers for immediate response and hazing if observed again. Hazing of Prime Canyon occurred on June 8-13.	Number of nuisance incidents declined
June 11	Unknown	S. of Magdalena, NM	One wolf observed in close proximity to a person.	Unknown if this was a wolf, the report was taken at the USFS office.	None, no further incidents in area
July 27	Unknown	Prescott, AZ	Possible wolf seen near private residence	IFT spoke to reporting party. Unknown. Domestic hybrids have previously been observed in area.	No further reports
August 8	Saffel Pack	West of Mexican Hay Lake, AZ	Observer described an interaction while hiking on August 1. Hiker observed 2 collared wolves and 3 uncollared pups. Wolves failed to move away. Hiker fired a shot with a handgun and wolves moved a little further away, but followed hiker for 400 yards.	IFT took a report from the observer. By the time the report was received the Saffel Pack had moved out of the area. IFT determined that the hiker had walked into a rendezvous site and wolf behavior was protective of the pups.	Wolves had moved out of the area by time of report. No further reports of incidents with the Saffel Pack.
August 18	N/A	Springerville, AZ	One wolf observed chasing cattle in pasture behind Safeway. Observer took photos.	IFT contacted observer. Photos taken by observer indicated that the animal was a dog.	Animal control was contacted. Not Mexican wolves
August 28	Unknown	SE of Nutrioso, AZ	Wolf observed a couple hundred yards away from residences. Observer ran it off.	IFT contacted observer. Possible unknown wolf	Animal left the area
October 5	N/A	Pinetop, AZ	Observer reported a close encounter with wolves on a trail.	IFT called observer and took report of incident. Likely not an encounter with wolves due to descriptions of animals provided by observer.	Likely not Mexican wolves
October 25	Unknown	South of Heber, AZ	Observer reported that about 6 month previous a wolf had followed her and her daughter on horseback on National Forest. Saw the animal twice	IFT conducted interview of the observer, but could not determine any evidence due to the time that had elapsed and lack of collared wolves in the area of the incident.	None
November 6	N/A	Hannagan Meadow, AZ	Report of wolves acting aggressive towards campers at Hannagan Campground.	IFT investigated and determined that domestic dogs were responsible for the incident.	Not Mexican wolves

Date Reported	Wolf ID	General Location	Type of Activity	IFT Response	Management Result
November 6	N/A	Ash Fork, AZ	Group of canid went through back yard.	IFT spoke to reporting party. Based on the observer's description the animals were not Mexican wolves.	Not Mexican wolves
November 7	Unknown	E of Show Low, AZ	Possible wolf seen at private residence.	IFT spoke to reporting party. One animal reported moving away from her. Unknown if it was a wolf.	No further reports
November 20	N/A	Rye, AZ	Possible wolf seen near private residence. Animal would move off when it saw people	IFT spoke to reporting party and asked reporting party to get pictures as the observer had heard the animal howl multiple nights and seen it over a couple of weeks. Possible domestic dog	Likely not Mexican wolf
December 7	N/A	Vernon, AZ	One wolf observed near private property.	IFT responded and spoke with reporting party	Likely not Mexican wolf
December 27	Unknown	Quemado, NM	Wolf attacked dog in front yard and injured the dog. Tracks were also observed about 50 yards from the house near horses.	IFT spent night in the area attempting to haze the uncollared animal. No signals were heard and the animal was not observed. The dog injury was confirmed as wolf-caused.	None. No further sightings.
December 8	Unknown	Overgaard, AZ	Possible wolf seen near houses. Elk dead in observer's back yard.	IFT spoke with the reporting party and investigated the area. Possible Mexican wolf	No further sightings
December 15	N/A	Valle, AZ	Possible wolf seen near residence	IFT spoke with reporting party and determined that it was a possible dog or domestic hybrid	Likely not Mexican wolf

Table 9. IFT proactive management activities in Arizona and New Mexico during 2017.

Proactive Management	Purpose	Time Period	Location	Packs Associated with Proactive Management	Management Result
Hay	Reduce livestock depredations	Calving Season	Blue River, AZ	Bluestem	No known depredations
Range Rider	Reduce livestock depredations	June – Oct (5 months)	Beaver Creek, AZ	Bluestem, Panther Creek	1 probable depredation
Range Rider	Reduce livestock depredations	March-June (4 months)	South Escudilla, AZ	Elk Horn	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Crosby Crossing, AZ	Hawks Nest, Hoodoo	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Harris Lake, AZ	Diamond, Baldy, Uncollared wolves	8 confirmed depredations
Range Rider	Reduce livestock depredations	June – Oct (4 months)	Sheep Springs, AZ	Diamond, Baldy, Uncollared wolves	Same depredations as documented above.
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Greer, AZ	Diamond, Saffel	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Alpine, AZ	Prime Canyon, Hoodoo, Elk Horn, Frieborn	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Greens Peak, AZ	Diamond, Baldy, Uncollared wolves	1 confirmed depredation
Range Rider	Reduce livestock depredations	June – July (2 months)	Cow Springs, NM	Mangas, Uncollared Wolves	No known depredations
Range Rider	Reduce livestock depredations	March – June (4 months)	Centerfire Bog, NM	Mangas, Uncollared wolves	No known depredations
Range Rider	Reduce livestock depredations	June – Oct (4 months)	Cox Canyon, NM	Luna, Prieto	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Govina, NM	Luna, Willow Springs	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	Gallo Mountain, NM	San Mateo, Uncollared wolves	No known depredations
Range Rider	Reduce livestock depredations	June – Sept (4 months)	East Sand Flat, NM	San Mateo, Willow Springs, Uncollared wolves	1 confirmed depredation
Range Rider	Reduce livestock depredations	March – May (3 months)	Gasoline Lake, NM	Mangas, Uncollared wolves	1 confirmed depredation
Range Rider	Reduce livestock depredations	June – July (2 months)	Eagle Peak, NM	Luna, Prieto	No known depredations
Range Rider	Reduce livestock depredations	Feb – May (4 months)	T-Bar/Y Canyon, NM	Luna, SBP, Prieto, Iron Creek, Lava, Dark Canyon	1 confirmed depredation associated with uncollared wolves

Table 10. Areas search and uncollared wolves documented by the IFT during 2017.

Area ID	General Area	Effort	State	Number Documented
A	Blue Ridge	Deployed remote camera, sign searched roads and trails to monitor for wolves	AZ	0
B	Chevelon Ridge	Deployed remote camera and food cache, sign searched roads and trails to monitor for wolves	AZ	0
C	Forest Lakes	Deployed remote cameras and food caches, sign searched roads and trails to monitor for wolves	AZ	0
D	Black Canyon south of Heber/Overgaard	Deployed remote cameras and food caches, sign searched roads and trails to monitor for wolves, and ran traplines	AZ	1
E	Pinedale/Clay Springs	Deployed remote cameras and food caches, sign searched roads and trails to monitor for wolves	AZ	0
F	Mogollon Rim north of Forestdale	Deployed remote camera and food cache, sign searched roads and trails to monitor for wolves	AZ	0
G	Lyman Lake/Richville Valley	Deployed remote camera and food cache, sign searched roads and trails to monitor for wolves	AZ	0
H	Steeple Creek	Deployed remote cameras, sign searched roads and trails to monitor for wolves	AZ	2
I	Pueblo Creek/Alma	Deployed remote cameras independent and in conjunction with food cache, surveyed area by helicopter	NM	1
J	Cout Lake	Sighting report confirmed with photo	NM	1
K	Fox Mountain	Sign searched roads and trails to monitor for wolves	NM	0
L	Amen Canyon	Dog injured by uncollared wolf	NM	1
M	Sand Flats	Deployed remote cameras, sign searched roads and trails to monitor for wolves	NM	0
N	Willow Springs	Deployed remote camera and food cache, sign searched roads and trails to monitor for wolves, surveyed area by helicopter	NM	2
O	La Jolla	Deployed remote cameras independent and in conjunction with food cache, surveyed area by helicopter	NM	2
P	Datil Mountains	Deployed remote cameras, sign searched roads and trails to monitor for wolves, wolf trapped	NM	3
Q	Luera Mountains	Sign searched roads and trails to monitor for wolves	NM	0
R	Indian Peaks/Pelona Mountain	Sign searched roads and trails to monitor for wolves	NM	0
S	Boiler Peak	Sign searched roads and trails to monitor for wolves	NM	0
T	Gallinas/Bear Mountains	Deployed remote cameras, sign searched roads and trails to monitor for wolves	NM	0
U	North San Mateo Mountains	Deployed remote cameras, sign searched roads and trails to monitor for wolves	NM	0
V	South San Mateo Mountains	Deployed remote cameras, sign searched roads and trails to monitor for wolves	NM	0
W	Tribal lands	Deployed remote cameras, sign searched roads and trails to monitor for wolves	NM	0

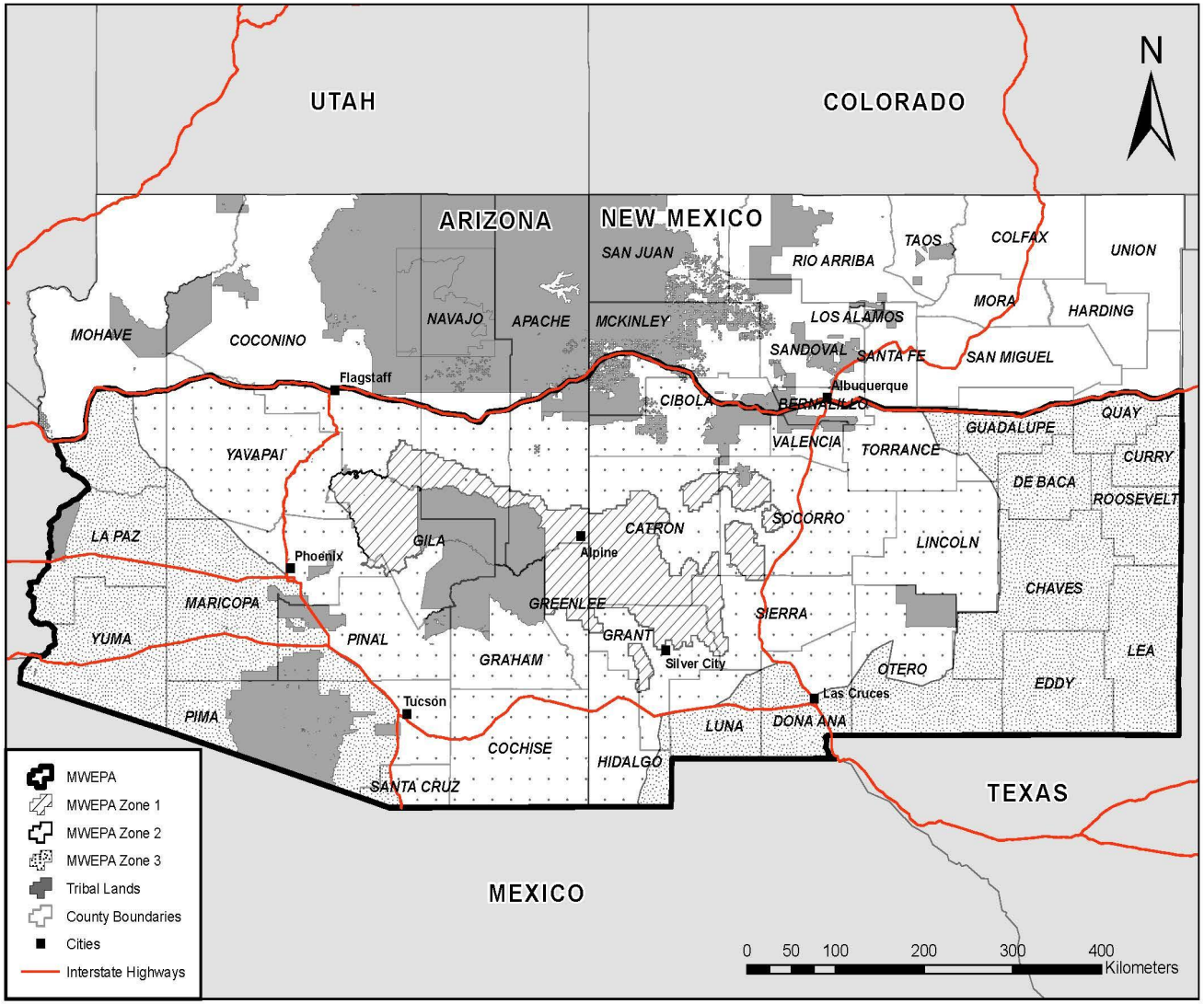

Figure 1. The Mexican Wolf Experimental Population Area (MWEPA) and Zones 1-3 in Arizona and New Mexico as described in the Final Rule found at http://www.fws.gov/southwest/es/mexicanwolf/pdf/Mx_wolf_10j_final_rule_to_OFR.pdf.

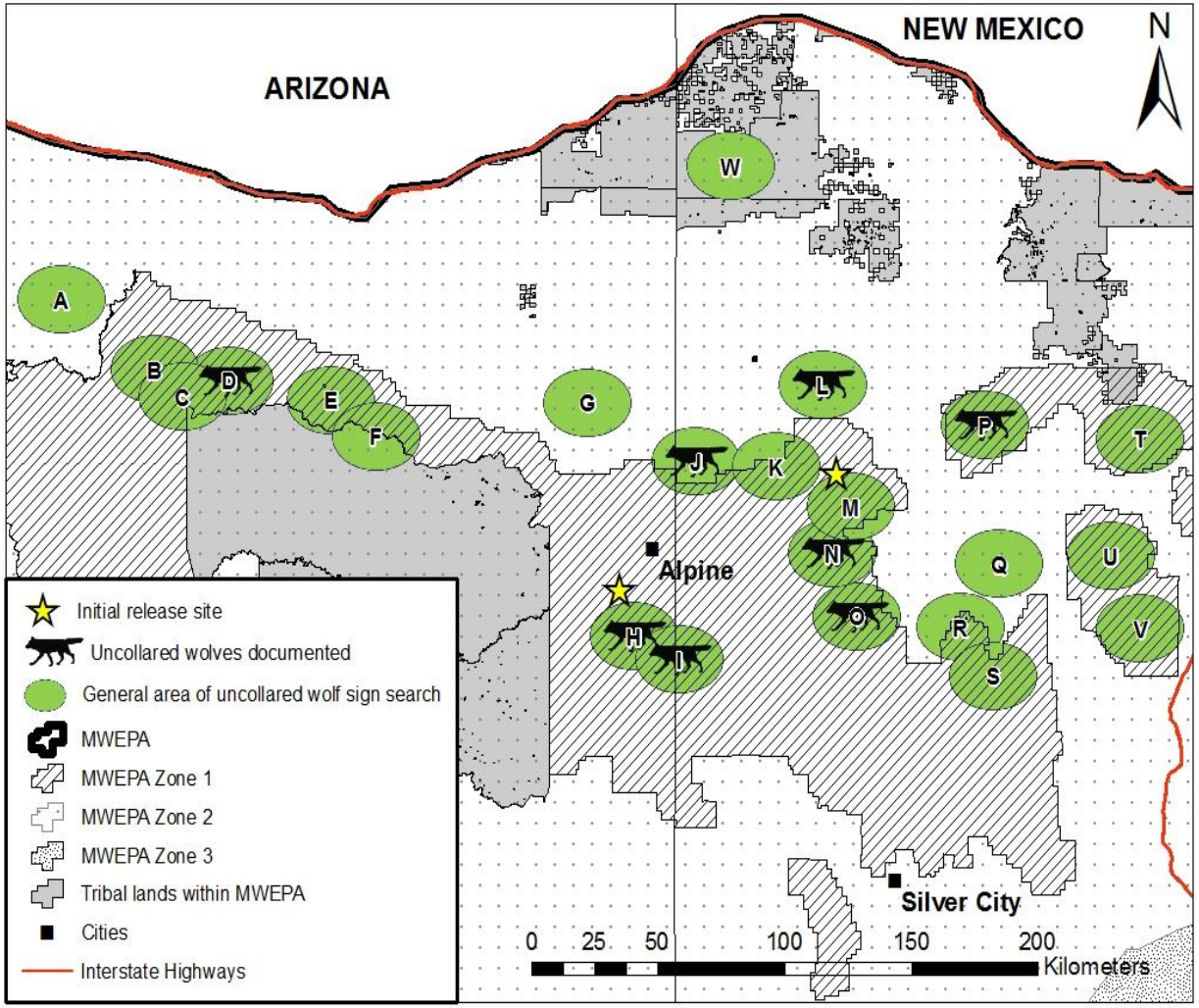

Figure 2. General areas searched for uncollared wolf sign (with uncollared wolves documented and counted in the 2017 wolf population designated) within the Mexican Wolf Experimental Population Area (MWEPA). Search areas correspond with map letters found in Table 10. General search areas overlapping the Fort Apache Indian Reservation do not necessarily indicate sign search conducted on tribal land. Two initial release sites were used during 2017 in Arizona and New Mexico within the MWEPA.

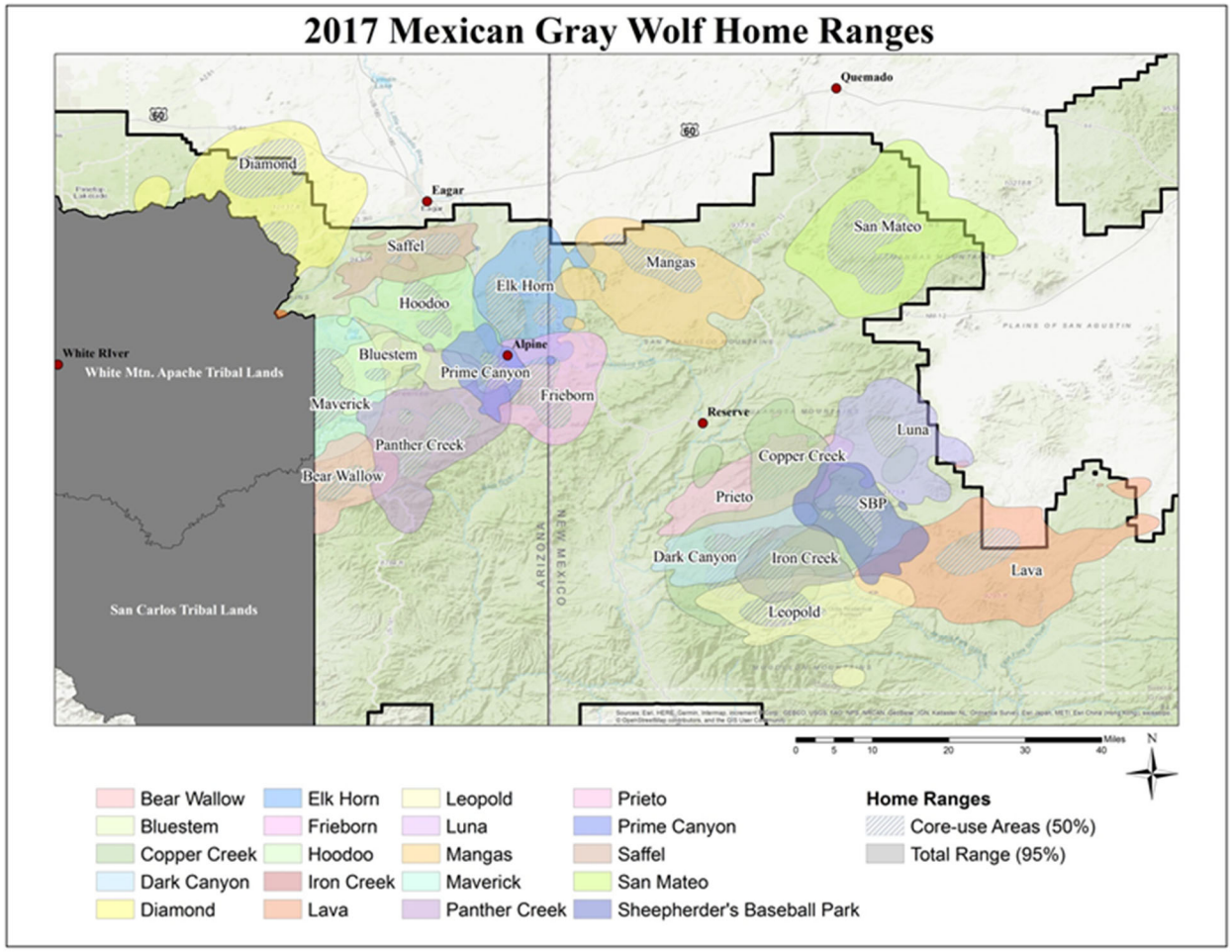

Figure 3. Mexican wolf home ranges for 2017 in Arizona and New Mexico within the Mexican Wolf Experimental Population Area (MWEPA). The shaded polygons on the map represent wolves having a minimum of 20 and a maximum 3017 independent radio locations and exhibiting movement characteristics consistent with a home ranges during 2017. The IFT collected enough location data in 2017 to accurately calculate home ranges for all the packs that exhibited home range characteristics.

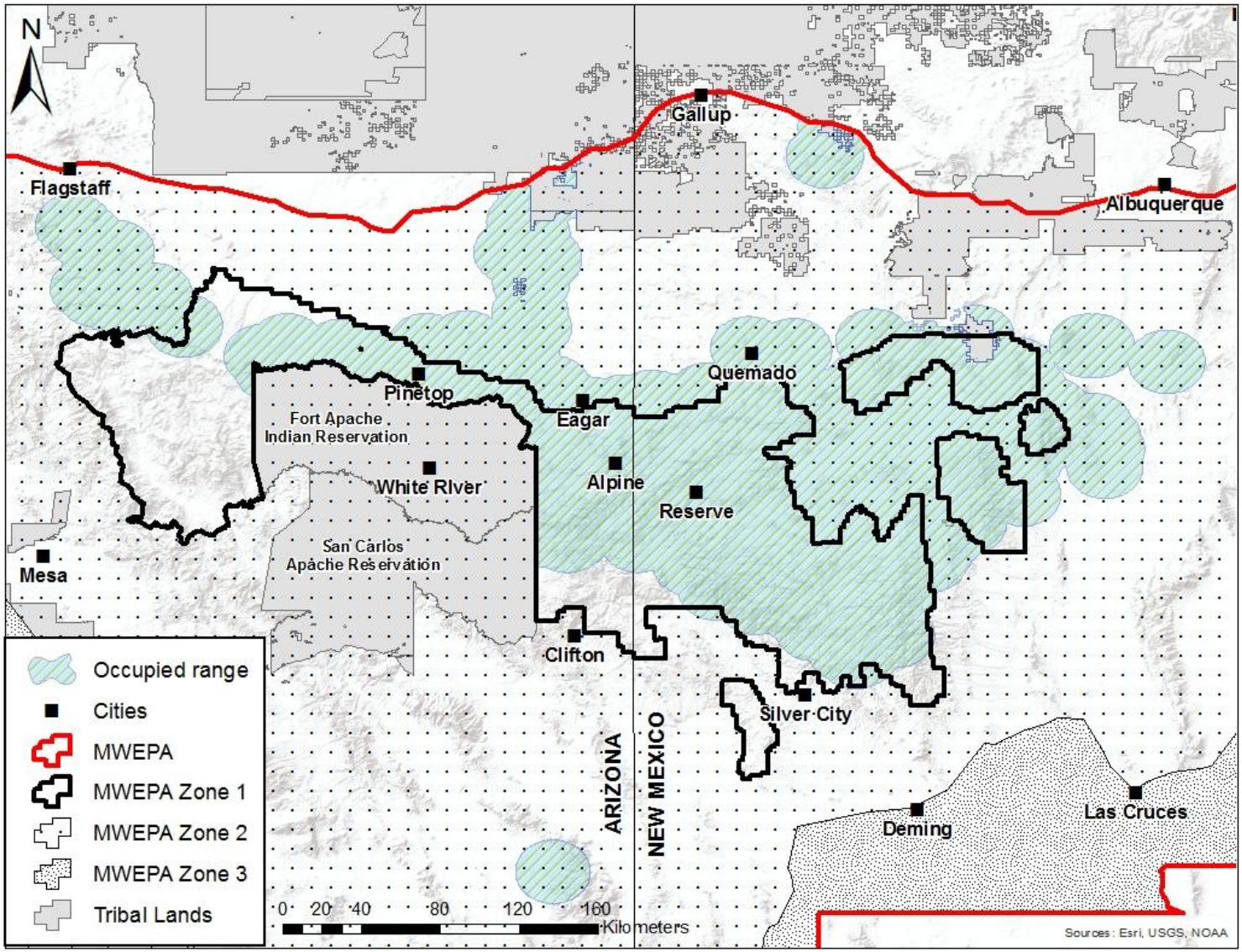

Figure 4. Mexican wolf occupied range in Arizona and New Mexico (2017) within the Mexican Wolf Experimental Population Area (MWEPA).

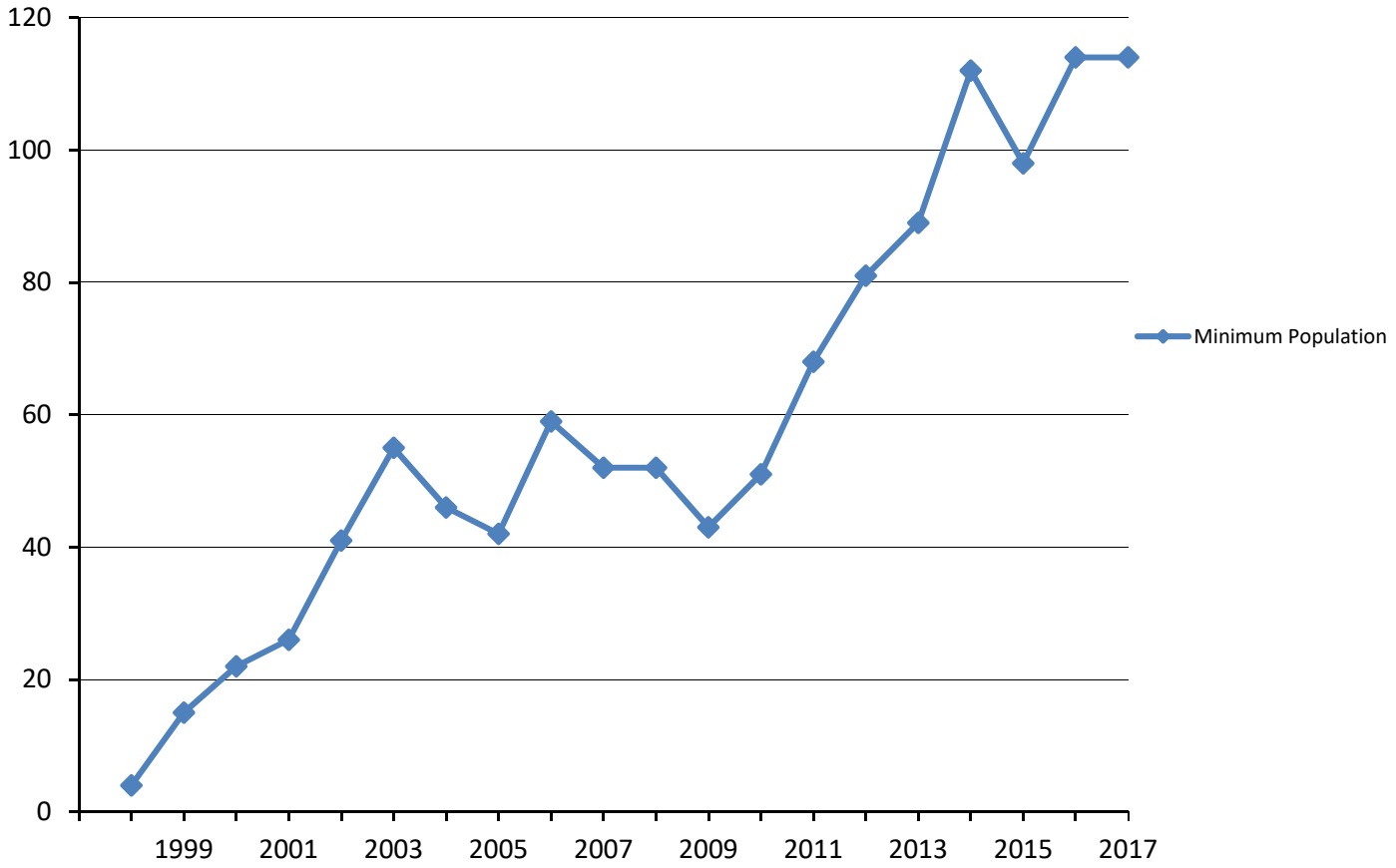

Figure 5. Mexican wolf minimum population estimates from 1998 through 2017 in Arizona and New Mexico.

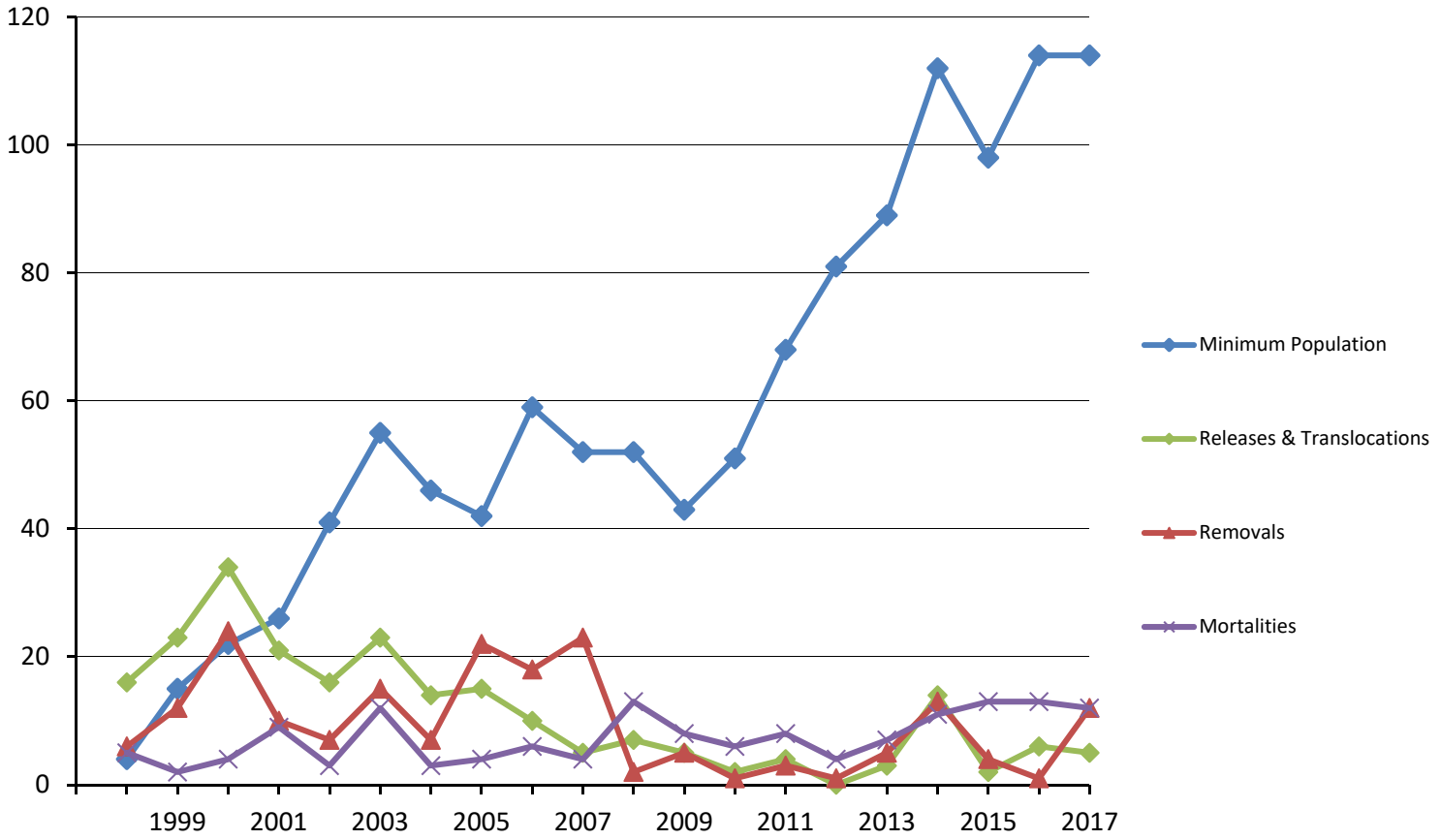

Figure 6. Mexican wolf minimum population estimates and associated population parameters (1998-2017). Releases and translocations included: initial releases (wolves released with no wild experience), translocations (wolves re-released from captivity back into the wild, and free-ranging wolves that were captured and re- released back into the wild for management purposes such as but not limited to boundary issues without having been placed temporarily into captivity). Removals included: wolves permanently removed from the wild (including wolves lethally controlled because they are associated with management actions), wolves temporarily removed from the wild and available for future translocation, and free-ranging wolves temporarily removed for management purposes such as boundary issues but without having been placed temporarily into captivity.

Appendix A. 2017 Pack and Single Wolf Summaries

5. Pack Summaries

Baldy (mp1672)
In January, M1347 and F1445 were considered fate unknown. They were not located for the entire year of 2017. In October, a pup, mp1672, was captured during routine trapping efforts in the known territory of the Baldy pack (the FAIR and the north-central region of the ASNF). Through genetic analysis, the pup was determined to be the offspring of AM1347 and AF1445. As of December 31, Baldy consisted of mp1672. Baldy had no confirmed depredations, one capture, no mortalities, two fate unknowns, no removals and no translocations. Baldy was a breeding pair.

Bluestem (AF1042, AM1341, f1489, fp1562, fp1563, mp1568, mp1573, and fp1665)
In January, Bluestem consisted of AF1042, AM1341, f1489, fp1562, fp1563, and at least four uncollared pups/yearlings. Bluestem continued to use their traditional territory in the central portion of the ASNF. During the annual helicopter count and capture operation, male pups 1568 and 1573 were captured, collared, and released. In February, mp1568 was found dead in Arizona; the cause of death was distemper. In March, mp1573 was found lame and was removed for veterinary care. He died in captivity under veterinary care; the cause of death was distemper. In April, fp1562 began making dispersal movements away from the rest of the pack; by June, she separated from the Bluestem pack and was documented later in 2017 traveling with AM1394 (formerly of the Panther Creek pack). The rest of the Bluestem pack localized and displayed denning and pup rearing behavior from April through July. In May, F1489 and fp1563 were captured, re-collared, and released. A minimum of four pups was documented with Bluestem in August and a female pup, 1665, was captured, collared, and released. Genetic results indicated that fp1665 was the offspring of AM1383 (originally from the Hawks Nest pack), suggesting that AM1383 may have replaced AM1341 as the breeding male in Bluestem. AM1341 was fate unknown by the end of 2017. In November, F1489 began making dispersal movements and traveling separately from the Bluestem pack; she was documented alone at the end of 2017. Yearling f1563 and fp1665 were found dead in November; f1563 was illegally killed and fp1665 died from unknown causes. As of December 31, Bluestem consisted of AF1042 and AM1383 (who both had failed collars), F1489, and at least two uncollared pups/yearlings. Bluestem had no confirmed depredations, one probable depredation, five captures, four mortalities, one fate unknown, no removals, and no translocations. Bluestem was a breeding pair.

Bear Wallow (AF1335, AM1338, and m1673)
At the beginning of 2017, Bear Wallow consisted of AF1335, AM1338, and two uncollared pups. Throughout 2017, Bear Wallow was located within their traditional territory in the east-central portion of the ASNF and the northeast portion of the SCAR. During the annual count and capture operation, AF1335 was captured, re-collared, and released back into her territory. Denning behavior was documented for this pair and pups were confirmed traveling with the pack through the end of the year. In October, yearling male 1673 was captured, collared, and released back into his territory. He made wide dispersal movements into New Mexico and separated from the Bear Wallow pack by the end of 2017. As of December 31, Bear Wallow consisted of AF1335, AM1338, m1673, three uncollared subadults, and three uncollared pups. Bear Wallow had no

confirmed depredations, two captures, no mortalities, no fate unknowns, no removals, and no translocations. Bear Wallow was a breeding pair.

Copper Creek (M1386 and F1444)

During late winter of 2017, single M1386 paired with F1444 (formerly of Dark Canyon) and became known as the Copper Creek pack. The Copper Creek pack maintained a territory within the western portion of the GNF. Copper Creek displayed behavior consistent with denning in the spring of 2017; however no pups were documented in late spring or summer. At the end of December, the Copper Creek pack consisted of M1386 and F1444. Copper Creek had no confirmed depredations or management actions as well as no captures in 2017.

Dark Canyon (AM992, M1354, and F1456)

At the beginning of 2017 Dark Canyon consisted of one wolf, AM992, which was traveling both within and outside of its traditional territory in the west-central portion of the Gila National Forest (GNF). During February, AM992 was located dead, having died of natural causes. During the spring M1354 (offspring of AM992) paired with F1456 (formerly of the Prieto pack) and began using traditional Dark Canyon territory, hence keeping the Dark Canyon pack name. Dark Canyon displayed behavior consistent with denning in the spring of 2017; however no pups were documented in late spring or summer. At the end of December, the Dark Canyon pack consisted of M1354 and F1478. Dark Canyon had no confirmed depredations or management actions as well as no captures in 2017.

Elk Horn (AF1294, AM1342, m1474, f1473, m1477, fp1668 and mp1671)

In January, Elk Horn consisted of AF1294, AM1342, m1471, m1474, f1473, and an uncollared male pup. The pack's territory is in the northeastern portion of the ASNF in Arizona and the northwestern portion of the GNF in New Mexico. Yearling female 1473 was captured and collared during the annual helicopter survey. Elk Horn denned in mid-April and produced a minimum of two pups. The Elk Horn pack had two pups documented with them until the end of the year. Yearling male 1474's collar failed in July, and although he was documented traveling with the pack throughout 2017, he became considered fate unknown during the year. Three wolves in this pack were captured and collared; two were pups of the year, fp1668 and mp1671. The third wolf was a wild-born yearling born in 2016, m1477. Yearling male 1477, f1473, and m1471 were documented making wide dispersal movements near the end of December. Yearling male 1477 and m1471 did not return to the Elk Horn Pack in 2017. As of December 31, the Elk Horn pack consisted of six individuals: AF1294, AM1342, m1474, f1473, fp1668 and mp1671. Elk Horn had no confirmed depredations, four captures, no mortalities, one fate unknowns, no removals, and no translocations. Elk Horn was a breeding pair**.**

Frieborn (F1443 and M1447)

In the beginning of 2018, F1443 of the Bluestem pack had begun traveling with F1447 of the Diamond pack. They established a territory in the east-central portion of the ASNF in Arizona and New Mexico and were named the Frieborn pack. They displayed behavior consistent with denning and pup rearing throughout the spring and summer, but no pups were documented with them in the fall and winter. As of December 31, Frieborn consisted of M1447 and F1443. Frieborn had no confirmed depredations, no captures, no mortalities, no fate unknowns, no removals, and no translocations. Frieborn was not considered a breeding pair.

Hawks Nest (AM1038, M1383, and m1453)
At the beginning of 2017, the Hawks Nest pack consisted of AM1038, M1383, and m1453. AM1038 was documented alone during the annual helicopter count and capture operation; M1383 and m1453 were not documented after December 2016 and were fate unknown during most of 2017. Throughout 2017, AM1038 made wide dispersal movements within the north central portion of the ASNF and the GNF in New Mexico. He remained alone throughout the year. M1383 remained fate uknown, but was documented as the sire of Bluestem fp1665. In December 2017, M1453 was captured by a private trapper in New Mexico, and was considered part of a new pair at the end of 2017. As of December 31, Hawks Nest was no longer considered a pack and AM1038 was considered a single wolf.

Hoodoo (AM1290, AF1333, fp1549, f1550, f1663, and mp1666)
In January, Hoodoo consisted of AM1290, AF1333, and f1550. Hoodoo was documented throughout the year in the central portion of the ASNF in Arizona. AF1333 was captured and re-collared during the annual helicopter survey. In March, fp1549 was found dead. Hoodoo denned in April and produced a minimum of three pups. In September, two wolves, yearling f1663 and pup mp1666 were captured and collared. Yearling female1663 was illegally killed in November. As of December 31, Hoodoo consisted of AM1290, AF1333, f1550, mp1666, and two uncollared pups. Hoodoo had no confirmed depredations, one probable depredation, two captures, two mortalities, no fate unknowns, no removals, and no translocations. Hoodoo was a breeding pair.

Iron Creek (AF1278, AM1240, m1555, m1556, and f1670)
At the beginning of 2017, Iron Creek consisted of a minimum of five animals, including AM 1240, AF1278, mp1556 and two uncollared pups. Throughout the year, Iron Creek was located within its traditional territory in the north-central portion of the GNF. During the spring, the IFT documented a minimum of four pups with the Iron Creek pack. During the fall, a total of three sub-adults were captured during routine trapping and collaring, which included the re-capture of m1555 (had slipped its collar in 2016 as a pup), m1556, and a new capture f1670. During early winter, m1556 began showing dispersal behavior, but was still considered a member of the Iron Creek pack. At the end of December, the Iron Creek pack consisted of a minimum of six animals: AM1240, AF1278, m1555, m1556 and one uncollared pup. Iron Creek had one depredation and no management actions. The Iron Creek pack was considered a breeding pair in 2017.

Lava (AM1285 and AF1405)
In January, Lava consisted of AM1285, and F1405. In February, AM1285 was captured and recollared during the annual population count. Throughout the year, Lava used their territory in central portions of the GNF. In May, Lava exhibited denning behavior and in the fall at least three pups were documented traveling with the pack. As of December 31, Lava consisted of two animals (AM1285 and AF1405). Lava had no confirmed depredations, one capture, no mortalities, no fate unknown, no removals, and no translocations. The Lava pack was not considered a breeding pair in 2017.

Leopold pack (AM1293, AF1346, and m1561)
At the beginning of 2017, the Leopold pack consisted of AM1293, AF1346, m1561 and two uncollared pups. Throughout the year the Leopold pack was located within their traditional territory in the northern portion of the Gila Wilderness. Leopold displayed behavior consistent

with denning in the spring of 2017; however no pups were documented in late spring or summer. During December, m1561 began showing dispersal behavior, but was still considered a member of the Leopold pack. At the end of December, the Leopold pack consisted of three animals: AM1293, AF1346, and m1561. Leopold had no depredations or management actions as well as no captures during 2017.

Luna pack (AF1487 and AM1158)

In January of 2017, the Luna pack consisted of five wolves: AM1158, AF1487, mp1554, and two uncollared pups. AM1158 was captured by a private trapper in January, the IFT was notifed and AM1158 was recollared and released. Lava used their traditional territory in central portions of the GNF throughout the year. The IFT documented denning behavior in April. A minimum of four pups were documented with the Luna pack in June. During August, the IFT successfully captured and collared fp1662 but it slipped its collar a few weeks later. By the end of December, the Luna pack was considered a breeding pair, and consisted of a minimum of four animals, which included AF1487, AM1158, and two un-collared pups. The Luna pack had two captures, no mortalities, no fate unknowns, no removals, no translocations, and no depredations.

Mangas pack (AM1296, AF1439, fp1664)

In January of 2017, the Mangas pack consisted of two wolves: AM1296, AF1439. This pair consistently utilized the northwestern portion of the Gila National Forest throughout 2017. The pair exhibited denning behavior during the spring and four pups were documented in the summer. In August 2017, alpha female 1439 was captured and recollared and female pup 1664 was captured and collared. As of December 1, the Mangas pack consisted of three wolves (AM1269, AF1439 and fp1664). The Mangas pack had two captures, no confirmed mortalities or fate unknowns, no removals, no translocations, and two depredations. The Mangas pack was a breeding pair during 2017.

Maverick (AM1183 and AF1291)

In January, Maverick consisted of AM1183 and AF1291. Throughout the year, Maverick was located within their traditional territory on the FAIR and the central portion of the ASNF. Maverick displayed denning behavior, but neither a den nor pups were confirmed for this pack during 2017. At the end of the year, only AM1183 and AF1291 were documented with Maverick. Maverick had no confirmed depredations, captures, mortalities, fate unknowns, removals, or translocations. Maverick was not a breeding pair.

Morgart's pack (AM1155)

In January of 2017, AM1155 was alone and traveling throughout central and north central portions of the GNF By the end of December, AM1155 was documented traveling alone within New Mexico. Morgart's pack had one confirmed depredation and one probable depredation, no captures, no mortalities, no fate unknowns, no removals, and no translocations. Morgart's pack was not a breeding pair.

New Pair (M1453)

During November of 2017, the IFT confirmed a pair of wolves traveling together in the north western portion of the Cibola National Forest (CNF). In the later part of December 2017, M1453 (failed radio collar) was captured by a private trapper in the same area, and was considered part of

a new pair at the end of December.

Panther Creek *(AF1339, AM1394, mp1483, fp1484, mp1486, and mp1574)*
In January, M1382 originally from the Bluestem pack was traveling with AF1339 of Panther Creek. AF1339 and a male pup, mp1574, were captured, collared, and released back into their territory during the annual count and capture operation. AM1394 was not documented since November 2016 and was considered fate unknown during 2017. Pups mp1483, fp1484, and mp1486 all began traveling separately from AF1339 and M1382 during February and did not return to the Panther Creek pack. Male pup 1483 was found dead in November from a vehicle strike; fp1484 traveled alone in Arizona; and mp1486 dispersed to New Mexico. AM1382 and AF1339 denned in early May and two neonatal pups from captivity (fp1590 and fp1591) were cross-fostered into the natal den which originally contained six pups. Because AM1382 and AF1339 are full siblings, two wild-born pups (mp1598 and mp1599) were removed to captivity, keeping the total at six pups (four wild-born and two captive-born) left in the den. In September, m1574 was captured, re-collared, and released back into his territory. A minimum of three pups were documented with the pack through September, but none were documented with the pack by the end of 2017. As of December 31, Panther Creek consisted of AM1382, AF1339, and m1574. Panther Creek had no confirmed depredations, three captures, one mortality, one fate unknown, no removals, and no translocations. Panther Creek was a not considered a breeding pair in 2017.

Pine Spring (F1562 and AM1394)
In January, f1562 was traveling with the Bluestem pack. In April, fp1562 began making dispersal movements away from the rest of the pack; by June, she separated from the Bluestem pack and was documented later in 2017 traveling with AM1394 (formerly of the Panther Creek pack). They established a territory in the northern portion of the ASNF and became known as the Pine Spring pack. As of December 31, Pine Spring consisted of AM1394 and AF1562. Pine Spring had three confirmed depredations, no captures, no mortalities, no fate unknowns, no removals and no translocations. Pine Spring was not a breeding pair.

Prieto (AF1251, AM1398, f1456, f1553, f1565, and mp1669)
At the beginning of 2017, Prieto consisted of a minimum of ten animals which included: AF1251, M1398, M1386, M1552, m1455, f1456, mp1565, and three uncollared pups. Throughout the year, the Prieto pack was located in the north-central portion of the GNF. At the beginning of January, f1553 paired with Sheepherder's Baseball Park pack (SBP) AM1284. During the spring f1456 paired with M1354 and became part of the Dark Canyon Pack. Also during the spring, M1386 paired with f1444 (formerly of the Dark Canyon pack) which is currently known as the Copper Creek pack. M1552 and m1455 dispersed from Prieto, and were traveling as single animals throughout portions of the Gila National Forest. M1552 is considered fate unknown as of early winter, and M1455 was recently documented in late winter with a failed radio collar within the GNF. During the spring of 2017, the IFT documented a minimum of two pups with the Prieto pack, one of which (mp1669) was captured and collared during routine collaring efforts. At the end of December, the Prieto pack consisted of five animals: AF1251, AM1398, f1565, mp1669, and one uncollared pup. The Prieto did not have any depredations and was diversionary fed to alleviate cattle conflicts. The Prieto pack was considered a breeding pair in 2017.

Prime Canyon (f1488)

At the beginning of 2017, f1488 of the Bluestem pack was documented traveling with an unknown collar-failed male wolf in the east-central portion of the ASNF. During the annual count and capture operation, f1488 was captured, re-collared, and released. Yearling f1488 and the collar-failed male wolf established a territory and were named the Prime Canyon pack. They did not display denning behavior and no pups were documented with them during the year. The unknown collar-failed male wolf traveling with f1488 was documented through September, but was not documented the rest of the year. In September, F1488 was captured, re-collared, and released back into her territory. In December, F1488 was documented traveling with M1471 of the Elk Horn pack. Prime Canyon had no confirmed depredations, one captures, no mortalities, no fate unknowns, no removals, and no translocations. Prime Canyon was not considered a breeding pair.

Saffel (AM1441, AF1567 and mp1661)

In January, f1567 of Hawks Nest and m1441 of Hoodoo had already begun traveling together in the north central portion of the ANSF. They established this as their territory and became known as the Saffel pack in April. Saffel denned in April and produced a minimum of four pups. During routine trapping efforts, a pup (mp1661), was captured, collared, and released back into his territory. As of December 31, Saffel consisted of AM1441, AF1567, mp1661 and three uncollared pups. Saffel had no confirmed depredations, one capture, no mortalities, no fate unknowns, no removals and no translocations. Saffel was a breeding pair.

San Mateo pack (AM1345, AF1399, fp1578)

In January of 2017, the San Mateo pack consisted of five wolves: AF1399, AM1345, and three un-collared pups. The IFT documented denning behavior of the San Mateo pack in April and cross-fostered two pups into their den; two pups were removed to captivity to keep the litter size at 8 and not overburden AF1399. A supplemental food cache was maintained to help the pack care for the genetically valuable pups. In July, the IFT confirmed a minimum of six pups and two yearlings. During September, the IFT successfully captured and collared mp1582; a wild born pup, the collar had slipped off the wolf in October. Trapping was reinitiated and fp1578, a genetically valuable cross-foster pup, was captured and collared. In November, AF1399 was captured and recollared. By the end of December, the San Mateo pack consisted of five wolves, which included AF1399, AM1345, fp1578 and two un-collared pups; one of which is believed to be mp1582. The San Mateo pack had three captures, no mortalities, one fate unknown, no removals, no confirmed depredations, and no translocations. San Mateo was a breeding pair in 2017.

Sheepherder's Baseball Park (AM1284, AF1392, and mp1667)

At the beginning of 2017 SBP pack consisted of AM1284, f1553 and 2 uncollared pups. Throughout the year, SBP was located in their traditional territory within the north central portion of the GNF. In the spring of 2017, the IFT documented a minimum of three pups with the SBP pack, one of which (mp1667) was captured and collared during routine collaring efforts. At the end of December the SBP pack consisted of four animals which included AM1284, AF1553, mp1667, and one uncollared pup. The SBP pack was confirmed in one depredation and was diversionary fed to alleviate cattle conflicts. The SBP pack was considered a breeding pair in 2017.

Tsay-O-Ah (F1283, M1343, and fp1674)
Tsay-O-Ah occupied a territory located on the FAIR. In November, fp1674 was captured and collared. Tsay-O-Ah had no confirmed depredations, one capture, no mortalities, fate unknowns, removals, or translocations. Tsay-O-Ah is a breeding pair.

Tse ighan lige (Diamond) (AM1249, AF1557, m1558, m1559, f1560, f1570, m1571, and m1572)
In January, Diamond consisted of AM1249, AF1557, mp1558, mp1559, fp1560, and three uncollared pups. They primarily occupied a territory on the FAIR and the north central portion of the ANSF. AM1249 and mp1558 were captured and removed to captivity during the annual helicopter survey in response to repeated livestock depredations. Three pups, fp1570, mp1571, and mp1572 were captured, collared, and released during the operation. In March, mp1572 was found lame and was removed for veterinary care. He was released back with the Diamond pack in April but traveled apart from them until July. In May, f1570 was illegally killed. After a series of depredations in August, AF1557 was lethally removed by the IFT, after which m1559, f1560, m1571, and m1572 all made large dispersal movements. Yearling male 1571 dispersed far to the north of the ANSF and was translocated back to the MWEPA in October as required by law under the 2015 10(j) rule of the Endangered Species Act. As of December 31, Diamond had dispersed completely with m1559, f1560, m1571 and m1572 all traveling separately. Diamond had eight confirmed depredations, seven captures, one mortality, no fate unknowns, four removals, and one translocation. The Diamond pack was not a breeding pair.

Willow Springs pack (F1397)
In January of 2017, the Willow Springs pack consisted of F1397. In the spring, F1397's collar was located but, no carcass was found. By the summer, F1397 was considered fate unknown. At the end of December, the Willow Springs pack contained no animals.

6. Individual Wolf Summaries

Single F1437
Female 1437 was documented traveling alone after the removal of her mate, M1564, in November 2016. She was illegally killed in January 2017.

Single F1530
In March 2017, a collar-failed wolf was documented on private land near the Chiricahua National Monument in Arizona. The wolf was identified as F1530, a dispersing wolf originally released near Cananea, Sonora in Mexico. She was captured on private land and removed to captivity later that month.

Single M1569
M1569 was documented traveling alone throughout 2017 in portions of the Gila National Forest and the north central portion of the Cibola National Forest.

Single M1455
In January, M1455 was considered part of the Prieto pack. In late-winter/early-spring M1455 dispersed and became a single wolf. M1455 traveled widely throughout the GNF and southern

portions of the CNF throughout 2017.

Single M1552
In January, M1552 was considered part of the Prieto pack but had begun to display dispersal behavior. In late-winter M1552 was considered a single wolf and travelled throughout the CNF and eastern portions of the GNF throughout 2017.

Single M1566
In January, a private coyote trapper in Socorro County, New Mexico captured an uncollared adult male wolf and notified the IFT. The IFT responded that evening and successfully processed and radio collared the wolf (M1566). The IFT released the wolf on site and monitored its locations. Later in January, it became apparent that the wolf had decreased daily movements, and the IFT made the decision to capture the wolf for medical treatment. The wolf died within two days of treatment, and it was confirmed that the cause of death was due to canine distemper.

7. Personnel

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

Arizona Game and Fish Department
Paul Greer, Field Team Leader
Julia Smith, Field Supervisor
Genevieve Fuller, Wolf Biologist
Craig Zurek, Wolf Biologist
Mike Godwin, Wildlife Manager Supervisor
Joel Weiss, Wildlife Manager
Aaron Hartzell, Wildlife Manager
Jason Capps, Wildlife Manager
Shawn Wagner, Wildlife Manager
Bob Birkeland, Wildlife Manager/Supervisor
Dave Cagle, Wildlife Program Manager
Rick Langley, Big Game Specialist
Bill David, Chief Pilot
Pete Applegate, Pilot
Steve Sunde, Pilot
Steve Dubois, Pilot
Preston Hunts, Pilot

New Mexico Department of Game and Fish
Agency cooperation ceased July 1, 2011; however, District officers remain involved in law enforcement issues.

USDA-APHIS Wildlife Services
Sterling Simpson, Field Team Leader/Wolf Management Specialist
Morgan Whipple, Wolf Management Specialist
Chris Carrillo, District Supervisor
Rudolph Fajardo, District Supervisor
Mike Kelly, Wildlife Biological Science Technician
Matt Ellis, Wildlife Biological Science Technician
Clint Ruppert, Wildlife Biological Science Technician

U.S. Forest Service
Vicente Ordonez – Forest Service Liaison to the Wolf Project

U.S. Fish and Wildlife Service
Sherry Barrett, Mexican Wolf Recovery Coordinator
Maggie Dwire, Assistant Mexican Wolf Recovery Coordinator
John Oakleaf, Mexican Wolf Field Projects Coordinator
Melissa Kreutzian, Fish and Wildlife Biologist
Colby Gardner, Fish and Wildlife Biologist
Susan Dicks, Fish and Wildlife Biologist
Kent Laudon, Field Team Leader
Janess Vartanian, Wildlife Biologist
Allison Greenleaf, Wildlife Biologist
Cyrenea Piper, Wildlife Biologist
Dewey Wesley, Biological Technician

AGFD Interns
Maya Stahl
McKenna Zandarski

USFWS Interns
Craig Zurek
Steven Nagy
Rae Nickerson
Colleen Farrell
Maddie Kombrink
Tom Offer-Westort
Suzanne Agan
Amy Fontaine
Nic Riso
Cara Thompson
Erika Sertl
Emily Schafsteck

White Mountain Apache Tribe
Sara Eno, Wolf Biologist/Interagency Field Team Leader
Theo Guy, Wolf Technician
Deon Hinton, Wolf Technician
Joseph Perez, Wolf Technician
Vonna Peaches, Mexican Wolf Program Assistant

Project Veterinarians
Dr. Ole Alcumbrac
Dr. Susan Dicks