

ARIZONA

Wildlife Views



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Managing Today for Wildlife Tomorrow

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GEORGE ANDREJKO

Following the floods of the early 1990s, I remember standing on the bank of the then-flowing Gila River discussing, or rather debating, the merits of a mitigation plan for the Gila River channel project. After some lengthy dialogue, a rather agitated member of a litigious environmental group finally acquiesced that the mitigation plan was a strong one, but in the same breath said, "But you don't understand, my goal is for there to be no dams on the Salt or Gila rivers!" I was taken aback at the idea of a goal that required elimination of the life blood of several million people. This moment has never left my mind because it defined one extreme of the spectrum of opinions about how we conserve our nation's natural resources, including wildlife. This extreme would remove nearly every human being in order to achieve one particular vision of natural diversity. At the other extreme are those who would remove all wildlife that may interfere with their particular world view.

Very few wildlife conservation issues evoke such extremes of the spectrum; wolves do.

While the challenge is daunting, we are fortunate to have the opportunity to learn from other recent experiments in the reestablishment of the grey wolf. I refer to each of these efforts as an experiment because each represents a unique set of biological, social and economic factors. For these reasons, we have learned from the other experiments in wolf recovery that each effort must be tailored to fit the unique factors involved.

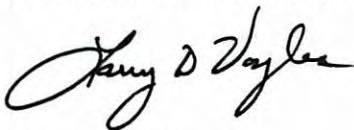
Here in Arizona, the proposed expansion of the Mexican Wolf Experimental Population Area (MWEPA) affects all of our state's 15 counties. Its geographical overlay encompasses an area with a human population of 6.3 million people. The gross economic output of agricultural industry in the area is estimated to be \$4.2 billion annually. The existing and proposed MWEPA affects both private and public lands ranching, in which many livestock operations run year-round and calve

on open range. The wildlife related recreation (from hunting and fishing) in the proposed area generates an estimated \$3 billion annually for Arizona's economy.

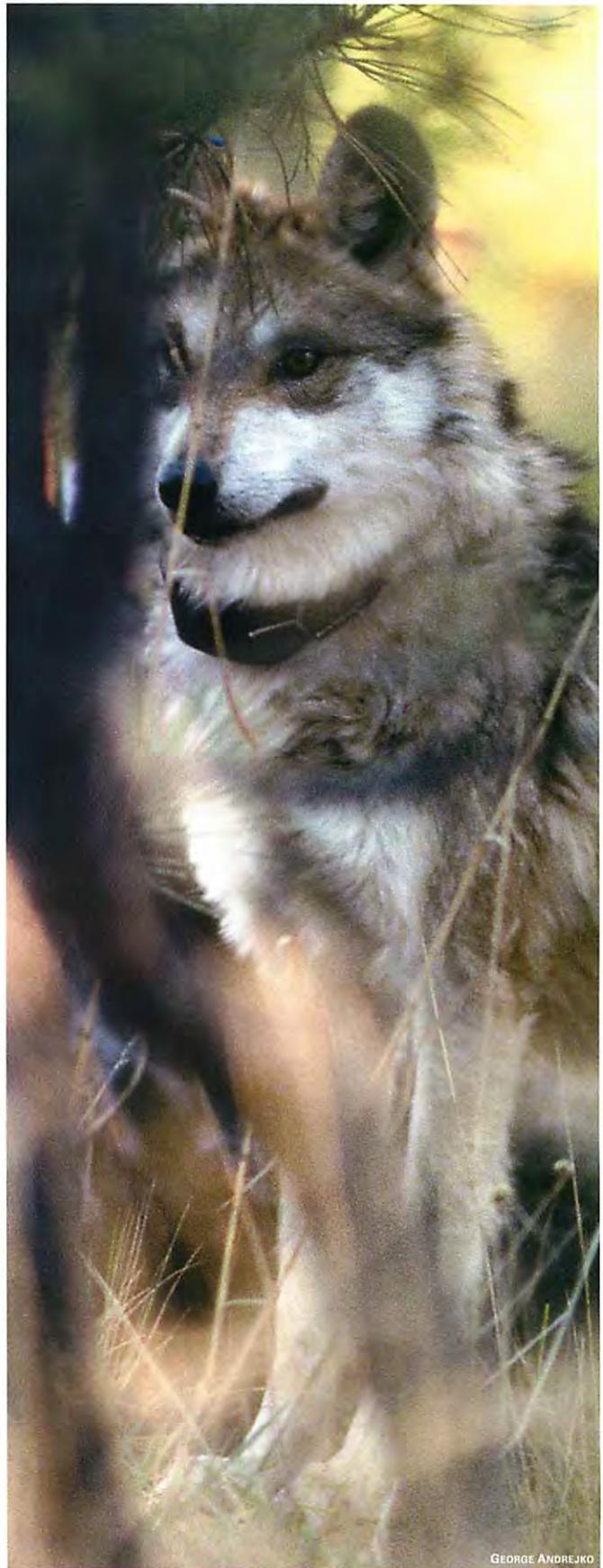
Arizonans want wolves returned to the wild landscape. The question is at what cost? There are those who demand as many wolves as possible, at all costs. To which one should say: be careful what you wish for Arizona. Instead, we believe that with careful and thoughtful approaches to wolf management, a "reasonable" number of wolves can viably exist on the landscape within the social, biological and economic context that is modern Arizona. And, we are certain that a reckless, winner-take-all approach to wolf reestablishment and recovery that pays no respect to that context will lead to irreconcilable conflicts on all facets of the program.

The Arizona Game and Fish Department intends to understand all of the dimensions of an issue this complex. As we work to realize a reasonable outcome, we will do so in compliance with the Arizona Game and Fish Commission's direction related to Mexican wolf conservation. We will also comply with commission policy related to the support for multiple-use management of Arizona's public lands. We may investigate new, yet-to-be-used entrepreneurial models of conservation. The solutions to complex problems are frequently found when we bring a fresh perspective to an old challenge.

This Special Issue of Arizona Wildlife Views explores the complexities of the Mexican wolf reintroduction challenge in detail. I hope you will find your journey through these pages to be as informative and eye-opening as our journey through the evolution of wolf conservation has been and continues to be.



Larry Voyles, Director
Arizona Game and Fish Department



GEORGE ANDREJKO

ON THE FRONT AND BACK COVER:
Photographs by George Andrejko



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When

Past and Present Accounts
of How Wolves Came
To Be in North America

Wolves Moved In

By Jim Heffelfinger

RED WOLF AT THE ALLIGATOR RIVER
NATIONAL WILDLIFE REFUGE
IN NORTH CAROLINA, USFWS

Few animals have figured so prominently in human history as the wolf. It has been admired and hated, and eliminated from areas of the United States and then recovered. It is perhaps one of the human race's oldest love-hate relationships. With wolves, more than any species, it is important to understand the past if humans are to successfully coexist with wolves in the future.

PAST

Wolves and coyotes have an incredibly complex history starting with the appearance of a medium-sized primitive dog about 2 million years ago at the beginning of the Pleistocene Epoch. This early member of the dog family was distributed across North America and Eurasia and most likely served as the common ancestor of all wolves and coyotes.

Recent genetic analyses provide interesting clues about the evolutionary development of coyotes and wolves. The evidence assembled thus far points to two separate branches developing, one in North America and the other in Eurasia. The North American branch gave rise to coyotes (*Canis latrans*), the small eastern wolf (*Canis lycaon*) in the northeast, and the smaller red wolf (*Canis rufus*) in the southeastern United States. The other branch in Eurasia developed into the larger gray wolf (*Canis lupus*). There has been decades of disagreement about the classification of the eastern and red wolf; hopefully future work will further clarify these relationships.

The Eurasian gray wolf invaded North America in a series of at least three separate waves as the corridor across the Bering Strait allowed for a connection between the



COYOTE BY BRUCE D. TAUBERT

two continents. The first wave of wolves moved into North America sometime before 500,000 years ago and settled in the mountainous areas of central Mexico. All of the wolves in the first wave were not the Mexican wolf subspecies as we now recognize it, but it is from this early immigration event that the Mexican wolf later developed. Later climate change partially isolated wolves in the Sierra Madre Mountains in Mexico where they became physically smaller and specialized as predators of Coues' white-tailed deer.

A second wave of Pleistocene wolf immigrants entered from Eurasia through the Bering Strait and mingled with those wolves already occupying the continent. Because of the separation of tens or hundreds of thousands of years, this second group of wolves was genetically different and identifiable from the first wave. These wolves eventually gave rise to the wolves that occupied a large geographic area across what is now southern Canada and the northern United States. Unfortunately, those in the United States resided squarely in the path of 19th and 20th century settlers and suffered almost complete eradication, remaining only in the Great Lakes region and perhaps the Pacific Northwest.

About 10,000 years ago, a third wave of wolves entered from Eurasia and came to occupy what is now Alaska, western Canada and eventually the northern Rocky Mountain states.

PRESENT

The wolf (*Canis lupus*) once had the largest distribution of any land mammal in the world. Although its range has been greatly reduced, wolves still occur in at least 46 countries worldwide. Outside of North America, there are at least 110,000 wolves living in wild populations with nearly all listed as stable or increasing due to improved conservation efforts. Only in India, China and a couple of European countries are they thought to be decreasing in number. Wolf num-

bers are stable or increasing in North America as well. Canada and Alaska are home to 58,000 to 67,000 wolves, and the contiguous United States has recovered the gray wolf in the northern Rocky Mountains (more than 1,600 wolves) and western Great Lakes region (more than 3,600 wolves). The Mexican wolf in the southwest and the red wolf in the southeast are still involved in the recovery process with 83 and 100 wolves, respectively.

NORTHERN GRAY WOLF

The last wave of wolf immigration from Eurasia occupied Alaska, western Canada and, by the 1970s, began to increase and expand into the northern Rockies. To facilitate the recovery of the gray wolf and removal from the endangered species list, wolves were captured in Canada in the mid-1990s and released into central Idaho (35 animals) and Yellowstone National Park (31 animals). These new populations grew rapidly. By 2002, the population reached 250 in Yellowstone and 260 in Idaho, with 59 wolves killed for repeated livestock depredations. The recovery goal for the northern gray wolf was set at three populations of 150 wolves each. By the time they were completely delisted from the endangered species list in 2012 they had far exceeded that goal with approximately 1,774 wolves living in the wild in three genetically connected populations. The northern gray wolf in the United States is no longer in danger of extinction. These populations are now managed by the state wildlife agencies along with other native wildlife species that have been recovered from low population levels. Limited and regulated hunting seasons are offered for these wolves that maintain their population far in excess of recovery goals.

WESTERN GREAT LAKES

Minnesota held the only wild wolf population in the lower 48 states when the Endangered Species Act protected wolves in 1974. This population of 1,000



wolves expanded and grew to more than 3,600 wolves in Wisconsin, Minnesota and Michigan by 2011. At that time, they had exceeded the recovery goals for more than five years and were no longer in danger of extinction. Wolves in this region were removed from the endangered species list in 2011 and are now managed by state wildlife agencies. Wolf hunting is allowed in all three states with harvests being limited to about 10 percent of the population annually in order to maintain population objectives in those states.

MEXICAN WOLF

The wolf population in the Sierra Madres has been isolated from other wolves on all sides except to the north where it crossed desert areas and hybridized with northern wolves in central Arizona and New Mexico. In the mountains of Mexico, this smaller wolf subspecies (*Canis lupus baileyi*) evolved to specialize in Coues' white-tailed deer prey and is perhaps the best example of a wolf



COYOTE BY BRUCE D. TAUBERT



MEXICAN WOLF BY GEORGE ANDREJKO

subspecies that is genetically, physically and ecologically identifiable. A captive breeding program has grown the population to nearly 260 wolves in captivity with about 83 in the wilds of Arizona and New Mexico.

RED WOLF

The origin of the red wolf (*Canis rufus*) has been surrounded by confusion and contention for decades. The most recent thinking is that red wolves and coyotes evolved together in North America from a common ancestor they both share with

the gray wolf that evolved in Eurasia. The red wolf was listed as endangered in 1967. Recovery efforts immediately found that free-ranging red wolves were rare (perhaps nonexistent), and the similar coyote was abundant throughout the red wolf's historical range in the southeastern United States. Animals with the strongest red wolf characteristics were captured from the wild to establish a captive breeding program that now numbers 200 wolves. Recovery has focused on the Alligator River National Wildlife Refuge in North Carolina where its island status helps reduce hybridization with coyotes. About 100 red wolves exist in the wild today.

EASTERN WOLF

The range of this wolf extends from southern Ontario and Quebec (Canada) to western Minnesota and Manitoba. Recent genetic information indicates the eastern wolf is not a subspecies of the gray wolf, but is another member of the red wolf-coyote lineage that developed

in North America. Because of this, it has been proposed as a separate species (*Canis lycaon*). This wolf has extensively hybridized with the gray wolves in the western Great Lakes region and also hybridized with coyotes in the eastern Great Lakes region.

Wolves were never extirpated across Canada, but disappeared from much of the United States under the wave of human settlement. Efforts to recover the species have been successful in the Northern Rockies and western Great Lakes regions. State wildlife agencies now manage those wolf populations along with other native species that have been saved or recovered from a time period lacking in conservation ethos. Challenges remain for the red and Mexican wolf, but biologists now have successful models to emulate as they navigate the tumultuous terrain of wolf policy and biology. ❁

■ Jim Heffelfinger is the department's game specialist in the Tucson regional office.

Field Notes:

Limited studies exist on Mexican wolves and much of the life history that is known came from early-century hunters through their observations of wolves in the wild. Since the first release in 1998 of Mexican wolves in Arizona, biologists have continued to learn more about the lesser-known Mexican wolf.

Scientific Name: *Canis lupus baileyi*.

From the Latin *canis*, meaning dog; *lupus*, meaning wolf; and *baileyi*, referring to Vernon Bailey, a U.S. Bureau of Biological Survey biologist, who collected a series of specimens of this subspecies or race.

Description: Smaller than a northern gray wolf but larger than a coyote. Adults are 70–80 pounds and 30 inches at the shoulder. Adults are 5–5.5 feet long, including a 14- to 17-inch tail. Males are larger than females. Head and feet are large in proportion to body. Small, erect ears with wide tufts of hair that grow out and down are one of the Mexican wolf's most distinctive features. Body color is often mottled or patchy, varying from gray and black to brown and buff.

Distribution: Historical distribution was from central Mexico and Michoacan north through Durango, Chihuahua and Sonora, into Arizona and New Mexico. There was broad overlap historically with other gray wolf subspecies exterminated by the early 1900s. Mexican wolves were extirpated from the United States by the mid-1900s, and most of Mexico soon thereafter. Current distribution is limited to the Blue Range Wolf Recovery Area, as specified in the nonessential experimental population special rule of the Endangered Species Act. There have also been Mexican wolf reintroductions in Mexico, the fate of which are uncertain.

Habitat: Mid- to high-elevation woodlands, including oak, pinyon pine, juniper, ponderosa pine and mixed conifer forests. Almost all historical records of Mexican wolves in Arizona occurred above 4,500 feet in elevation. Habitat must contain large ungulate prey animals for wolves to thrive.

Home Range: In Arizona, biologists estimate most packs use 150 to 250 square miles of territory that they defend from other canines such as other wolves, coyotes and domestic dogs.

Pack Size: Pack size tends to be smaller than other wolf subspecies and averages between three to five wolves per pack. Typical packs consist of the adult pair, young-of-the-year, and sometimes yearlings.

Density: Mexican wolf density is unevenly distributed across its home range. Some areas near prime elk calving grounds appear to receive heavier use than other areas, and established foot and livestock trails are commonly used as runways or travel routes.

Mortality and Lifespan: Causes of death include disease, malnutrition, debilitating injuries and inter-pack strife. Human-caused mortality, such as unlawful killing and vehicle collisions, also are major causes of mortality. In areas with little human exploitation, the primary causes of mortality are disease and malnutrition in pups or yearlings. Adult deaths are often attributed to territorial fights with other wolves. Mortality rates for yearlings average nearly 50 percent. Wild wolves rarely live to be 10 years old.

Prey: Elk presently makes up 80 percent to 90 percent of the Mexican wolf's diet, although the subspecies originally evolved to prey on deer. On average, one wolf consumes the equivalent of about 16 adult elk annually.

All about wolves

Wolf Movements: Three key types of movements occur in reintroduced Mexican wolves: homing (the movement of displaced wolves toward their place of birth or release); pack territory shifts (a shift in territory by newly colonizing wolf pack in response to winter weather, food availability, human disturbance, etc.); and, dispersal from packs (when young wolves disassociate from their natal pack and either move into a breeding vacancy in another pack or become lone wolves). Dispersal is a key process in wolf reestablishment. It leads to new pack formation, more breeding pairs and wider areas of wolf occurrence. However, mortality rates during dispersal are high compared to when wolves are together in packs.

Reproduction: Wolves are primarily monogamous, even though a pack can include more than one sexually mature female. Behavioral and physiological adaptations usually prevent more than one female per pack from breeding, which normally occurs from December to March. If a breeding wolf, or alpha wolf, dies or is removed from the pack, another wolf from within or outside the pack can fill this breeder position prior to the next breeding season. However, removal of an alpha animal can disrupt the pack to the point where it essentially dissolves and pack members begin moving independently.

Gestation lasts 63 days. Four to seven pups are usually born in April. Annual pup mortality is normally about 50 percent, but can vary widely depending on prey density, weather, disease and other competitors. Pups are weaned at five to six weeks, and remain totally dependent

on adults until they are at least nine to 10 months old. Mexican wolf dens are located under various objects, including rock ledges or logs, or dug into soft soil. Dens can be reused, but it appears that most reintroduced Mexican wolves move their dens annually, even if just a short distance. After about six weeks, the adults move the pups away from the den site to another area near water called a rendezvous site. Pups and other pack members use rendezvous sites as their center of activity during the summer months. Pups begin traveling with the adults by October, sometimes sooner on shorter forays.

■ Lynda Lambert is a public information officer for the department. She is primarily responsible for education and outreach for endangered and nongame species, research and habitat issues. Information contained in this story is based on field information compiled from the Mexican Wolf Inter-agency Field Team.

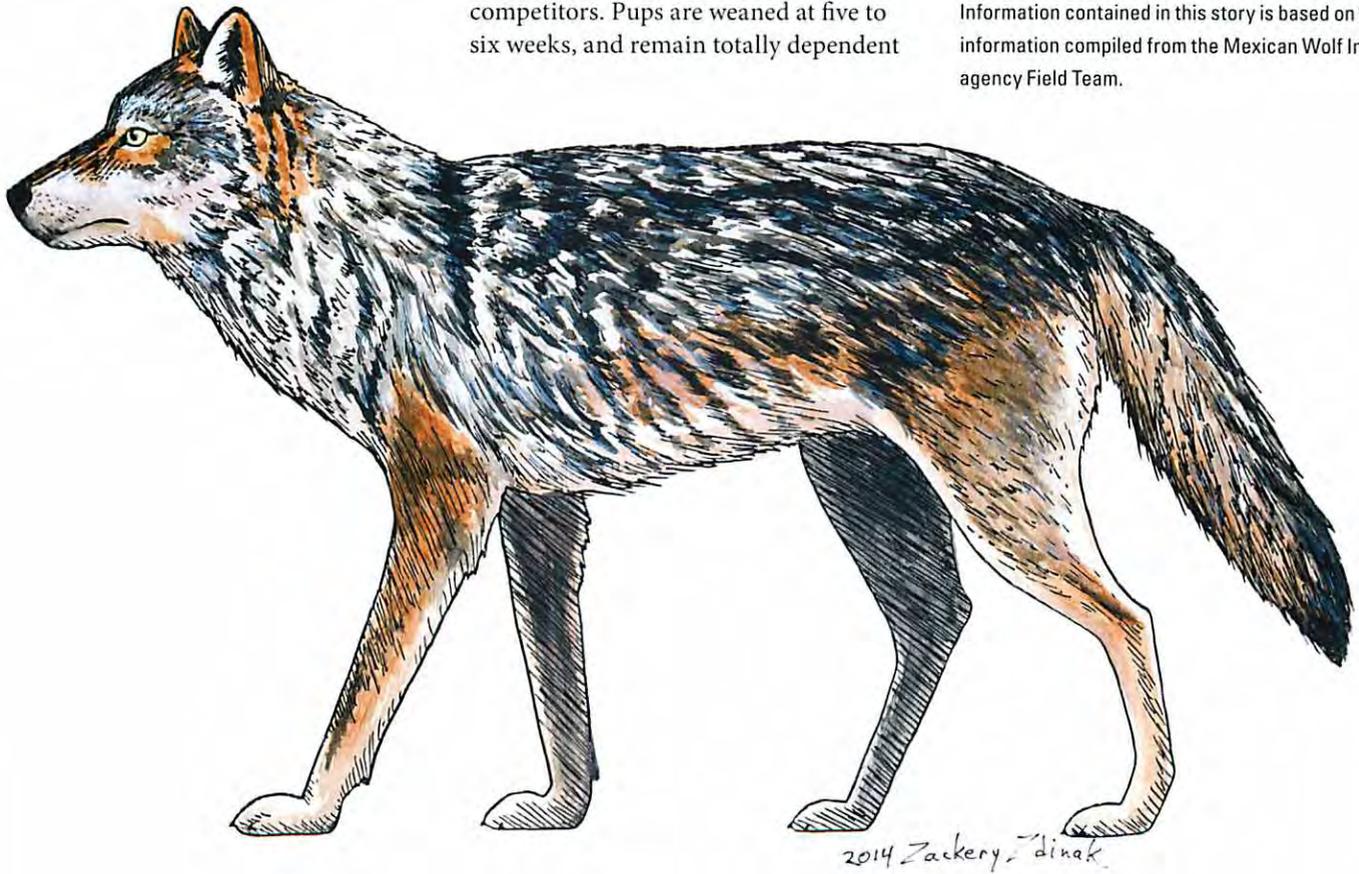


ILLUSTRATION BY ZACKERY ZDINAK

As the Wild West was settled, wolves were pushed to extinction to protect livestock, game populations and Little Red Riding Hood. Wildlife conservation-forefather Aldo Leopold, government hunters, sportsmen and stockmen spurred extermination of wolves. Strychnine, dynamite, denning, shoot-on-sight and relentless trapping were used, and bounties were paid for proof of death.

By the mid-1900s, a resident, breeding population of Mexican wolves north of Mexico no longer existed. Only occasional transient wolves visited the borderlands of the United States and Mexico, while a few animals persisted in Mexico. The plight of wildlife began to change though in the 1960s and 1970s as environmentalism inspired America's first federal endangered species laws including the Endangered Species Act (ESA) of 1973.

Mexican wolves were listed as an endangered subspecies (unique from other gray wolves) under the ESA in 1976. Two years later, the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service (Service), revoked the 1976 listing. The Mexican wolf became just another gray wolf. It was still endangered and fully protected by the ESA but no longer recognized as the distinct animal that genetics have since proven it to be. This 1978 decision paved the way for almost four decades of turmoil, delay and cost in Mexican wolf conservation.

TWO DECADES OF PLANNING

With classification as endangered but no wild wolves to protect, the Service set out to save this almost-vanished subspecies. Between 1977 and 1980, the last wild wolves were captured in Mexico and taken to institutions dedicated to preserving rare species against extinction. Seven of those animals were certified as pure-bred Mexican wolves and became the founders of a captive-breeding program that now numbers about 260 wolves in 52 facilities and provides stock for reintroduction.

A proverbial "perfect storm" occurred from 1982 to 1985 that brought Mexican wolves into international focus. The Service and Mexico completed a bi-national recovery plan in 1982. One of the primary objectives included maintaining a captive-breeding program and

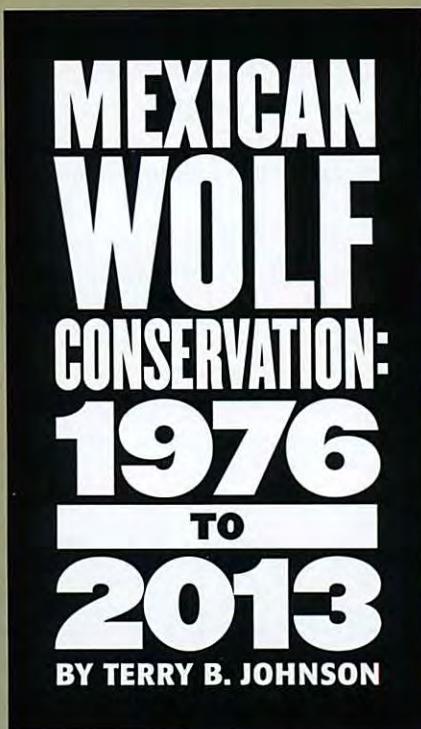
reestablishing a viable, self-sustaining population of at least 100 Mexican wolves in the mid-to-high elevations of a 5,000-square-mile area within the Mexican wolf's historic range. Another important development occurred in 1982. The ESA was amended to allow experimental populations of endangered species to be reintroduced, giving more flexible management regulations than are provided for "fully protected" populations. Then, in 1985, Peter Siminski, a curator at the Arizona-Sonora Desert Museum and head of the Mexican Wolf Species Survival Plan, publicly decried the Service approving a Mexican wolf recovery plan and then putting it on a shelf with no evident intent to implement it. This sparked a furor that

over the next 13 years resulted in an overwhelming number of proposals, plans, paperwork and, ultimately, Mexican wolf reintroduction (see sidebar).

Of the guiding documents surrounding this issue, the Final Environmental Impact Statement, Final Rule and Mexican Wolf Management Plan are most vital to understanding wolf conservation in the Southwest. Collectively, they define boundaries within which wolves must roam and around which controversy boils. They reflect comprehensive analysis of the purpose and need for establishing a population of at least 100 Mexican wolves within the Blue Range Wolf Recovery Area (BRWRA) of the Mexican Wolf Experimental Population Area (MWEPA) in Arizona and New Mexico. The documents define the

collaboration that was to occur, with Service oversight and guidance, and provide for wolf management that included consideration of impacts to the public from the reintroduction of Mexican wolves.

The importance of these documents in providing guidance for the program cannot be understated. In recent years, the Arizona Game and Fish Commission has requested that the Service complete several planning measures that are considered by the commission to be critical to the future of the program, including a revision of the outdated Mexican wolf recovery plan to provide a more current framework for the program to follow. Two efforts to revise the recovery plan have been attempted in the past, and currently a new team has been convened to prepare a new recovery plan.





Bruce Sitko



GEORGE ANDREJKO



GEORGE ANDREJKO



THE FIRST RELEASE

On Jan. 27, 1998, the Service's Mexican Wolf Recovery Coordinator Dave Parsons and I trucked the first of 11 wolves from the Service's acclimation facilities in New Mexico to Alpine, Ariz. The animals were placed in pre-release acclimation pens at three sites in the Blue Range recovery area. While the event was recognized as an exciting milestone, the real work had just started. The global media, dignitaries and public congregating in Alpine on that day were long gone when issues and conflict inevitably developed after the release.

Secretary of the Interior (and ex-governor of Arizona) Bruce Babbitt presided over the Alpine festivities on release day. Federal and state wildlife directors, state wildlife commissioners, wolf advocates and others attended the momentous occasion, some in support and others opposed.

In a pre-release briefing, Secretary Babbitt committed to addressing the cornerstone of making this reintroduction a success: building social tolerance through transparent communication with local stakeholders and mitigating financial losses from wolf depredation. While federal partners have attempted to address this cornerstone over the course of the program, establishing full social tolerance for all stakeholders has yet to be achieved.

The 11 Mexican wolves were released from the pre-acclimation pen on March 28, 1998, ahead of an oncoming blizzard. The weather conditions were not ideal, but an ominous court injunction against releasing the wolves seemed imminent and decisive action was taken. The releases went off without a hitch. Supplemental food was provided to help the wolves in the early days after release but soon the radio-collared wolves were killing elk. All three packs established territories and, by that summer,

Arizona's first wild-born wolves in more than 50 years were cavorting near dens in the recovery area.

An Interagency Field Team (IFT) became responsible for tracking and monitoring the wolves, recording their location and behavior, and responding as necessary when issues developed. Among the predicted issues was livestock depredation. Livestock depredations can be difficult to definitively determine. Wolves were often blamed for livestock deaths even if a definitive cause of death could not be determined. The IFT though documented losses that were consistent with the projections made during the planning stages of Mexican wolf reintroduction.

From 1998 to 2013, the wild wolves established a foothold in Arizona and New Mexico despite the effects of unlawful killing, vehicle collisions, drought, fire and removal of animals due to livestock depredation or nuisance behavior. The IFT documented 92 wolf mortalities in the wild from 1998 to 2012, 47 of which were due to illegal shooting. Eighteen were from natural causes. In addition, during the same time period, 28 wolves were removed from the wild either lethally or taken into captivity for excessive livestock depredation or exhibiting nuisance behavior such as hanging around residential areas and displaying a lack of fear of humans. (Some of the wolves that were removed were eventually returned to the wild when the animals were older.)



GEORGE ANDREJKO

In 1998 project partners released three family groups of Mexican wolves into the primary recovery zone on public lands within the Apache National Forest in eastern Arizona. Before a release, wolves are kept in pre-release acclimation pens, (left and right). The Interagency Field Team is responsible for tracking and monitoring wolves that are released in Arizona, (center).

MILESTONES

Amidst the human turmoil, many Mexican wolves have adapted well to life in the wild. Initial releases of wolves continued in the years following the first release. By 2005, the need to release naïve wolves (those born and reared in captivity) had diminished despite losses due to unlawful killing or removal of animals from the wild. Release sites were limited, and wild wolves were reproducing in the wild and bolstering the population. Between 2005 and 2009, the minimum wild population ranged between about 40 and 60 wolves. More importantly though was that nearly all wolves in the wild were wild born by 2010, an achievement that is considered a significant milestone in any endangered species recovery effort. The 2013 population survey showed a minimum of 83 Mexican wolves roaming Arizona and New Mexico, an increase from 75 animals in 2012. With the wolf population at its highest since reintroduction, the wolf reintroduction partners are optimistic that the project's objective to establish a "population of at least 100 Mexican wolves" will soon be attained.

It took years and a lot of hard work to get the Mexican Wolf Reintroduction Project off the ground, and the Arizona Game and Fish Department is committed to continuing its mission to restore this important subspecies to the Arizona wildlands for future generations. Wildlife reintroduction programs do not achieve success overnight. They require perseverance, flexibility and time. Until a self-sustaining population of Mexican wolves exists in Arizona, the department will look to the milestones achieved along the way as indicators of success. 🐾

■ Terry Johnson served as the department's endangered species coordinator for more than 28 years before retiring in 2011. He is now an endangered species consultant for a variety of entities.

From 1985 through 1996, the department and Service collaborated on countless tasks essential to bringing Mexican wolf reintroduction to the Commission and Secretary of the Interior, among others, for final consideration. Significant steps in the planning process included:

- **1985:** Department identification of 17 potential reintroduction sites in Arizona.
- **1987:** Commission approval of a 12-step process for reestablishing nongame and endangered wildlife.
- **1990:** Department public attitudes survey about Mexican wolves.
- **1991–92:** Public scoping by the Service for an Environmental Impact Statement (EIS) on Mexican wolf reintroduction in the Southwest.
- **1992:** Department report narrowing down the 17 potential reintroduction sites in Arizona to four and ultimately one (Blue Range Wolf Recovery Area).
- **1995:** Proposed department reintroduction plan for the Mexican wolf.
- **1996:** Service issues Final EIS.
- **1997:** Federal Record of Decision to implement the EIS preferred alternative.
- **1998:** Jan. 12, publication of federal Final Rule for establishing a nonessential experimental population of Mexican wolves through reintroduction in east-central Arizona, allowing dispersal and translocation in the designated recovery area in Arizona and New Mexico.
- **1998:** Jan. 28, captive wolves transferred from holding facilities in New Mexico to pre-release acclimation pens in Arizona's wolf recovery area.
- **1998:** March 28, Service's Mexican Wolf Management Plan and release of 11 wolves into the BRWRA.

By Julie Hammonds

The Arizona Game and Fish Commission has always played a key role in the Mexican wolf reintroduction.

ENGAGED

FROM THE START

The crucial vote could have gone either way. On Oct. 21, 1995, the Arizona Game and Fish Commission seized an opportunity to voice its opinion on the potential reintroduction of Mexican wolves into the Southwest. At stake: Arizona's participation in federal efforts to recover this endangered subspecies.

Nobody knew how the five commissioners would vote. They had been heavily lobbied, according to Mike Golightly, then in his fourth year on the commission. "Both sides were so passionate," he recalls. When he proposed a motion that supported wolf reintroduction under certain conditions, even Golightly didn't know what the outcome might be.

By that time, Arizona had been involved in Mexican wolf conservation for more than 10 years, assessing biologically viable reintroduction sites and surveying the public.

Beth Woodin served on the commission from 1990 to 1995. "We were following a process that had been instituted in 1983, which was nicknamed the 'Arizona 12-step,'" Woodin says. "The commission accomplished each step as it came, through public process. We held many public meetings that were extremely well attended by supporters and detractors. It became hotter and more contentious as time went by, but it was important that each stage go forward in order."

Between public meetings, commissioners talked with landowners and local residents in potential reintroduction areas, participated in conferences and attended scientific symposia to better understand wolf biology.

These public events served to air diverse opinions and to educate commissioners on all the issues. So it was a well-informed commission that met in October 1995 to consider a draft environmental impact statement, a federal planning document that analyzed the proposed reintroduction's potential effects.



“When the draft EIS came out, the one we voted on — frankly, I was just glad we were at a point where we could say yes or no,” remembers Golightly. “We weren’t deciding whether to reintroduce wolves or not. The question was, Did we want the department to help manage threatened and endangered species?”

Golightly made a strategic decision to introduce a motion that favored establishing a “nonessential-experimental” population of Mexican wolves in the Southwest, under certain conditions. “My thought was, let’s get it out on the floor for discussion. If the commission voted that down, the door was still open for discussion, whereas if the first motion had been anti-reintroduction and it passed, that would have been it — end of discussion.”

As it turned out, the commission’s newest member held the swing vote. Fred Belman of Tucson was a big game hunter, “not crazy about the wolf,” Woodin remembers. “He was leaning toward voting no,” says Golightly. “Over lunch that day, I made sure he spent some time with the department’s project coordinator, Terry Johnson, to get more information. ... We went back into the meeting room after lunch, made the motion, and it was approved 3-2.”

Woodin recalls that after the meeting, Belman told her he was also swayed by testimony from staff of the Arizona-

Sonora Desert Museum, which is located in his hometown. “If they could support it, I could support it,” Woodin says Belman told her. She adds, “He was a brave person with strong principles.”

After that crucial vote, the department was solidly in the wolf business — with one interesting historical footnote. Multiple reintroduction sites were originally being considered, but the U.S. Forest Service removed two — the Buenos Aires National Wildlife Refuge in southern Arizona and the Coronado National Forest in northern Arizona — from consideration. The White Sands National Proving Grounds, N.M., or the Blue Range area of eastern Arizona remained as site options. Golightly’s motion supported “Alternative A” in the draft environmental impact statement, allowing wolves to be released initially into either White Sands or the Blue Range. The commission’s motion specified that White Sands should be chosen for the first release. But when the U.S. Fish and Wildlife Service (Service) announced its final decision more than a year later, the chosen site was the Blue Range.

The commission responded in a letter to the Service, reiterating a preference for an initial wolf release in New Mexico. However, the letter went on, “Our concerns and our opposition notwithstanding, we reiterate our position that, should the Service decide on



AZGFD Commissioner
John (J.W.) Harris

wolf reintroduction in the Blue Range Area, we will diligently work with you to ensure that the effort has every reasonable opportunity for success, and that any impacts on other resources and the public are minimized to the fullest extent possible.”

The commission’s crucial 1995 vote was not the end of its involvement in wolf reintroduction, of course. Endangered species conservation requires long-term effort. Over the years, there have been four memoranda of understanding among participating agencies, including Arizona. These are intended to guide the program on the basis of shared policies and principles. However, many different stakeholders are involved, and there are ongoing challenges for everyone.

“I would have liked to see a smooth transition to wolves in the wild and everybody in agreement as to what was happening and everybody walking away from the table satisfied, which has never happened,” says former commissioner Dennis Manning, who served from 1997 to 2002. “Nobody is happy with the program up to today.” he says.

During his tenure on the commission, Manning and others raised several concerns. “How do you contain a large carnivore into a designated release area?” he asks. “History has proved you can’t. Another concern was the effect on our cattle industry in eastern Arizona and western New Mexico. ... The program decimated the small rancher industry in those areas.”

In September 2002, the commission directed the department to voice displeasure with the project’s status in a letter to the Service. (The letter was also signed by the director of the New Mexico Department of Game and Fish.) To make the project more responsive to local needs and ensure a more appropriate state role, the commission asked for opportunities for participation by all stakeholders, a



The Blue Range Area was the site chosen for the first wolf release.

PHOTOS ON THIS PAGE BY GEORGE ANDREJKI

restructuring of state and federal roles and functions, and better response protocols that would ensure immediate response to urgent issues such as wolf depredation on livestock.

The commission reserved the right, “if these issues are not resolved within the timeframes outlined in the letter, to take further action on the department’s participation in this project.”

Although progress was noted in follow-up meetings, problems remained. In October 2008, the commission instructed the department’s director “to continue to work toward establishment of an Arizona population of Mexican wolves that is a component of a larger metapopulation capable of sustaining itself in the long term.” The commission conditioned its continued support for wolf conservation on 13 principles and actions. These included:

- a continued leadership role for Arizona in the program.
- a revised Mexican Wolf Recovery Plan “that provides ... achievable and legally-defensible population objectives adequate to justify and sustain delisting for wolf conservation efforts in Arizona and elsewhere.”
- a renewed memorandum of understanding “to continue providing a foundation for collaborative adaptive management of the project.”
- adequate financial commitments from all partners.
- “an interdiction, incentives, and compensation program that appropriately addresses the impacts of Mexican wolf reintroduction and recovery on the private sector and creates incentives for enhanced conservation and stewardship.”

In the past five years, the commission has remained frustrated by these and other elements of the wolf reintroduction program. In December 2011, it adopted a motion stating it would not “support any new [wolf] releases until such time



IFT PHOTO

as there is a new recovery plan, a new management plan, a new EIS and a new 10(j) [rule].”

That motion was revised in January 2012 to approve the replacement of wolves lost to mortality on a case-by-case basis, “based on deliberation and determination; those removed as a result of [people’s] unlawful acts would be at the discretion of the director, those lost to other sources of mortality would be subject to commission deliberation and determination for replacement.”

Commissioner J.W. Harris began serving as commission chair in 2013. “We’re definitely committed to having wolves in Arizona,” he says. “We’ve spent a huge amount of money in this state making sure it happens.”

Harris thinks Arizona should continue to play a key role in the wolf reintroduction. “We definitely want to be included as an active part of federal planning processes, because the people of Arizona and the outdoorsmen of Arizona need and deserve strong advocates,” he says.

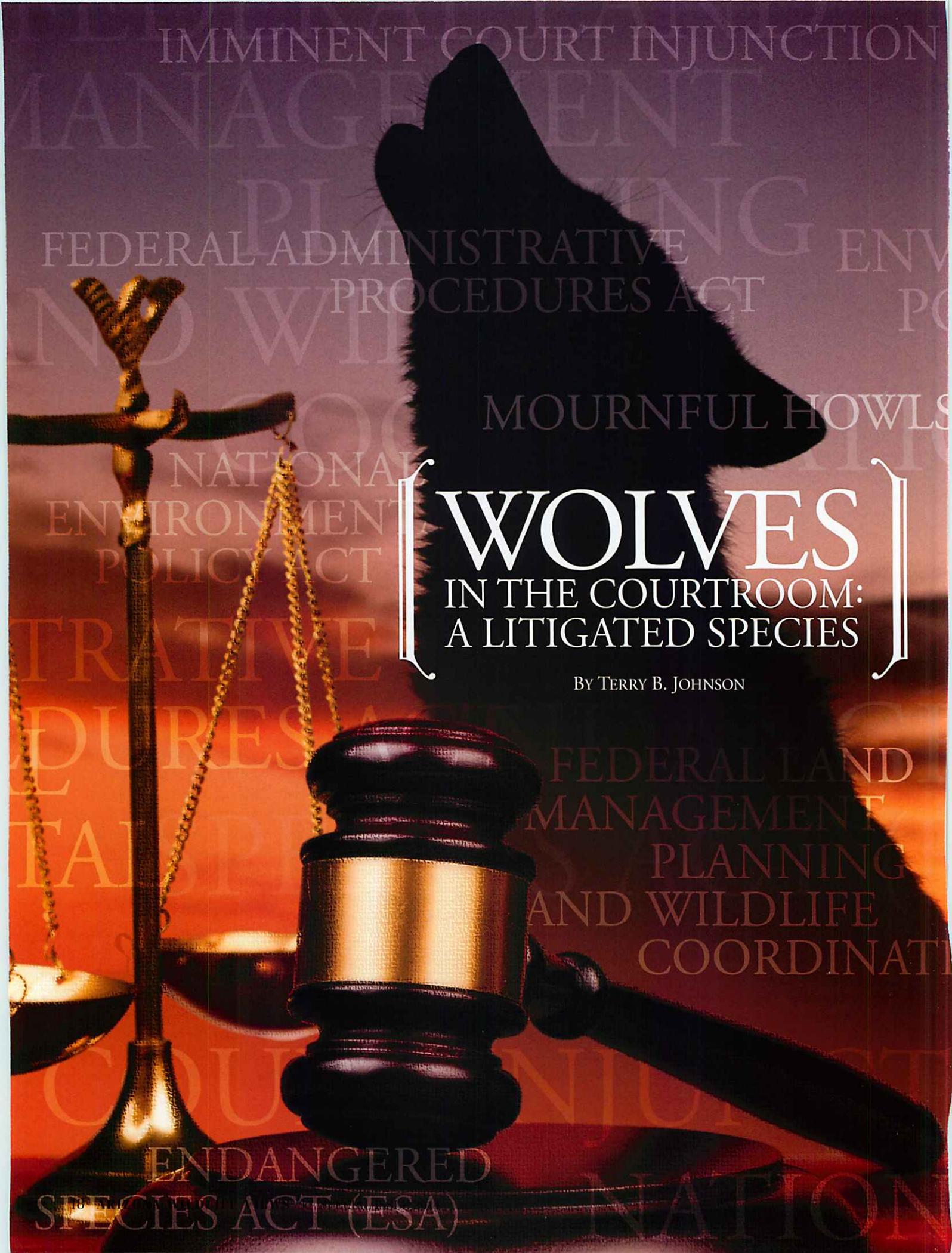
In fact, “We’d like to have a state wolf management plan where the Mexican wolf is managed in conjunc-

tion with all other wildlife and with consideration for all the other interests, including those of ranchers and recreationists. ... We have good staff who’ve been involved for a long time, and they are in the best position to know what must be done to manage this population successfully.”

Harris says if Arizona were to take on management of the Mexican wolf population, “a lot of the partners currently involved in Mexican wolf conservation would still be partners, including U.S. Fish and Wildlife — it just gives the state more day-to-day management authority and flexibility.” He adds, “We know Arizona is the very northern portion of the Mexican wolf’s range, so to really have recovery, Mexico needs to be a very active partner.”

To those who think the wolf reintroduction is not going well, Harris says, “We went from 50-some to 83 wolves in two years or so, and that’s without any new releases; that’s with a wild natural population. I consider that a huge success.” ❁

■ Julie Hammonds is the associate editor of Arizona Wildlife Views magazine.



IMMINENT COURT INJUNCTION

MANAGEMENT

PLANNING

FEDERAL ADMINISTRATIVE PROCEDURES ACT

NO WITH

MOURNFUL HOWLS

NATIONAL

WOLVES

IN THE COURTROOM: A LITIGATED SPECIES

BY TERRY B. JOHNSON

ENVIRONMENTAL
POLICY ACT

TRATIVE

DURES

TAL

FEDERAL LAND
MANAGEMENT

PLANNING

AND WILDLIFE

COORDINATI

COURT

ENDANGERED
SPECIES ACT (ESA)

NATION

Mexican wolves were scheduled to be released from acclimation pens in the Blue Range Wolf Recovery Area of east-central Arizona in the more favorable spring weather of 1998. But, suddenly that timing changed and, on March 28, 1998, 11 wolves were released virtually in the dead of frozen night in the face of a blizzard. Why the hurry? The answer was simple: rumor of an imminent court injunction that would stop the forward momentum of the wolf reintroduction program and prevent the wolves' release.

A thorough review of the federal litigation that has shaped Mexican wolf recovery and reintroduction thus far would require hundreds of pages, but some key elements are worth noting.

What is the primary basis for litigation? Agency compliance with federal, state or tribal laws applicable to recovery and reintroduction proposals, plans, decisions and actions drives much of the litigation. Principal among these laws are the: Federal Administrative Procedures Act, National Environmental Policy Act, various Federal land management planning and wildlife coordination acts; and, Endangered Species Act (ESA).

These laws collectively establish criteria that must be met for endangered species conservation actions to occur. Non-compliance with any of them may be subject to litigation and judicial relief. The citizen suit provisions in the ESA clearly reflect Congress's intent that the public has the right to contest federal actions that seem contrary to the best interests of the nation's most imperiled wildlife species. Court cases have generated an abundance of case law affirming that agencies must comply with these laws or correct perceived errors of judgment, science and procedure.

This foundation leads to: Why are wolves perhaps the nation's most litigated species? Wolves are charismatic animals at the symbolic apex of predator-prey relationships and ecosystem diversity and stability. Over time, wolves have impacted deer, elk and other prey animals that are now big game for sport hunters as well as targets of wildlife watchers armed with cameras, binoculars and spotting scopes. A wolf's strength, endurance, ferocity and resilience are legendary. Their mournful howls evoke strong feelings of wonderment or fear, which can compel strong feelings about wolf conservation.

"Why?" also involves frustration with the U.S. Fish and Wildlife Service (Service), an agency that many believe is caught between a rock and a hard place: the need to meet its legal obligations to recover endangered species and the reality of doing so across a landscape of fragmented habitat, multiple jurisdictions and political districts, property rights, and conflicting public land uses and public values. Many also use the Service's delayed decision making and the perception that the agency fails to comply with the letter and spirit of the laws under which it operates as a reason to seek judicial intervention. The abundance of court victories by citizen-employed litigators is testimony to the complexity of the Service's efforts and to the values that drive such litigation.

The public's interests are not easily characterized in such a way that consensus is clear. Agencies, organizations, individuals and politicians all tend to want things managed

their way, for their values, especially in their own backyards. For the Mexican wolf, consensus is an elusive goal. Finding real-life solutions that satisfy all of the diverse groups is never easy, and the pathways to these decisions all too frequently lead to court.

More and more wildlife management is being driven by court decisions that reflect which aggrieved party has more time, more persistence and deeper pockets.

The wolf's imperilment, symbolic importance and invaluable use as a tool for "nonprofit" fundraising sometimes means the species serves as a cover for agendas that may not be related to whether, where or how wolves should occupy the landscape. Anti-hunting, anti-grazing, anti-environmentalist and anti-government agendas seem as characteristic of wolf litigation as actual wolf-related issues. An agency's lack of compliance with administrative and procedural requirements of the law also plays a role. It quickly becomes evident that "why?" is a complex question to answer.

The Arizona Game and Fish Commission and department have steadfastly declined to use court action to resolve concerns about Mexican wolf conservation. Only time will tell what long-term effect these court decisions have on wildlife conservation and the future of the Mexican Wolf Reintroduction Project. ❁

■ Terry Johnson served as the department's endangered species coordinator for more than 28 years before retiring in 2011. He is now an endangered species consultant for a variety of entities.

WHY ARE WOLVES PERHAPS THE NATION'S MOST LITIGATED SPECIES? WOLVES ARE CHARISMATIC ANIMALS AT THE SYMBOLIC APEX OF PREDATOR-PREY RELATIONSHIPS AND ECOSYSTEM DIVERSITY AND STABILITY.

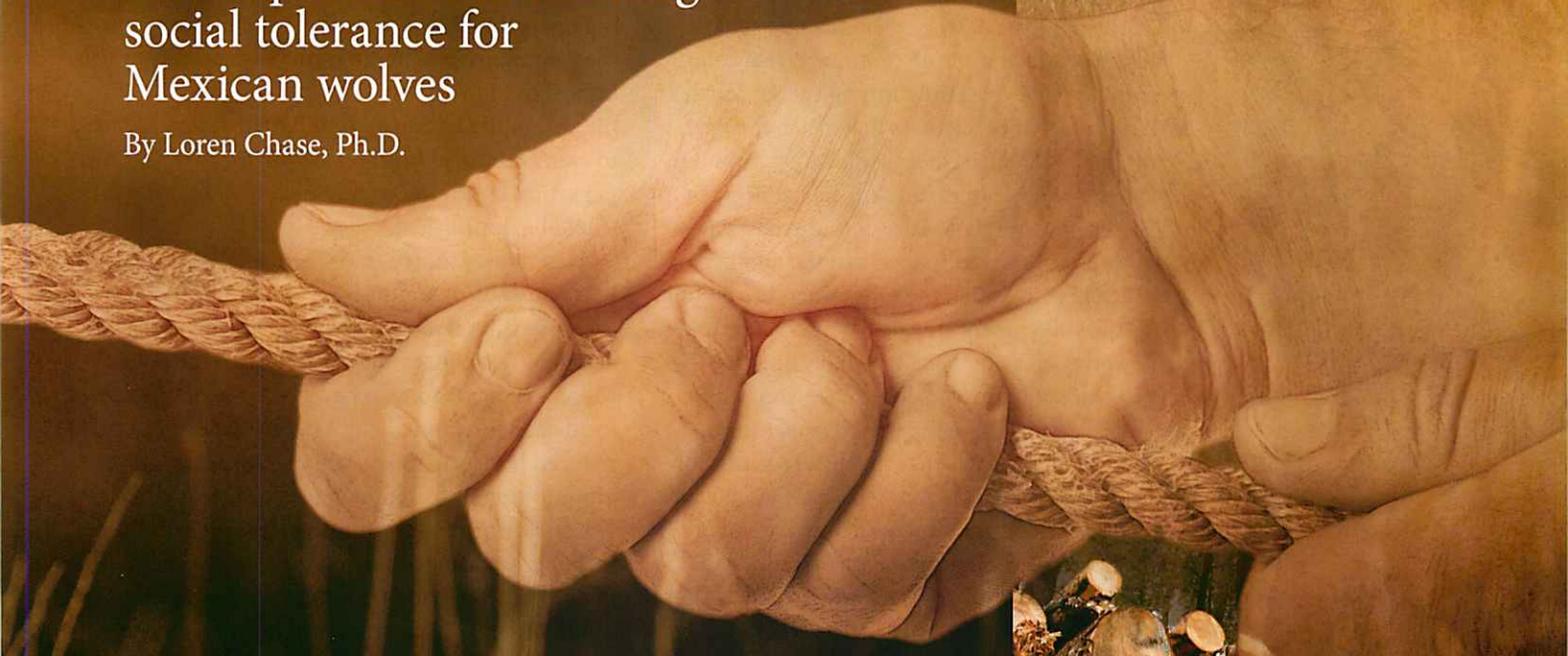
THE TUG-OF-WAR OF



CONSERVATION

The importance of building social tolerance for Mexican wolves

By Loren Chase, Ph.D.



Few people can get through childhood without playing tug-of-war. We all had our tactics to win: putting the stronger people in back, locking your arms, pulling with your legs, and taking small steps. Such a simple game taught teamwork and showed examples of physics and mechanical advantage. Unfortunately, some mistakenly view Mexican wolf management in Arizona as a game of tug-of-war. This is understandable. In the past, few conservation issues have been more contentious, litigious or complex as Mexican wolf management.



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On one end of the rope, some individuals and organizations are tugging in their direction to have large numbers of Mexican wolves thriving across the entire Southwest. Numbers that are unrealistic in our modern age. Habitat conditions and vast amounts of open space are not what they were historically. These groups are concerned that a viable, self-sustaining population of Mexican wolves will not be established or that the project may be discontinued. That compels them to pull even harder through actions such as filing lawsuits to force changes that match their version of how wolf management should look. However, with human and urban expansion, habitat degradation and diminishing prey base, it is unrealistic to expect wolves to recover to their historic numbers.

At the opposite end of the rope, others are pulling to have the government stop wolf conservation and kill all wolves on sight. People strongly opposed to wolf reintroduction may include those who believe their ability to make a living will be jeopardized, such as the logging industry's inability to access forest products if critical habitat were to be designated for wolves. Agricultural producers fear the loss of livestock through wolf depredation because of the industry's already-thin profit margins. Many within the hunting community are concerned there will be loss of big game, thus reducing their ability to hunt deer or elk.

And in the middle of the rope is the great majority of Arizonans who weakly support or oppose wolf reintroduction and remain largely unaware of the issues that come with wolf management. Most are suburbanites with little connection to nature, or they are recent transplants from states that lack the awe-inspiring ecosystems Arizona offers. Their daily life is impacted very little by the presence or absence of a Mexican wolf, so they do not have a strong opinion in either direction.

Monitoring all of this counterproductive infighting is the Arizona Game and Fish Department. The department is committed to a wolf reintroduction program that will put wolves on the land, but at a level that allows ranching to occur and big game populations to continue at healthy levels. The department supports the concept of "multiple-use" of Arizona's public lands, which includes conserving wildlife and their habitats, livestock production, public recreational activities, hunter opportunity, and recovery of imperiled wildlife species. However, perhaps the most daunting challenge of the department's Mexican wolf management is gaining social acceptance.

The department is trying to help various

stakeholders at opposing ends of the issue better understand and tolerate the nuances of managing wolves. For example, those who live where wolves occur are most affected by their presence. Therefore, acceptance of the wolf reintroduction project by this group is essential to the success of Mexican wolf conservation. Wolves are likely to reduce local hunting opportunities in some areas, so the acceptance of the wolf management program by this group is also important. Finally, buy-in from wolf advocates is important too because without their support, efforts to gain additional funding for wolves, invest in compensation programs, or other landowner incentives would be diminished.

History has shown that when Arizonans set aside these misleading tug-of-wars and pull together in the same direction, focusing on commonalities, we achieve great conservation successes. One notable success is the ongoing recovery efforts for the California condor. Hunters in Arizona have voluntarily reduced lead available to condors by using non-lead ammunition or by removing gutpiles from the field. The department helps by using Heritage Fund dollars to provide non-lead ammunition at no charge to hunters drawn for a hunt in the condor's core range. Other conservation groups contribute to a raffle for hunters who turn in a gutpile. Each group contributes a little, and everyone benefits, especially the condor. Additionally, Arizona has many other examples of cooperative successes including black-footed ferrets, Chiricahua leopard frogs, Sonoran pronghorn and Apache trout.

The reality is that Mexican wolves are — due to laws created by the citizens of this country — returning in some number to portions of their former, historically-occupied lands. It is imperative that individuals and organizations consider the factual science surrounding wolf management issues, use reason when discussing these volatile issues, and comprehend opposing viewpoints. Each stakeholder must evaluate his or her position and decide if they are going to pull against each other at the extremes of the artificial tug-of-war or work together to seek common ground. However, we invite all to set aside the zero-sum mentality of yesteryear where one team must lose in order for another to win. Because when it comes to Mexican wolf conservation, if we all win a little, nobody loses a lot. 🌿

■ Dr. Loren Chase is the department's human dimensions program manager and leads several statewide and national research studies. He hopes to see a wolf when he is hunting with his grandkids many years from now.

Misconceptions About Wolves

By Julie Hammonds

No doubt about it: Wolves are fascinating animals. People have always wondered about them and woven what we think we know about them into tales both true and fantastical. In the modern age, as wolves have become the subject of scientific study, it may be surprising that misconceptions about them persist, but they do.

Two common tales told today about Mexican wolves are that they carry diseases that threaten humans and livestock, and that they pose a serious danger to humans and pets. Like other misconceptions about wolves throughout the eons, these stories are not based in fact. Here are some questions commonly asked of wolf biologists, along with the answers as we know them today.

QUESTION: DO WOLVES CARRY DISEASES THAT THREATEN HUMANS AND LIVESTOCK?

Answer: Mexican wolves are susceptible to many of the same diseases that can affect domestic dogs, coyotes, foxes and other members of the dog family. These include rabies, canine distemper, canine parvovirus, plague, tularemia, leptospirosis, neospora, intestinal parasites such as worms, and external parasites such as fleas and ticks. In general, very little infectious disease has been found in captive or wild Mexican wolves, according to information gathered and prepared by veterinarians from the Mexican Wolf Reintroduction Project, Arizona Game and Fish Department and U.S. Fish and Wildlife Service. No serious infectious disease has ever been found in the Arizona-New Mexico population of Mexican wolves.

Q: HOW DO WE KNOW THESE MEXICAN WOLVES DON'T CARRY SERIOUS INFECTIOUS DISEASES AND PARASITES?

A: Wild Mexican wolf populations in Arizona and New Mexico are intensively monitored for diseases and parasites, and preventively treated as a precaution. Wild wolves are routinely vaccinated, dewormed and tested for the presence of diseases and parasites when they are captured and handled. These vaccination, deworming and disease surveillance programs protect public health, individual wolves and the health of the larger wolf population.

Q: IS RABIES A SERIOUS CONCERN WITH THE WILD MEXICAN WOLF POPULATION?

A: Because rabies is present in Arizona and New Mexico, wild animals here, including wolves, can transmit this potentially fatal viral disease to humans. However, rabies has not been documented in the Arizona-New Mexico wolf population. Wild Mexican wolves that are captured and handled are given rabies vaccines to help prevent infection. Elsewhere, rabid wolves have, on extremely rare occasions, attacked people, who then died of rabies. There are two cases from Alaska (the last one in 1943) and one suspected case in the Lower 48 (Wyoming, 1833).



Q: WHAT ABOUT OTHER DISEASES CANINES ARE SUBJECT TO, SUCH AS DISTEMPER, PLAGUE, ETC.?

A: A comprehensive vaccination that prevents canine distemper, parvovirus and other diseases found in canines is given when a wild Mexican wolf is captured and handled. Distemper and parvo have not been found in the Arizona-New Mexico population of Mexican wolves.

Plague and tularemia are bacterial diseases commonly associated with smaller animals such as rodents and rabbits. Mexican wolves are routinely tested for these diseases. Test results sometimes show that a Mexican wolf has been exposed to plague or tularemia, possibly from eating rodents or rabbits or being exposed to rodent fleas (which are different from the fleas commonly found on canines), but wolves are fairly resistant to becoming clinically ill with these diseases.

Leptospirosis is a bacterial disease that can be transmitted from wildlife to humans and also can cause livestock abortions. The Mexican wolf population is routinely tested for exposure. No positive results have been detected. A similar disease, neospora, also has not been detected in Mexican wolves.

Q: ARE MEXICAN WOLVES LIKELY TO ATTACK OR HARM HUMANS?

A: To date, there have been no incidents of a free-ranging Mexican wolf attacking or injuring a person. In fact, wolf attacks in general across North America are so rare as to almost be nonexistent. In "A Case History of Wolf-Human Encounters in Alaska and Canada," a 2002 publication by the Alaska Department of Fish and Game, biologist Mark McNay states that "No human deaths have been attributed to wild, healthy wolves (in the United States and Canada) since at least 1900, and biting incidents or bluff charges are rare enough to warrant publication in scientific journals." In the 80 cases McKay studied, aggressive, nonrabid wolves bit people in 16 cases, and none of those bites was life-threatening. These case histories are all based on eyewitness accounts and credibly documented reports rather than secondhand information, which is far less reliable.



GEORGE ANDREJKO



On one side of the wolf issue, people are pulling to have the government stop wolf conservation and kill all wolves on sight. They may believe stories about wolves, rather than understand facts about wolf biology, thus perpetuating misconceptions. Or those who strongly oppose wolf reintroduction may believe their ability to make a living will be jeopardized.



Q: ARE REINTRODUCED MEXICAN WOLVES APT TO BE MORE DANGEROUS THAN WILD WOLVES BECAUSE THEY ARE MORE ACCUSTOMED TO BEING AROUND HUMANS, AND LESS AT EASE IN THE WILD?

A: Biologists look for avoidance and fear of humans as one of the primary characteristics when selecting Mexican wolves for release. The first wolf pack released, in 1998, killed wild elk within three weeks of release. Before release, wolves are managed with minimal exposure to humans in an environment that fosters and maintains natural behaviors. They are not socialized or habituated to humans, making them unlikely to be attracted to human establishments once released.

Q: HOW CAN I KEEP MYSELF, MY FAMILY AND MY PETS SAFE IN WOLF COUNTRY?

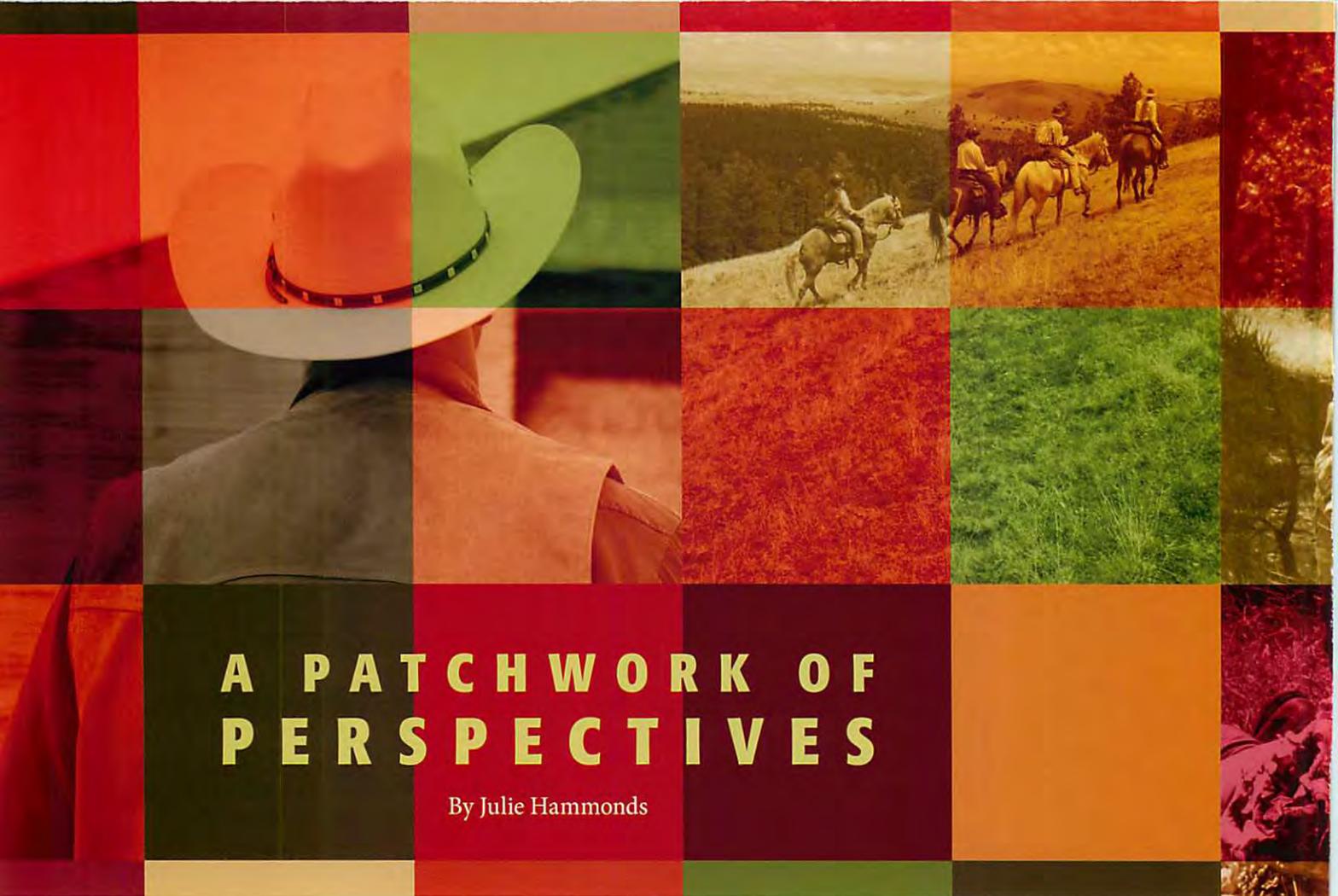
A: Most people will never see a Mexican wolf. If you do see one or more wolves near humans or manmade structures, this does not mean the wolves are likely to attack. Extraordinary precautions are not needed. Still, it's wise to behave with caution when wolves might be present, as you would when in the territory of any wild predator. Treat wolves (and other wildlife) with respect. Never feed a wild animal or leave food or garbage outside in open containers.

People with dogs should be aware that wolves are known to treat dogs as a territorial threat and may kill them to defend their territory. A U.S. Forest Service publication recommends that people, "Keep dogs under control at all times and leashed when possible. Should you hear or see wolves near your camp, contain dogs in a tent or vehicle if possible and

harass wolves away if necessary. You may legally harass a wolf away from you and your property, but you must report it within seven days."

Learning the facts about wolves and respecting their renewed presence in the wilds of Arizona and New Mexico are the best ways to dispel misinformation about wolves. ❁

■ Julie Hammonds, the associate editor of Arizona Wildlife Views magazine, based this story on "Blue Range Reintroduction Project Fact Sheet for Guides, Outfitters, and Forest Visitors" (U.S. Forest Service 2006) and information at www.azgfd.gov/wolf, in addition to other sources cited in the article.



A PATCHWORK OF PERSPECTIVES

By Julie Hammonds

The reintroduction of Mexican wolves to Arizona and New Mexico has affected many people. Their voices are pieced together here like squares in a multi-colored quilt.

Wolf advocate Bobbie Holaday founded Protect Arizona's Wolves and was a key force behind wolf reintroduction.

"We very much need a top predator in the wild," she says. "Unfortunately, when the wolf was destroyed, the coyote moved into that niche. But coyotes couldn't do the job the wolf had done. Wolves keep a healthy population of deer. With the wolf back, deer and elk have to be on the alert and move around. They have more exercise and are healthier.

"Putting the wolf back into its niche was a way of maintaining a healthy balance among the whole ecological system and every species in it. This not

only benefited advocates who wanted to have wolves in the wild, but hunters and those who enjoy taking advantage of all the opportunities in nature.

"We have wolves that were born in the wild now, which we didn't before, and that's what I wanted: wild wolves."

Sportsmen foresee impacts to wild ungulates, particularly elk, and to hunting opportunities.

"Being an elk lover, elk hunter and a conservationist that specializes in elk, the loss of elk is the number one issue to me personally," says Steve Clark, president of the Arizona Elk Society. "The Mexican gray wolf's diet

is 80 percent to 90 percent elk. This could easily affect the wildlife of Arizona unless we keep the wolf population in check." He adds, "Currently we're losing hunting opportunity. Hunters spend money not only on licenses and tags but on food and gas and hotel space and laundry. It all adds up for those small communities."

"Many sportsmen and women are resigned to the fact we have wolves in Arizona," says Jim Unmacht, president of Arizona Sportsmen for Wildlife Conservation. "We ought to maintain that population in the Blue Range, but not try to recover a species that had only 10 percent of its historical range in our state,



to the detriment of all other species in Arizona. The U.S. Fish and Wildlife Service should work with Mexico to recover the species in Mexico, where 90 percent of its range used to be.”

The re-establishment of a top predator in a landscape that's no longer wild concerns livestock growers.

Rancher Barbara Marks lives in the Blue Range Wolf Recovery Area and says the reintroduction “pretty much changed life as we knew it.” Wolves have attacked their cattle and working dogs. They have changed grazing locations to minimize conflicts with wolves and, in turn, had to buy supplemental hay for their herds. A range rider

now stays with the cattle constantly during critical times such as calving season.

“Ranchers didn’t want the wolves in the first place,” she says, “and for them to bear most of the financial burden of wolf presence — that’s not fair.” The ranchers are grateful for programs such as one offered by the Mexican Wolf Conservation Fund, which cover some (but not all) of the added operational costs. Patrick Bray of the Arizona Cattle Growers’ Association says, “We roughly estimate it costs \$20 a head more to raise cattle [annually] in the Blue Range than in other parts of Arizona.”

The reservations of two Apache tribes are near the wolf recovery area in Arizona. Each tribe responded differently to the wolf reintroduction.

“From the beginning, the San Carlos Apaches unwaveringly opposed wolves moving out of the recovery area onto their reservation,” recalls Dave Parsons, the U.S. Fish and Wildlife Service’s first Mexican wolf recovery coordinator. “A couple traditional San Carlos Apaches were interested in doing a blessing of sorts for the wolves when they were first released from crates into acclimation pens in 1998,” but the tribal council nixed the idea. “As far as I know,

they still feel the same way: They have no intention of hosting wolves on their reservation.”

The White Mountain Apaches also showed interest as the program began, “but it never turned into a request or an agreement at the time, to allow the wolf population to expand onto the reservation.” Later, “there was an agreement forged with the tribe and they do allow wolves to come onto their reservation, at least in some numbers. That continues to this day. We have one tribe participating, one tribe not.” ❁

■ Julie Hammonds is the associate editor of Arizona Wildlife Views magazine.



In the Toolbox: Techniques and approaches to help reduce livestock-wolf conflicts

*“It’s a tough deal,
working with the wolf.”*

—Fourth-generation rancher
Carey Dobson

The Blue Range Wolf Recovery Area includes approximately 4.4 million acres within the Apache and Gila national forests in Arizona and New Mexico. Much of this forested land is actively managed for cattle and sheep grazing on a seasonal or year-round basis. It also provides natural habitats that support wildlife, including Mexican wolves. The overlap between wolves and livestock on shared land can result in conflict — and opportunity.

The conflict is obvious: “When there is the predatory animal on the landscape, there is naturally stress on our animals,” says Patrick Bray of the Arizona Cattle Growers’ Association. Not only do wolves eat livestock, but their presence “causes birthing rates in cows to drop because they are constantly harassed or moved around by wolves. When we do get calves on the ground, weight gain is a problem, just because the wolves are out there.”

Fourth-generation rancher Carey Dobson recalls one herd of cows he had fenced into 400 acres. “There was knee-high grass in there. Of 60 cows that had babies, when I sold I had only 43 calves. Six were confirmed [lost] to depredation and I knew why two more died; the others, I don’t know what happened. They were eaten, but I never could find them. And there was so much stress on the cows that only half of them bred. The only thing I can attribute it to is the wolves and the pressure they put on the cows.”

The conflict between wolves and livestock is obvious: It’s part of why wolves were driven to the brink of extinction in the 20th century. The opportunity may be less obvious, but it’s no less real. As we try to bring Mexican wolves back in the 21st century, can livestock growers, management agencies and wolf supporters find better ways to coexist with wolves?

Since the Mexican wolf reintroduction program began, ranchers have tested and implemented ways to adjust their operations to minimize loss of livestock to wolves. Dobson recalls attending “wolf school” in Yellowstone, Mont., “where they taught us different things to try to keep depredation from happening.” Ranchers such as Dobson have worked with the manage-

ment agencies involved, and with other stakeholders, to reduce wolf-livestock conflicts. Some of the proactive management tools include:

- Turbo fladry: electric fencing with flagging installed around livestock holding pastures to discourage wolves from crossing a fence perimeter.
- Supplemental livestock feed and hay: provided to livestock producers who gather livestock in specific areas during calving season to minimize wolf conflicts.
- Range riders: they attend livestock during critical periods and use radio telemetry equipment to monitor wolf movements in relation to cattle.
- Livestock grazing rotation: ranchers move livestock within grazing allotments to avoid areas of high wolf use or where wolves den.
- Exclusionary 8-foot fencing: used to enclose private parcels to protect especially vulnerable animals, pets, etc.
- Radio telemetry equipment: issued to livestock producers to monitor wolf locations, avoid pastures where wolves are present and target hazing activities.
- Diversionary and supplemental food caches: native prey carcasses are strategically placed to encourage wolves to modify patterns to reduce potential conflicts with livestock.

In addition to these techniques for preventing the loss of livestock, ranchers also have access to loss-reimbursement funding for confirmed wolf depredations. “We get \$800 reimbursement from Defenders of Wildlife for a calf,” Dobson says. (Defenders of Wildlife has worked with Dobson since wolves were first reintroduced; for example, they have helped fund range riders on his ranch. Other ranchers work with different organizations.) Dobson lost 12 calves to confirmed depredation in 2013. His surviving calves sold for an average of about \$1,100 per animal, “so we lose \$300 a head if we lose a calf. Don’t get me wrong — it’s better than nothing.” But ranchers don’t always get the full payment. When a depredation is only “probable” but not “confirmed,” reimbursement drops to \$400.

Defenders of Wildlife and other groups have contributed more than \$200,000 to loss-reimbursement funding and other wolf-livestock avoidance measures. While this amount represents a commitment from such organizations, in reality, a much greater commitment is needed to be effective in offsetting livestock losses.

“When there are wolves in our area with a den, we move to another spot,” says Dobson. “That means more money for feed, more money to move them. ... When a rancher moves his livestock to prevent problems, give money for that; if someone is being proactive and doing the right thing, compensate them.”

Such additional opportunities to compensate ranchers

for losses and help increase tolerance for wolves on working landscapes are intended to be addressed by the Mexican Wolf-Livestock Interdiction Trust Fund. The fund is intended to generate long-term financial support for impacted livestock producers. It held a balance of nearly \$200,000 in 2013. It was established in 2009 by the U.S. Fish and Wildlife Service, in cooperation with the National Fish and Wildlife Foundation. Two years later, an 11-member Mexican Wolf/Livestock Coexistence Council, comprised of Arizona and New Mexico ranchers, environmental organizations, tribes and county representatives, was appointed to develop livestock producer incentives and a framework for deploying trust fund dollars.

The council developed guidelines for compensating participating livestock producers for wolf depredations. Members also confronted the leadership challenge of crafting a more pragmatic and innovative approach to dealing with wolf-livestock conflicts. The council recognized that past loss-compensation programs were reactive. They did not provide incentives for livestock producers to be more tolerant of wolves on shared landscapes. Documenting losses and evaluating preventive measures has been difficult and has resulted in escalated conflict with livestock producers, as Dobson pointed out.

Addressing the polarized stakeholder values and perspectives on wolves, the council developed a plan that attempts to address real costs and provide conservation incentives (payment) to ranchers who “host” wolves on shared lands. Stakeholders most affected by wolves and most vested in the long-term success of the council’s program helped develop the plan.

Using a performance-based program to provide financial incentives that promote self-sustaining Mexican wolf populations, viable ranching operations and healthy western landscapes to help build social tolerance for wolves sounds like the way of the future. It remains to be seen whether the council’s work will succeed. As for Dobson, “I wish I didn’t have wolves, but I do, and I’m doing everything I can to make it work. I’m 4th generation, and I have the 5th and 6th generation coming up. I want them to have this way of life. That’s why we do this: So they can live like I’ve lived.” ❁

■ Jon Cooley is the department’s endangered species program coordinator. Julie Hammonds is the associate editor of *Arizona Wildlife Views* magazine.



NATURE:



Relationships between predator and prey are never simple. Mexican wolves released in Arizona have adapted their diet, and 80 percent to 90 percent of their diet consists of elk.

Restoring a wildlife species without negatively impacting another

By Jim Heffelfinger and Brian Wakeling



ELK AND HABITAT PHOTOS BY GEORGE ANDREIKO, TRAIL CAMERA PHOTOS BY IFT

Restoring wolves in Arizona has not been easy. Wolves depend on prey, and relationships among predators and prey are never simple. Wildlife biologists are specifically trained to understand these relationships, spending years in classes and studying applied research. Formal training is followed by years of practical application managing wildlife populations while continuing to learn more about the complex relationships among predators, prey and their habitat. Biologists often are asked to explain this intertwined relationship to the media, public or decision-makers that lack this scientific training and experience. Consequently, many people think of predator-prey relationships as the simplistic “balance of nature” where both predator and prey populations reach some sort of harmonious balance. But, does the balance of nature truly exist today in our human-influenced world? Was there ever such a thing? What kind of balance can we expect as we move toward a self-sustaining population of Mexican wolves in Arizona?

This natural balance is considered a long-term average with regular fluctuations of predator and prey populations. Predators require prey for food. As prey declines, predator numbers decline, resulting in more abundant forage that provides cover and nutrition. With predator numbers also low, the stage is set for prey to increase. Prey populations then increase to higher levels and may start to overuse the habitat before predator numbers increase in response to the availability of more food (prey). These are the classic predator-prey fluctuations that biologists study in college and how many view the “balance of nature.” Although many perceive this balance exists in nature, it is not so simple. There are times when predators adversely impact prey populations and when prey populations fluctuate independent of predators.

Moving from this general concept to the real world, biologists soon realize that Mother Nature is far more complex, especially when returning a predator like the wolf to a habitat where it has been absent for a long time. Predator-prey relations are complicated by multiple species of prey, competing predators, periods of drought and habitat changes to name a few. During the 60 years since wolves existed in the Southwest, their habitat underwent dramatic change such as wide-spread urbanization and development of a complex road system. Almost none of the changes benefited wolves. Because of these changes, predictions are imprecise on the effects that the reintroduction of wolves will have on other native wildlife. However, insight can be gained from what has occurred in other places in North America where wolf populations have rebounded and from the data collected during the last 14 years of Mexican wolf recovery efforts in Arizona.



Wolves prey on large-bodied hoofed animals. That is their job. Mexican wolves evolved in the Sierra Madre Mountains of Mexico as specialized predators of Coues' white-tailed deer. Elk are not a natural prey source for a Mexican wolf. But wolves are incredibly adaptable like the related coyote. Mexican wolves released in Arizona have adapted their diet and 80 percent to 90 percent of their diet consists of elk. A deer's smaller size may make it seem like an easier meal, but elk are easy to locate in herds, more vocal in the forest and keep fairly consistent daily routines. One elk can also feed a whole wolf pack. Wolves do consume other prey, but they have found that, "Elk. It's what's for dinner."

Wolves are coursing predators, meaning they chase prey, and hunt as a team. One wolf consumes the equivalent of about 16 adult elk annually. Throughout the wolf's occupied range in the United States and Canada, wolf populations are larger and more stable in areas where elk, moose, caribou or dense populations of eastern white-tailed deer exist.

When wolves reoccupied northern Yellowstone, elk were abundant. In 1995, the elk population was estimated at 17,000 animals. By 2010, the population declined approximately 70 percent to about 4,500 elk. While wolves are widely blamed for the decrease in elk, other factors, combined with wolf predation, played a role in the decline. Hunting (outside of Yellowstone's boundaries) and below-average precipitation in the area also influenced elk populations. Wolf numbers increased from zero to more than 100 in northern Yellowstone, and when the elk population plummeted, the wolf population followed until only 38 wolves remained.

Predicting the effects wolf recovery in Arizona may have on deer populations is even more challenging than predicting their effect on elk populations. Arizona's dry climate produces less forage that supports fewer deer. While deer do not account for a significant percentage of the Mexican wolf's diet, deer could be the wolf's primary prey in areas that lack elk. A wolf is estimated to require about 80 deer annually if they consumed nothing but deer. In this scenario, wolves would not eat only deer, but it is clear that Arizona's deer herds would not support the same wolf densities as the Northern Rocky Mountains or the

Great Lakes Region in the Midwest. Trying to achieve the same wolf densities at the expense of other native wildlife populations would be negligent wildlife management and unsustainable long term.

The current Mexican wolf population in Arizona and New Mexico is approaching the original goal of at least 100 animals. Elk monitoring to date has not shown a decline in elk numbers, and deer remain more abundant in the White Mountains than in many Arizona desert mountain ranges. Arizona and New Mexico lands can support this number of wolves and contribute to the overall recovery of Mexican wolves in their historical range without detrimental effects on prey populations.

Wolf populations may increase in the future to the point where wolf predation does reduce elk and deer abundance. But, if wolves exert enough influence to dramatically reduce an ungulate population, intervention may be needed to prevent the wolf's prey base from declining to a point where it causes the wolf population to decrease. If a balance between wolf and elk populations had occurred in northern Yellowstone, it may have been possible to maintain greater numbers of both species.

The "balance of nature" probably never existed, even in pristine, undisturbed habitats of the past. Today, roadways, habitat changes, catastrophic wildfires, the increasing frequency of drought, climate change and human development all impact species abundance and the predator-prey relationship. In today's world where human impacts abound, it is naïve to believe that the balance of nature can be left to Mother Nature alone. Wildlife agencies have a responsibility to assist and manage all native wildlife populations in balance and not to the detriment of one. Mexican wolves are no different. The restoration of wolves must not damage the conservation and restoration of other native species. Managing for a sustainable level of wolves, in consideration of how southwestern ecosystems differ from the past and from more productive ones, is the responsible way to help ensure that all native species persist in Arizona into the future. ❖

■ Jim Heffelfinger is the department's game specialist in the Tucson regional office. Brian Wakeling is the department's game branch chief.

BY JON COOLEY, MIKE RABE AND LARRY RILEY

THE PRICE WE PAY

THE COSTS OF MEXICAN
WOLF MANAGEMENT

\$1

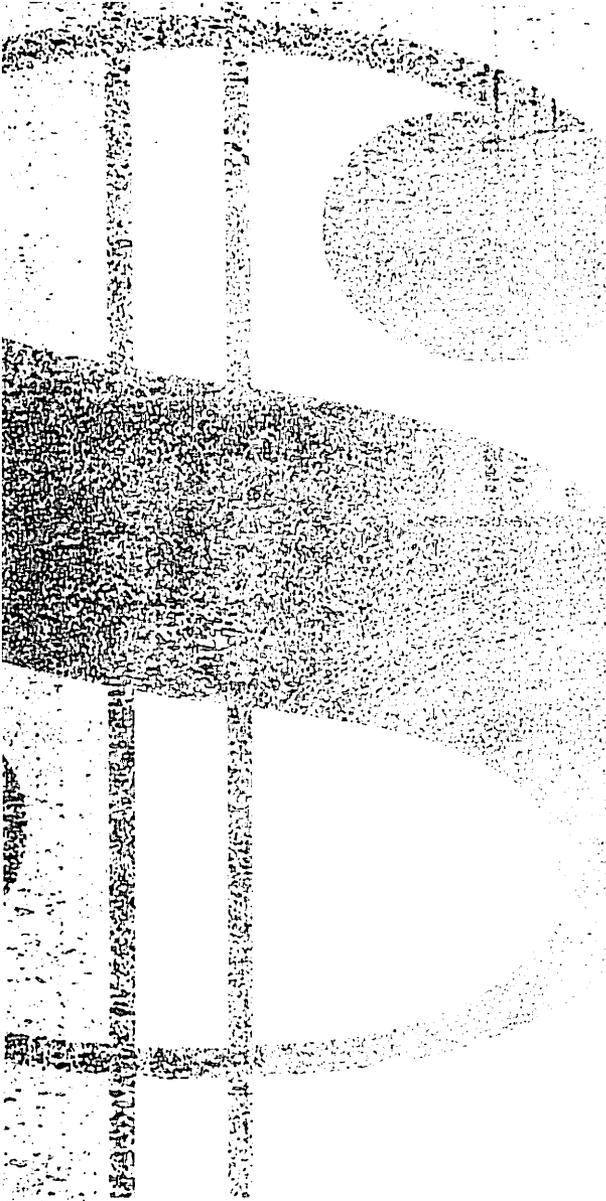


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MANAGEMENT OF MEXICAN WOLVES IS ONE OF THE MOST LABOR- AND TIME-INTENSIVE OF ANY WILDLIFE MANAGEMENT PROGRAMS UNDERTAKEN BY THE ARIZONA GAME AND FISH DEPARTMENT, DUE TO THE COMPLEXITY OF THE ISSUES, NUMBER OF PARTNERS AND CONTROVERSY SURROUNDING MEXICAN WOLVES.



IT SEEMS LIKE AN EASY QUESTION WITH A SIMPLE ANSWER: “HOW MUCH WILL IT COST TO RECOVER MEXICAN WOLVES IN THE SOUTHWEST?” HOW ABOUT AN EVEN EASIER ONE: “HOW MUCH HAS MEXICAN WOLF MANAGEMENT COST SO FAR?”

There is profound disagreement on what it will take to fully recover the Mexican wolf. Until it is decided what “recovered” means, the first question cannot be answered. Response to the second question should be easier, but even accounting for the costs of Mexican wolf management thus far is difficult.

Management of Mexican wolves is one of the most labor- and time-intensive of any wildlife management programs undertaken by the Arizona Game and Fish Department, due to the complexity of the issues, number of partners and controversy surrounding Mexican wolves. Given the number of people and organizations involved in the Mexican wolf project, the true cost is hard to pin down.

The Mexican wolf project can be broken into five components: captive breeding of wolves; planning for their release (endangered species require significant planning, mandated by law); screening and preparing captive bred wolves for release; releasing wolves into the wild; and, intensively managing wolves in the wild. Each component involves multiple partners and stakeholders, both government and private. Each partner has separate cost accounting systems that are difficult to reconcile. Some partners have no interest in accounting for their expenses, so the numbers go unreported. This makes it very difficult to answer that question of, “How much has been spent so far?”

Early on, Mexican wolf program expenses were relatively modest and partners were few. From 1977 to 1990, the department and the U.S. Fish and Wildlife Service (the only two government partners accounting for their costs at that time) estimated they spent \$94,900 on recovery planning and managing the captive breeding program.

In the beginning stages of the program, management focused on raising Mexican wolves in captivity, and the dollars spent to do this went largely unreported. The goal was to preserve the limited founding lineages of Mexican wolf genetics and raise wolves for eventual release to the wild. A secondary role was to enhance genetic diversity in Mexican wolves. Conducted by a largely voluntary network of zoos and zoological facilities, this binational breeding program ultimately included the integration of 52 facilities in the United States and Mexico where wolves are bred and raised.

Once the first Mexican wolves were released into Arizona in 1998, the direct costs tied to managing the subspecies began to add to overall project expenses. In 1999, total project expenditures reported by participating agencies were estimated at more than \$737,000. In 2012, project partners spent about \$2.9 million.

About 90 percent of the expenses for the Mexican wolf reintroduction project have been borne by the federal government either by direct actions or in grants to the participating states and tribes. From 1977 to 2012, the total cumulative costs (both federal and state) of the Mexican wolf recovery pro-

gram were estimated to be a minimum of \$28.8 million. This estimate does not include private or volunteer costs. A substantial portion of these dollars are spent on public engagement with concerned stakeholders. Transparency, accountability and gathering public input, which are critical for successful wolf management, are expensive.

Two state wildlife agencies have been involved in Mexican wolf management, Arizona and New Mexico. Since 1990, the department has used a dedicated state fund that comes from Arizona lottery dollars, the Heritage Fund, and federal grants for wolf recovery efforts in Arizona. The New Mexico Game and Fish Department spent approximately \$810,000 of state funds and additional federal funds on wolf management between 1999 and 2011, before withdrawing direct participation in the project in 2011. Arizona spent \$2.6 million from 1977 to 2012.

Two-thirds of the expenses for pre-release screening, conditioning and preparation are borne by non-governmental organizations, and those expenditures are also not accurately reflected in the U.S. Fish and Wildlife Service's project cost reports. Wolves from the captive breeding program are screened for release and prepared at one of three facilities intended to prepare the animals for their new lives outside of captivity. These pre-release facilities are at the Sevilleta National Wildlife Refuge in New Mexico, the Ladder Ranch in New Mexico, and Wolf Haven International in Washington.

When costs are considered, the Interagency Field Team (IFT) in charge of managing Mexican wolves on a day-to-day basis must be factored into the equation. IFT total expenditures are approximately \$500,000 per year, and consist of employee salaries, aerial monitoring/tracking expenses and other miscellaneous equipment necessary to release, translocate, monitor, trap, vaccinate, affix radio collars, track and obtain biological samples from wild wolves as a part of project management. Costs also include depredation investigations and other proactive management efforts aimed at reducing wolf-human-live-stock conflicts.

Losses to livestock producers can also be another factor that is considered in calculating the total spent on wolf management. Estimates of livestock loss compensation rates in the Southwest range from \$800 for a calf to \$2,500 for a bull lost to depredation, without including significant indirect costs incurred by livestock producers like reduced reproductive rates and body condition. Both non-governmental organizations and the federal government have set up funds to compensate ranchers for animals lost due to wolves. This funding program has undergone several changes with the current program being referred to as the Mexican Wolf/Livestock Coexistence Council. Funding for this program has come from a variety of sources including Defenders of Wildlife, government grants and private donations.

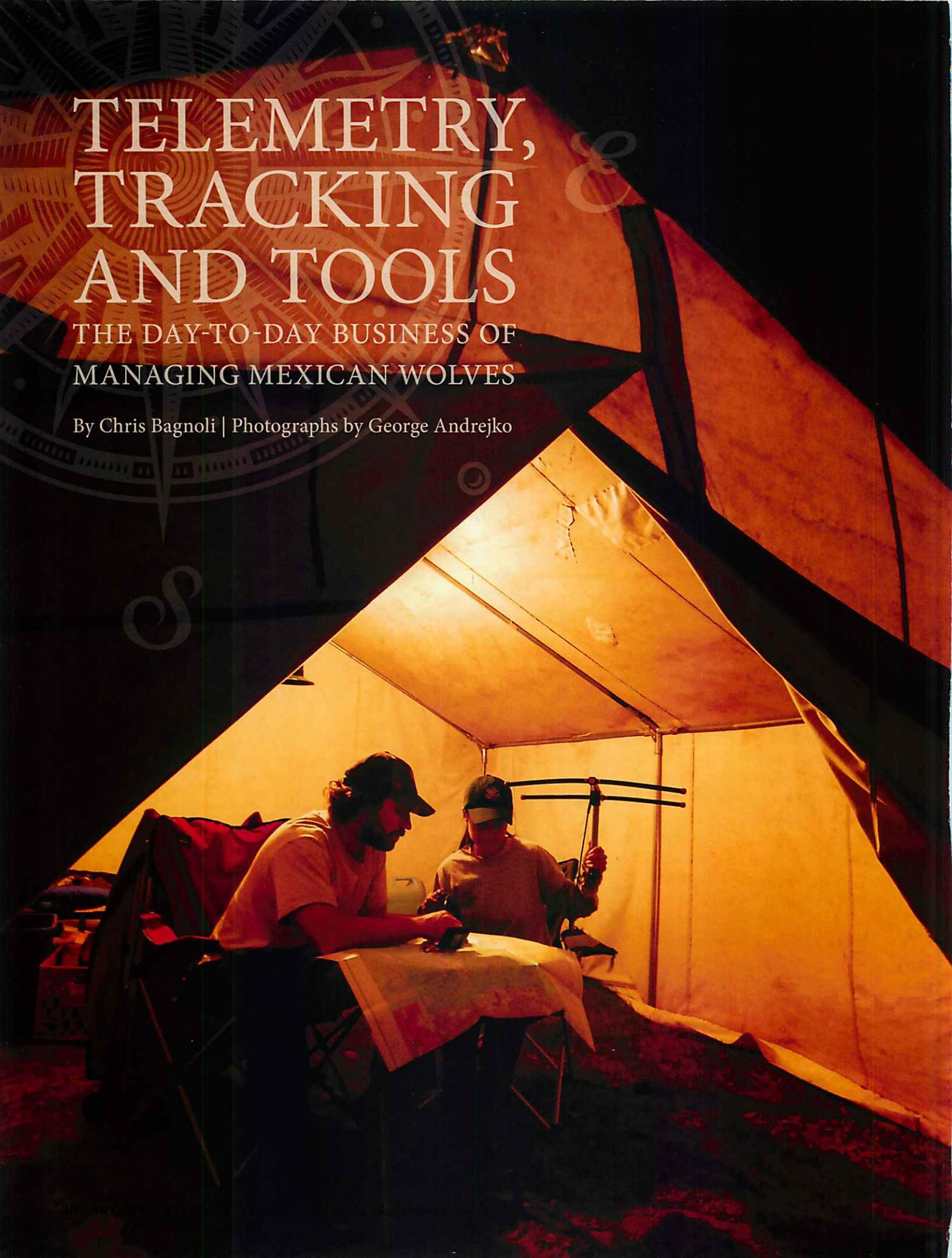
In the final analysis, the cost of securing existing Mexican wolf genetic lineages and restoring wolves to the Southwest has been substantial, however, the true total costs are difficult, if not impossible, to tabulate. The benefits of the wolf program are even harder to calculate. Only the people of Arizona and New Mexico can answer that question. ❁

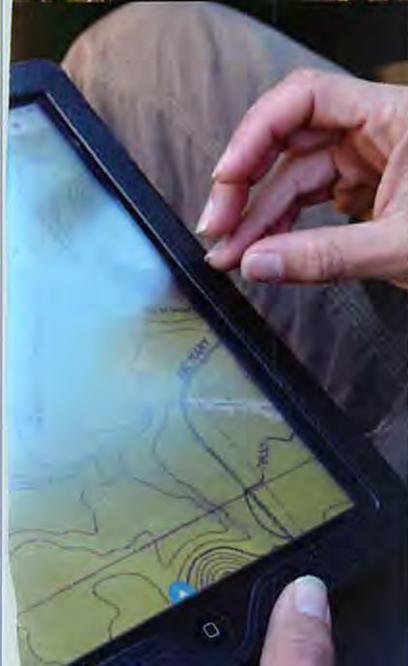
■ Jon Cooley is the department's endangered species program coordinator. Mike Rabe is the department's nongame wildlife branch chief. Larry Riley is the former wildlife management division assistant director. He retired in 2013.

TELEMETRY, TRACKING AND TOOLS

THE DAY-TO-DAY BUSINESS OF
MANAGING MEXICAN WOLVES

By Chris Bagnoli | Photographs by George Andrejko





MANAGING ANY THREATENED OR ENDANGERED WILDLIFE SPECIES REQUIRES DEDICATED PROFESSIONALS, WHO POSSESS UNIQUE SKILLS, EXPERIENCE AND TRAINING, TO PERFORM SPECIALIZED FIELD ACTIVITIES.

The Interagency Field Team (IFT) for the Mexican Wolf Reintroduction Project (project) is responsible for the day-to-day management of wolves.

The IFT consists of full-time and seasonal staff from the five agencies included in a special Memorandum of Understanding that governs how the project is implemented in the field. Those five entities are the U.S. Fish and Wildlife Service (FWS), Arizona Game and Fish Department (department), U.S.D.A. Forest Service (USFS), U.S.D.A. Animal and Plant Health Inspection Service — Wildlife Services (WS), and the White Mountain Apache Tribe (WMAT).

The department has been involved with the reintroduction of Mexican wolves into the Blue Range Area's primary recovery zone in Arizona even before the first wolves were released in 1998. The FWS originally outlined the concept of an IFT in the 1998 Interagency Mexican Wolf Management Plan. The original IFT was comprised of a team leader from the FWS, a wolf biologist from the department, and a wolf management specialist from WS. In 1999, New Mexico joined the IFT, adding a wolf biologist to the team. As the project evolved further, USFS and WMAT members were added to the team. Currently, the department provides five full-time biologists, including the team leader, to the IFT.

A key provision of the IFT approach involves having an operations base for on-the-ground wolf management that is within the recovery area. The Mexican wolf field office is located in Alpine, Ariz. IFT members live within the local community, which helps them cultivate relationships with community members and local project stakeholders, and better understand the issues. This is not always an easy undertaking. Reintroducing wolves into portions of their historical range is not an effort supported by many area residents. It takes dedicated individuals with "thick skin" to successfully accomplish the various field tasks amid conflicting attitudes and perceptions.

While each individual IFT member may represent one of the five participating agencies, the most effective team members understand the balance between having a professional commitment to manage wolves and the importance of understanding the perspectives of the people who share the land with wolves. It is not easy, and not all personnel selected for these positions understand the unique challenges involved with this work. The ability to seek progress on contentious issues with people who have diverse perspectives is as important as having appropriate field skills.

IFT members are required to monitor telemetry signals from the ground using a radio receiver, map and compass. IFT members must learn the local terrain and each wolf's habits. Team members also apply the same techniques while circling a collared wolf a thousand feet overhead from an airplane.

When wolves are captured for collaring, their vitals and measurements are recorded. Telemetry collars put on wolves capture data such as: home range, denning locations, predation and depredation behaviors and dispersal patterns.

Many think that IFT work involves following Mexican wolves around day and night in backcountry forests. If it were only that simple! Managing wolves involves a variety of duties like developing and implementing wolf release and translocation proposals; monitoring wolf locations from the ground and air, and, trapping animals to affix radio telemetry collars for monitoring movements. The IFT also investigates wolf-sighting reports, conducts depredation investigations, removes wolves for management purposes and analyzes wolf predation on native prey. The list of duties continues with responding to nuisance wolf reports, coordinating with stakeholders on proactive management efforts, conducting annual population counts, writing project reports, and coordinating with local governments and land management agencies. Basically, the team is responsible for almost every aspect of on-the-ground wolf management.

One very important activity the IFT undertakes is capturing wolves to affix telemetry collars. The monitoring data obtained from the collars assists in understanding basic wolf life history, including home range size, territory location, seasonal use patterns, denning locations, predation and depredation behaviors, and dispersal patterns. Wolf captures are accomplished primarily by the use of humane, padded leg-hold traps. Trapping wolves requires patience and perseverance from team members, along with a willingness to pass along their knowledge of trapping techniques as new members are recruited.

Team members also must understand and learn the art and science of wolf handling. Mexican wolves are an endangered



subspecies that require specialized handling procedures. Biologists must know how to administer capture drugs, monitor vital signs, obtain biological information, attach the collar correctly, reverse the effect of capture drugs (if used), and release the wolf safely. Once the collar is attached and the wolf is released, an IFT member is then required to monitor the telemetry signal from the ground using a radio receiver, map and compass. IFT members must learn the local terrain and each wolf's habits.

Aerial monitoring is another important component of wolf management. Once a team member has mastered tracking wolves on the ground, he applies the same techniques while circling a collared wolf a thousand feet overhead from an airplane. He must be able to accurately place that location on a map. This allows biologists to more quickly obtain an animal's location. The IFT repeats this exercise over thousands of square miles of rugged, forested terrain to complete the weekly telemetry monitoring flight assignment.



The IFT member is then responsible for updating a flight location document on the department's website that serves as a resource for local stakeholders.

Often, when an IFT member's day seems to be winding down, he may receive a call from a member of the public reporting a wolf sighting. After gathering information and entering it into the project database, the IFT member will try to verify the sighting. If he does not recall locating any collared wolves in the vicinity of the report, and if there is snow on the ground for tracking, an investigation may show the reported animal was a wolf or simply a large coyote. Responding quickly helps ensure that possible signs



may still present when the IFT member arrives. So, with the last bit of daylight, off goes the IFT member to investigate the sighting. Welcome to the day-to-day business of an IFT member managing Mexican wolves. Working conditions may not be ideal, and there is never a dull moment when working on the project, but team members are rewarded knowing they contributed to restoring a key component of Arizona's diverse wildlife heritage. 🐾

■ Chris Bagnoli is the regional supervisor for Game and Fish's Pinetop office. Prior to this position, he was the Mexican Wolf Interagency Field Team leader.

COUNTING WOLVES

One of the most important operations the Interagency Field Team (IFT) conducts is end-of-year Mexican wolf population counts that coincide with the wolves' breeding season. The goal is to develop a minimum estimate of wolf numbers in Arizona and New Mexico, and report on the size, productivity, and extent of the Mexican wolf population. The data are used to assess the overall progress of the Mexican Wolf Reintroduction Project (project).

The process to develop a minimum population estimate occurs over several months. The IFT follows a procedure for deriving this estimate that was formed in consultation with leading wolf biologists from around the country. Starting in November, project personnel begin to closely monitor wolves with radio telemetry collars to document how wolves are using their territories and which wolves may be dispersing to locate new mates, and establish new territories and packs.

The effort to search for wolf sign in areas outside of established territories is critical because biologists know that only a portion of the population wears telemetry collars and accounting for the uncollared portion is an important task. In any given year, the uncollared portion of the population (not associated with known wolf packs) may be as high as a quarter of all the wolves.

The visual wolf population count occurs during a 10-day period in January and is conducted by helicopter. Specially trained IFT personnel fly over every radio-collared wolf and visually document each animal present. Usually there are uncollared wolves traveling with collared animals, and these sightings assist the IFT with determining pup recruitment and pack dynamics.

The helicopter team also consists of experts trained to capture wolves using capture drugs fired from dart guns. This allows the IFT to replace old telemetry collars that may have non-functioning batteries, attach new collars, and treat injured wolves.

While this may sound exciting, remember this operation occurs in winter in the White Mountains in a helicopter with no doors. Exciting? Yes ... but bone-chillingly cold!



Home (On the (Core) Range: Recovery efforts in Mexico

By Francisco J. Abarca and Mike Rabe

RECOVERY OF THE MEXICAN WOLF IS AN ISSUE THAT CROSSES INTERNATIONAL BORDERS. The United State's neighbor to the south is working diligently to put the Mexican wolf back on the landscape in its historic range. The two nations continue to foster a decades-long partnership to help further on-the-ground reintroduction efforts.

As the name implies, the historical occurrence of Mexican wolves was centered in the Sierra Madre Mountains in Mexico, where this subspecies occurred as far south as the state of Oaxaca. In Arizona, the Mexican wolves' range only extended as far north as southeastern Arizona. Due to conflict with livestock operators, wild wolves were decimated until only a few survived into the 1960s. By the 1970s, only a few holdouts remained in the states of Durango and Zacatecas in Mexico, and none remained the southwestern United States.

To prevent the extinction of the subspecies, the United States and Mexico joined efforts to implement one of the first binational conservation efforts when the last five wild Mexican wolves were captured from the mountains of Durango between 1977 and 1980. These five wolves, along with two captive Mexican wolves from the United States, were used to start a captive breeding program to benefit both countries. Collaboration between the two countries resulted in the creation of the binational Mexican Gray Wolf Recovery Team and a strong captive breeding program that aimed to reestablish the Mexican wolf in the wild through captive breeding, public education and research.

Mexico's commitment to the recovery of the Mexican gray wolf has included the creation of the Technical Advisory Subcommittee for the Recovery of the Mexican Wolf in 1997; preparation of the Action Plan for the Conservation of the Mexican Wolf in 2009 (the equivalent of a recovery plan in the United States); and, establishment of 17 facilities that have produced more than 70 Mexican wolves. Government entities, university researchers, veterinarians, non-governmental organizations and private individuals joined forces in these efforts. Past President Felipe Calderón identified the recovery of the Mexican wolf as one of the top five priorities for the conservation of endangered species in Mexico.

The nation's recovery effort has been led by the Species at Risk Conservation Program (PROCER) that is part



of the National Commission of Protected Areas, and in collaboration with Mexico's Wildlife General Office. In addition to developing the Action Plan for the Conservation of the Mexican Wolf, PROCER also spearheaded significant recovery efforts for the subspecies by identifying six sites that can provide the most suitable reintroduction habitat within Mexico. Sites in northern Mexico were selected based on research done on habitat, prey availability, as well as public perceptions about the Mexican wolf.

In 2011, Mexican authorities released five Mexican wolves (two males and three females) into the pine-oak forest of Sierra San Luis in northeastern Sonora, within 100 miles of the U.S.-Mexico border. Unfortunately, the reintroduction of this subspecies started with setbacks similar to the program in the United States when four of the five wolves were found dead within two months after release. Necropsies conducted on four animals showed the presence of warfarin, a blood thinner that's commonly used as a predicide (poison).

Despite the initial setbacks, Mexico's determination and commitment to see the Mexican wolf back in the wild continue, and subsequent releases have taken place. Between 2012 and April 2013, four wolves were released in northwestern Chihuahua. One animal is still confirmed to be roaming the Sierra Madre Mountains as of September 2013.

Estimates show that up to 2,600 wolves may be sustained within the habitat available in Mexico, if human persecution is significantly reduced. Because much of the Mexican wolf's core historical range has few urban centers, Mexico offers the best hope for recovering the Mexican wolf. It is a basic tenant of biology that most wildlife populations do better in their core range than on the outer edges.

With help from Mexican and U.S. biologists, future generations of Mexican citizens will once again hear the howl of the Mexican wolf when populations are re-established. Populations within Mexico would not only contribute to a more balanced ecosystem, but more importantly, to the overall recovery of the subspecies. ❁

■ Francisco Abarca is the department's international and borderlands program manager. Mike Rabe is the nongame wildlife branch chief for the department. Mexican biologists contributed to this article.

WOLF

THE FUTURE OF WOLVES IN ARIZONA

By Jim deVos and
Jon Cooley

A look into the future sometimes requires a look into the past.

Can you imagine the great wonder the first explorers saw when they came to Arizona? The banks of the mighty Gila River were forested with towering cottonwoods, and the river's water teemed with native fish. Meandering streams ran through many valleys. Cottonwoods, willows and other broad-leaved deciduous trees lined the shores, and beavers filled the waters. Explorers were regaled with the sight of majestic Merriam's elk. According to exploration records, game species were abundant. There were even excerpts about hearing the forlorn howl of wolves.

Having left frigid lands to the east, these explorers found a warmer and sunnier climate in Arizona, which abounded with various wildlife species. They were so pleased with their findings they brought others to this wondrous land, and so the changing of Arizona's landscape began. Few places in Arizona were unaffected by the Anglo-European settlers over the next century. The profoundness of this can be seen in that one of the suggested origins of our state's name came from the Native American culture, which referred to Arizona as "the place of small springs." That hardly describes Arizona today.

VIEWS



George Anagnosto

In 1867, Jack Swilling rode along the edge of the White Tank Mountains and saw the rich, fertile Salt River Valley and recognized the immense economic potential the valley held. He started the Swilling Irrigation Canal Company, and the change of our landscape began in earnest. By 2010, the population of Phoenix was more than 4 million people. The city had grown from the original town site of 320 acres to its current size of about 475 square miles. What was a wonder to behold then is now a different land. Arizona today is a land with more than 6 million people, a state crisscrossed by a myriad of roadways, canals and power lines, and a map that is dotted with cities and small towns, where it used to be mostly open and uninhabited wild land with isolated ranch houses and trading posts.

Wildlife species are condensed into increasingly smaller pieces of wild lands as development and population numbers continue to grow. This habitat fragmentation presents challenges for not only managing this state's wildlife, but also for subspecies such as the Mexican wolf that are being reintroduced to the landscape after a long absence.

IT'S ALL IN THE GENES

We know wolves existed here as stories of them (and the effective efforts to remove them from the newly settled state) are plentiful. It is difficult to determine just how many of this subspecies of wolf actually occupied the American Southwest. In reading David Brown's "The Wolf in the Southwest: The Making of an Endangered

Species," insight can be gained, but even information in this book is not absolute.

Brown summarized the opinions of mammologists regarding wolf subspecies in Arizona and depicted three clusters of wolves, the majority of which occurred in far southeastern Arizona and extended into the "boot heel" of New Mexico. These locations were occupied by *Canis lupis baileyi*, or in common terms, the Mexican wolf. Other wolf population clusters found in the state at the time were classified as different subspecies.

It is important to remember where Mexican wolves were historically found as wildlife conservationists work to restore the subspecies to Arizona's landscapes. The Arizona Game and Fish Department believes Mexican wolf restoration must focus on returning the subspecies to the landscapes where it evolved and not where some people want to put them today. There is a push to broaden the area where Mexican wolves would be allowed to roam, but these areas are not part of the Mexican wolf's historical habitat. A basic principle of biology and wildlife restoration is that a species belongs where it historically lived and evolved.

A considerable challenge to the future success of Mexican wolf conservation is overcoming limited genetic diversity and expanding the gene pool to the extent possible. One of the principles of genetics is that the more diverse an organism is the greater its likelihood of long-term survival. A small gene pool can lead to perpetuation of harmful genes if they exist in a small population.

The entire Mexican wolf subspecies

today descends from only seven animals. Many have asked if restoration can be achieved with such a small founding population. The jury is still out on this question, but looking at the black-footed ferret, there is hope for the Mexican wolf. Endangered black-footed ferrets came from only seven founding animals. More than 1,000 live in the wild today. Besides ferrets, Arizona's thriving elk populations came from small founding populations in the early 1900s.

Fortunately, the science of genetic management can be applied. A carefully designed and monitored Species Survival Plan is being implemented by the U.S. Fish and Wildlife Service (Service) to optimize genetic diversity.

THE FUTURE

The future is uncertain regarding how and where and even if Mexican wolf recovery can be achieved. The Service currently has two major proposals being considered for the Mexican wolf. The first proposes to delist the gray wolf — of which the Mexican wolf is a subspecies — due to its population recovery in other areas of the United States. But, the Mexican wolf has not reached a sustainable population, so the Service proposes to classify it differently from the other gray wolves and relist it as endangered.

The second proposal addresses the expansion of the current range where Mexican wolves can become established and where releases of wolves from the captive breeding program can occur. Discussion and debate of this proposal is being driven by concerns that the Mexican wolf population remains smaller than desired and recovery in Mexico is in its infancy.

The push to see wolves restored everywhere they once roamed also plays a role in the second proposal. While wolves once lived in some of the areas included in the expansion proposal, Arizona has changed drastically. Just because an area was suitable for wolves in the past does not mean it is suitable today. There is no place in Arizona where wolves can live without impacting the people who live



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or recreate in the state or economically-important livestock operations and game populations. As a result, few people are neutral on the concept of expanding areas where wolves will be allowed to roam.

While genetics and range are important to Mexican wolf management, compromise also plays a big part in the larger issue. Can Arizona support 1,000 wolves? No. The state never has, even in historical times. But, Arizona can contribute to the recovery of Mexican wolves. The key is finding a balance between the number of wolves that can exist on Arizona's wild lands of today and limiting the number of negative impacts to other key stakeholders and other wildlife populations. The department will continue to encourage all interested parties to join the discussion to find solutions to Mexican wolf conservation challenges through negotiation and compromise. Perhaps then, contentious public debate over this subspecies would become a thing of the past.

If the future focuses on facts and science versus myth and emotion, and if wolf proponents and opponents can identify a realistic population goal, the wolf will be the beneficiary.

SMALL VICTORIES

Amidst the passion for wolves, it's easy to overlook that recovery does not happen overnight. It is a long road full of speed bumps. Small milestones must be celebrated as necessary steps in the longer-term goal of recovery. There are many who are critical of the Mexican wolf program. Some call it a failure. But how is a program that expanded the number of Mexican wolves in the Southwest from zero 15 years ago to more than 83 animals today a failure? A 50 percent population growth in the last two years is also not a failure. The 1982 Recovery Plan and the 1998 management plan specified a minimum population objective of 100 wolves. Sure it is taking longer than the time estimated to achieve this goal, but the reintroduction partners have persisted and the wolves are growing closer to that population objective.

Another milestone to celebrate is the natural reproduction occurring in the population. The entire population is now wild-born. That is a major success for any species reintroduction program. As more wolves are wild-born and instinctually act like wild wolves, depredations have decreased. The need to remove captive-raised, naïve wolves that show unacceptable behavior (habituation, livestock depredation, etc.) correspondingly decreased, a dynamic that has helped the population grow.

One thing is for certain: Wolves will continue to spark debate, and the Arizona Game and Fish Department is committed to on-the-ground wolf management into the future. The challenge has been and will continue to be how to minimize the impacts of wolves (doing what wolves do) to the people who make their living on the ground, to those who enjoy recreating in the beautiful wildlands, and to those who long to hear the howl of a wild wolf reverberating through a canyon. ❁

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