ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AMAJA01032
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Canis lupus baileyi*
COMMON NAME: Mexican Wolf, Mexican Gray Wolf, Lobo
SYNONYMS: *Canis nubilus baileyi*, *C. lycoan baileyi*
FAMILY: Canidae

AUTHOR, PLACE OF PUBLICATION: Nelson and Goldman (*C. nubilus baileyi*), J. Mamm., 10:165. May 9, 1929.

TYPE LOCALITY: Colonia Garcia, 6,700 ft., Chihuahua, Mexico. July 10, 1899.

TYPE SPECIMEN: USNM 98312, skin and skull of adult male, collected by E.W. Nelson and E.A Goldman. Original number 13895.

TAXONOMIC UNIQUENESS: Only subspecies in genus to occur in Arizona, 1 of 5 subspecies in North America. The Mexican Wolf is also the southern-most occurring and most endangered subspecies of gray wolf in North America. The U.S. Congress directed the U.S. Fish and Wildlife Service to obtain an independent assessment of the red wolf (*Canis rufus*) and the Mexican Gray Wolf (*Canis lupus baileyi*) after controversy surrounding the taxonomic validity of the Mexican Wolf subspecies following reintroduction; *Canis lupus baileyi* was confirmed as a valid subspecies of C*anis lupus* in 2019 (NASEM 2019).

DESCRIPTION: *Canis lupus baileyi* is the smallest and most genetically distinct of the five subspecies of gray wolf that once inhabited most of North America. Males are larger than females; the nose pad is 1 1/4" (33 mm) wide, height 26-38" (66-97 cm); length 4' 3" to 5' 6" (130-165 cm); tail is 13 3/4" - 17" (35-42.5 cm); hind foot 8 5/8"-12 1/4" (22-31 cm); weight 70-100 lbs (31.1-86 kg) (50-90 lbs per USFWS 1995). This is a small sized wolf both externally and cranially; they have a broad zygomatic arch, short thick muzzle, deep chest cavity, thick neck and forequarters, and a downward slope from shoulder to hindquarters. Their head and feet are large in proportion to the body, and their long legs look almost frail compared to their bodies. The color can range from most common grizzled gray to shades of black, brown, and buff; throat and area between forelegs whitish; has a long bushy tail with a black tip.

AIDS TO IDENTIFICATION: *C. l. baileyi* is smaller externally and cranially than *C. l. youngi* (intermountain Gray Wolf); the coyote (*C. latrans*) is smaller with a smaller nose pad, and it holds its tail downward whereas *baileyi* holds its tail straight out, and a domestic dog's (*C. familiaris*) tail curves upward. It is one-half the size of an arctic wolf; it is more narrow chested than a domestic dog; it looks like a shaggy German Shepard but has predominantly longer forefeet and legs.

ILLUSTRATIONS:
B & W photo (Johnson, 1990: 18).
Map (Busch, 1995: 172)
Color photo (Groebner, 2000:18-20).
Color photos (Johnson, 1992: 2)

TOTAL RANGE: Historically in Southeastern Arizona, Southwestern New Mexico, West Texas, and the Sierra Madre of Mexico south at least to southern Durango (USDI, FWS 2017). Once considered extirpated in the United States, but reintroduced to Arizona in 1990s and New Mexico soon after. A small remnant population remains in Mexico.

RANGE WITHIN ARIZONA: Historically in Southeastern corner of the Apache National Forest in Arizona, bordering New Mexico Gila National Forest, in Greenlee and Apache Counties. They had not been seen in the wild since 1970, until reintroductions in Apache County, Arizona. The Mexican Wolf Experimental Population Area is now recognized by the U.S. Fish and Wildlife Service in Southern Arizona (USDI, FWS 1988).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The Mexican Gray Wolf is a social animal that lives in packs of 2-15, but typically 4-7. The strongest male and strongest female, are the leaders (alpha). The male and female hierarchy: Alpha male is dominant over the entire pack, followed by the alpha female, then the beta male and beta female, and last the omega male and omega female. A wolf's social status can be determined as early as thirteen days old. Dominant behavior is an open mouth with bared teeth, hair raised along its back, and ears erect and pointed forward. Different packs tend to try and avoid each other. Each pack can travel over hundreds of miles, but their home range is unknown. Wolves howl most commonly during breeding season in late fall and early winter, but may howl any time of year. Howling is an important means of communication, letting pack members know the location of other pack members; as do scent posts marked by urination (Hoffmeister 1986). The way the wolf stands can say something to another wolf. Body gestures are very important in this way. Their sense of smell is over a hundred times greater than a human. Almost half of a wolf's time is spent sleeping and the rest is spent hunting and rearing its young.

They are mainly nocturnal, hunting along runways and hunting beats that follow stream beds, washes, old game trails, and old roads. Both parents forage for food to feed the young. When food is taken at a great distance from the den, the parents will fill themselves and regurgitate the food at the dens for the young. When young are about 3 months of age, they and the parents leave the den, and may begin to traverse established runways on hunting beats (Hoffmeister 1986).

Pathogens to which wolves might be exposed in the wild include canine parvo virus, canine distemper, infectious canine hepatitis, leptospirosis and rabies. These pathogens do exist in canids, in areas of dense human population. Neither canine hepatitis nor leptospirosis is a

concern in the southwest. The protocol for Mexican wolves released into recovery areas, is to vaccinate them for rabies, parvo virus, distemper, hepatitis and leptospirosis while in captivity. Wild-born wolves would only be trapped and vaccinated in cases of serious outbreaks of a given disease (Groebner 1995).

REPRODUCTION: Both the male and female are sexually mature by the age of 2 years (first breeding occurs between 2-3 years of age). Only the dominant male and female mate and rear offspring; pairs usually mate for life. They breed once a year from December to March, when the female goes into estrus for 3-5 days. Four to eight pups are born from March to May after a gestation period of 63 days. The young are born blind, deaf, and completely helpless. Young are tended by both parents, although the entire pack helps in raising the pups. Dens are made under rock ledges, off the slopes of canyon walls or hills, with good visibility of surrounding area. Some offspring remain with the pack, while others disperse as they mature, probably in winter (December).

FOOD HABITS: They feed primarily on large mammals including elk, deer, javelina, and occasionally pronghorn, and bighorn sheep. Also may take, to a lesser degree, rabbits, hares, wild turkeys and small rodents (Groebner 1995); have been known to occasionally take cattle. They can go for weeks without food, and will gorge on kill when it is plentiful.

HABITAT: A significant vegetation type is probably not important for wolf survival. Mexican Wolves have historically been associated with montane woodlands characterized by sparsely to densely-forested mountainous terrain and grasslands (Brown 1998 *in* USDI, FWS 2017). As long as the habitat is adequate to support sufficient prey populations, such as elk and deer, and human-induced mortality is controlled, the wolf should survive. Ungulate populations are most productive in ecosystems that contain a variety of forest successional stages (Groebner 1995). Mexican wolves travel between suitable habitat areas using riparian corridors, as well as roads and trails; habitat connectivity has become an increasingly relevant management factor (USDI, FWS 2017).

The Arizona reintroduction area consists of rugged topography, with steep canyons and high ridges, bisected by the Mogollon Rim. The most common vegetation types of the Blue Range area are petran montane and Great Basin conifer forests, plains and Great Basin grasslands, Madrean evergreen woodland, and semidesert grasslands (Groebner 1995).

ELEVATION: Historical range includes elevations of f 1,219 – 1,524 m (4,500 – 5,000 ft), however the Mexican Wolf Experimental Population Area (target range for captive releases) varies considerably in elevation and topography, ranging from 3,048 m (10,000 ft) in the mountains to below 305 m (1,000 ft) in southwestern Arizona (Wahlberg et al. 2016).

PLANT COMMUNITY: In the Arizona recovery area, petran montane forests occur at higher elevations, and are comprised of ponderosa pine (*Pinus ponderosa*), aspen (*Populus* spp.) and fir (*Abies* spp.). Great Basin forests are characterized by pinyon-juniper stands, at slightly lower elevations. Madrean evergreen woodlands also occur below the pine forests, and are dominated by evergreen oaks, pinyon, and juniper. Grasslands occur between 3,600-

7,500 feet, and consist of native and nonnative grasses, with mesquite (*Prosopis*), juniper, and forbs in areas where fire suppression and grazing are common (Groebner 1995).

Upper reaches of riparian areas within the recovery zones support plant communities of narrowleaf cottonwood (*Populus angustifolia*), willows (*Salix* spp.), alders (*Alnus* spp.), maples (*Acer* spp.), and red osier dogwood (*Cornus stolonifera*). Lower elevations are dominated by Fremont cottonwood (*P. fremonti*), sycamore *(Platanus wrightii*), walnut (*Juglans major*), boxelder (*Acer negundo*), ash (*Fraxinus* spp.), and hackberry (*Celtis* spp.) (Groebner 1995).

POPULATION TRENDS: At one time, they were extirpated from Arizona, New Mexico, and Texas. Recovery efforts began more than 20 years ago with the establishment of a fledgling captive breeding program. They were reintroduced to Arizona (1998 and 1999) and New Mexico (2000) as experimental non-essential populations. Released animals are captive-reared wolves that are 'genetic surplus,' meaning their genes are already well represented by relatives in the captive population. A small wild population persists in Mexico. The Mexican Wolf Interagency Field Team (IFT) documented at least 113 Mexican wolves in the wild in Arizona and New Mexico in a survey at the end of 2016 (USDI, FWS 2017). These findings suggest slight population growth in the wild compared to the 97 wild wolves documented in the 2015 survey (USDI, FWS 2017).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:
LE, XN (USDI, FWS 2015a, 2022)
*XN=experimental non-essential
[XN, revision (USDI, FWS 2015b)]
[UR (USDI, FWS 2010)]
[PTN (WildEarth Guardians and the Rewilding Institute 2009)
[XN (USDI, FWS 1998)]
[PXN (USDI, FWS 1996)]
[LE (USDI, FWS 1978) at full species]
[LE (USDI, FWS 1975)]

STATE STATUS:
1 (AZGFD, AWCS 2022)
[1A (AZGFD SWAP 2012)]
[WSC (AGFD, WSCA 1996 in prep)]
[Endangered (AGFD, TNW 1988)]

OTHER STATUS:
Not Forest Service Sensitive (USDA, FS 1999, 2007, 2013)
[Forest Service Sensitive (USDA, FS 1988)]
Bureau of Land Management Sensitive (USDI, BLM AZ 2017)
No Status (NNDRW, NESL 2008)

[Group 1, species level, NNDRW, NESL 2001, 2005]
E, probably Extinct in the wilds of Mexico (NORMA Oficial Mexicana NOM-059-SEMARNAT-2010)
[P, determined endangered in Mexico (MFESL 1994)]

MANAGEMENT FACTORS: Recovery of this species will require sound management that addresses the following areas: livestock industry, ranchers, prey base, habitat capabilities, multiple use conflicts, public education.

PROTECTIVE MEASURES TAKEN: While originally included in the 1973 Endangered Species Act listing of the gray wolf (*C. lupus*) (USFWS 1978), the Mexican Gray Wolf (*Canis lupus baileyi*) was listed separately as a subspecies in 2015 (USFWS 2015a, Odell 2018). The U.S. Fish and Wildlife Service established a nonessential experimental population of the Mexican Gray Wolf in Arizona and New Mexico in 1998 (USFWS 1998) under section 10(j) of the Endangered Species Act. Two recovery areas were established, the Blue Range Wolf Recovery Area (BRWRA) and the White Sands Wolf Recovery Area (WSWRA) with wolves initially reintroduced in the BRWRA. The BRWRA consists of the entire Apache and Gila National Forests in east-central Arizona and west-central New Mexico and the WSWRA consists of all land within the boundary of the White Sands Missile Range in south-central New Mexico together with designated land immediately to the west of the missile range (USFWS 1998). The larger Mexican Wolf Experimental Population Area (MWEPA) the portion of Arizona lying north of Interstate Highway 10 and south of Interstate Highway 40; the portion of New Mexico lying north of Interstate Highway 10 in the west, north of the New Mexico-Texas boundary in the east, and south of Interstate Highway 40; and the portion of Texas lying north of United States Highway 62/180 and south of the Texas-New Mexico boundary (USFWS 1998). The MWEPA was expanded in 105 by moving the southern boundary from Interstate Highway 10 to the United States–Mexico international border across Arizona and New Mexico (USFWS 2015b).

A Mexican gray wolf captive population is now managed under the Mexican Wolf Species Survival Plan (SSP), administered by the Association of Zoos and Aquariums, to support reintroduction of the subspecies to the wild (USDI, FWS 2017). The captive population is considered an essential component of the Mexican Wolf recovery effort. Recovery actions listed in the 2017 Recovery Plan include surveying and monitoring Mexican Wolf populations in the wild; conducting releases (including cross-fostering) and translocations of Mexican wolves; reducing human-caused mortality of Mexican Wolves; reducing Mexican Wolf-livestock conflicts; developing and implementing plans for releases, cross-fostering, and translocations; monitoring and managing Mexican Wolf health and genetic health; maintaining habitat; maintaining and enhancing connectivity within and between Mexican Wolf populations; maintaining and improving the status of native prey populations; managing the Mexican Wolf captive breeding population; conducting education and outreach; managing the recovery program; coordinating binational recovery efforts; and developing adequate

regulations and management and monitoring plans to maintain viable Mexican Wolf populations after delisting (USDI, FWS 2017). The regulations for the experimental population designation were revised in 2022 to include a revised population objective, a new genetic objective, and the temporary restriction of three take provisions (USFWS 2022).

SUGGESTED PROJECTS: Public education; additional field surveys to evaluate possible future reintroduction sites; improvement of infrastructure for reduction of roadway mortalities; further genetic analysis of populations; habitat availability and quality assessments

LAND MANAGEMENT/OWNERSHIP: USFS (Apache-Sitgreaves National Forest), and private in the Arizona recovery zone.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

Dan Groebner, Arizona Game and Fish Department.

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ADDITIONAL INFORMATION:

Exterminated from essentially all of range through trapping and poisoning. Habitat is shrinking from human encroachment.

Most wolves that were (and are) reintroduced to Arizona and New Mexico, come from the U.S. Fish and Wildlife Service captive wolf management facility at Sevilleta National Wildlife Refuge in New Mexico. Cooperators in the captive propagation program include Arizona-Sonora Desert Museum and the Phoenix Zoo.

Per Arritt (1999), "The expected home range per wolf pack is about 250 square miles, and wolves will not share home ranges. After this year, we will have used most appropriate release sites in the 1,000 square-mile primary recovery zone in Arizona, which means we are running out of space for releasing wolves. A formal amendment to the plan would be required to open more remote areas for releases." **Note:** after this article was printed, they began releasing wolves in New Mexico.

Revised: 2001-03-06 (SMS)
2021-06-28 (CRB)
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