

ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

Element Code: AMAJH05010

Data Sensitivity: Yes

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Leopardus pardalis* (Linnaeus, 1758)  
**COMMON NAME:** Ocelot, Ocelote, Tigrillo, Painted Leopard  
**SYNONYMS:** *Felis pardalis* Linnaeus, 1758  
**FAMILY:** Felidae

**AUTHOR, PLACE OF PUBLICATION:** 1758. Linnaeus, Syst. nat., ed. 10, 1:42. (*F. p. sonoriensis* 1925. Goldman, Jour. Mamm., 24:378, August 17).

**TYPE LOCALITY:** State of Veracruz (by restriction, J.A. Allen, Bull. Amer. Mus. Nat. Hist., 41:345, October 3, 1919). *F. p. sonoriensis*: type from Camoa, 800 ft., Rio Mayo, Sonora.

**TYPE SPECIMEN:**

**TAXONOMIC UNIQUENESS:** *Leopardus pardalis* is one of thirteen species in genus *Leopardus* (American Society of Mammalogists 2023), and the only species in the genus known to occur in Arizona. *Leopardus pardalis* historically has been divided into as many as ten subspecies which ranged from the southwestern U.S. to northern Argentina (Pocock 1941, Murray and Gardner 1997). Kitchner et al (2017) provisionally recognized only two: *L. p. pardalis* from North and Central America and *L. p. mitis* from southern Central America and South America, but ITIS (2023) currently recognizes ten subspecies. Two subspecies have occurred in the United States; *L. p. sonoriensis* reported in Arizona and *L. p. albescens* in Texas and eastern Mexico (Murray and Gardner 1997).

Formerly included in the genus *Felis* (Banks et al. 1987, Jones et al 1973). Included in the genus *Leopardus* by Wozencraft (in Wilson and Reeder 1993), Murray and Gardner (1997), Jones et al. (1997), Wilson and Reeder (2005) and Kitchner et al (2017).

**DESCRIPTION:** A medium-sized slim cat, with body dimensions similar to a bobcat. The tail is about one-half the length of the head and body, and females are slightly smaller than males. In total length males range from 95.0 – 136.7 cm (37.4-53.82 in), females 92.0 – 120.9 cm (36.22-47.60 in); length of tail for males 28.0 – 40.0 cm (11.02-15.75 in), females 27.0 – 37.1 cm (10.63-14.60 in); weight for males 7.0 – 14.5 kg (15.43-31.96 lb), females 7.0 – 10.8 kg (15.43-23.81 lb). (Wilson & Ruff, 1999). The spots on this long tail cat do not have the rosettes of the Jaguar (*Panthera onca*). Ground colors of the upper pelage are grayish (subtle) to cinnamon brown. Dark markings form chain-like streaks, considered black-bordered elongated spots or nearly stripes than spots, running obliquely down sides. The head has small black spots and two black stripes on each cheek, and 4-5 parallel black stripes on neck. The backs of the rounded ears are black with a white central spot. Ground color of sides paler

than dorsum, and under-parts and inner surfaces of limbs whitish; tail above marked with dark bars and blotches. Eye-shine is golden. The skull is similar to that of the bobcat but larger. Skull with elongated brainbox and prominent sagittal crest. The braincase is narrow across postorbital constriction, and the nasals long; skull has 30 teeth. They have 4 mammae.

Cahalane (1961) states that “no ocelot is exactly like another. The color of different individuals of one species, even in the same neighborhood, varies greatly, all the way from ruddy yellow to grayish. No coat patterns are exactly alike. One side of an ocelot does not match its other side. The lines, spots and rings run in a crazy pattern.”

**AIDS TO IDENTIFICATION:** Jaguar (*P. onca*) is much larger than *L. pardalis*, and marked almost entirely with rosettes. The ocelot is comparable in size to the Bobcat (*Lynx rufus*), but it is easily distinguished by its long tail and grayish or tawny coat covered with numerous dark spots and streaks. Their tracks are similar, but slightly larger and wider than the Bobcat’s, about 2-2.5 in (5.0-6.2 cm) long, equally wide and with forefoot larger than hind foot. The other spotted cat found in North America north of Costa Rica is the Margay (*Leopardus wiedii*). The Margay is smaller, roughly half the size of the Ocelot, has longer tail, longer than hind leg, and lacks the two prominent black check stripes. (Wilson & Ruff, 1999). The spots in the body of ocelots make a pattern that is unique to each specimen, which can be used for identification of individuals when distinguishing specimens for monitoring purposes (Camerena et al. 2019).

#### **ILLUSTRATIONS:**

Color drawing (Burt and Grossenheider, 1976: plate 8)

Color photo (Whitaker, Jr., 1996: plate 268)

Color photo (*in* Wilson & Ruff, 1999: p. 229)

Color photo (adult ©Tom Smylie USFWS, and kittens © Linda Laack USFWS; *in* Texas Parks & Wildlife web species account, accessed 6/30/1999 & 01/14/2011).

**TOTAL RANGE:** Listed endangered throughout its range in the western hemisphere, where it ranges from southern Texas and southern Arizona, through Central and South America into northern Argentina and Uruguay. (U.S. Fish and Wildlife Service, 2010). On the fringes of its range, occupies a very limited region in both the United States (remnant populations in southern Texas, and transient populations in southeastern Arizona) and Argentina. The known range includes a total of 22 countries (USDI, FWS 2016).

Historically, ranged from Arkansas to Arizona south to Paraguay, Uruguay, and northern Argentina. This included eastern, central, and southern Texas, and possibly Louisiana. In USFWS (2010), “Fossils of ocelots have been reported from the U.S., primarily in California, Arizona, and Florida (Navarro-Lopez 1985)...There are no fossil records for Texas, but ocelot probably occurred there in prehistoric times and may have ranged over much of the southern U.S. (Navarro-Lopez 1985).”

**RANGE WITHIN ARIZONA:** At one time thought to be extirpated from the state, (Southeastern Arizona [Pima, Santa Cruz, and Cochise counties]). There were no ocelots detected from about 1985 to 2009 in Arizona (USDI, FWS 2016). Just five individual ocelots (four live and one dead) have been detected between 2009 and 2015 in Arizona (Avila-Villegas and Lamberton-Moreno 2013, Culver et al. 2016). Prior to these five recently-known individuals, the last documentable ocelot in Arizona was a male that had been killed by a vehicle near the town of Oracle in 1967 (López González et al. 2003).

In 1985, Brown (*in* Harwell and Siminski 1986 draft) believed that the ocelot may be repeating the northward expansion of the javelina, coati-mundi, and other neo-tropical invaders into the San Pedro River Valley, Arizona. There may be a good possibility with the establishment of the TNC (The Nature Conservancy) San Pedro River Preserve, and the BLM (Bureau of Land Management) San Pedro River Natural Conservation Area that this is occurring. Both these management areas occur east of the Huachuca Mountains.

### **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** Ocelots are generally nocturnal, though it is not uncommon to see them during the day. They spend their days lying quietly in the branches of large trees, emerging to hunt after dark. Though normally solitary, they frequently travel and hunt in pairs, probably as mates, maintaining contact and signaling each other with cries like those of domestic cats. Ocelots are good climbers and inhabit forested or brushy areas. They swim well, and often hunt along streams.

Texas studies suggest home ranges of about one square mile, although this may vary due to prey abundance. Wilson & Ruff (1999) report male territories of 4-18 square km, varying in size by habitat and season. Females occupy a smaller home range of 2-11 square km within the territory of a single male, though one or more females often occupy a single male's territory. They are the most frequently hunted cat in Latin America.

**REPRODUCTION:** Seasonality of breeding not known, but newborn kittens has been reported from every month of the year (Wilson & Ruff, 1999). It is thought that most births occur in September through January. Gestation averages 70-80 days, with 1-2 young born (3 exceptionally), fully furred with eyes closed. The natal den is usually a bare area in a dense thicket, though dens in caves, logs, and hollow trees have been reported. The female raises her young without any help from the male. When young are about two months old, they begin to accompany the mother on hunting forays. They remain dependent on her for meals for several months. Offspring remain on the mother's home range for the first years. At this time, young males disperse, probably forced out by the resident adult male. Females remain and may settle on a portion of the mother's home range or on a neighboring site after reaching sexual maturity at 15-22 months (captive ocelots may reach sexual maturity as early as 10 to 11 months). (Wilson & Ruff, 1999). Extreme cold temperatures may limit ocelot reproduction more so than other native cat species (Sunquist & Sunquist 2002 *in* USDI, FWS 2016).

Studies on assisted reproduction techniques have established that male and female ocelots show minimal seasonality and that females are polyestrous with 2-3 week cycle lengths and no spontaneous ovulation (USDI, FWS 2016).

**FOOD HABITS:** Diet changes with the season throughout its range, but consists of a wide variety of small vertebrates and large invertebrates. Prey items include mammals, birds, reptiles, amphibians, fish, insects, and land crabs. Rodents are generally the principal food item. (Wilson & Ruff, 1999). They are known to eat armadillos, lesser anteaters, squirrel monkeys, and land tortoises. Ocelots hunt both on the ground and in trees, sometimes even catching birds perched in trees.

**HABITAT:** The ocelot inhabits a large range, however the species is considered a habitat specialist as habitat requirements are similar throughout the range (USDI, FWS 2016). Spatial patterns are strongly associated with dense cover or vegetation, high prey populations (Sunquist 2002, in USDI, FWS 2010), and the ability to avoid open country (USDI, FWS 2016). In Arizona and Sonora, little is known about ocelot habitat use. Lopez Gonzalez et al. (2003) found 27 of the 36 records (75%) of ocelots in Sonora were associated with tropical or subtropical habitat, namely subtropical thornscrub, tropical deciduous forest, and tropical thornscrub. Only males (11.1% of the total records) were recorded in temperate oak and pine-oak woodland. In south Texas, the species occurs predominantly in dense thornscrub communities (Navarro-Lopez 1985, Tewes 1986, Laack 1991; all in USDI, FWS 2010). Much of the Lower Rio Grande Valley has been altered for agricultural and urban development (Jahrsdoerfer and Leslie 1988), with <1% of south Texas supporting extremely dense thornscrub that is used by ocelots (Tewes and Everett (1986). (USDI, FWS 2010). Ocelots used primarily forest or woody communities in Tamaulipas, Mexico (Caso 1994, in USFWS 2010).

Ocelots in south Texas prefer shrub communities with canopy covers >95%, and avoided areas of 50-75% canopy cover. (Horne 1998, in USDI, FWS 2010). Important microhabitat features chosen include canopy height (>2.4 m) and vertical cover (89% visual obscurity at 1-2 m). Ground cover used, was characterized by a high percentage of course woody debris (50%) and very little herbaceous ground cover (3%) (Horne 1998, in USDI, FWS 2010).

**ELEVATION:** Generally found at elevations below 4,000 ft (1,200 m).

**PLANT COMMUNITY:** In Texas, ocelots occur in the dense thorny chaparral of the Rio Grande valley, with dominant species consisting of mesquite (*Prosopis glandulosa*), *Acacia* spp., *Condalia* spp., granjeno (*Celtis pallida*), cenizo (*Leucophyllum texanum*), and white brush (*Aloysia texana*) (Tewes and Schmidly, 1987).

**POPULATION TRENDS:** Unknown. There were 53 total known individuals in the two separate populations in south Texas as of August 2015 (USDI, FWS 2016). "A third and much larger population of the Texas/Tamaulipas ocelot (*L. p. albescens*) occurs in Tamaulipas, Mexico, but is geographically isolated from ocelots in Texas. In November

2009, an ocelot (*L. p. sonoriensis*) was documented in Arizona (in Cochise County) with the use of camera traps (Sky Island Alliance 2010, unpubl. data).” The U.S. Fish and Wildlife Service estimates that, if recovery efforts are fully funded and carried out as outlined in the 2016 Recovery Plan, recovery criteria for down listing could be met by 2085. Population criterion for delisting would include at least 200 ocelots in Texas and 1,000 ocelots in Tamaulipas for at least 10 years.

### **SPECIES PROTECTION AND CONSERVATION**

<b>ENDANGERED SPECIES ACT STATUS:</b>	LE (USDI, FWS 1982) [PE (USDI, FWS 1980)] [LE, outside the U.S. (USDI, FWS 1972)]
<b>STATE STATUS:</b>	1 (AZGFD, AWCS 2022) [1A (AGFD SWAP 2012)] [WSC, as <i>Felis pardalis</i> (AGFD, WSCA 1996 in prep)] [Endangered, as <i>Felis pardalis</i> (AGFD, TNW 1988)]
<b>OTHER STATUS:</b>	Bureau of Land Management Sensitive (USDI, BLM AZ 2017) P, Determined Endangered in Mexico (NORMA Oficial Mexicana NOM-059-SEMARNAT-2010) [Endangered in Mexico (LEGEPA 1994)] LC (IUCN, Paviolo et al. 2015)

**MANAGEMENT FACTORS:** Management units have been set for two cross-border areas, the Texas/Tamaulipas Management Unit (TTMU) and the Arizona/Sonora Management Unit (ASMU). Establishing management units is a useful tool for species occurring across wide ranges with multiple populations, varying ecological pressures, or different threats in different parts of their range. In using this approach, the U.S. Fish and Wildlife Service were able to set recovery goals for each unit, and will be able to measure their contribution toward recovery. (USDI, FWS 2010; USDI, FWS 2016). While the ESA requires the development of recovery plans, the USFWS “has limited resources and little authority to address the major threats to the ocelot’s recovery outside U.S. borders” (USDI, FWS 2016).

**Threats:** Human population growth and development persists across the ocelot’s range, causing habitat conversion, fragmentation, and loss to present the primary threats today (USDI, FWS 2016). It is estimated that more than 95% of the dense thornscrub habitat in the Lower Rio Grande Valley has been converted to agriculture, rangelands, or urban developments (USDI, FWS 2016, Jahrsdoerfer and Leslie 1988, Tremblay et al. 2005). Issues associated with “border barrier development and patrolling the boundary between the United States and Mexico” were also cited by USFWS as further exacerbating the isolation of Texas

and Arizona ocelots from those in Mexico. Commercial exploitation and illegal hunting were significant threats to the species when the ocelot was originally listed, however the illegal harvest and export of ocelots has significantly declined and is controlled by the Convention on International Trade of Endangered Species (CITES).

**PROTECTIVE MEASURES TAKEN:** Listed as Endangered throughout its range in the western hemisphere. Adoption of illegal hunting laws throughout majority of range. Creation of Recovery plan for U.S. populations in 1990, and initiation of the revision of 1990 Recovery Plan in 2010 (USFWS Draft). The First Revision of the Ocelot Recovery Plan was created and signed by the USFWS in 2016.

Additional protective measures taken include the expansion of two National Wildlife Refuges in south Texas, and their ongoing restoration efforts to restore agricultural lands to native thornscrub. The acquisition of thousands of acres of land by the Nature Conservancy (TNC) to help protect ocelot habitat, and create corridors between existing habitats. The purchase in 2003 of a 4,047 ha ranch in northern Sonora, Mexico by the Mexican non-profit group, Naturalia, to help protect the jaguars and its habitat. Ocelots also occur there and will benefit from this protection. In 2008, Naturalia purchased an additional 14,164 ha making an 18,211 ha preserve called the Northern Jaguar Reserve. In northern Sonora, the Rancho El Aribabi where ocelot has been observed, is seeking to be recognized as a national reserve. In 2006, the USFWS approved a Safe Harbor Agreement (SHA) to encourage restoration of private lands to provide suitable habitat for the ocelot and to provide connectivity between areas currently occupied by ocelot. In 2005, a new USDA-Natural Resources Conservation Services standard was written which describes how to establish thornscrub on cropland for the benefit of the ocelot. This program provides a financial incentive for landowners to restore ocelot habitat on their property. (USDI, FWS 2010).

In 2011, the South Texas Refuge Complex developed a long-term habitat restoration plan for the ocelots of south Texas to identify restoration needs (USDI, FWS 2016). In 2012, the USFWS began a “collaborative project with a non-profit conservation group from Tamaulipas, Mexico, Conservación y Desarrollo de Espacios Naturales (CDEN), as well as with Friends of Laguna Atascosa National Wildlife Refuge, Gladys Porter Zoo, and San Antonio Zoo” to support translocation of ocelots to small populations in need of genetic augmentation (USDI, FWS 2016). A petition was submitted to the U.S. Secretary of the Interior by the U.S. Fish and Wildlife Service in 2021 to list the Texas Distinct Population Segment (DPS) of Ocelot (*Leopardus pardalis pardalis*) as “endangered” under the Endangered Species Act. In 2016, the Texas Department of Transportation (TXDOT) installed nine highway underpasses for ocelots in Cameron County, Texas, three large bridge style crossings between Raymondville and Sarita, Texas, and four wildlife crossings between Los Fresnos and Laguna Vista, Texas; all modified roads run through areas used by ocelots and where ocelot mortalities due to vehicle collisions have been documented (USDI, FWS 2016). The Arizona Game and Fish Department and Arizona Department of Transportation have also committed to installing wildlife linkage infrastructure and have implemented high resolution conservation monitoring programs for priority linkages. ADOT has built eight large

wildlife underpasses on SR-260 and three wildlife overpasses on US-93, and has committed to build new wildlife crossing structures on SR-77, US-89A, and SR-64.

**RECOVERY STRATEGY:** As the species is listed throughout its range, covering 22 countries and numerous management jurisdictions, the ocelot presents a significant challenge for recovery planning. The U.S. Fish and Wildlife Service signed the First Revision of the Recovery Plan for the Ocelot in 2016, though the United States represents only a small portion of the species total range. The strategy as outlined in the USFWS 2016 Recovery Plan involves: “the assessment, protection, reconnection, and restoration of sufficient habitat to support viable populations of the ocelot in the borderlands of the U.S. and Mexico; the reduction of the effects of human population growth and development on ocelot survival and mortality; the maintenance or improvement of genetic fitness, demographic conditions, and health of the ocelot; the assurance of long-term viability of ocelot populations through partnerships, the development and application of incentives for landowners, application of existing regulations, and public education and outreach; the use of adaptive management, in which recovery is monitored and recovery tasks are revised by the USFWS in coordination with the Bi-national Ocelot Recovery Team as new information becomes available; the support of international efforts to ascertain the status of and conserve the ocelot south of Tamaulipas and Sonora”.

**SUGGESTED PROJECTS:** Little is known about the ocelot population in the ASMU. Field studies are needed to estimate the current population, examine population density, demographics, habitat use, food habits, and spatial ecology. Challenges (threats) to the ocelot concerning border issues such as fencing, lighting, U.S. Border Patrol and illegal immigrant activities including vehicle and pedestrian traffic, and habitat alteration to facilitate law enforcement and reduce illegal immigration into the U.S. are increasing. These challenges can be addressed through interagency cooperation and research. Recovery planning for the ASMU should focus on basic research that details habitat suitability, distribution, and threats. (USDI, FWS2010). Authors of the USFWS 2010 draft Ocelot Recovery Plan recognize that many of the issues facing current ocelot populations in Texas will pertain to ocelots that may be in Arizona, or in populations that occur in Sonora. They also recognize that dramatic climatic and landscape differences will dictate original research and conservation planning for the ASMU. Further studies are also needed to investigate the potential impacts of climate change on ocelot populations across the species range. Similarly, “recovery efforts would benefit from information on how ocelots establish and move around in their home ranges relative to roads, or in their use of culverts or underpasses to negotiate roads” (USDI, FWS 2016).

**LAND MANAGEMENT/OWNERSHIP:** USFS, BLM, TNC, Private.

### **SOURCES OF FURTHER INFORMATION**

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#### ADDITIONAL INFORMATION:

*Felis* = cat, from Latin; *pardalis* = leopard-like, from Greek. Common name derived from Indian word for jaguar. Tigrillo is Spanish for small tiger.

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