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THE OCELOT (*LEOPARDUS PARDALIS*) IN NORTHERN TEXAS,
WITH COMMENTS ON ITS NORTHERN BIOGEOGRAPHY

Frederick B. Stangl Jr.¹ and John H. Young²

ABSTRACT.—A road-killed specimen of a large male ocelot (*Leopardus pardalis*) was salvaged on March 2010 from Palo Pinto County in north central Texas. Our review of the northern biogeography of the species indicates that the specimen is not out of historical context. The possibility that the animal represents a broader range of sparsely distributed individuals within the elusive cat's known historical range deserves consideration.

RESUMEN.—Un ocelote (*Leopardus pardalis*) muerto de sexo masculino y de tamaño grande fue recuperado en una carretera del Condado Palo Pinto en el centro-norte de Texas en Marzo del año 2010. Una revisión de la biogeografía norteña del ocelot sugiere que la presencia de éste animal no está fuera del contexto histórico. La posibilidad que éste animal representa un grupo de individuos que están escasamente distribuidos dentro los límites historicamente conocidos de ésta especie evasive merece ser considerada.

The historical biogeography of the ocelot (*Leopardus pardalis*) in the United States is sketchy and poorly documented due to the animal's secretive habits and decided preference for dense thickets and rugged terrain, as noted by the earliest observers (Bailey 1905, Strecker 1924). Baird (1857:87) claimed that the ocelot occurred "all through the lower country of Texas, and ranges as far north as Red river," although the basis for the latter part of his statement is not known. The only voucher material previously reported from Texas was the skin of one animal and the skull of another, both obtained for Baird by U.S. Army officers from along the Rio Grande in Eagle Pass, Maverick County. The skin of one kitten and the fluid-preserved body of another also were obtained across the Rio Grande from Brownsville, in Matamoras, Mexico. These materials were reported by Baird (1857) to be deposited with the Smithsonian Institution (catalog numbers 25, 129, 235, 2291, respectively). Until this report, those specimens represented the only museum records of *L. pardalis* from the United States of which we are aware.

The modern distribution of the ocelot has been mapped as extending from the northern two-thirds of South America into Central America, and along either side of the Mexican Plateau into southern Arizona, most of Texas, and the adjoining parts of Louisiana and Arkansas (e.g.,

Lowery 1974, Hall 1981, Hoffmeister 1986, Sealander and Heidt 1990, Murray and Gardner 1997, Schmidly 2004, Haines et al. 2005). The ocelot is one of the rarest cat species in the United States, with stable resident populations of ca. 80–120 animals presently known only from the southernmost Texas counties of Cameron and Willacy. Field studies on these populations by Michael Tewes and colleagues from Texas A&M University–Kingsville (e.g., Harveson et al. 2004, Laack et al. 2005, Haines et al. 2005, 2006) have been ongoing since shortly after the species was listed as federally endangered in 1982 by the U.S. Fish and Wildlife Service.

On 28 March 2010, the road-killed body of an adult scrotal male ocelot was retrieved by Texas Parks and Wildlife game warden Matt Waggoner from along Highway 180, ca. 3 km east of Palo Pinto, Palo Pinto County, Texas (32°46'4.08"N, 98°15'41.4"W). The terrain in this region is typical for the Western Cross Timbers and consists of limestone and shale, with dense stands of mixed oaks (mostly *Quercus marilandica* and *Quercus stellata*) and red cedar (*Juniperus virginiana*) that extend through north Texas into Oklahoma. Bordered by mesquite savanna to the west and bands of prairie to the east, large tracts of relatively continuous woodlands and heavy brush still persist because the broken and rugged terrain is of little

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Fig. 1. Tanned hide and skull of *Leopardus pardalis* (MWSU 23034) recovered from Palo Pinto County, Texas, on 28 March 2010.

agricultural value. The Brazos River enters the region near Waco and meanders to the north and west, through Palo Pinto County near the collection site, and beyond to the mesquite savanna of the Rolling Plains.

The ocelot weighed 13.04 kg, and body measurements (mm) were total length, 1220;

tail length, 355; hind foot length, 155; and ear length, 55. Selected cranial measurements (mm) were condylobasal length, 130; zygomatic breadth, 96; and postorbital breadth, 34. These measurements place this individual near the upper limits reported for males of the species (Murray and Gardner 1997). The specimen

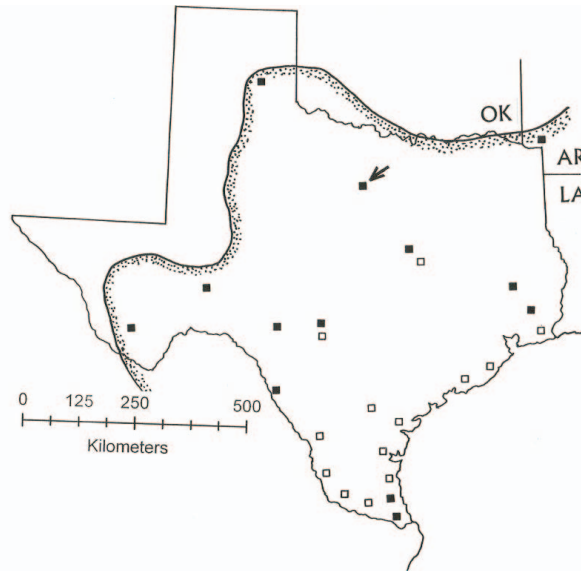


Fig. 2. Historical distribution of *Leopardus pardalis* in Texas. Solid symbols represent records from Table 1, and open symbols are additional records from Schmidly (2004). Arrow indicates location for the Palo Pinto County specimen reported herein.

was in excellent condition, as judged by its skin being more heavily laden with fat than is typical of bobcats (*Lynx rufus*) we have taken at comparable times of the year. The cat had clearly been ranging free and foraging successfully for some time, for the flesh side of the pelt revealed the face and venter to be heavily festooned with many hundreds of the fine spines of prickly pear (*Opuntia* sp.) and tasajillo (*Cylindropuntia leptocaulis*), especially around the feet and forelegs. The stomach contained 4 small rodents reported as typical fare for the ocelot (e.g., de Villa Meza et al. 2002): 2 *Sigmodon hispidus*, 1 *Peromyscus* (c.f. *P. leucopus*), and 1 *Reithrodontomys* (c.f. *R. fulvescens*). The complete skeleton and tanned hide (Fig. 1) are deposited in the Midwestern State University Collection of Mammals (MWSU 23034), and voucher tissues are deposited in the Genetic Resources Collection of Texas Tech University (TK 163819).

Provenance of the Palo Pinto Ocelot

The detailed provenance of a field-taken or salvaged specimen of any species can seldom be ascertained, but, whether of captive or natural origins, we believe the Palo Pinto ocelot is of Texas–northern Mexico ancestry. The background pelage color of the animal is pale gray,

which is characteristic of populations from along and north of the Rio Grande (Murray and Gardner 1997). Also, the animal has a mtDNA haplotype that corresponds to specimens from south Texas and northern Mexico (Janecka et al. 2007, DeYoung and Holbrook 2010).

One of 3 possible scenarios might account for an ocelot in north Texas. First is that the animal simply traversed the 850 km separating the Palo Pinto locality from known south Texas populations (Fig. 2)—an extraordinary distance for a species with a typical dispersal distance of ca. 10 km (Haines et al. 2005). A second possibility is that the animal escaped from a captive setting. We note that the species is popular with zoos and exotic pet fanciers, although zoological collections in the nearby Dallas–Fort Worth metroplex (ca. 50–80 km to the east) were not missing an ocelot. There have been no reports from other sources of escaped or missing animals, as might be expected unless the animal was illegally maintained. Finally, a review of the historical record of the species (Table 1) suggests the possibility that the Palo Pinto ocelot might simply represent a secretive and uncommon species of more widespread occurrence across the state than currently suspected. The plausibility of this latter scenario is discussed below.

TABLE 1. Literature reports for the ocelot (*Leopardus pardalis*) comprising a basis for a mapped historical range of the species (Hall 1981). Primary references (unless otherwise cited) are for Arizona, Hoffmeister (1986); Arkansas, Sealander and Heidt (1990); Louisiana, Lowery (1974); and Texas, Bailey (1905) and Schmidly (1983).

Specific locality	Year	Basis	Comments
ARIZONA			
Near Redington, Pima Co.	pre-Columbian	voucher	Skull from archaeological fauna identified by Burt (1961)
Fort Verde, Yavapai Co.	1887	voucher	Skin obtained by E.H. Mearns; deposited at American Museum
Near Camp Verde, Yavapai Co.	1932	verbal account	Taken by trapper; reported to Arizona Game and Fish Department
Near Patagonia, Santa Cruz Co.	1960	verbal account	Taken by hunter; reported to Arizona Game and Fish Department
Ski Island region, Cochise Co.	2009	photograph	Remote-sensing camera image from Sky Island Alliance conservation group
Near Globe, Gila Co.	2010	voucher	Road-killed specimen, salvaged by Arizona Game and Fish Department; deposition uncertain at present time
ARKANSAS			
Southeastern corner of state	1855	voucher	Type specimen for <i>L. pardalis albescens</i> Pucheran; deposition unknown
LOUISIANA			
Eastern border of state	1800s	none	Inferred presence by proximity to reports from east Texas
TEXAS			
Big Thicket region, east Texas	1700s	written account	Schmidly (1983) recounts early Spanish recollections of "tiger cats"
Eagle Pass, Maverick Co.	mid-1800s	voucher	Baird (1857) reports on skin and skull in the Smithsonian Institution
Vicinity of Waco, McLennan Co.	mid-1800s	verbal account	Strecker (1926) cites trapping records, fur purchases from vicinity
Big Thicket, Hardin/Polk counties	late 1800s	verbal account	Baker (1956) relates recollections of older residents
McLennan Co.	late 1800s	verbal account	Strecker (1924) cites reports of occurrences along local river bottomlands
South of Sheffield, Pecos Co.	early 1900s	verbal account	Bailey (1905) cites secondhand source of local occurrence along Pecos River
Near Sour Lake, Hardin Co.	1902	verbal account	Bailey (1905) quotes N. Hollister of several hunter kills
Near Rock Springs, Edwards Co.	1902	verbal account	Bailey (1905) relates store owner's account of skin sales
10 mi. S Kerrville, Kerr Co.	1902	verbal account	Bailey (1905) relates sheriff's viewing of skin
West central Brewster Co.	1903	verbal account	Bailey (1905) reports on and presumably views skin
2.5 mi. NE Hedley, Donley Co.	1950	photograph	Davis (1951) cites newspaper account and photo of ocelot taken by hunter
Palo Pinto/Young county line	late 1950s	verbal account	This report; 2 sight records from Waco Bend of Possum Kingdom Lake
3 km E Palo Pinto, Palo Pinto Co.	2010	voucher	This report

Northern Biogeographic History of
Leopardus pardalis

Pleistocene records for *L. pardalis* in North America exist only for sites in Florida and the Yucatan of Mexico (Kurten and Anderson 1980,

Murray and Gardner 1997, Arroyo-Cabrales and Polaco 2003), with the Florida records attributed to an earlier northern incursion during the preceding Sangamon interglacial (Werdelin 1985). Burt's (1961) recovery of an ocelot skull

from a pre-Columbian Arizona archaeological site provides the earliest Holocene record of the species from the United States, for it is not recorded from the many Holocene faunas known from across New Mexico (Harris 1987, 1989), Oklahoma (Davis 1987), or Texas (Graham 1987, Dalquest and Schultz 1992). This chronological gap in the Holocene record may represent sampling error for a rare taxon; but if present, the lack of ocelot records in cave faunas would be somewhat surprising, as the ocelot has been associated closely with caves in Texas for purposes of refuge and rearing young (Bailey 1905). More likely, the ocelot reclaimed parts of its range in Texas during comparatively recent centuries, heralding other documented cases of neotropical advances (e.g., collared peccary, *Pecari tajacu*; nine-banded armadillo, *Dasypus novemcinctus*; and pygmy mouse, *Baiomys taylori*). Two recent records for Arizona (Sky Island Alliance 2010, Arizona Game and Fish Department 2010) may well represent a parallel development for the species in Arizona.

The primary basis for our understanding of the ocelot's historical occurrence in Texas (see Schmidly 2004) remains Bailey's (1905) narrative, although the secretive nature and reluctance of *L. pardalis* to venture beyond dense cover necessitated his heavy reliance on second-hand accounts. Reported habitat typically varied from the dense tangled woodlands of the Big Thicket region of east Texas to the cedar breaks of central Texas and the dense brush of the rugged Pecos Valley that bisects the Stockton and Edwards plateaus. Clearly, without reference to animals taken by trappers or flushed by hunting packs of hounds, Bailey's contribution would have been greatly impoverished.

Strecker's (1924, 1926) accounts indicate that *L. pardalis* extended its range northward from the broken country of central Texas along this tangled corridor and associated river bottomlands. Early residents of McLennan County (ca. 60 km SE Palo Pinto) spoke of "long-tailed wildcats" of a distinctly spotted variety frequenting the rugged bottomlands of the Brazos and Tehuacana rivers, along the southeastern margins of the Western Cross Timbers near Waco, Texas (Strecker 1924). These reports apparently were substantiated by a local fur buyer's earlier records from the mid-1850s, which listed "leopard" skins from Indians in

the mid-1800s that brought 37–50 cents on the New York fur market (Strecker 1926).

The ocelot has a history in Palo Pinto County that precedes the specimen comprising the basis of this report. One experienced hunter/naturalist (J.W. Rogers, personal communication), who hunted and fished extensively in the county during the 1950s, was unsurprised at our record. He related hearing of the species' local existence from other outdoorsmen, and described 2 sightings of his own during the late 1950s. Both incidents occurred while he was fishing along Waco Bend of the Brazos River, just upstream of the Possum Kingdom impoundment. These observations were on the Palo Pinto–Young county line and little more than 30 km north of the collection site of our specimen. The 1950 specimen reported by Davis (1951) from the rugged Panhandle canyonlands of Donley County, ca. 300 km NW Palo Pinto County, appears less incongruous in this context, given the dispersal avenues afforded by river bottoms of the Brazos and Red river drainages that extend west and northwest from this wooded corridor.

Given the secretive nature of wild felids, even cats as common as the bobcat (*Lynx rufus*) or as large as the mountain lion (*Puma concolor*) are seldom observed in a natural setting, and the incidence of outdoor activities relied upon by Bailey (1905) for most of his accounts (e.g., trapping, hunting with hounds) has declined in popularity during recent decades. For these reasons, we see little reason to expect casual sightings or other evidence of resident ocelots to surface on any regular basis, although vigilance for just such an eventuality by field biologists and wildlife professionals is certainly warranted.

We thank Loraine Huddleston of Santo, Texas, for her prompt reporting of the specimen. Palo Pinto game warden Matt Waggoner obtained locality data and transported the animal to Midwestern State University. Jody Mays of the U.S. Fish and Wildlife Service provided many courtesies involved in obtaining the necessary permits. Allan Nelson of Tarleton State University and Mark Howell of Texas Parks and Wildlife played critical roles in procurement of the specimen by Midwestern State University. We recognize Sam Kelley of the U.S. Geological Survey for his detailed observations of the pelt during the tanning

process. These observations contributed materially to this manuscript. Ken Wilkins of Baylor University kindly provided copies of the Strecker papers, and Magaly Rincon-Zachary provided the Spanish abstract. Comments on earlier versions of the manuscript were offered by Norman V. Horner and Jesse W. Rogers of Midwestern State University. Two anonymous reviews and the editorial input of the Western North American Naturalist staff contributed materially to the finished manuscript.

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