

First record of ocelot *Leopardus pardalis* in a pine-oak forest of the Sierra Madre Occidental, Durango, México

Primer registro de ocelote *Leopardus pardalis* en un bosque de pino-encino de la Sierra Madre Occidental, Durango, México

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The ocelot, *Leopardus pardalis*, is one of the 6 species of felines distributed in México. It is currently listed as Endangered of Extinction according to NOM-059-SEMARNAT-2010. Therefore, this work aimed to report the presence of the ocelot in the ejido Chavarría Nuevo, Durango, México. A random sampling was carried out in a pine-oak forest in the ejido Chavarría Nuevo, Pueblo Nuevo, Durango, using camera traps. Eight cameras were installed, and the sampling effort was calculated as the number of camera traps multiplied by the number of days sampled (1,200 trap-days). Separate photographs recorded several animal species; however, the ocelot was captured only in 4 photographs. Based on the time of the day when the photographs were captured, in addition to the size and body constitution, the photographs were identified as belonging to the same individual; however, the sex could not be determined. In mammal monitoring studies, this is the first record of ocelot in the study region, an area of great importance regarding forest use in México. The presence of this species suggests that the forest is in good health, as in these areas the presence of the feline is mainly associated with its feeding on prey such as rabbits, badgers, and birds.

Key words: Camera traps; feline; new record; pine-oak forest; Sierra Madre Occidental.

El ocelote, *Leopardus pardalis*, es una de las 6 especies de felinos que se distribuyen en México. Actualmente se encuentra en peligro de extinción conforme a la NOM-059-SEMARNAT-2010. Por lo que el objetivo del presente trabajo fue reportar la presencia del ocelote en la región del ejido Chavarría Nuevo, Durango, México. Se realizó un muestreo aleatorio mediante cámaras trampa en el ejido Chavarría Nuevo, Pueblo Nuevo, Durango en bosque de pino-encino. Se colocaron 8 cámaras y se obtuvo el esfuerzo de muestreo con el número de cámaras por el número de días muestreados (1,200 días trampa). Se obtuvieron fotografías independientes con el registro de varias especies de fauna; sin embargo, el ocelote se observó solo en 4 fotografías, conforme las horas en que fueron tomadas las fotografías, además del tamaño y conformación del cuerpo se identificó como un mismo individuo; sin embargo, no fue posible apreciar el sexo. En trabajos de monitoreo de mamíferos, este sería el primer registro de ocelote para la región, un área de gran importancia en el aprovechamiento forestal a nivel nacional. La presencia de esta especie sugiere un buen estado de salud del bosque, ya que en estas áreas la presencia del felino estaría asociada principalmente a su alimentación con presas como conejos, tejones y aves.

Palabras clave: Bosque pino-encino; cámaras trampa; felino; nuevo registro; Sierra Madre Occidental.

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The ocelot (*Leopardus pardalis*) is one of 6 species of wild felines that inhabit México (Aranda 2012). It is also a species playing a central role in natural ecosystems as it regulates the population size of the prey on which it feeds (De Oliveira et al. 2010). Due to poaching, illegal trafficking, and fragmentation of its habitat, it is currently listed as Endangered by the Official Mexican Standard (NOM-059; SEMARNAT 2010). It is also included in Appendix I of the list of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2024) and as Least Concern in the IUCN Red List of Threatened Species (Paviolo et al. 2015).

Its current distribution ranges from the southern United States through México, Central America, and Ecuador to northern Argentina (Murray and Gardner 1997). In México,

it thrives in Sonora and Chihuahua to the Pacific coast, in Tamaulipas through the Gulf of México to the Isthmus of Tehuantepec, Oaxaca, and in the Yucatán Peninsula (Aranda 2012).

The ocelot inhabits mainly landscapes with dense vegetation cover, such as humid and dry forests, temperate forests, cloud forests, thorny forests, and xeric scrub (Murray and Gardner 1997; Aranda 2005; Iglesias et al. 2009; Bárcenas and Medellín 2010; Aranda et al. 2012; Ahumada-Carrillo et al. 2013). Specifically for the state of Durango, there is a single record of this species in temperate oak forests (Servín et al. 2016) in the La Michilía Biosphere Reserve, municipality of Mezquital, in the southeastern part of the state; however, there are no official records of this species

in the dominant pine forests. Therefore, the objective of this note is to report the presence of ocelots in the ejido Chavarría Nuevo, Pueblo Nuevo, an area covered by pine forests of importance in forestry located west of the previous record in Durango.

The study was carried out in the ejido Chavarría Nuevo, municipality of Pueblo Nuevo, Durango. The ejido comprises a total area of 8,430.22 ha; the dominant vegetation type is the pine-oak forest, commonly under forest management, so the present study was derived from a work on the relationship of this primary activity with the diversity of mammals in the region. The municipality is in the west of the state, located in the Sierra Madre Occidental, with the northern portion on the summits of this mountain range, representing extensive highland plains ranging between 2,500 and 2,600 m (INEGI 2010). This ejido comprises 3 types of climate: temperate subhumid, semi-cold subhumid, and semi-cold humid, with summer rains and winter precipitation between 5 % and 10.2 %, according to Köppen's Climate Classification modified by García (1964).

Random sampling was carried out, and 8 Wildgame Innovations Terra Extreme Lightsout 18 MP camera traps were installed at a height not above 40 cm from ground

level (Chávez et al. 2013) from May 2020 to September 2020 (150 days total). This tool was selected because camera traps are an effective non-intrusive method; its continuous monitoring capacity makes it suitable for recording the presence of rare or elusive wild mammals, which are difficult to detect with other methods (Botello et al. 2005). The cameras were set to capture n number of photographs every 5 sec and remain active for 24 hr. The location of each camera trap was georeferenced with a Garmin etrex® GPS. During sampling, camera traps were checked monthly and then moved to a different location to cover most of the ejido. Each photograph captured recorded the time and date. The total sampling effort (ME) was calculated by multiplying the number of camera traps used by the number of monitoring days (Monroy-Vilchis et al. 2011).

With a sampling effort of 1,200 trap-days, we recorded 239 photographs of large and medium-sized mammals living in the region, as well as birds. Of these records, 4 photographs captured the presence of ocelot (*Leopardus pardalis*) in pine-oak and oak-pine forests. This feline was recorded on the following dates: May 1 and 6, 2020; June 2, 2020, and July 2, 2020, in 2 locations with the following geographic coordinates: 23° 39' 44.26" N, 105° 39' 01.71" W and 23° 39' 24.67" N, 105° 39' 21.62" W (Figure 1).

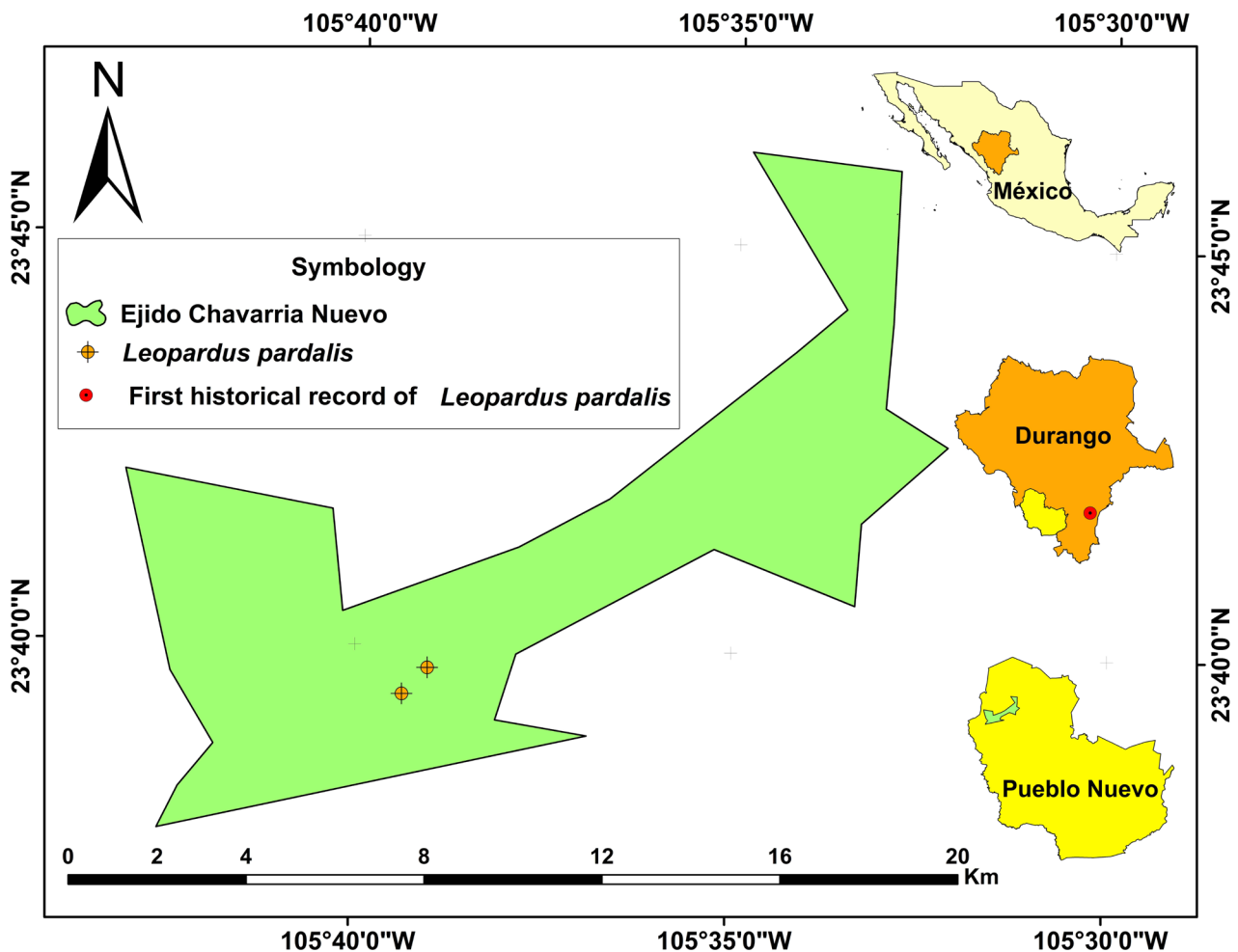


Figure 1. Map of ocelot (*Leopardus pardalis*) photo trapping sites in a pine-oak forest in the ejido Chavarría Nuevo, Durango, México.

The 2 clearest photographs in which the size and pattern of spots on the feline's body can be appreciated suggest that these probably correspond to the same individual (Figure 2). The position of the animal in the remaining photographs did not allow for determining the sex or whether they captured a different individual.

These records are considered the first to document the presence of ocelots in pine-oak forest areas in the ejido Chavarría Nuevo, municipality of Pueblo Nuevo, Durango, located 142 km northwest of the Michilía record. Previously, ocelot was recorded in the area of La Michilía Biosphere Reserve, in an oak forest at 2,750 m in the southeastern part of the state (23° 26' 1.68" N, 104° 16' 40.8" W), between the municipalities of Súchil and El Mezquital (Servín et al. 2016). The ejido where this study was carried out has transition areas of steep ravines and dense vegetation, which likely provide favorable conditions for ocelot in terms of shelter and food supply (Sunquist and Sunquist 2002; Jackson et al. 2005). Due to the convergence of different environmen-



Figure 2. First photographic record of ocelot (*Leopardus pardalis*) in the ejido Chavarría Nuevo, Durango, México. Images available on quarimochi494@gmail.com.

tal and physical conditions in this type of relief, these areas host a high diversity of plant species, including the genera *Pinus* and *Quercus*, and animal species of the orders Didelphimorphia, Cingulata, Lagomorpha, Carnivora, and Artiodactyla, as mentioned by Buendía-Rodríguez et al. (2019) and Lira-Torres and Briones-Salas (2012).

The presence of ocelot in this area represents a bioindicator of good health status of the local ecosystem since it is a species that regulates the population size of its prey (Pérez-Irineo and Santos-Moreno 2015). Its presence suggests well-preserved forests that are home to a high diversity of prey, including small and medium-sized mammals, as well as birds (Massara et al. 2015). However, this ejido is under timber forest exploitation all year round; that is, there is constant tree cutting that could reduce the habitat of this feline and other species. Therefore, these first records of ocelot (*Leopardus pardalis*) indicate the urgent implementation of measures to conserve it while the forest continues being exploited, applying continuous cover silviculture (Forestry Focus 2024), which helps maintain the habitat of the ocelot and its prey species.

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