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Confirmed presence of jaguar, ocelot and jaguarundi in the Sierra of San Carlos, Mexico

In northeast Mexico the occurrence of the jaguar *Panthera onca*, ocelot *Leopardus pardalis* and jaguarundi *Herpailurus yagouaroundi* is not well known. Because of lack of confirmed reports, no recent publications mention the Sierra of San Carlos within the actual range of these felines. Here, we provide a series of photographs taken with a remote sensing camera of these three species at the Rancho Sílica that is located in the northern part of the Sierra of San Carlos in Tamaulipas, Mexico. We believe that these distribution records will improve the knowledge about the range of these species and therefore could lead to better conservation actions. We hope that the Sierra of San Carlos will be included within the Mexican protected area system in the future.

The distribution range of the jaguar, ocelot and jaguarundi in northeast Mexico is not well recognised. The state of Tamaulipas is by far, the least surveyed state in Mexico (Rodriguez-Soto et al. 2011) and still some new distribution records are often discovered. However, some of the records reported in the literature should be taken with caution because they may come from unreliable sources (Carvajal 2016).

The Sierra of San Carlos (24°30' & 25°00' N / 98°30' & 99° 15' W) also known as the Sierra Chiquita or Cruillas, is a mountain range in the north-central part of the state of Tamaulipas (Fig. 1). The climate is semi-arid and the highest elevation (1,786 m) is at Cerro el Hongo (Martínez 1998). Total annual precipitation is about 734.8 mm and it is considered as the southern limit of the Tamaulipan Biotic Province (Dice 1943). Sierra of San Carlos has five types of vegetation that include desert shrub, thorn shrub, deciduous forest, pine-oak forest, and riparian forest (Martínez 1998).

De la Torre et al. (2017) did not include in their analysis the Sierra of San Carlos as a potential area for jaguar distribution (Fig. 1). Rodriguez-Soto et al. (2011) included the Sierra of San Carlos but as one of the lowest percentage of probability for jaguar occurrence. In a distribution analyses for jaguar, ocelot and jaguarundi for northeast Mexico, although Carvajal (2016) could not find any confirmed records of these species within the Sierra of San Carlos, her analysis did include the Sierra as a potential area for the distribution of the three cat species.

However, on multiple occasions co-author of this note, E. Dominguez, had ocelots and ja-

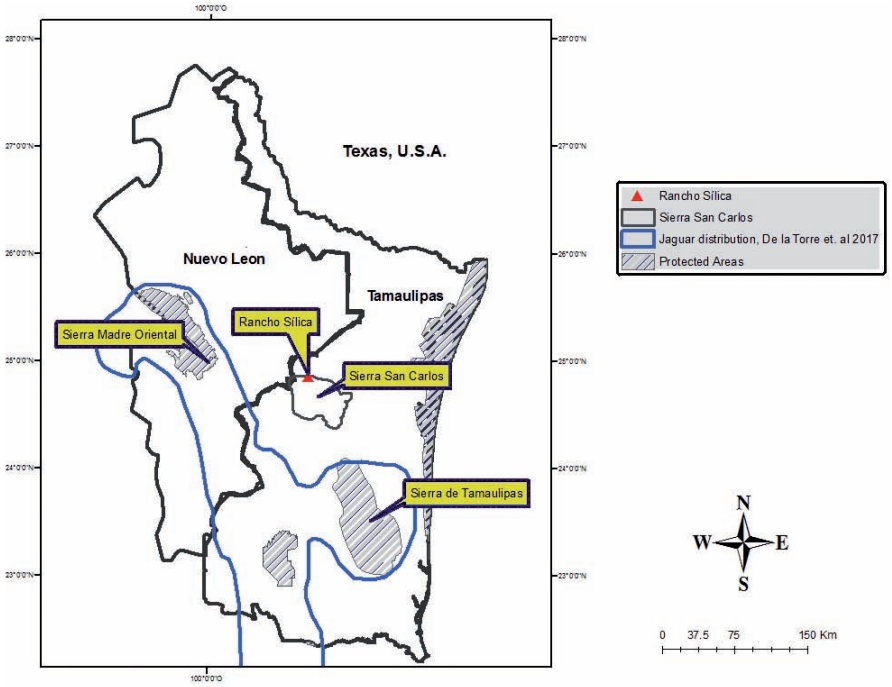

Fig. 1. Jaguar distribution by De la Torre et al. 2017, Rancho Sílica, Sierra of San Carlos, Sierras Madre Oriental and Sierra de Tamaulipas, locations.

guarundis photographed at a waterhole within the Rancho Sílica (24° 52' 33.90" N / 98° 58' 36.92" W) (Figs. 2 & 3). Other feline species such as mountain lion *Puma concolor* and bobcat *Lynx rufus* were also photographed in the same spot. Furthermore, in April 2018, for the first time, a jaguar was photographed at the same water hole (Fig. 4). This specimen seems to be a young male jaguar that may be on dispersal movements. Even though it is difficult to know the origin of this specimen, we suspect that it may has come from either the Sierra of Tamaulipas, about 80 km to the south, or from the Sierra Madre Oriental, about 85 km to the west, both of which are recognised by De la Torre et.al. (2017) as the actual range for the jaguar (Fig. 1). It will be important to do a more intensive survey in Sierra of San Carlos in the future to evaluate if this was a dispersing individual or if there is a viable jaguar population in the San Carlos Sierra and otherwise to know which corridors exist to connect them with other known jaguar populations in the west and south.

In addition, it is important to evaluate if there are also viable populations of both ocelots and jaguarundis since these species were not recently reported in this area (Grigione et al. 2009). Sierra of San Carlos may be the actual northern most distribution region for the ocelot in northeast Mexico (Caso 2013, Carvajal 2016).

Recently, the Sierra of Tamaulipas (Fig. 1) was included as one of the protected areas in northeast Mexico and part of the reason of creating this protected area was the confirmed presence of jaguar. Therefore, the photographic records in this short communication of jaguar, ocelot, and jaguarundi, protected species in Mexico, should be enough to include the Sierra of San Carlos in the protected areas system managed by the Mexican government by the Comisión Nacional de Areas Naturales Protegidas CONANP.

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Fig. 2. Ocelot photographed at Rancho Sílica, Sierra of San Carlos, Tamaulipas, Mexico.

Fig. 3. Jaguarundi photographed at Rancho Sílica, Sierra of San Carlos, Tamaulipas, Mexico.

Fig. 4. Jaguar photographed at Rancho Sílica, Sierra of San Carlos, Tamaulipas, Mexico.