

Expansion of distribution range of the Greater Grison (*Galictis vittata*) in México

Expansión del área de distribución del grisón (*Galictis vittata*) en México

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The potential distribution of the Greater Grison, *Galictis vittata*, reaches east-central México including the southern portion of Tamaulipas state. However, there are no geographical records that confirm this potential range limit. Our study documents the first record of the Greater Grison photographed by camera traps at “El Cielo” Biosphere Reserve, Tamaulipas State, México. We installed 26 camera traps at “El Cielo” Biosphere Reserve. The cameras were programmed to take pictures and with the date and hour of each photo recorded automatically. Also, we created a map, which combined the Greater Grison’s potential distribution and published occurrence records, to overlay on our new sightings in “El Cielo”. One camera trap recorded two photos of a Greater Grison at “El Cielo” Biosphere Reserve, within a preserved pine-oak forest environment. These two records represent the only confirmed sightings of the Greater Grison in Tamaulipas state and they are located 64.4 km northwest of the nearest estimated potential distribution and 186 km north of the northern-most sighting in southern San Luis Potosí. The record of our study expand both the original potential distribution and the known distribution of this species toward the northwest and north, respectively. The sightings also increase the known elevation limit of the species in México from 1,500 to 1,790 m. We believe that the occurrence of Greater Grison at “El Cielo” is not unusual because this site has the conditions and habitat that are suitable to the distribution of this species.

Key words: Biosphere reserve; Mustelidae; northeast México; Sierra Madre Oriental.

La distribución potencial del gran grisón, *Galictis vittata*, llega al centro y este de México, incluida la parte sur del estado de Tamaulipas. Sin embargo, no hay registros geográficos que confirmen este límite. El presente estudio documenta el primer registro del gran grisón fotografiado por trampas cámara en la Reserva de la Biosfera “El Cielo”, Tamaulipas, México. En el área de estudio se instalaron 26 trampas cámara que fueron programadas para obtener fotografías con la hora y fecha impresa. También se realizó un mapa en el que se integró la distribución potencial del grisón, los registros de ocurrencia publicados y los registros fotográficos de “El Cielo”. Una trampa cámara registró dos fotografías del gran grisón en la Reserva de la Biosfera “El Cielo”, dentro de un bosque de pino-encino conservado. Los dos registros representan el único avistamiento confirmado para el grisón en Tamaulipas, y están localizados a 64.4 km al noroeste de la distribución potencial estimada y a 186 km al norte del registro confirmado en el sur del estado de San Luis Potosí. Los registros de este estudio expanden tanto la distribución potencial como la distribución conocida del grisón hacia el noroeste y al norte, respectivamente, y también, aumentan el límite de elevación conocido en México de 1,500 a 1,790 m. La presencia del gran grisón en “El Cielo”, se debe probablemente a que este sitio tiene las condiciones de hábitat para que se pueda distribuir esta especie.

Palabras clave: Mustelidae; noreste de México; reserva de la biosfera; Sierra Madre Oriental.

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The Greater Grison, *Galictis vittata* (Shreber, 1776), is a medium-sized mustelid with an elongated body and distinctively short legs ([Álvarez-Castañeda et al. 2015](#)). Its potential distribution indicate it could range from the southeastern portion of México including the Yucatán peninsula, south through Central America, and throughout the northern half of South America ([Yensen and Tarifa 2003](#); [Tarifa et al. 2010](#); [Bornholdt et al. 2013](#)). It has been

recorded in tropical forests, rainforests, grasslands, arid regions, tropical dry forests, coffee plantations and secondary vegetation ([Estrada et al. 1993](#); [Gallina et al. 1996](#); [De la Torre et al. 2009](#); [Hodge and Arbogast 2016](#); [Mandujano et al. 2018](#)).

The Greater Grison is of special interest because it is one of the least-known mammals in the Americas; because of the low numbers of studies or records reporting its pres-

ence, we know very little about the biology and ecology of this species throughout its range (Tarifa *et al.* 2010; Hernández-Hernández *et al.* 2018).

In México, the laws of faunal protection consider *Galictis vittata* to be an endangered species (SEMARNAT 2010). According to our literature search, the potential distribution of Greater Grison in México includes 11 states located at the east and southeast of the country (Escalona-Segura *et al.* 2002; Ramírez-Pulido *et al.* 2005; González-Christen 2008; Olguín-Monroy *et al.* 2008; De la Torre *et al.* 2009; Hernández-Hernández *et al.* 2018; Mandujano *et al.* 2018). In México, the Greater Grison lives at altitudes ranging from sea level to 1,500 m above sea level, but mostly below 500 m (Yensen and Tarifa 2003). Although the potential distribution of the Greater Grison reaches into the extreme southeastern portion of Tamaulipas state (Yensen and Tarifa 2003; Cuarón *et al.* 2016), there were no records confirming its presence in this state (Vargas-Contreras and Hernández-Huerta 2001), until now. In this study, we submit the first confirmed record of occurrence of the Greater Grison (*Galictis vittata*) in Tamaulipas state, México, expanding its potential and known distribution limits.

This study was conducted at “El Cielo” Biosphere Reserve, located in the Northeast of México, in Tamaulipas state and is part of the bio-geographical region of the “Sierra Madre Oriental” (SMO). This reserve is an important zone of transition between the Nearctic and the Neotropical regions, with altitudes ranging between 100 and 2,300 m that provide different environmental conditions and different types of vegetation (Steinberg *et al.* 2014). From December 2017 to January 2019 we installed 26 camera traps (Scoutguard HCO model SG565) at “El Cielo”. The cameras were one km apart, in two types of habitat: cloud forest and pine-oak forest and were programmed to take pictures, with the date and hour of each photo recorded automatically.

We created a map, which combined the Greater Grison’s potential distribution (Cuarón *et al.* 2016) and published occurrence records (Global Biodiversity Information Facility 2019; database updated until January 2019), to overlay on our new sightings in “El Cielo.”

One camera trap recorded two photos of a Greater Grison in 2018; the first on 17 July at 1818 H and the second on 1 November at 1052 H (Figure 1). These photos clearly



Figure 1. Photographic evidence of the Greater Grison (*Galictis vittata*) on “El Cielo” Biosphere Reserve Tamaulipas, México, in a pine-oak forest.

show the typical color pattern of the species: blackish marbled gray dorsally with a white stripe starting at the forehead, passing under the ears and above the eyes, and ending at the shoulders. Anatomically, the limbs are very small and the tail is short, as is typical of the Greater Grison (Figure 1; Álvarez-Castañeda *et al.* 2015). The camera trap that took both pictures was positioned at 23° 2' 44.70" N, -99° 15' 45.90" W at an elevation of 1,790 m (Figure 2). It was within a preserved pine-oak forest environment (mostly *Pinus patula*, *P. pseudostrobus*, *Quercus germana*, *Q. affinis* and *Q. polymorpha*; González-Medrano 2005; Pérez and Valencia-A. 2017) and very close to the cloud forest (approximately 200 m away).

These two records in the “El Cielo” Biosphere Reserve represent the only confirmed sightings of the Greater Grison in Tamaulipas, México. They are located 64.4 km northwest of the nearest estimated potential distribution and 186 km north of the northern-most sighting in southern San Luis Potosí (Figure 2). Together, these two sightings expand both the original potential distribution and the known distribution of this species toward the northwest and north, respectively. The sightings also increase the known elevation limit of the species in México from 1,500 (Yensen and Tarifa 2003) to 1,790 masl. However, another study in Colombia sighted a Greater Grison at 2,200 m (Escobar-Lasso and Guzmán-Hernández 2014).

The San Luis Potosí specimen of *Galictis vittata* mentioned above, was collected from the Xilitla locality (21° 23' 10" N, -98° 59' 24" W), was preserved and deposited on the Louisiana State University Museum of Natural Science, Mammal Collection. Record ID: urn: catalog: LSUMZ: Mammals: 2769. Source: http://ipt.vertnet.org:8080/ipt/resource.do?r=lsuzm_z_mammals (published on 03-19-2015).

Other mustelid species have been recorded in previous studies conducted at the “El Cielo” (e. g., *Eira barbara senex* and *Mustela frenata frenata*; Vargas-Contreras and Hernández-Huerta 2001), but the Greater Grison had

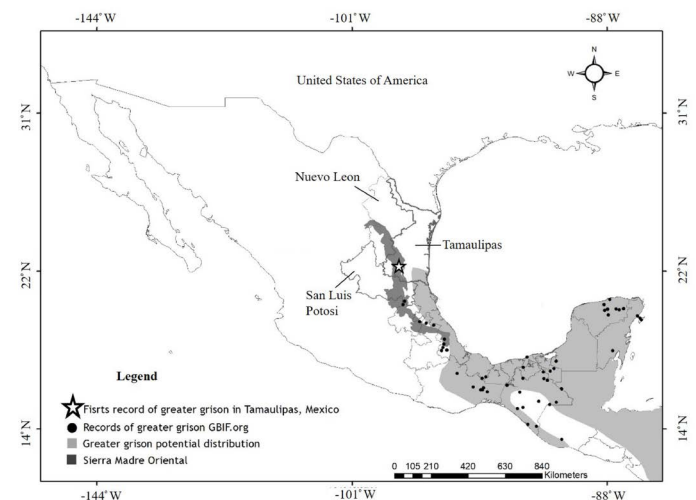


Figure 2. First record of the Greater Grison (*Galictis vittata*) for the Tamaulipas state, México. White star = first record of Greater Grison in Tamaulipas, México; black dots = records of the Greater Grison in GBIF.org; light gray = potential geographic distribution of Greater Grison; dark gray = Sierra Madre Oriental.

not been mentioned before, not even as an anecdotal record. We believe that the occurrence of Greater Grison at "El Cielo" is due to that the reserve has the conditions and habitat that are suitable to the distribution of this species (cloud forest, tropical forest and grassland). Other research in México, have registered this species in tropical forests, rainforests, grasslands, cloud forest, arid regions, tropical dry forests, coffee plantations and secondary vegetation (Estrada et al. 1993; Gallina et al. 1996; De la Torre et al. 2009; Mandujano et al. 2018). On the other hand, "El Cielo" is undergoing a consistent process of plant regeneration that started 35 years ago when the biosphere reserve was established by decree (1985) and forestry exploitation stopped completely (Steinberg et al. 2014). Maybe now, with less human activity and better conservation of the reserve, it will be possible for species like the Greater Grison can reach these areas. Furthermore, the geographical position of "El Cielo" within the eastern mountain range, Sierra Madre Oriental, allows the Reserve to function as an important biological corridor, connecting the wild fauna populations of Nuevo Leon and San Luis Potosi states (Steinberg et al. 2014), and opening the possibility for species from other States to arrive at Tamaulipas (Figure 2). Finally we want to highlight that camera trap are an efficient tool to discovering new species and document the expansion of species into new areas, as described in our writing.

Acknowledgements

The authors thank to F. Caballero-Rico, E. Berrones-Benitez (field guide) and Mr. Moisés for allowing us to enter "ejido San José" at El Cielo Biosphere Reserve. We thank "Universidad Autónoma de Tamaulipas" (Project UAT/PFI2015-15) and the Higher Education Teacher's Professional Development Program, "PRODEP" (UAT-PTC-221/511-6/17-8212) for the funding granted to this research work. We also thank R. J. Smith for the English edition.

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Associated editor: Consuelo Lorenzo

Submitted: December 18, 2019; Reviewed: January 8, 2020.

Accepted: January 10, 2020; Published on line: March 2, 2020.