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New altitude record for the long-tailed weasel (*Neogale frenata*) in Mexico

Nuevo record de altitud para la comadreja de cola larga (Neogale frenata) *en México*

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ASTRACT
Knowing the altitudinal limits of species is usefor for better understanding their distribution, tolerance limits, and interactions. This article reports a new altitude record for the long-tailed weasel (*Neogale frenata*) in Mexico. The observation was recorded by a camera trap located at 3,872 meters above sea level on El Pico del Águila in central Mexico. A long-tailed weasel was observed carrying a juvenile Mexican cottontail (*Sylvilagus cunicularius*). This observation extends the known altitudinal range of the long-tailed weasel in Mexico and represents the second-highest record for this species worldwide. Additionally, it is the first documented instance of a Mexican cottontail being preyed upon by a long-tailed weasel.
Palabras clave: Elevation range, Ciudad de Mexico, Pico del Águila, *Sylvilagus floridanus*.

RESUMEN
Conocer los límites altitudinales de las especies es fundamental para comprender mejor su distribución, sus límites de tolerancia y sus interacciones. El objetivo de este artículo es reportar un nuevo récord de altitud para la comadreja de cola larga (Neogale frenata) *en México. La observación se realizó mediante una cámara trampa colocada a 3,872 msnm en El Pico del Águila, en el centro de México. En la imagen se registró a una comadreja de cola larga transportando un individuo juvenil de conejo serrano* (Sylvilagus cunicularius)*. Esta observación amplía el rango altitudinal conocido para la comadreja en México y representa el segundo avistamiento más alto de la especie a nivel mundial. Además, es la primera vez que se documenta la depredación del conejo serrano por parte de una comadreja de cola larga.*
Keywords: *Ciudad de México, Pico del Águila, rango de elevación,* Sylvilagus floridanus.

Relevancia: ***Nuevo registro altitudinal para la comadreja*** (Neogale frenata)***, ampliando su distribución altitudinal***

Understanding the altitudinal limits of an animal's distribution is crucial for comprehending the conditions it can inhabit, creating accurate distribution models, and predicting interactions with other species (Escobar-Lazo and Gil-Fernandez, 2014). Additionally, the altitudinal range must be es-

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tablished for different locations, as latitude and altitude have similar effects on climatic variables (see an example in Olcott and Barry, 2000). For instance, temperature decreases with increasing altitude and latitude; therefore, an animal´s ability to survive at high altitudes near the equator does not necessarily imply that it can survive at the same altitude in high latitudes. However, for many species, the distribution is primarily known on a two-dimensional scale, and information on altitude remains incomplete.

A notable example of the long-tailed weasel (*Neogale frenata*), which inhabits a wide range of environments across the Americas. Its distribution spans from approximately 50° (Southern Canada) to the equator (in Ecuador and even parts of Peru; Sheffield and Thomas, 1997; Helgen and Reid, 2016). Previous reports indicate that *N. frenata* can inhabit altitudes of up to 4,220 masl in Colombia (Escobar-Lazo and Gil-Fernandez, 2014) and 3,800 masl on El Cofre de Perote in Mexico (Hall, 1936 in Sheffield and Thomas, 1997). Therefore, the objetive of this study is to report a new altitudinal record for the long-tailed weasel in central Mexico.

We conducted a camera trap survey on El Pico del Águila, Ajusco Mountain (Mexico City, 19°12´46´´ N 99°15´25´´ W; Figure 1) as part of a large study on seasonal changes in animal activity. We deployed five camera traps (Trail Camera HC801) between May 21, 2022 and May 20, 2023. The cameras were programmed to capture photographs in response to movement. All five camera traps were placed at an elevation of 3,872 masl, as measured with a GPS and confirmed using topographical maps with 20 m elevation contours.

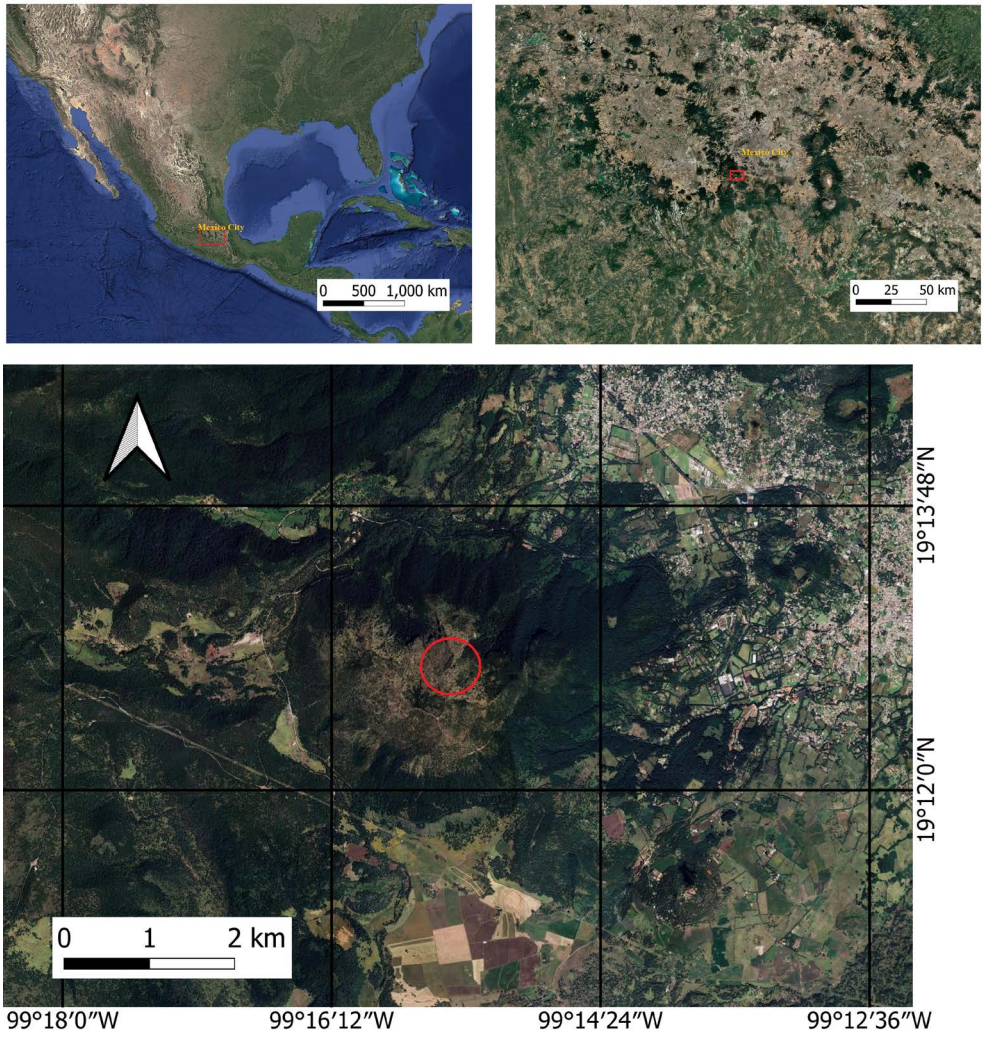

Figure 1. New record of the long-tailed weasel (*Neogale frenata*) in the Pico de Aguila, México .

Figure 2. A long-tailed weasel carrying a rabbit. Photography taken at El Pico del Águila 3,872 masl.

The altitudinal record for *Neogale frenata* was obtained from a camera trap located on El Pico del Águila, Ajusco mountain, Mexico City at an elevation of 3,872 meters above sea level. The photograph captures a *Neogale frenata*, identifiable by its distinctive tail with a black tip, carrying a rabbit (Figure 2), likely a juvenile Mexican cottontail, (*Sylvilagus cunicularius*; Waterhouse, 1848). Although two rabbit species inhabit the region, *S. cunicularius* and *S. floridanus* (J. A. Allen, 1890), share similar characteristics, the excrements found near the traps and previous photographs suggest *S. cunicularius* as the species present (see Glebskiy *et al.*, 2024). Therefore, it is highly likely that this is the species captured in the image. The record was obtained at 13:08 h on July 29, 2022 (Figure 2).

This record represents the highest documented observation of *N. frenata* in Mexico and the second highest worldwide, with the absolute record being from Colombia at 4,220 masl (Escobar-Lazo and Gil-Fernandez, 2014). According to INEGI (n.d.), only eight locations in Mexico exceed 3,900 meters in elevation (the altitude of the observation point). Therefore, nearly the entire Mexican territory is accessible to this weasel, at least from an altitudinal perspective.

The weasel observed in this study is carrying a juvenile *Sylvilagus cunicularius* (likely) rabbit, consistent with its expected diet of small to medium-sized rabbits (Sheffield and Thomas, 1997). To the best of the author's knowledge, this is the first report of *S. cunicularius* being consumed by the long-tailed weasel. This could be due to the fact that adult *S. cunicularius* is a relatively large rabbit (Cervantes *et al.*, 1992) and may be too big for a weasel to hunt; however, juveniles are smaller and more vulnerable to predation.

This observation has another interesting implication: long-tailed weasels are a known predator of the volcano rabbit *Romerolagus diazi* (Cervantes-Reza, 1981 ; Ferrari-Pérez, 1893), a species typically found at high altitudes (Fa *et al.*, 1992). This study expands the known altitudinal range of the weasel, suggesting that the geographic overlap between these species, and potentially their predator-prey interations could be substantial. Further research is recommended to assess the significance of this interaction.

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CITED LITERATURE

Cervantes-Reza, F.A. 1981. Some predators of the zacatuche (Romerolagus diazi). *Journal of Mammalogy*, 62:850-851.

Cervantes, F. A., Lorenzo, C., Vargas, J. y T. Holmes. 1992. Sylvilagus cunicularius. *Mammalian Species*, 412:1-4.

Escobar-Lasso, S. y M. Gil-Fernández. 2014. El mayor registro de elevación de *Mustela frenata* (Carnivora: Mustelidae) y distribución en el departamento de Calda, región andina de Colombia. *Mammalogy Notes*, 1:7-9.

Fa, J.E., F.J. Romero y J. López-Paniagua. 1992. Habitat use by parapatric rabbits in a Mexican high-altitude grassland system. *Journal of Applied Ecology*, 1:357-370.

Glebskiy, Y., D.A. Parra-Campos y Z. Cano-Santana. 2024. Consumption of *Eryngium proteiflorum* by the Mexican cottontail (*Sylvilagus cunicularius*). *Therya Notes*, 5:24-27.

Helgen, K. y F. Reid. 2016. *Mustela frenata*. The IUCN Red List of Threatened Species 2016: e.T41654A45213820. https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T41654A45213820.en.

INEGI. n.d. 2024. Mapa principales elevaciones con relieve. https://cuentame.inegi.org.mx/mapas/pdf/nacional/relieve/elevaciones_relieve-n.pdf Consulted on December 2 2024.

Olcott, S. P. y R.E. Barry. 2000. Environmental correlates of geographic variation in body size of the eastern cottontail (*Sylvilagus floridanus*). *Journal of Mammalogy*, 81:986-998.

Sheffield, S. R. y H.H. Thomas. 1997. Mustela frenata. *Mammalian species*, 570:1-9.

Velázquez, A. y J.A. Guerrero. 2019. *Romerolagus diazi*. The IUCN Red List of Threatened Species 2019: e.T19742A45180356. https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T19742A45180356.en. Accessed on 27 March 2023.