

Predation attempt by a long-tailed weasel *Neogale frenata* on a *Holcosus gaigeae* lizard

Intento de depredación de la comadreja de cola larga *Neogale frenata* sobre la lagartija *Holcosus gaigeae*

PEDRO E. NAHUAT-CERVERA^{1*}, AND J. ISMAEL ARELLANO-CIAU²

¹Ekunel Península de Yucatán. 52th 670, C. P. 97000, Mérida. Yucatán, México. E-mail: pedro.nahuat4@gmail.com (PEN-C).

²Ichi Tours. 30th 180, C. P. 97780, Valladolid. Yucatán, México. E-mail: lichitours@gmail.com (JIA-C).

*Corresponding author

The long-tailed weasel, *Neogale frenata*, is a small mammal occurring from southern Canadá to northern South America, whose diet consists mainly of small mammals, and occasional consumption of reptiles. We herein describe the attempted predation by a *N. frenata* on a *Holcosus gaigeae* lizard. Our observation was made during an *ad libitum* bird watching in the municipality of Felipe Carrillo Puerto, Quintana Roo, México. Two events were recorded in which the weasel was observed approaching the lizard, trying to position itself for an approach from behind and actively chasing it around. This predation behavior coincides with previously reported hunting strategies for *N. frenata* for medium-sized prey and represents the first record of interaction between these 2 species.

Key words: Predation behavior; predator; prey; trophic ecology; Yucatán Peninsula.

La comadreja de cola larga, *Neogale frenata* es un mamífero pequeño que se distribuye desde el sur de Canadá hasta el norte de Sudamérica, cuya dieta consiste principalmente de pequeños mamíferos, alimentándose ocasionalmente de reptiles. En este documento se describe el intento de depredación de *N. frenata* sobre la lagartija *Holcosus gaigeae*. La conducta se registró durante un recorrido de observación de aves en el municipio de Felipe Carrillo Puerto, Quintana Roo, México. Se registraron 2 eventos en los que se observó a la comadreja tratar de posicionarse atrás de la lagartija para aproximarse y perseguirla activamente. Este comportamiento de depredación coincide con las estrategias de caza reportadas previamente para *N. frenata* para presas de tamaño mediano y representa el primer registro de interacción entre estas 2 especies.

Palabras clave: Comportamiento de depredación; depredador; ecología trófica; Península de Yucatán; presa.

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The long-tailed weasel, *Neogale frenata*, is a small-sized mustelid mammal (300 - 550 mm, with males larger than females) that occurs consistently from southern Canadá to northern South America. The tail is thin and almost the same length as the body. Its coloration is light or orange-brown in the dorsum with a cream-colored venter, it has a yellow spot on the chest, the tip of the tail is black, and on the face it has a white mask bordered by black. Inhabits tropical dry and evergreen forests, xerophytic scrubs, grasslands, coniferous forests, and moorlands at altitudes from sea level to about 4,200 m (Sheffield and Thomas 1997; Ceballos and Oliva 2005). In the Mexican Yucatán Peninsula, this species has been registered in all 3 states (Campeche, Quintana Roo and Yucatán) in flooded, deciduous, semideciduous, and evergreen forests, and secondary vegetation (Sosa-Escalante et al. 2013; Contreras-Moreno et al. 2015).

Neogale frenata is a generalist predator, with a diet mainly focused on small mammals (species from the orders Chiroptera, Eulipotyphla, Rodentia, Lagomorpha). However, this species has been registered to feed on other taxa, including beetles, grasshoppers, and other insects; small vertebrates such as birds and their eggs (from the orders Anseriformes, Galliformes, Passeriformes, Piciformes) and even carrion

(Sheffield and Thomas 1997; Muths 1998; Ceballos and Oliva 2005; Pasch and Pino 2013; Proulx 2019; Troy and Conover 2019; Vaca-León et al. 2019), if the abundance of their preferred mammalian prey is low. Regarding herpetofauna prey, although this species has been registered feeding upon salamanders, snakes (*Lampropeltis* spp., *Pituophis* spp.) and lizards, these records are considered uncommon (Sheffield and Thomas 1997).

The lizard *Holcosus gaigeae* is part of the rainbow ameiva (*Holcosus undulatus*) complex, a species group distributed throughout the lowlands of México to Costa Rica (Meza-Lázaro and Nieto-Montes de Oca 2015). *Holcosus gaigeae* is a diurnal lizard of moderate body size (snout-vent length -SVL- ranging from 80 to 130 mm, tail length more than twice SVL) and endemic to the Mexican portion of the Yucatán Peninsula (Lee 1996; González-Sánchez et al. 2017). Species specific knowledge of its biology is still limited for *H. gaigeae*, mainly due to its recent separation from *H. undulatus*; however, it is known that it feeds mainly on small invertebrates (insects and arachnids), and some specific observations on its reproduction and predation were already made (Nahuat-Cervera and Pérez-Martínez 2021).

Occasional events of predation of *Holcosus* lizards have been recorded in the Yucatán Peninsula, mainly by Colubridae, Dipsadidae and Elapidae snakes (Gómez de Regil and Escalante-Pasos 2017; Carbajal-Márquez et al. 2019). Other predators include wolf spiders (Lycosidae), birds of prey (Accipitriformes) and feral cats (Nahuat-Cervera et al. 2020; Nahuat-Cervera and Pérez-Martínez 2021). We herein describe the attempted predation by a *N. frenata* on a *Holcosus gaigeae* lizard.

The area of the observation event took place on a dirt road surrounded by semi-deciduous tropical forest and secondary vegetation 3.3 km east from the Señor community (19° 50' 26" N, 88° 06' 10" W, WGS 84, 27 m) in the Municipality of Felipe Carrillo Puerto, Quintana Roo, México. On 1 July 2018 at 09:16 hr, during a birdwatching tour, we observed an adult *N. frenata* chasing an adult male *H. gaigeae*.

At this first observation event, the lizard rapidly crossed the road while being chased by the *N. frenata* and entered the dense vegetation at the other side. The weasel did not dive into the vegetation in pursuit but rather held on the

edge of the vegetation and began to walk and sniff along-side the road.

A second observation event took place a few minutes after the first and while *N. frenata* was still walking over the road, what we assumed to be same *H. gaigeae* exited the forest around 3 meters from the original entry point, crossed the road again in the opposite direction and stopped in the middle. *Neogale frenata* noticed the lizard coming out cautiously started to walk towards it (the lizard was standing at this point) and tried to position itself for an approach from behind (Figure 1A-C). As the weasel slowly approached the lizard, the latter slowly flattened its body, possibly (we think) with the intention of going unnoticed. Once *N. frenata* was approximately 40 cm away from *H. gaigeae*, the lizard fled in our direction (Figure 1D) for approximately 7 meters and then darted sideways into the dense vegetation by the road. The weasel repeated its previous behavior of walking and stopping while sniffing the road's edges. Approximately 4 minutes afterward the weasel seemed to give up and enter the forest in the opposite side of the road to where the lizard was.



Figure 1. Attempted predation of *Holcosus gaigeae* by *Neogale frenata*. A-B) Approach of the long-tailed weasel to the lizard, C) its positioning behind it, and D) the chase.

The occasional observations of the different species contribute to the knowledge of the biology and natural history of the wildlife mammals; for example, the rediscovery of *Lepus altamirae* after a century from its description (Silva-Caballero and Rosas-Rosas 2022). Due the records of *N. frenata* preying on herpetofauna are not common (Sheffield and Thomas 1997), the observation reported in this manuscript contributes to the knowledge about the consumption of reptiles by this mammal.

The behavior exhibited by *N. frenata* coincides with the hunting strategies described for the species while hunting above-ground for small and medium-sized prey (which when captured are usually subdued and killed by biting the back of the neck; Sheffield and Thomas 1997). As highlighted in Figure 1, *H. gaigeae* can be considered a medium-sized prey in relation to the own body size the *N. frenata*, and as such the weasel sought to position itself behind the lizard likely attempting an undetected approach to bite its prey on the back of the neck. To our knowledge, this observation represents the first interaction record between these 2 species, thus providing valuable information on their natural history, particularly for *H. gaigeae*.

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