NOTES

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Natural History

Record of *Coendou mexicanus* (Kerr, 1792) (Rodentia, Erethizontidae) in an oil palm monoculture plantation with comments on its threats in Chiapas, Mexico

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Abstract

The biology of the Mexican hairy dwarf porcupine, *Coendou mexicanus*, remains poorly documented, including its distribution and ecology. We report a new direct observation of a juvenile *C. mexicanus* in the municipality of Mapastepec, Chiapas, Mexico, within an oil palm monoculture plantation and highlight the threats it faces due to the expansion of agricultural activities. The transformation of natural forests into monocultures reduces resource availability for the species, increasing its vulnerability to habitat degradation. Management and conservation strategies that consider the impacts of agriculture on local diversity are needed.

Keywords: life history, distribution, Mexican Porcupine, threatened species, arboreal mammals.

Resumen

La biología del Puercoespín tropical, *Coendou mexicanus*, sigue siendo pobremente documentada, incluyendo su distribución y ecología. Reportamos una nueva observación directa de un juvenil de *C. mexicanus* en el municipio de Mapastepec, Chiapas, México, dentro de un monocultivo de palma de aceite y resaltamos las amenazas que enfrenta debido a la expansión de actividades agrícolas. La transformación de los bosques naturales en monocultivos reduce la disponibilidad de recursos para la especie, incrementando su vulnerabilidad a la fragmentación del hábitat. Es necesario implementar estrategias de manejo y conservación que consideren los impactos de la agricultura sobre la diversidad local.

Palabras clave: historia de vida, distribución, puercoespín mexicano, especies en peligro, mamíferos arborícolas

The Mexican hairy dwarf porcupine, *Coendou mexicanus* (Kerr, 1792), is an arboreal mammal species and is the only erethizontid in southern Mexico (Redford & Eisenberg,

1992; Reid 2009). It is characterized by its prehensile tail, spiny coat, presence of spines covering most of the body, and nocturnal behavior (Redford & Eisenberg 1992; Wilson & Reeder 2005; Reid 2009). Its biology remains poorly documented and its diet is predominantly herbivorous, consisting of seeds, leaves, buds, and fruits (Estrada & Coates-Estrada 1985; Medellin 1994; Vázquez et al. 2016).

The distribution of *C. mexicanus* extends from San Luis Potosí through the Yucatán Peninsula, Mexico, and Central America to the West of Panama (Ramírez-Bravo 2012; Lira-Torres et al. 2014; Córdoba-Alfaro 2016; Vázquez et al. 2016). It is widely distributed across different landscapes like evergreen forest, semi-evergreen forest, secondary vegetation, coastal sand dunes, grasslands, pine oak forest, cloud forest, hydrophilic vegetation, natural savannah, mangrove, tropical deciduous forest, tropical sub-deciduous forest, inhabiting elevations ranging from sea level to 3200 m (Briones-Salas & Sánchez-Cordero 2004; Riechers-Pérez 2004; Reid 2009; Monterrubio-Rico et al. 2010; Pérez-Irineo & Santos-Moreno 2012; Lira-Torres et al. 2014; Cisneros-Palacios et al. 2015; Hidalgo-Mihart et al. 2022).

Coendou mexicanus is currently categorized as Least Concern by the International Union for Conservation of Nature (IUCN) (Vázquez et al. 2016). This species is listed as threatened under Mexican law (SEMARNAT) due to habitat degradation and destruction, and hunting, which have raised concerns about population declines in certain regions of the country (Estrada & Coates-Estrada 1985; Medellin 1994; Ramírez-Bravo 2012; Lorenzo et al. 2014). On the coast of the Mexican state of Chiapas, seven records have been published (Hernández-Hernández & Chávez 2021; GBIF 2025), and threats to its populations remain largely undocumented. Given the extensive deforestation on the coast of Chiapas (Hernández-Hernández & Chávez 2021), this landscape modifications might affect arboreal mammal behavior and occurrences. Here, we report the presence of a juvenile of *C. mexicanus* within an oil palm monoculture plantation on the coast of Chiapas and provide additional comments on its threats in the locality.

We consulted the available published references (Hernández-Hernández & Chávez 2021) and used the rgbif package (Chamberlain et al. 2025) to obtain previous vouchered records (Table 1) of *C. mexicanus* from the Global Biodiversity Information Facility (GBIF 2025) in the coast of Chiapas. The data were processed on R Studio version 2025.09 (Posit Team 2025). The map with the collected data was created using QGIS version 3.4 (QGIS 2024), and details of the landscape at the location of our observation are also presented on a satellite image from 2022 (Google 2025) (Figure 1B).

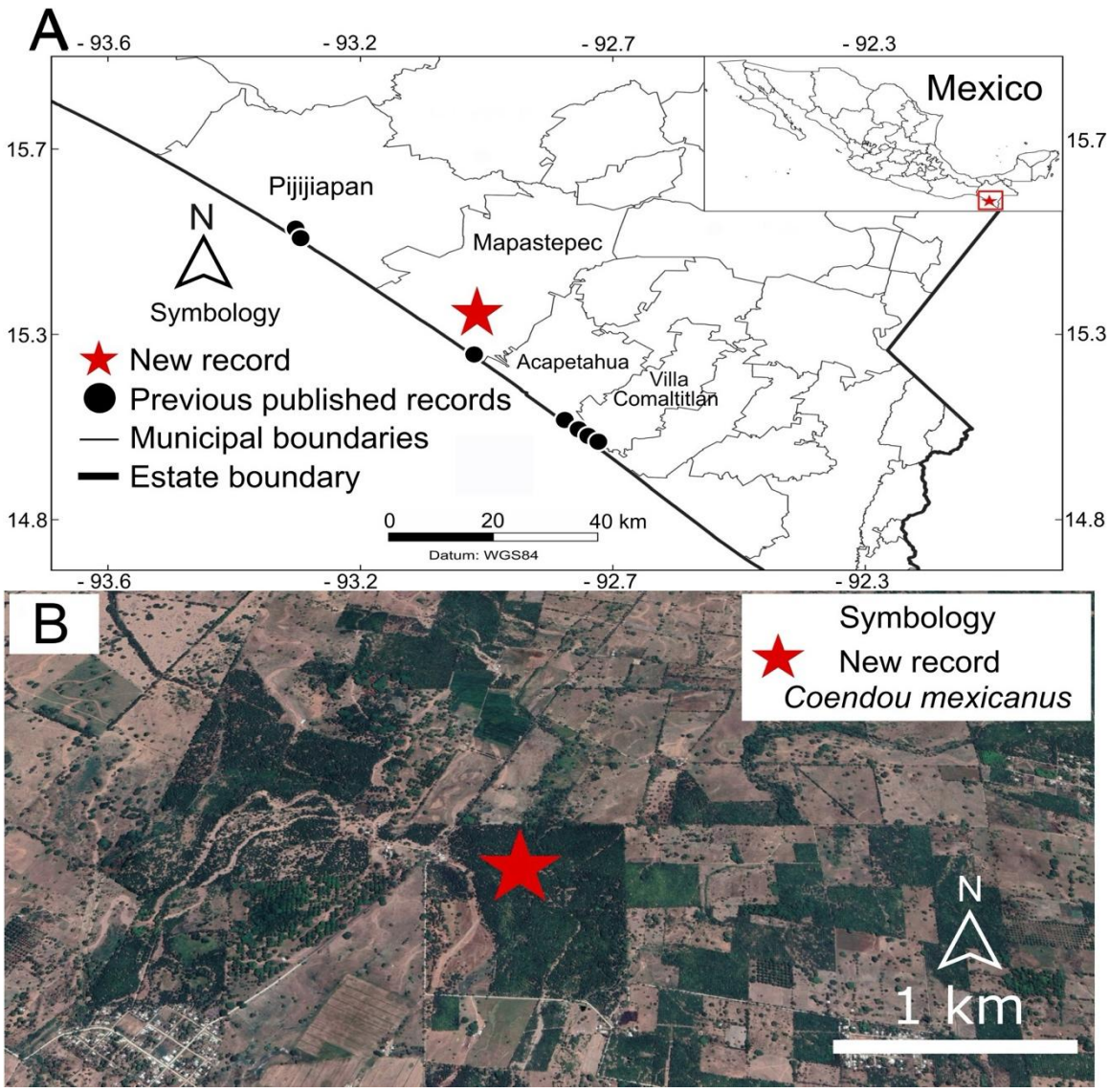

Figure 1. New record of *Coendou mexicanus* for the municipality of Mapastepec and previous records on the coast of Chiapas (A) and zoom on new record (B).

Seven occurrence records of *C. mexicanus* were compiled from the coast of Chiapas previously to this note. These records were concentrated in two periods (1979–1994 and 2021–2022), with a pronounced temporal gap of 27 years between them (Table 1). The record is located in Rancho El Cacao (15,34554, -92,93923; WGS84; 29 masl), Mapastepec Municipality, Chiapas, in southeastern Mexico (Fig. 1A). On March 9, 2022, at approximately 6:00 p.m., we observed a juvenile *C. mexicanus* on the trunk of an oil palm (*Elaeis guineensis*, Arecaceae), about 2 m from the ground (Fig. 2A). The individual was juvenile due to the presence of soft black hair, similar to the juveniles of *Coendou rufescens* (Ramírez-Chaves et al. 2022). This sighting occurred within an extensive oil palm plantation of around 400 ha (Fig. 2B). The original habitat was once a tropical evergreen forest (Rzedowski 2006); however, the area is now characterized by extensive oil palm (*E. guineensis*) plantations, intensive livestock farming (cows), grassland cultivation, cattle

ranching, and scattered patches of tropical forest. The municipality of Mapastepec has an average annual temperature of 26,4°C and annual rainfall is 2.095 mm (https://pt.climate-data.org).

Table 1. Records of *Coendou mexicanus* from the coast of Chiapas gathered from GBIF (2025) and scientific literature.

Coordinates	Locality	Municipality	Collection/Publication	Year
15,09138, -92,78472	Campamento Koatlespala, 2.5 km	Acapetahua	MZFC-M 96	1979
15,55166, -93,26527	Pijijiapan, 17 km al S, Estero Palo Blanco	Pijijiapan	CZRMA 1254	1986
15,53055, -93,25694	Estero Palo Blanco, 17 Km al SSW de Pijijiapan	Pijijiapan	INIREB 140	1986
15,05416, -92,74472	Isla Cuaquespala, Reserva La Encrucijada	Villa Comaltitlán	MZFC-M	1991
15,06694, -92,75555	Reserva La Encrucijada, Isla La Concepción	Villa Comaltitlán	CZRMA 1255	1994
15,0375, -92,724167	Isla La Concepción, Reserva La Encrucijada	Villa Comaltitlán	CZRMA 930	1994
15,25108, -92,94728	Ejido Ceniceros, El Castaño	Mapastepec	Hernández-Hernández & Chavez (2021)	2021
15,34554, -92,93923	Rancho El Cacao	Mapastepec	This note	2022

There are a few voucher records of *C. mexicanus* in the coast of Chiapas (Table 1), and deforestation and habitat loss in the region might pose significant challenges to its conservation (Hernández-Hernández & Chávez 2021). Our direct observation of a juvenile *C. mexicanus* represents the second verified record for the municipality of Mapastepec. The closest previous record geographically was an observation of an adult located 10,5 km southeast in Ejido Ceniceros, El Castaño, in mangroves obtained by camera trapping (Hernández-Hernández & Chávez 2021).

The presence of the porcupine within oil palm plantations is notable, as it is an arboreal species with specific habitat requirements, relying on high vegetation cover (Lorenzo et al. 2014; Osorio-Rodriguez et al. 2021). The reported habitat specialization of the porcupine (see Reid 2009; Vázquez et al. 2016) suggests that disturbance may have a significant impact on its survival and distribution. In this context, the conversion of tropical forests into oil palm plantations poses a threat to the species by reducing the availability and/or quality of resources and suitable sites for carrying out its activities. Although the presence of *C. mexicanus* has been reported within an oil palm plantation in Tabasco (Franquesa-Soler et al. 2023), these records occurred under specific conditions. The plantations were relatively small (<60 ha) and surrounded by patches of native vegetation, which may facilitate the species' movement and the use of the plantation as a temporary or transitional habitat. While *E. guineensis* may provide both shelter and a food resource, as observed for *Coendou spinosus* (Batista-da-Silva et al. 2019), further fieldwork is needed to confirm this association with *C. mexicanus* in Mapastepec. Additionally, oil palm plantations have been reported to negatively impact mammal diversity (Yue et al. 2015; Roslan et al. 2025), raising concerns about the presence of *C. mexicanus* in these environments.

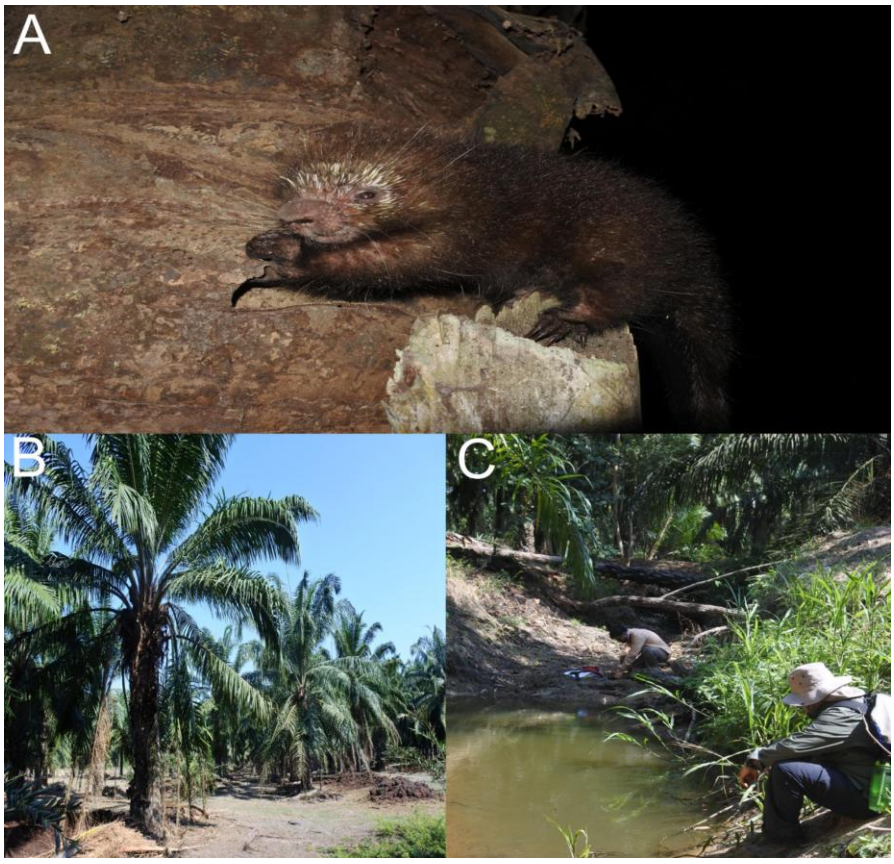

Figure 2. Juvenil of *Coendou mexicanus* (A), general habitat (B), and water source (C). Photos: Angel I. Contreras-Calvario.

Our record of *C. mexicanus* within an oil palm plantation is unusual, as the species´ typical home range covers approximately 10 ha (Wainwright 2002), which is smaller than the distance separating the plantation from the nearest vegetation path (around 2.4 km). This suggests that the observed individual moved beyond its typical range. The presence of the porcupine in this crop may be related to the search for a water source, as it was recorded during the dry season. During this period, temporary water remnants, such as small pools, were observed within the crop (Figure 2C), which may have attracted the individual. This behavior highlights the importance of water resources in the distribution and mobility of the species, particularly during periods of scarcity. Notably, no reports indicate that *C. mexicanus* consumes the fruits or leaves of the oil palm (Franquesa-Soler et al. 2023), ruling out the possibility that oil palm cultivation serves as a food resource for the species. Our finding suggests that *C. mexicanus* may be forced to move into disturbed areas in the absence of critical resources such as water in their natural habitat, increasing their vulnerability to threats such as habitat fragmentation and deforestation.

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