

SHORT COMMUNICATION

Report of leucism in *Tamandua mexicana* (Pilosa: Myrmecophagidae) from southeastern Mexico

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Abstract Coloration anomalies caused by melanin deficiency are rare in wild mammals and often increase predation risk. We document a case of leucism in an adult female *Tamandua mexicana* from the Reserva Cuxtal, Yucatán, Mexico. The specimen exhibited pale yellowish-white fur, pink skin, and dark eyes. Given the increasing urban pressures in the Reserve, population and genetic studies are essential to elucidate the potential causes of coloration anomalies and to support effective conservation efforts.

Keywords: coloration anomalies, mammals, Reserva Cuxtal, Xenarthra

Reporte de leucismo en *Tamandua mexicana* (Pilosa: Myrmecophagidae) del sureste de México

Resumen Las anomalías de coloración por deficiencia de melanina son raras en mamíferos silvestres y suelen aumentar el riesgo de depredación. Documentamos un caso de leucismo en una hembra adulta de *Tamandua mexicana* en la Reserva Cuxtal, Yucatán, México. El ejemplar presentó pelaje blanco-amarillento pálido, piel rosa y ojos oscuros. Dadas las crecientes presiones urbanas en la Reserva, son fundamentales los estudios poblacionales y genéticos para esclarecer las posibles causas de las anomalías de coloración y orientar acciones de conservación efectivas.

Palabras clave: anomalías de coloración, mamíferos, Reserva Cuxtal, Xenarthra

Coloration in mammals plays a key role in their ecology and survival by contributing to concealment, communication and regulation of physiological processes (Caro, 2005). However, color disorders may arise from biological imbalances, such as genetic mutations that promote excess or deficiency of pigments (*i.e.*, melanin) in the skin, fur, and eye tissues of individuals (Acevedo & Aguayo, 2008; Abreu *et al.*, 2013; Cotts *et al.*, 2023a).

The emergence of these color anomalies can be associated with biological and environmental factors that disrupt natural populations. For instance, habitat fragmentation can reduce population sizes

and connectivity, which in turn limits gene flow and increases the likelihood of inbreeding. This can result in the expression of deleterious alleles, including those that affect pigmentation (Koneru & Caro, 2022). Other factors such as pollution, dietary deficiencies, and climate change can also alter pigmentation and affect coloration-related physiological functions in animals (Koneru & Caro, 2022). These alterations in body coloration can increase vulnerability to solar radiation, elevate predation risk, reduce mating success, and ultimately decrease individual fitness (Bried *et al.*, 2005; Idoeta *et al.*, 2011; da Silva *et al.*, 2019; Bôlla *et al.*, 2022).

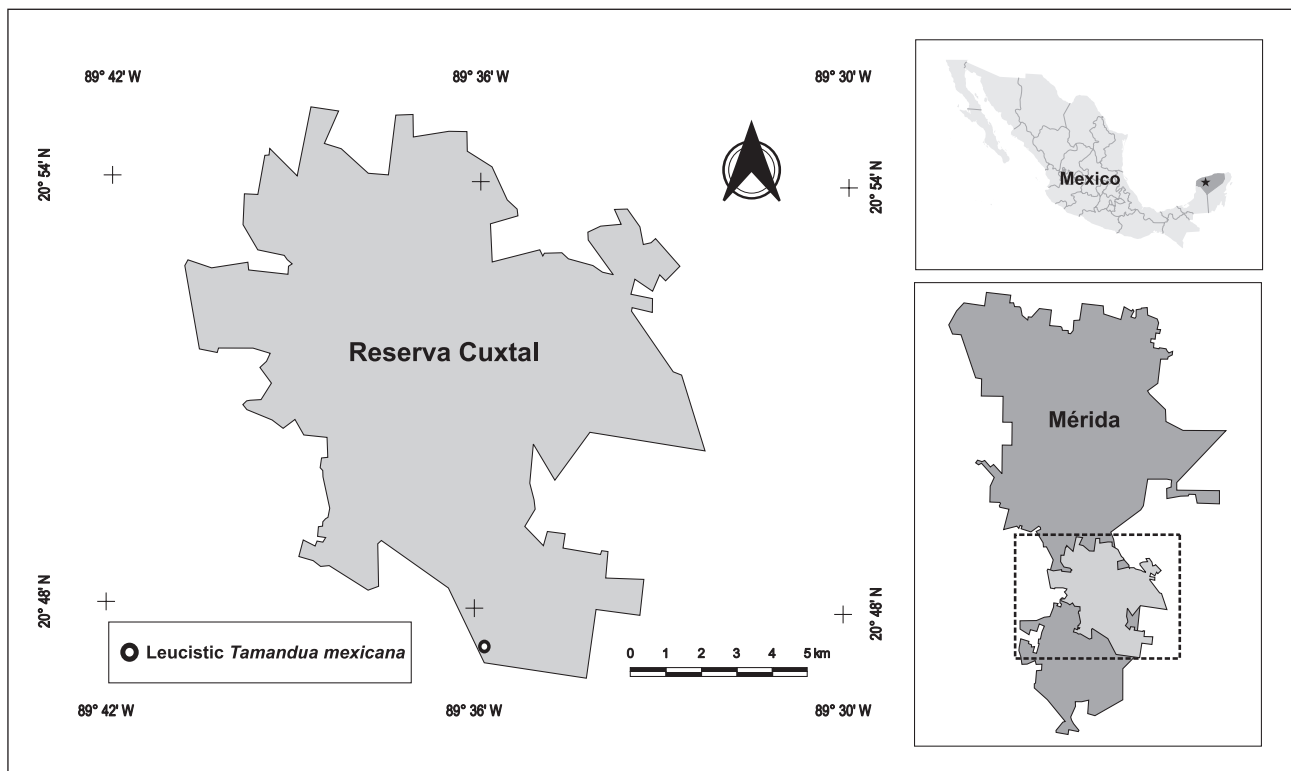


FIGURE 1. Location of the record of a leucistic adult female *Tamandua mexicana* (YUC-CC-250-11/CM/1010) in the Reserva Cuxtal, Mérida, in the state of Yucatán, México. The star marks the location of the municipality of Mérida.

Coloration anomalies have been recorded across several mammalian orders. For instance, reviews by Uieda (2000) and Abreu *et al.* (2013) document at least 198 cases in 26 species of Neotropical mammals, more frequently found in orders such as Cetartiodactyla, Chiroptera, and Rodentia. In members of the order Pilosa (sloths and anteaters), documentation of chromatic disorders has increased in recent years (Xavier *et al.*, 2010; de Azevedo Lopes *et al.*, 2019; Ríos-Alvear & Cadena-Ortiz, 2019; Ríos *et al.*, 2019; More *et al.*, 2021; Bôlla *et al.*, 2022; Cotts *et al.*, 2023b; Fuentes *et al.*, 2024). For the genus *Tamandua*, which includes *T. mexicana* (Saussure, 1860) and *T. tetradactyla* (Linnaeus, 1758), several types of coloration anomalies have been reported, including albinism, leucism, brown variation, melanism, xanthochromism, and erythrism (see Cotts *et al.* 2023b and references therein; Fuentes *et al.*, 2024).

The northern tamandua (*T. mexicana*) is a medium-sized anteater characterized by a tubular snout, toothless mouth, long sticky tongue, and prehensile tail. Its fur is dense, uniform, and slightly rigid, with a cream-yellow coloration on the head, neck, nape, and limbs, and a characteristic dark vest-shaped marking extending from the back and belly to the base of the tail (Navarrete & Ortega, 2011). The species is distributed from southern Mexico through all Central America to the western Andes in South America (Cuarón, 2005; Navarrete & Ortega, 2011; Núñez-Pérez *et al.*, 2011). In the IUCN Red List of Threatened Species, it is categorized as

Least Concern (Turcios-Casco *et al.*, 2025), though in Mexico it is considered Endangered (DOF, 2010) primarily due to habitat loss, as well as other factors such as road mortality and attacks by feral animals (CONABIO, 2025). In this contribution, we report a case of leucism in *T. mexicana* from southeastern Mexico.

On July 23, 2012, at 06:30 hr, an individual of *T. mexicana* hit by a car was found by Javier A. Ortiz-Palma and the senior author (JAOM) on the Molas-Dzoyaxché road (20°47'31.40"N, 89°35'51.99"W; **FIG. 1**), within the Zona Sujeta a Conservación Ecológica "Reserva Cuxtal" (RC), municipality of Mérida, Yucatán, México. The anteater, an adult female (body length = 605 mm, tail length = 460 mm), was still alive but in agony, succumbing shortly after being collected. Its coloration displayed the following characteristics: the fur was entirely pale yellowish-white (**FIG. 2A**), lacking the species' characteristic dark dorsal vest marking (**FIG. 2E**). The skin, including the snout, ears, limbs, and claws were pale pink (**FIG. 2B–C**); however, ocular depigmentation was not present (**FIG. 2D**). The specimen was deposited in the mammal collection of Colecciones Zoológicas at the Campus de Ciencias Biológicas y Agropecuarias of the Universidad Autónoma de Yucatán (UADY), cataloged with the number YUC-CC-250-11/CM/1010 (**FIG. 2E**).

Leucism is a congenital condition caused by a neural crest disorder that prevents the migration or development of melanocytes in certain areas of

the body, and it is characterized by a total or partial lack of melanin in the skin, fur, feathers, or scales, with eye pigmentation remaining unaffected (van

Grouw, 2021). The phenotype observed in the *T. mexicana* individual reported herein is consistent with leucism rather than albinism, as individuals with albinism typically exhibit reddish or pink eyes

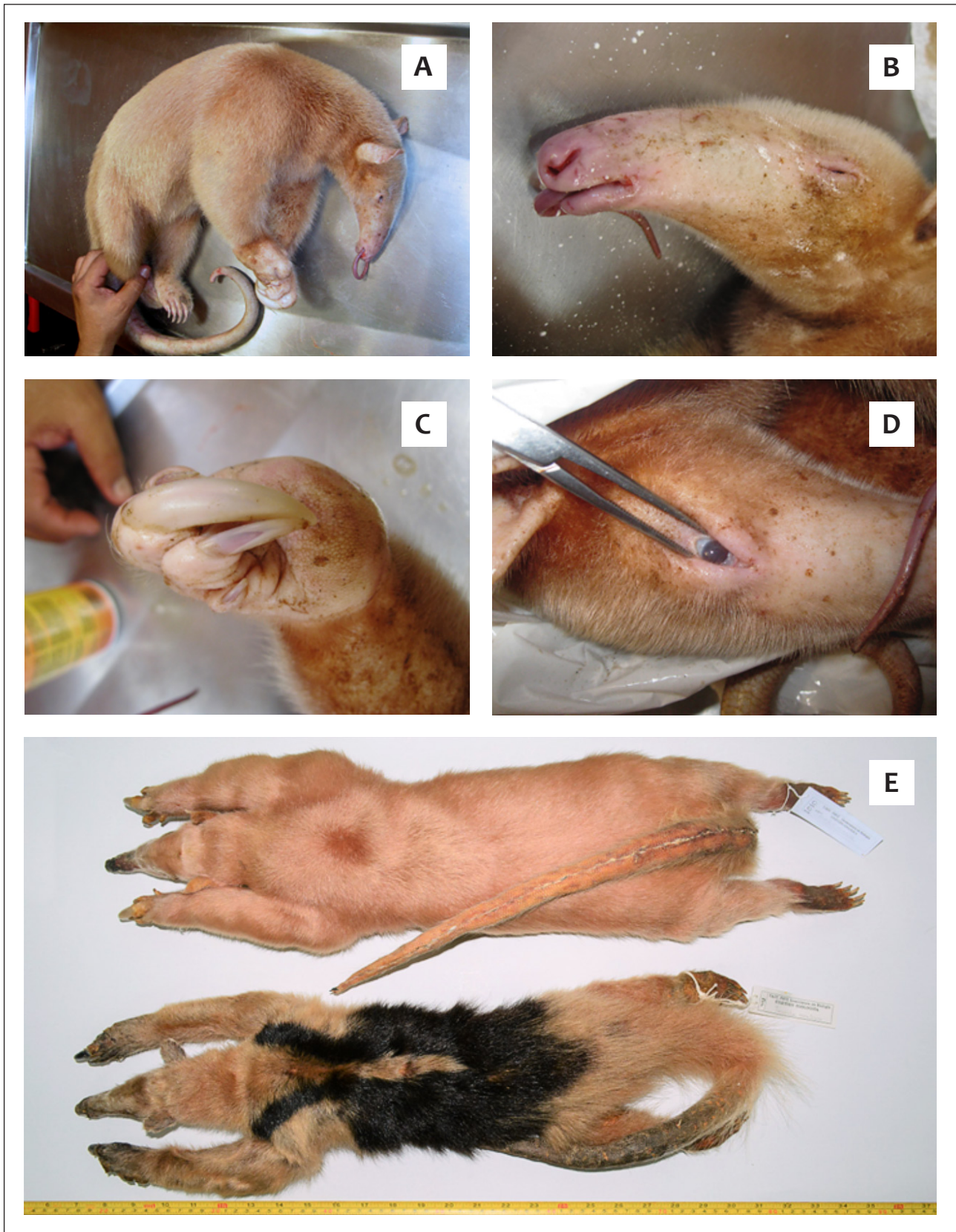


FIGURE 2. A–D. Various views of a leucistic adult female *Tamandua mexicana* (YUC-CC-250-11/CM/1010) from the Reserva Cuxtal, Mérida, Yucatán, Mexico, showing pale yellowish-white fur, pale pink skin, and dark eyes. E. The same individual prepared as a museum specimen, next to a conspecific with the coloration typical of the species in the region.

due to the complete absence of melanin in the iris and retina (Abreu *et al.*, 2013).

This represents the first record of a leucistic *T. mexicana* in Mexico and the third recorded instance of coloration anomalies in mammals from the Yucatán Peninsula; with previous reports including two cases of leucism in the white-nosed coati (*Nasua narica*) from Quintana Roo (Silva-Caballero *et al.*, 2014) and a case of albinism in the common opossum (*Didelphis virginiana*) from Campeche (Cuxim-Koyoc *et al.*, 2020).

Chromatic disorders associated with melanin deficiency, such as leucism and albinism, are often considered significant disadvantages for survival, as they increase predation risk by making affected individuals more conspicuous (Silva-Caballero *et al.*, 2014). The leucistic *T. mexicana* reported here is an adult female, suggesting that despite the increased predation risk associated with its atypical coloration, this did not hinder its development or survival to adulthood. Similarly, documented cases of reproductively active mammals with abnormal coloration in other species (*e.g.*, Buys *et al.*, 2002; García-Morales *et al.*, 2012; Borloti *et al.*, 2019; Rios *et al.*, 2019; Cuxim-Koyoc *et al.*, 2020; Bôlla *et al.*, 2022) show that some individuals can survive, develop, and reproduce despite the ecological challenges posed by such phenotypic traits.

Since the RC was designated a protected natural area in 1993 (DOGEY, 1993), it has faced ongoing human pressures driven by land-use changes, including the expansion of Mérida's urban area into the reserve, agricultural activities (*e.g.*, farming and crop cultivation), and the extraction of stone materials (GMAM, 2018; García-Gil *et al.*, 2020). These activities have led to the loss of approximately 40% of the original deciduous forest over the past two decades, resulting in a highly fragmented landscape.

Habitat reduction and degradation in the reserve may have long-term genetic consequences for wildlife by reducing population size and connectivity, potentially leading to inbreeding depression and the expression of deleterious traits, such as color anomalies (Bensch *et al.*, 2000; Pirie *et al.*, 2016). For instance, limited gene flow in small, fragmented leopard (*Panthera pardus*) populations in South Africa has been linked to the emergence of atypical color morphs (Pirie *et al.*, 2016). In this context, evaluating the population status and genetic diversity of *T. mexicana* within the RC will be crucial to understanding the potential impact of demographic pressures on the occurrence of color anomalies and to guide effective conservation strategies.

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