Short Note

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Chromatic variation in the tayra (*Eira barbara*): first record of albinism in the Amazon biome and a new case of leucism in northern Brazil

https://doi.org/10.1515/mammalia-2025-0155
Received December 16, 2025; accepted October 8, 2026; published online November 4, 2026

Abstract: We report the first documented case of albinism in *Eira barbara* within the Amazon biome. The individual was recorded in Cristalino State Park (Mato Grosso, Brazil) through direct observation and camera traps and showed diagnostic traits of albinism, including yellowish-white fur, reddish eyes, and pinkish skin. This represents the only confirmed Amazonian record and the second known for the species, both in Brazil. Additionally, a leucistic individual was recorded in Tocantins. These records expand knowledge of phenotypic variation in *E. barbara* and highlight the value of long-term biodiversity monitoring.

Keywords: phenotypic variation; mustelids; biodiversity monitoring

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The tayra (*Eira barbara* Linnaeus 1758) is a medium-sized mustelid (Mammalia, Mustelidae) widely distributed across South America, ranging from southern Mexico to northern Argentina (Presley 2000; Reis et al. 2011). It has been recorded at elevations up to 2,400 m (Emmons and Feer 1997), although it is more commonly found below 1,200 m (Presley 2000).

This species is omnivorous and opportunistic, with a diet that includes fruits, insects, honey, and small vertebrates such as birds, rodents, and lagomorphs (Nowak 1999; Reis et al. 2011). Tayras are primarily diurnal and exhibit both terrestrial and arboreal behaviors (Presley 2000). Although they mainly occur in forested areas, they can also exploit resources in open habitats or even anthropized environments (Barcelos et al. 2023; Presley 2000).

Individuals of this species average 66 cm in body length and weigh between 4 and 11 kg. They have elongated bodies, short limbs, long bushy tails, and small rounded ears (Reis et al. 2011). Typical coloration ranges from black to yellowish hues, with coat coloration varying across their geographic range: in Andean regions, the head is usually darker than the body, whereas in Brazil, the typical pattern is a lighter head and darker body (Eisenberg and Redford 1999; Emmons and Feer 1997; Presley 2000; Tortato and Althoff 2007). Chromatic anomalies have already been documented in tayras, including albinism (Aximoff and Rosa 2016) and leucism (Pinheiro-Costa and Norris 2025; Talamoni et al. 2017).

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Albinism is a chromatic anomaly caused by a recessive mutation that inhibits melanin production, the pigment responsible for the coloration of skin, fur, and eyes (Bensch et al. 2000; Scrich et al. 2019). In mammals, this condition manifests as white fur, reddish eyes, and pinkish tones in hairless regions (Oliveira 2009; Rodrigues et al. 1999). A similar condition, leucism, is characterized by partial or complete depigmentation of the fur without affecting the pigmentation of the skin or eyes (Acevedo and Aguayo 2008; Miller 2005). Therefore, individuals with white fur but dark eyes and pigmented muzzles are not considered albinos (Aximoff and Rosa 2016; Oliveira 2009; Rodrigues et al. 1999). Both conditions are considered genetically based anomalies that tend to occur more frequently in small and isolated populations, or those with low gene flow, where inbreeding can favor the expression of rare alleles (Pinheiro-Costa and Norris 2025; Talamoni et al. 2017).

The rarity of leucism and albinism in nature has often been associated with potential ecological disadvantages, such as increased visibility to predators, since coloration plays a key role in camouflage and antipredator strategies (Caro 2005). Nonetheless, scattered records of both conditions in wild mammals have been reported across different regions and taxonomic groups, suggesting that these anomalies may persist under particular ecological (e.g., fragmented areas) or demographic circumstances (e.g., low population density) (Abreu et al. 2013; Aximoff and Rosa 2016; Brito and Valdivieso-Bermeo 2016; Fontoura et al. 2025; Pinheiro-Costa and Norris 2025; Talamoni et al. 2017).

Given the rarity of chromatic anomalies in wild populations and the ecological and genetic implications they may entail, documenting such occurrences is crucial for understanding the extent and causes of phenotypic variation in Neotropical carnivores (Fontoura et al. 2025). We present new records of chromatic anomalies in *E. barbara*, including the first confirmed case of albinism for the species in the Amazon region, as well as a case of leucism at the Cerrado–Amazon transition zone.

Records of chromatic variation in *E. barbara* in the Brazilian Amazon are shown in Figure 1. An albino individual was observed in the Amazon, specifically in Cristalino State Park (PEC), located in northern Mato Grosso, Brazil, whereas a leucistic individual was recorded in northern Tocantins State. PEC is a protected area created in 2001, covering 66,900 ha and bordering the state of Pará (SEMA/MT 2024). The region is characterized by a tropical climate, with high temperatures and marked seasonality in precipitation, typical of the southern Amazon, with annual rainfall exceeding 2,000 mm and mean temperatures around 24–26 °C. Vegetation includes seasonal forests, ombrophilous forests, savannas, and ecotonal transition zones (SEMA/MT 2024). Wildlife monitoring in the PEC is carried out through the SEMA Monitora Program (linked to ICMBio and the ARPA program) and the Biodiversity Research Program (PPBio), using camera traps and active surveys along linear transects (Roque et al. 2018; Rosa et al. 2021). On 28 February 2024, during the rainy-season campaign, one albino *E. barbara* individual was observed at 7:00 a.m. by two observers on Trail 1 (9°27′43.42″S; 55°48′45.56″W), during a survey of medium- and large-sized mammals and game birds (i.e., bird species commonly hunted for subsistence, such as Cracidae and Tinamidae) conducted between 6:00 a.m. and 12:00 p.m. (Figure 2A and B). The animal displayed yellowish-white fur, reddish eyes, and pinkish tones on the muzzle, ears, and extremities, diagnostic characteristics of albinism. Subsequently, on 22 April 2025, probably the same individual was recorded by a camera trap along the same Trail 1 (9°27′52.60″S; 55°49′30.45″W), approximately 1,500 m from the first sighting and 419 days after the direct observation, confirming its persistence in the area (Figure 2C and D).

In addition to this new record, a leucistic *E. barbara* individual was opportunistically recorded in northern Tocantins State (Figure 3). The record was obtained on 18 July 2025 at Fazenda São Lucas (7°52′14.53″S; 48°49′25.95″W), in the municipality of São Miguel do Tocantins, northern Brazil. The site is located in a privately owned area outside a protected area, within a landscape characterized by forest fragments surrounded by pastures and secondary vegetation. The region is part of the Brazilian Legal Amazon and is characterized by a tropical savanna climate (Aw, Köppen classification), with well-defined wet and dry seasons, annual rainfall between 1,500 and 1,800 mm, and mean temperatures of 26–27 °C (Alvares et al. 2013). Vegetation at the site consists predominantly of *cerrado sensu lato* interspersed with gallery forests and transitional zones toward Amazonian forest types (Ribeiro and Walter 2008). The individual exhibited pale fur but normally pigmented eyes and skin, consistent with leucism (Figure 3). This record expands the known occurrence of chromatic variation in *E. barbara* in northern Tocantins, within the Cerrado–Amazon ecotone.

Leucism has been relatively frequently reported in *E. barbara* (e.g., Grechi et al. 2020; Talamoni et al. 2017; Tortato and Althoff 2007), particularly when compared to other Neotropical carnivores (Fontoura et al. 2025). In contrast, cases of true albinism remain extremely rare, with only one previously confirmed record in the Atlantic Forest biome (Aximoff and Rosa 2016). The present record therefore represents the first documented case of albinism in the Amazon biome and only the second across the species' range, which extends from southern Mexico to northern Argentina (Presley 2000).

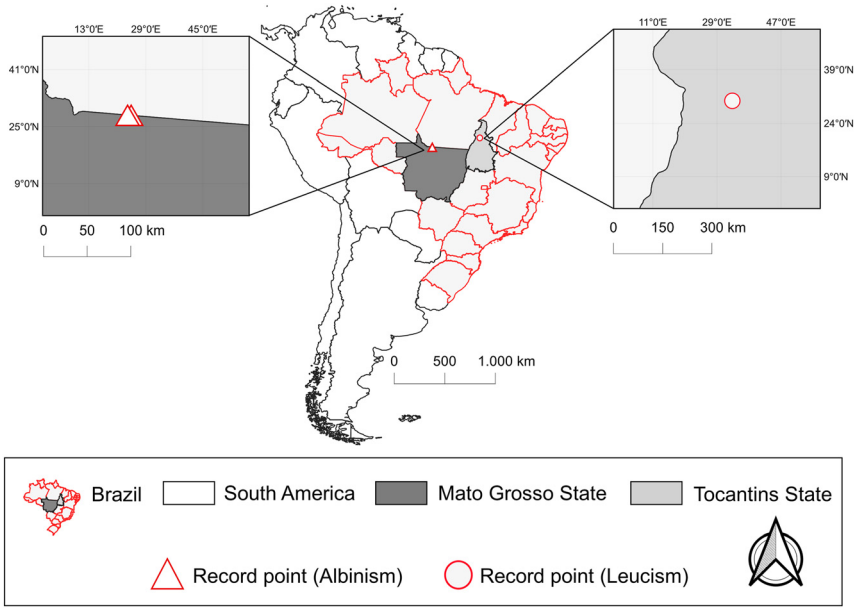


Figure 1: Geographic records of *Eira barbara* (tayra) with coat color anomalies in Brazil. The general location map shows South America, highlighting the location of Brazil. The central map shows the Brazilian territory, highlighting Mato Grosso state (dark gray) and Tocantins state (light gray), with the locations of the records. On the left, the inset of Mato Grosso indicates, by a white triangle with a red outline, the record point of an albino individual in the Cristalino state Park region. On the right, the inset of Tocantins state shows, by a white circle with a red outline, the record point of a leucistic individual.

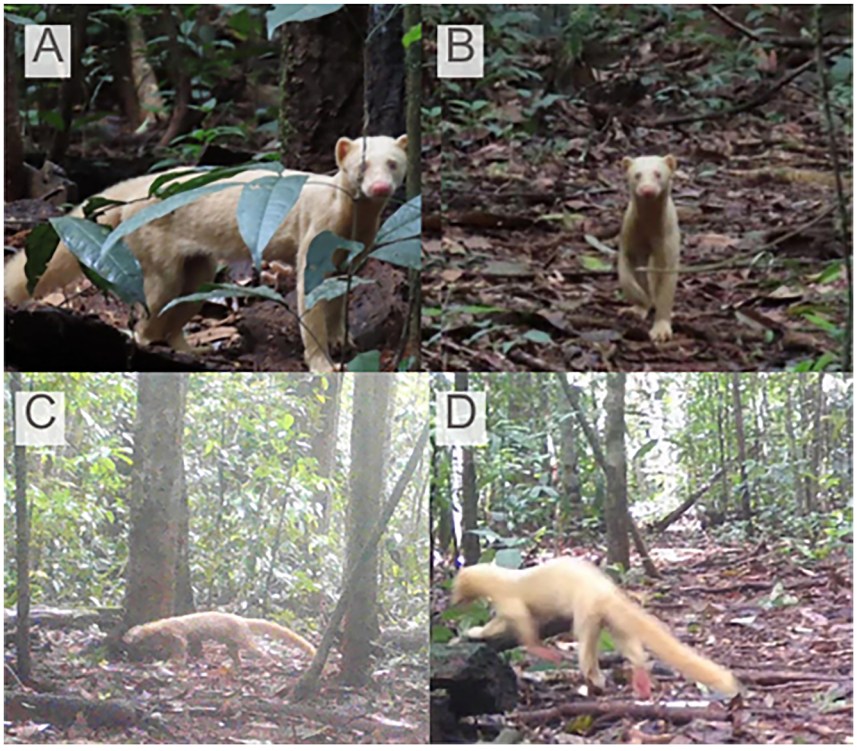


Figure 2: Visual records of an albino *Eira barbara* individual in Cristalino state Park, northern Mato Grosso, Brazil. (A–B) Direct observation of an albino individual during a line transect survey on February 28, 2024. (C–D) Camera trap images of a likely the same individual recorded on April 22, 2025, approximately 1,500 m from the first sighting. This assumption is based on the rarity of albinism in the species, the spatial proximity between records, and the consistent diagnostic traits observed, including pale yellowish-white fur, pinkish muzzle and extremities, and reddish eyes.

Color anomalies such as albinism and leucism are known to be associated with ecological disadvantages in wild mammals, including reduced camouflage, increased predation risk, impaired visual acuity, and even social exclusion from conspecifics (Abreu et al. 2013; Caro 2005; Ortolani 1999). These factors may reduce survival and reproductive success and may contribute to the low number of confirmed records of such anomalies in natural populations (Fontoura et al. 2025).

Most documented cases of albinism and leucism are associated with small, fragmented, or isolated populations, conditions that often result in reduced genetic variability and increased expression of recessive traits (Abreu et al. 2013; Tensen and Fischer 2024). Examples include leucistic rodents in the Andes (Brito and Valdivieso-Bermeo 2016), albino deer in isolated savannas (Rodrigues et al. 1999), and a leucistic lowland tapir in agricultural landscapes (Alviz et al.



Figure 3: Leucistic *Eira barbara* individual recorded in northern Tocantins state, Brazil, on 18 July 2025 at 06:55 h by a camera trap (7°52′14.53″S; 48° 49′25.95″W). The animal shows pale fur but normally pigmented eyes and skin, a condition consistent with leucism.

2025). Populations in these environments often present genetic bottlenecks or inbreeding effects that may favor the emergence of rare phenotypic expressions.

The occurrence of an albino *E. barbara* in a well-preserved area of continuous forest is noteworthy, as it contrasts with the expectation that such anomalies are more likely to arise in genetically constrained populations. Cristalino State Park is located within the Arc of Deforestation, one of the most anthropogenically impacted regions of the Amazon, yet it remains embedded in an ecological corridor of over 2 million hectares of largely intact forest (Rodrigues et al. 2025). Therefore, the presence of an albino tayra in this setting suggests that factors beyond habitat fragmentation, such as spontaneous mutations or undetected local genetic processes, may also contribute to this rare phenotypic expression.

Leucistic *E. barbara* individuals have been recorded both in well-preserved forests and in fragmented or human-modified landscapes (Pecora et al. 2024). Records of albino individuals are extremely scarce, with only a few documented cases to date, which limits any inference about their association with specific habitat types. Leucistic tayras appear to be more frequently detected in fragmented or urbanized areas (Pecora et al. 2024), such as the site of this study in northern Tocantins. This apparent pattern may be influenced by increased detectability in disturbed landscapes or by genetic effects of habitat fragmentation and population isolation, which can favor the expression of recessive alleles responsible for leucism. However, given the limited number of available records, especially for albinism, these interpretations should be considered with caution.

Alternatively, this phenotypic expression may stem from stochastic processes such as random mutation or natural genetic drift, independent of human-induced isolation. Localized demographic dynamics, such as temporary reductions in effective population size or spatial genetic structuring, could also be contributing factors. This reinforces the need to investigate not only the spatial occurrence of chromatic anomalies but also their underlying genetic and demographic drivers.

Finally, rare events such as these highlight the critical role of long-term biodiversity monitoring programs in detecting and documenting anomalous phenotypes that would otherwise go unnoticed (Lindenmayer et al. 2010). Such records are not merely anecdotal; they contribute to our understanding of natural variation, population health, and genetic diversity in wild mammal species (Collen et al. 2013). As environmental pressures increase across tropical ecosystems (Dirzo et al. 2014), the systematic documentation of these occurrences becomes ever more important for guiding conservation planning and understanding species resilience.

Acknowledgments: We thank the Mato Grosso State Environmental Secretariat, PPBio Western Amazon, and INCT CENBAM for funding and logistical support.

Research ethics: Fieldwork was conducted in protected areas under the Technical Cooperation Agreements (TCT) between the Federal University of Mato Grosso (UFMT) and the Mato Grosso State Secretariat for the Environment (SEMA), TCT No. 009/2010 and TCT No. 0323/2021, which authorize research activities in state protected areas.

Informed consent: Not applicable.

Author contributions: Conceptualization: EMN and CR; methodology: EMN and DJR; data collection: DJR; data curation: EMN; investigation: EMN, RCC, IYF and DJR; writing – original draft: EMN; writing – review and editing: RCC, IYF, DJR and CR; visualization: EMN, RCC and IYF; supervision: CR and DJR. All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

Use of Large Language Models, AI and Machine Learning Tools: None declared.

Conflict of interest: All other authors state no conflict of interest.

Research funding: Mato Grosso State Environmental Secretariat (Cooperation Agreement No. 0323/2021/SEMA/MT); PPBio Western Amazon (CNPq Processes No. 441260/2023-3 and No. 441228/2023-2); INCT-CENBAM (CNPq Process No. 406474/2022-2 and FAPEAM Process No. 01.02.016301.02394/2024-50); Research Productivity Fellowship (CNPq Process No. 312407/2022-0); CNPq (Process No. 306450/2026-7); and Universal Project (CNPq Process No. 404233/2023-6).

Data availability: All data supporting the findings of this study are included in the main text.

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