First record of total albinism in *Erythrolamprus poecilogyrus* (Serpentes: Dipsadidae: Xenodontinae), in the Cerrado biome, Brazil

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Resumen: El albinismo total, una condición caracterizada por la ausencia total de todos los pigmentos, es raro en las serpientes silvestres debido a los costos ecológicos, al aumento del riesgo de depredación y a la pérdida de camuflaje. Aunque se observa con frecuencia en individuos cautivos, las ocurrencias naturales son escasas, especialmente en reptiles. En este estudio, describimos el primer caso confirmado de albinismo total en la serpiente neotropical *Erythrolamprus poecilogyrus*, ampliando la diversidad fenotípica conocida dentro de este género y destacando la importancia de tales registros no solo para avanzar en nuestra comprensión de sus impactos ecológicos, sino también para fomentar futuras investigaciones sobre las vías genéticas y de desarrollo que subyacen a estos fenotipos.

Total albinism is a rare condition characterized by the congenital absence of all pigments, including melanin and carotenoids, resulting in a fully depigmented phenotype (Bechtel, 1995; Griffiths *et al.*, 1998; Borteiro *et al.*, 2001). In snakes, it has been commonly documented in individuals bred in captivity for the pet trade (Saenko *et al.*, 2015), but the absence of expression of any pigments is rarely observed in wild populations (Bechtel, 1995; Borteiro *et al.*, 2021). Here, we report the first case of total albinism in *Erythrolamprus poecilogyrus* (Wied-Neuwied, 1824), a widely distributed species in South America (Dixon & Markezich, 1992; Giraudo & Scrocchi, 2001).

The observation was made in the morning of January 17, 2024 in a grassland area in Dourados, Mato Grosso do Sul, Brazil. The specimen, a juvenile of undetermined sex and approximately 50 cm in total length, was observed moving through the vegetation and was easily detected due to its anomalous coloration. Its behavior upon approach was evasive, and the individual quickly escaped into the vegetation, displaying no defensive postures or warning behaviors. As the encounter was casual and no permits for fauna handling were available, only photographic documentation was obtained before the individual escaped. In future encounters, we emphasize the importance of minimally invasive procedures, such as cloacal swabs or ventral photographic documentation. These methods can provide valuable biological data without harming specimens, but these should only be carried out by experts using appropriate protective measures.

Based on visible external features, the phenotype of this individual was classified as total albinism. The diagnosis was based on the

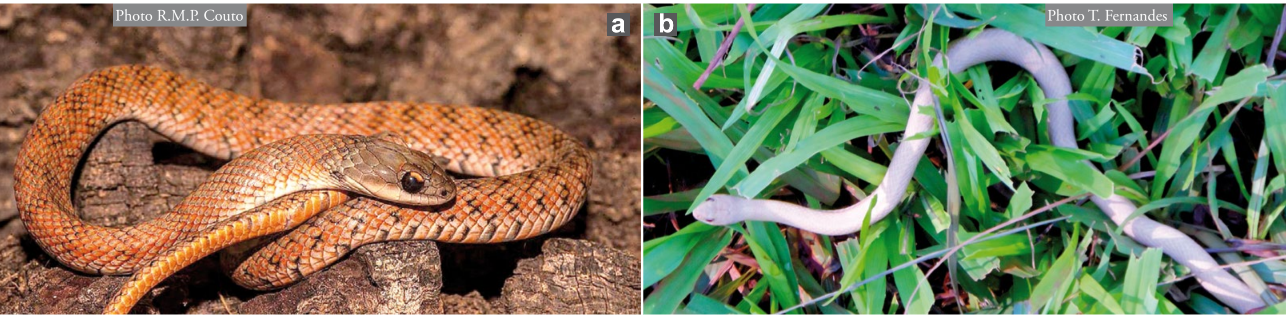

Figure 1: Comparison between two individuals of *Erythrolamprus poecilogyrus* recorded in the same environment. a) Normally colored. b) Total albino.
Figura 1: Comparación entre dos individuos de *Erythrolamprus poecilogyrus* encontrados en el mismo ambiente. a) Coloración normal. b) Albinismo total.

following characteristics: (1) complete absence of melanins; (2) absence of orange, red, or yellow pigmentation (as commonly present in typical individuals of the species); and (3) reddish, unpigmented eyes, according to Borteiro *et al.* (2021) (Figure 1). The specimen exhibited an overall whitish coloration, with a faint pink hue becoming noticeable upon closer examination, feature commonly associated with the complete absence of skin pigmentation. In contrast, typical individuals of the species display darker and orange tones, along with scattered black blotches across the body.

Despite the remarkable diversity within *Erythrolamprus*, which comprises over 50 species (Curcio *et al.*, 2009), records of aberrant color phenotypes within the genus are relatively sparse (Lema, 1960; Miranda *et al.*, 1985; Silva *et al.*, 2010; Boos, 2001; Borteiro *et al.*, 2021), although they have been reported for several species and types of alterations (Borteiro *et al.*, 2021).

Color anomalies such as albinism may impose ecological disadvantages due to increased predation risk, impaired camouflage, and potential thermoregulatory and visual limitations (Bechtel & Bechtel, 1981; Sazima & Di-Bernardo, 1991; Krecsák, 2008; Ascoli-Morrete *et al.*, 2022). Although *E. poecilogyrus* is a widely distributed and behaviorally variable species complex, with both diurnal and nocturnal activity reported across its range (Curcio *et al.*, 2009), the lack of any cryptic or warning coloration in this individual likely increases its exposure to predators regardless of its activity period. While other cases of color anomalies have been reported in *Erythrolamprus* species, this is the first confirmed case of total albinism, expanding the known color variation within the genus. A recent revision of color aberrancies in Neotropical snakes (Borteiro *et al.*, 2021) collected data of only a previous single case of total albinism in the wild, reported in *Amerotyphlops brongersmianus* (Mira-Mendes *et al.*, 2017). Documenting such rare events is essential not only for understanding their ecological implications, but also for encouraging future research into the genetic and developmental pathways underlying these phenotypes.

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Frecuencia y distribución de ofidios melánicos en la península ibérica y su relación con las regiones climáticas en las que habitan

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El melanismo en reptiles se debe a la sobreproducción de melanina por parte de los melanocitos que se encuentran en la capa basal de la piel, dando lugar a un exceso de pigmentación oscura con la aparición de animales completamente negros (melánicos), o bien muy oscuros o con zonas del cuerpo negras (melanóticos) (Bechtel, 1978; Rivera *et al.*, 2001). En algunas especies de ofidios, se ha comprobado que el melanismo puede otorgar a los ejemplares melánicos una mayor eficacia termorreguladora para la absorción rápida y efectiva de la radiación solar, sobre todo si es escasa, en días con poca radiación solar o en ambientes sombríos con un porcentaje alto de días con presencia de nubes, apoyando la hipótesis del melanismo térmico (Clusella-Trullas *et al.*, 2007; Tanaka, 2005; Fernández-Guiberteau *et al.*,