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SHORT COMMUNICATION

First record of leucism in the polychromatic Amazon tree boa, *Corallus hortulana* (Serpentes, Boidae) of South America

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ABSTRACT

Snakes have a wide variety of color patterns that can be related to specific ecological and physiological functions. However, genetic mutations can lead to the appearance of anomalous color patterns, which can directly interfere with the fitness of individuals. Leucism is a chromatic anomaly characterized by the almost total absence of epidermal and dermal chromatophores that produce the color. *Corallus hortulana* is an arboreal snake with nocturnal habits, widely distributed throughout South America, with a wide range of color patterns, known as polychromatism. Here we report the first case of leucism in *Corallus hortulana* and discuss the potential ecological implications of this anomaly in this species.

KEYWORDS: Amazonia, Squamata, coloration, color pattern, snakes, French Guiana

Primeiro registro de leucismo em suaçuboia, *Corallus hortulana* (Serpentes, Boidae) uma espécie policromática da América do Sul

RESUMO

As cobras possuem uma grande variedade de padrões de coloração que podem estar relacionadas a funções ecológicas e fisiológicas específicas. No entanto, mutações genéticas podem levar ao aparecimento de padrões de coloração anômalos que podem interferir diretamente na *fitness* do indivíduo. O leucismo é uma anomalia cromática caracterizada pela ausência quase total de cromatóforos epidérmicos e dérmicos que produzem a cor. *Corallus hortulana* é uma serpente arborícola de hábitos noturnos, amplamente distribuída pela América do Sul, com grande variação de padrões de cor, conhecida como policromatismo. Aqui nós relatamos o primeiro caso de leucismo em *Corallus hortulana* e discutimos as potenciais implicações ecológicas desta anomalia para a espécie.

PALAVRAS-CHAVE: Amazônia, Squamata, coloração, padrão de cor, cobras, Guiana Francesa

Color in animals is characterized as the range of electromagnetic wavelengths reflected by pigments present in the chromatophores of the dermis and epidermis (Cuthill *et al.* 2017). Snakes have a wide variety of color patterns ranging from cryptic to aposematic colors, which may have different ecological and physiological functions, (Davis Rabosky *et al.* 2016, Deitloff *et al.* 2019, Farooq and Uetz 2020). Color patterns reflect aspects of natural selection and predator-prey relationships (Davis Rabosky *et al.* 2016, Gustavo *et al.* 2016, Cyriac and Kodandaramaiah 2019; Dallagnol Vargas *et al.* 2020).

Genetic mutations can lead to the emergence of aberrant or anomalous color patterns that can directly interfere with the fitness of individuals, as these anomalies often tend to reduce their chances of survival (Cyriac and Kodandaramaiah 2019). Albinism and melanism are the most common chromatic anomalies recorded in snakes (Prust 1984, Borteiro *et al.* 2021). Recently, a new classification for chromatic anomalies found in snakes was proposed, to correcting some cases of individuals that had been classified as albinos but were actually of leucism (Borteiro *et al.* 2021). Leucism is an anomalous color pattern caused by the almost total absence of epidermal and dermal chromatophores, which may present some remnants of dispersed iridophores (Bechtel and Bechtel 1985, Borteiro *et al.* 2021).

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Corallus hortulana (Linnaeus, 1758) is a polychromatic arboreal snake with nocturnal habits that is widely distributed throughout South America. Henderson (1997) classified the color patterns of this species into different categories based on the presence of spots on the dorsolateral and cephalic dorsal regions of the body for three background color morphs (taupe, yellow and brown). Although some color patterns in this species tend to be more frequent in certain regions of the Amazon, and the selection of color morphs by environmental variations has been suggested without explicit hypothesis testing, the predictor variables for the occurrence of color morphs are still unknown (Duarte *et al*. 2015).

Here we report the record of a leucistic individual of *C. hortulana*. The leucistic snake was sighted on July 14, 2021, at 08:45 pm, during a nocturnal survey on a trail by the margins of the road from Kourou to Cayenne, French Guiana (5°01'22.8"N; 52°29'02.7"W), in a region of savannas and secondary forests. The individual was photographed *in situ* and not collected, and the morphometric measurements were taken with a measuring tape in the field. The meristic characters were identified through the photographs taken. The individual (snout-vent length = 127 cm, tail length = 35.5 cm, unidentified sex) was moving along a branch approximately 1 m above the ground (Figure 1). The specimen was identified as *Corallus hortulana* due to the set of the following characters: 12 scales between the supra oculars, four subloreal scales, 14 circumorbital scales and contact between medial nasal scales, besides, the location falls within the expected geographic range of *C. hortulana*, following Henderson (1997). The individual was not collected. After handling, it was released at the point of capture.

Figure 1. Leucistic individual of *Corallus hortulana* recorded in French Guiana. This figure is in color in the electronic version.

The color of the individual was characterized by the predominance of white color throughout the body, with small spots of a light grayish color scattered through the body. The eyes had a black center and a peripheral region in shades of grayish blue. The tongue and internal part of the nasal orifices were dark purple color, with to pink labial pits (Figure 1). This coloration characterizes frame the individual as leucistic according to the classification of Borteiro *et al*. (2021), this being the first record in the wild of this chromatic anomaly for *C. hortulana*.

Leucism in wild snakes is extremely rarely reported. We found only one registered case for South American boids (*Boa constrictor*, Linnaeus 1758) in the state of Rio de Janeiro, Brazil (USA 2015). Furthermore, only one case of chromatic anomaly was recorded for the genus *Corallus* (erythrism in *Corallus annulatus*, Cope 1875) (Borteiro 2021), which is probably an underestimation due to the high diversity of color morphs in this group, especially within the *Corallus hortulana* (Henderson 1997).

From an ecological point of view, leucistic individuals become highly contrasting with the environment, especially in arboreal species. The fact that the specimen has reached adulthood may suggest that the nocturnal habit may be favorable to the survival of leucistic individuals, however, studies investigating this issue still need to be carried out.

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