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FIRST RECORD OF ANOPHTHALMIA IN THE EMERALD TREE BOA (*CORALLUS BATESII*)

PRIMER REGISTRO DE ANOFTALMIA EN LA BOA ESMERALDA (*CORALLUS BATESII*)

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Resumen.– Reportamos el primer registro de anoftalmia en *Corallus batesii*, dentro de un bosque en regeneración en la zona de amortiguamiento del Parque Nacional del Manu, Madre de Dios, Perú. Las malformaciones congénitas como la anoftalmia suelen ser inducidas durante el desarrollo embrionario como resultado de mutaciones genéticas, condiciones de temperatura inadecuadas, deficiencias nutricionales y exposición a contaminantes.

Palabras clave.– Anomalía morfológica, anormalidad, Parque Nacional del Manu, Perú, serpiente ovovivípara.

Abstract.– We report the first record of anophthalmia in *Corallus batesii*, within a regenerating forest in the buffer zone of the Manu National Park, Madre de Dios, Peru. Congenital malformations such as anophthalmia are usually induced during embryonic development as a result of genetic mutations, unsuitable temperature conditions, nutritional deficiencies, and exposure to contaminants.

Key words.– Abnormality, Manu National Park, morphological anomaly, ovoviviparous snake, Peru.

Congenital malformations in reptiles are poorly studied, but it is understood that these abnormalities are usually induced during the early embryonic development period, due to genetic mutations, unsuitable temperature conditions during gestation or incubation, nutritional deficiencies, and toxin exposure to the embryo (Sabater & Perez, 2013). There are several types of ocular malformations that occur in reptiles, including anophthalmia, microphthalmia, cystic globe, cyclopia/synophthalmia, coloboma, and aphakia. Anophthalmia, either unilateral or bilateral, is defined as the congenital total absence of ocular tissue and results from a failure of the primary optic vesicle to develop or from a complete regression of the optic vesicle (Bayón et al., 1999; Jablonski & Mikulíček, 2015).

Corallus batesii (Emerald Tree Boa) is an ovoviviparous snake species in the family Boidae that is distributed throughout most of the Amazon region (Henderson et al., 2009). Here we report a case of unilateral anophthalmia in *C. batesii*.

On 20 October 2022 at 19:10 h, we encountered an adult *C. batesii* at the Manu Learning Centre (12.78917° S, 71.39111° W, WGS 84, 460 m a.s.l.), a biological station operated by Crees Foundation for Manu, situated in the buffer zone of the Manu National Park, within the Madre de Dios region, Peru. The Manu Learning Centre is located within a 643 ha area of strictly-protected secondary tropical rainforest, although traditional agricultural activities are practised in the surrounding area. Initially spotted moving across grass and a gravel path in an open area surrounding the station during light rain, the *C. batesii* was captured for data collection and measurements as part of a long-term herpetofaunal monitoring programme. The individual had a snout-vent length of 930 mm, tail length of 160 mm and weighed 445 g. When captured, we noticed that the left eye of the snake was absent, while the right eye was normally developed (Fig. 1). Upon closer inspection, it appeared to be a congenital malformation, since the site where the eye would usually be found was covered in normally pigmented scales, and there was

Figura 1. A) Vista frontal de un adulto de *Corallus batesii* con caso de anoftalmia unilateral. B) Vista lateral del lado izquierdo de la cabeza con un ojo ausente. Fotos: Joseph L. Oakley.
Figure 1. A) Frontal view of an adult *Corallus batesii* with a case of unilateral anophthalmia. B) Lateral view of the left side of the head with an absent eye. Photos: Joseph L. Oakley.

no evidence of injury to the area. Therefore, we suggest that it is a case of unilateral anophthalmia. While handling the snake, its restricted field of vision noticeably affected its defensive reactions. Upon detecting observers' movement on the left side of its head, it coiled into an S-coil and tried to bite. However, movements on the right side, even with the handler's hand nearby, elicited no noticeable response.

Many species of boas, including *C. batesii*, have labial pits – heat-sensing organs used to detect the heat signatures of prey (Goris, 2011). An experiment by Noble & Schmidt (1937) on *C. hortulanus* determined that in the absence of vision, labial pits become the primary sensory mechanism directing attacks towards endothermic prey, and that the temperature of an approaching prey item elicits a strike. Nevertheless, our observation indicates that in the case of this individual, it appeared to rely more on the vision of its existing eye than its thermoreceptors on the side where the eye was absent.

There are documented instances of ocular abnormalities in other ovoviviparous snakes, including members of the families Boidae and Viperidae (Sabater & Perez, 2013; Čubrić & Crnobrnja-Isailović, 2017; Seixas et al., 2020; Rocha et al., 2023).

As far as we are aware, ours is the first record of an ocular malformation in *C. batesii*. Overall, research is lacking on ocular malformations in reptiles. Further study is needed to understand the causes of abnormalities, in order to identify whether conservation efforts are necessary to reduce the frequency of occurrences caused by anthropogenic factors. Finally, the implications of ocular malformations in reptiles require further research to understand the impact on their life history and behaviour, including development, survivability, feeding and reproduction.

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