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ANTIPREDATOR BEHAVIOUR EMPLOYED BY *RHINELLA CASTANEOTICA* (BUFONIDAE) DURING CLIMBING BEHAVIOUR

COMPORTAMIENTO ANTIDEPREDADOTORIO EMPLEADO POR *RHINELLA CASTANEOTICA* (BUFONIDAE) DURANTE EL ESCALAMIENTO

Carlos Eduardo Costa-Campos [1,2*] & Fillipe Pedroso-Santos[3]

[1]*Universidade Federal do Amapá, Departamento de Ciências Biológicas e da Saúde, Laboratório de Herpetologia, Macapá, AP, Brazil, CEP: 68.903-419*

[2]*Universidade Federal do Amapá, Programa de Pós-Graduação em Biodiversidade e Biotecnologia-Rede BIONORTE, Macapá, AP, Brazil, CEP: 68902-280*

[3]*Programa de Pós-Graduação em Biodiversidade Tropical – PPGBio, Universidade Federal do Amapá, Macapá, AP, Brazil, CEP: 68.903-419*

**Correspondence: dududueducampos@gmail.com*

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Resumen.– Los anuros muestran varios comportamientos antidepredadores. Agacharse se caracteriza por la inflación de los pulmones. Describimos un comportamiento antidepredador de *Rhinella castaneotica* durante el comportamiento de escalada de la selva amazónica en el estado de Amapá, norte de Brasil. El comportamiento de escalada es una habilidad común en dendrobátidos y bufónidos, pero no se reconoce que la agacharse ocurra en sinergia. Esperamos que nuestras observaciones contribuyan con el conocimiento actual sobre el comportamiento antidepredador asociado con el comportamiento de escalada en los anuros.

Palabras claves.– Bufónidos, Amazonia Oriental, agacharse.

Abstract.– Anurans show several antipredator behaviours. Body raising is characterized by inflation of the lungs. We describe the body raising behaviour of *Rhinella castaneotica* during climbing behaviour from Amazonian rainforest in the state of Amapá, northern Brazil. Climbing behaviour is a common ability in dendrobatids and bufonids, but the body raising is not recognized to occur in synergy in *R. castaneotica*. We hope that our observations contribute with the current knowledge of antipredator behaviour associated with climbing behaviour in anurans.

Key words.– Bufonids, Eastern Amazonia, crouching down.

Anurans show several antipredator behaviours (e.g., aposematic and cryptic colour, body elevation, body raising, death-feigning, eye-protection, mouth-gaping, puffing up the body, and stiff-legged), allowing them to escape from their predators in a variety of ways (Toledo et al., 2011; Ferreira et al., 2019; Pedroso-Santos et al., 2022). Deimatic behaviour can be characterized by sudden postures (Umbers et al., 2017), such as body raising, characterized by lungs inflation, lifting the anuran body of the substrate, giving the appearance of bigger and avoiding the attack of the predator (Toledo et al., 2011).

Rhinella castaneotica (Caldwell, 1991) is a small-sized bufonid species (males 18.4–23.6 mm of snout-vent length, and females 18.9–26.3 mm), and is geographical distributed in the Amazon basin of Brazil, Colombia, Bolivia and Peru; this nocturnal species call sporadically during the rainy season in ponds, as well as on empty Brazil nut capsules known as "castanheiras", fallen on the ground (Caldwell, 1993; Lehtinen et al., 2004). To provide more information and understanding of anuran behaviour, we recorded antipredator deimatic exhibited by *R. castaneotica*.

Field observations took place on 14th February 2019 at the Cancão Municipal Natural Park (0.9138° N, 52.9997° W), a conservation unit located in the municipality of Serra do Navio, Amapá State, north Brazil. We observed an individual *R. castaneotica* performing climbing behaviour at night from 18:00 h to 18:30 h. When researcher approached his hand to

Figura 1. Ejemplar de *Rhinella castaneotica* agachachado durante el comportamiento antipredatorio en el Parque Natural Municipal de Cancão, municipio de Serra do Navio, Estado de Amapá, norte de Brasil.

Figure 1. *Rhinella castaneotica* crouching down while climbing at the Cancão Municipal Natural Park, municipality of Serra do Navio, Amapá State, north Brazil.

the individual, we observed that the specimen *R. castaneotica* displayed crouching down behaviour (Fig. 1).

Climbing behaviour is a common ability in Dendrobatidae (Benício, 2020) and terrestrial bufonids of the genus *Rhinella* (e.g., Noronha et al., 2013; Hudson et al., 2016; Maia-Carneiro & Maia-Solidade, 2020) which offers many advantages, such as access to safety from ground-dwelling predators, resting and foraging places (Lindquist et al., 2007). For *R. castaneotica*, the climbing behaviour was first described by Noronha et al. (2013), and later by Oliveira-Souza et al. (2020); however, no other antipredator behaviour associated with climbing behaviour was observed by these authors.

The crouching down (*sensu* Toledo et al., 2011) has been described as an antipredator behaviour mechanism, in which the anurans hold itself in a lower than the habitual sitting posture, ranging from a slightly lowered position to a full crouch in which the chin touches the substrate; the eyes may remain closed and the forearms may be extended forward or flexed toward the body. This behaviour may be displayed in many substrates such as on vegetation and on the ground, and has been described for Bufonidae, Centrolenidae, Dendrobatidae, Hylidae, Leptodactylidae, and Leiuperidae (Toledo et al., 2004; Toledo et al., 2011; Figueiredo et al., 2021; Pedroso-Santos et al., 2021).

Our observations contribute with the current knowledge on antipredator behaviour associated with climbing behaviour in anurans. Future research may focus on what triggers crouching down and other potential defensive behaviors of *R. castaneotica*.

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