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First record of predation on *Makalata didelphoides* (Rodentia: Echimyidae) by *Corallus hortulana* (Squamata: Boidae) in the Eastern Amazon, Brazil

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Abstract. Understanding snake diets helps clarify trophic networks and ecosystem structure. *Corallus hortulana*, a widely distributed arboreal snake in South America, has a generalist diet, including birds, reptiles, and small mammals. This study reports the first recorded predation of *Makalata didelphoides*, an arboreal rodent, by *C. hortulana* in the Eastern Amazon. The event was observed at the Beija-Flor Brilho-de-Fogo Extractive Reserve, Amapá, Brazil. The snake, an adult female measuring 1.56 m and weighing 650 g, captured an *M. didelphoides* weighing 280 g, representing 43.1% of its body mass. This finding underscores the species' dietary plasticity and its role in regulating small mammal populations. Furthermore, it highlights the importance of ecological studies to expand knowledge on predatory interactions in the Amazon and to support local biodiversity conservation.

Keywords: predation, snake diet, Amazonia, rodent prey, trophic interaction, new record.

Dietary generalization or specialization is a widely discussed topic that helps better understand how trophic networks contribute to the maintenance and structuring of animal and plant communities across different ecosystems (Svanbäck et al. 2015). Snakes (Reptilia, Squamata) are a highly diverse group in terms of diet, with their prey typically associated with the lifestyle habits of each predatory species (Grundler & Rabosky 2021). Additionally, snakes employ different hunting strategies, ranging from immobility (sit-and-wait) in areas with high prey concentrations (e.g., bodies of water) to active hunting (Martins & Oliveira 1999). Among snake families, Boidae stands out for comprising species with diverse lifestyles, ranging from aquatic (*Eunectes* genus) to terrestrial and semi-arboreal (*Boa* and *Epicrates* genera) and fully arboreal (*Corallus* and *Chilabothrus* genera) (Martins & Oliveira 1999).

Corallus hortulana (Linnaeus 1758) is an arboreal snake that is occasionally terrestrial when active and is widely distributed throughout South America (Henderson 1997, Martins & Oliveira 1999). It has nocturnal and crepuscular habits and is usually found near riverbanks (Henderson 1997, Martins & Oliveira 1999). This species is characterized by its

chromatic polymorphism and specialized structures for detecting thermal signals, which are transmitted to a well-developed ocular region. This adaptation enhances its success rate in capturing endothermic prey, particularly flying species (e.g., bats) (Henderson & Pauers 2012). The diet of *C. hortulana* consists of endothermic species (birds and small mammals) as well as ectothermic prey (amphibians, lizards, and, in some cases, fish) (Martins & Oliveira 1999, Costa-Silva & Henderson 2014, Pizzatto et al. 2009, Henderson et al. 2013).

On the night of July 18, 2024, at 8:37 p.m., during active searches along the left bank of the Água Fria Stream, located in the Beija Flor Brilho de Fogo Extractive Reserve, in the municipality of Pedra Branca do Amapari, state of Amapá, Brazil (0.7918°N, 51.9783°W, elevation 86 m), the predation of a Brazilian spiny tree rat, *Makalata didelphoides* (Desmarest, 1817), by an adult female *C. hortulana* was recorded. The snake was observed by third parties in a post-prandial state under a branch above water level, in an environment predominantly of riparian vegetation. The following day, July 19, at 10:21 a.m., our team went to the site where the snake had been sighted and collected it for laboratory screening. The collected snake individual measured 1560 mm in total length, with a head length of 42.9 mm, and weighed 650 g. The prey, *M. didelphoides*, had a total length of approximately 390 mm and weighed about 280 g (Figure 1).

Widely distributed from Colombia and Venezuela to Trinidad and Tobago and the northern and northeastern regions of Brazil, *Makalata didelphoides* is a nocturnal and arboreal rodent of the family Echimyidae (Patton et al. 2015). Species of the genus *Makalata* are associated with seasonally flooded forests of the Amazon (varzeas and igapós), where they occur along watercourses and on flooded islands with várzea forests, seasonally flooded areas that follow the pulse of large rivers (Miranda et al. 2022). In the state of Amapá, *Makalata didelphoides* has been recorded in terra firme forests, usually in riparian forests (Silva et al. 2013, Pereira et al. 2020). The rodent specimen was identified by craniodental characters and deposited under the number IEPA 4897 in the Coleção Mastozoológica do Instituto de Pesquisas Científicas e Tecnológicas do Estado do Amapá.

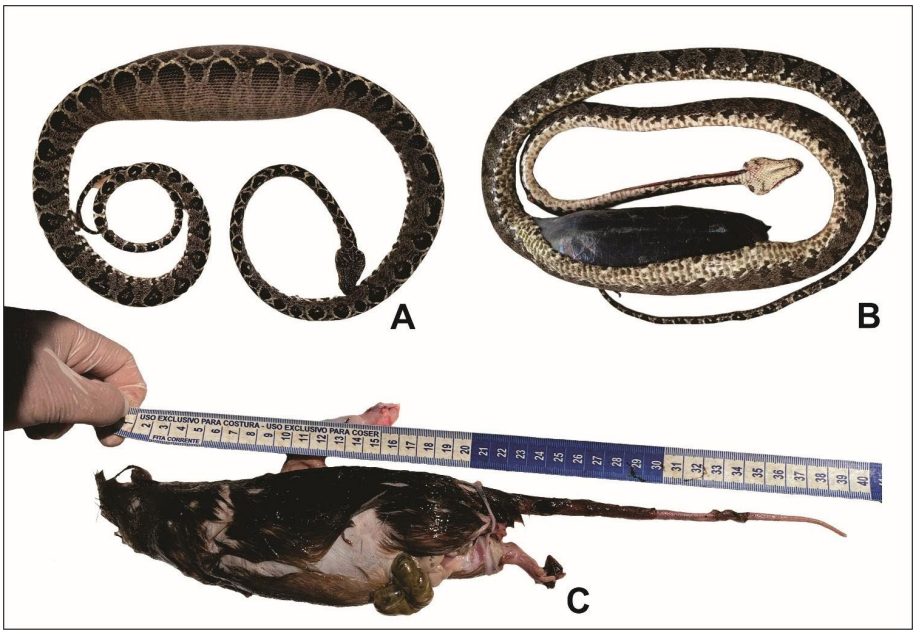

Figure 1. A) Dorsal view of the *Corallus hortulana*; B) *Makalata didelphoides* inside the digestive tract of the snake; C) Prey item (*Makalata didelphoides*) removed from the stomach of the snake, showing total length measurement.

According to Pizzatto et al. (2009), adult *Corallus hortulana* snakes tend to prey on relatively heavier animals in relation to their own absolute mass. This was observed in the analyzed individual, where the prey accounted for approximately 43.1% of the predator's total mass, reinforcing the behavior documented in the study.

This record of *M. didelphoides* predation by *C. hortulana* adds a new species to the snake's diet, supporting the generalist feeding habit described by Yánez-Muñoz et al. (2017). Table 1 complements the information presented by listing literature records of mammal prey captured by *C. hortulana*, further highlighting the species' ability to capture prey across different ecological niches. Although *C. hortulana* is not restricted to a single habitat type, records show that 85% of its prey have arboreal habits, confirming a preference for foraging above ground. Studies on the feeding habits of *C. hortulana* are crucial for understanding its natural history and ecological importance. Likewise, field research is essential for expanding knowledge of snakes in northern Brazil and the Eastern Amazon.

Table 1. Mammals recorded as prey of *Corallus hortulana* in different studies (Adapted from Yánez-Muñoz et al. 2017).

Prey	**Habitat**	**Local**	**Reference**
Cebidae			
Saimiri sciureus	Arboreal	Central Amazon, Brazil	Ribeiro-Júnior et al. (2016)
Cricetidae			
Hylaeamys perenensis	Terrestrial	Western Amazon, Brazil	Yánez-Muñoz et al. (2017)
Nectomys squamipes	Semi-Aquatic	Brazil	Pizzatto et al. (2009)
Oligoryzomys nigripes	Terrestrial	Brazil	Pizzatto et al. (2009)
Rhipidomys mastacalis	Arboreal	Brazil	Pizzatto et al. (2009)
Didelphidae			
Gracilinanus microtarsus	Arboreal	Brazil	Pizzatto et al. (2009)
Marmosa murina	Arboreal	Brazil	Pizzatto et al. (2009)
Micoureus demerarae	Arboreal and terrestrial	Brazil	Pizzatto et al. (2009)
Philander frenatus	Arboreal and terrestrial	Brazil	Pizzatto et al. (2009)
Echimyidae			
Proechymis sp.	Terrestrial	Western Amazon, Brazil	Pommer-Barbosa et al. (2021)
Makalata didelphoides	Arboreal	Eastern Amazon, Brazil	In this manuscript
Phyllostomidae			
Artibeus jamaicensis	Arboreal	Guianas and Brazil	Henderson & Pauers (2012)
Artibeus obscurus	Arboreal	Brazil	Pizzatto et al. (2009)
Artibeus sp.	Arboreal	Central Amazon, Brazil	Barnett et al. (2007)
Carollia perspicillata	Arboreal	Atlantic Forest, Brazil	Esbérard & Vrcibradic (2007)
Platyrrhinus lineatus	Arboreal	Atlantic Forest, Brazil	Esbérard & Vrcibradic (2007)
Glossophaga soricina	Arboreal	Eastern Amazon, Brazil	Santos & Costa-Campos (2015)
Vespertilionidae			
Myotis albescens	Arboreal	Guianas e Brazil	Henderson & Pauers (2012)
Myotis sp.	Arboreal	Central Amazon, Brazil	Martins & Oliveira (1999)
Mormoopidae			
Pteronotus sp.	Arboreal	Eastern Amazon, Brazil	Barbier et al. (2023)

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We dedicate this manuscript to the memory of Professor Carlos Eduardo Costa Campos, one of the greatest references in herpetology in the Amazon. Costa-Campos dedicated his life to researching the herpetofauna of the state of Amapá and worked tirelessly to promote scientific research in the state. Now his scientific legacy continues to accompany us; we will never forget his teachings. Rest in peace, Costa Campos.

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