



Wucherer's Groundsnake, *Xenopholis scalaris* (Wucherer 1861) (Squamata: Dipsadidae): A New Record for São Paulo State and an Updated Map of the Species' Distribution in the Atlantic Forest of Brazil

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Wucherer's Groundsnake (*Xenopholis scalaris*) is a moderately sized snake (SVL 200–400 cm) with a slightly flattened head and small eyes. Its most distinctive morphological characteristic is the expanded dorsal vertebrae (Boulenger 1896; Hoge and Federsoni 1975). Very little is known about the ecology of the species, except that it forages at night (Ringler et al. 2010), has a cryptozoic lifestyle, living below the surface of the soil and in humid decaying organic matter on the forest floor (Martins and Oliveira 1998; Vieira et al. 2012), and feeds primarily on amphibians (Ringler et al. 2010; dos Santos-Costa et al. 2015; Abreu et al. 2021), with predation having been reported for Aromobatidae, Leptodactylidae, Microhylidae, and Strabomantidae (Martins and Oliveira 1998; Ringler et al. 2010; dos Santos-Costa et al. 2015; Costa and Trevelin 2020; Abreu et al. 2021).

The species is present in the Brazilian Amazon Basin (Amazonas, Pará, Mato Grosso, and Rondônia), and in the neighboring countries of Bolivia, Peru, Ecuador, Colombia, and French Guyana (Martins and Oliveira 1998; Nogueira et al. 2019). In addition, a disjunct population occurs in the Atlantic Forest from Pernambuco in the north to São Paulo in the south. According to Nogueira et al. (2019), this species appears to be rarer in the south. Gomes et al. (2020) examined individuals from both the Amazonian and Atlantic Forest populations and concluded that, despite the geographic gap, they are conspecific. *Xenopholis scalaris* has the conservation status of Least Concern (LC) on the Brazilian Red List (ICMBio 2024), the São Paulo Red List (São Paulo 2018), and the IUCN Red List of Threatened Species (Doan et al. 2019). Nevertheless, due largely to its secretive habits, very little is known about the São Paulo population (Zaher et al. 2011). The species is infrequently included in community studies and few specimens are in herpetological collections

(Jansen et al. 2009; França et al. 2019; Gomes et al. 2020; Filho et al. 2021).



Figure 1. A Wucherer's Groundsnake (*Xenopholis scalaris*) found in Restinga de Guaratuba, São Paulo, Brazil. Photograph by José Luiz Peboni Guimarães.

We herein present the second record of *Xenopholis scalaris* for São Paulo, as well as a new distribution map for the Atlantic Forest population. This new record represents the southernmost occurrence along the coast, 158 km straight-line

distance from the locality reported by Condez et al. (2009). The individual was found at 2130 h on 9 June 2024 at the Restinga de Guaratuba, Bertioiga Municipality, São Paulo (-23.74648, 45.93002), by José Luis Peboni Guimarães,

Table 1. Literature records of Wucherer's Groundsnake (*Xenopholis scalaris*) in the Atlantic Forest listed from south to north. Records include those published in Nogueira et al. (2019) and additional records by Roberto et al. (2017), Freitas et al. (2018), Dubeux et al. (2022), and this study.

Locality, Municipality, State (coordinates)	Reference
Restinga de Guaratuba, Bertioiga, São Paulo (-23.74648, -45.93002)	This study
Near Vieiras District, Piedade, São Paulo (-23.84982, -47.47419)	Condez 2009
Vila de Inhomirim, Magé, Rio de Janeiro (-22.61182, -43.19124)	Hamdan et al. 2015
Linhares Road, Linhares, Espírito Santo (-19.55500, -39.83000)	Nogueira et al. 2019
Patiguara, Canavieiras, Bahia (-15.64940, -39.12560)	Hamdan et al. 2015
Sempre Tenha, Canavieiras, Bahia (-15.64940, -39.12560)	Hamdan et al. 2015
Conjunto romana/Muimbi, Camacã, Bahia (-15.41560, -39.58810)	Nogueira et al. 2019
Santa Rita de Cássia, Camacã, Bahia (-15.38750, -39.59220)	Nogueira et al. 2019
Chapi, Una, Bahia (-15.29300, -39.07500)	Nogueira et al. 2019
Boa Vista, Jussari, Bahia (-15.20310, -39.52940)	Nogueira et al. 2019
Futurosa, Jussari, Bahia (-15.20310, -39.52940)	Nogueira et al. 2019
Serra do Teimoso, Jussari, Bahia (-15.16360, -39.54330)	Nogueira et al. 2019
Monte Alegre, Itabuna, Bahia (-14.80830, -39.47310)	Nogueira et al. 2019
Ilhéus–Itabuna Road, Km 14, Ilhéus, Bahia (-14.80170, -39.15110)	Nogueira et al. 2019
—, Ilhéus, Bahia (-14.80000, -39.0500)	Nogueira et al. 2019
UESC Campus, Ilhéus, Bahia (-14.79780, -39.17080)	Nogueira et al. 2019
Benção, Ilhéus, Bahia (-14.79720, -39.19860)	Nogueira et al. 2019
Rocado Grande, Barro Preto, Bahia (-14.77440, -39.44060)	Nogueira et al. 2019
CEPLAC–Regional Headquarters, Ilheus, Bahia (-14.76750, -39.22810)	Argôlo 2004
Duas Barras, Ilhéus, Bahia (-14.76750, -39.22810)	Nogueira et al. 2019
Riachuelo, Ilhéus, Bahia (-14.7322, -39.2039)	Nogueira et al. 2019
Mr. Urbano's farm, Ilhéus, Bahia (-14.71110, -39.18440)	Nogueira et al. 2019
Santa Maria, Ilhéus, Bahia (-14.70860, -39.18280)	Nogueira et al. 2019
ESJOB, Itajuípe, Bahia (-14.68500, -39.36420)	Nogueira et al. 2019
Conceição, Uruca, Bahia (-14.51170, -39.24330)	Nogueira et al. 2019
Formosa, Itacaré, Bahia (-14.43330, -39.18360)	Nogueira et al. 2019
Bom Sossego, Ibirapitanga, Bahia (-14.16670, -39.36670)	Nogueira et al. 2019
—, Camamu, Bahia (-13.98470, -39.21470)	Nogueira et al. 2019
Jaqueira, Camamu, Bahia (-13.90440, -39.24330)	Nogueira et al. 2019
California, Itubera, Bahia (-13.77030, -39.20060)	Nogueira et al. 2019
Lagoa Santa, Itubera, Bahia (-13.67920, -39.18080)	Nogueira et al. 2019
Serra da Jiboia, Recôncavo Baiano, Bahia (-12.85000, -39.46660)	Freitas 2018
Campo Grande, Usina Porto Rico Private Reserve, Alagoas (-9.95850, -36.23550)	Nogueira et al. 2019
APA de Murici, Murici, Alagoas (-9.22729, -35.85785)	Dubeux et al. 2022
Mata do Cuxio, Cabo de Santo Agostinho, Pernambuco (-8.23560, -35.06240)	Nogueira et al. 2019
RPPN Pedra D'Antas, Lagoa dos Gatos, Pernambuco (-8.41474, -35.51173)	Roberto et al. 2017

a local tourism guide. He photographed the snake (Fig. 1) and asked EM for help with identification. The species was confirmed by EM and two other specialists, O.M. Entiauspe-Neto and F.L. Franco. Using Nogueira et al. (2019) as the main reference and consulting other sources (Roberto et al. 2017; Freitas et al. 2018; Dubeux et al. 2022), we present a new distribution map of *X. scalaris* in the Atlantic Forest (Fig. 2) and a table of all records of the species in the biome (Table 1). This new record in Bertioga emphasizes the important role citizen science can play in Brazil and beyond, significantly enhancing our understanding of the geographic distribution of countless species (e.g., Rosa and Freitas 2024).

We also correct an oversight in Nogueira et al. (2019) pertaining to records of the species in São Paulo. Two locations were listed for a single specimen (IBSP-76256) in the Instituto Butantan herpetological collection, São Paulo, Brazil. It was collected near the District of Vieiras, Municipality of Piedade, São Paulo (Condez et al. 2009). Subsequently, however, Queissada placed it in Tapiraí Municipality, São Paulo (Nogueira et al. 2019). That error resulted in Nogueira et al. (2019) listing both locations for the same individual. However, this lapse is but a drop in an ocean of 163,498 records of 412 different species of snakes included in their “Atlas of Brazilian snakes.”

Moura et al. (2017) recognized six different biogeographical subregions (BSR) in the Brazilian Atlantic Forest while considering the snake assemblages in each region. From São Paulo to Pernambuco, which includes the distribution of *X. scalaris*, three BSRs were identified: one from Pernambuco to northern Bahia; a second from the center of Bahia to southern

Rio de Janeiro, and a third from São Paulo to Santa Catarina. Climate, topography, and precipitation differ considerably between the three. Moura et al. (2017) found that the snake species in the different regions were related especially to temperature. Models predicting a suitable climate for the presence of *X. scalaris* showed the center of Bahia as the most favorable (Gomes et al. 2020). This could explain why *X. scalaris* is rarer in the southern part of its distribution than in the northern part, possibly reflecting an adaptation to the higher temperatures of central Bahia (Moura et al. 2017).

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Figure 2. The distribution of Wucherer’s Groundsnake (*Xenopholis scalaris*) in the Atlantic Forest biome of Brazil. Brazilian territory is outlined in yellow. The Atlantic Forest biome is indicated by light green. Black dots denote records in Nogueira et al. (2019); white dots indicate records in Roberto et al. (2017), Freitas et al. (2018), and Dubeux et al. (2022); the red dot marks the new record reported herein.

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