

First record of the rare snake *Chlorosoma laticeps* (Werner, 1900) in the State of Rio de Janeiro, Brazil

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Locality.— Brazil, state of Rio de Janeiro, municipality of São João da Barra, Private Natural Heritage Reserve (RPPN) Caruara (21°47'43.9"S; 41°02'13.0"W, WGS84, 6m above sea level). The specimen was observed crossing a road and subsequently captured by the specialists of the Falco Ambiental team working in Wildlife Monitoring Program, on September 14, 2022, around 03:00 pm (Authorization number INEA / LI N° IN050962). The individual was deposited in the Coleção Herpetológica do Norte Fluminense of the Universidade Estadual do Norte Fluminense Darcy Ribeiro (CHNF1044).

Comment.— Despite its wide distribution, occurring in Bolivia and Brazil, *Chlorosoma laticeps* (Werner, 1900) has been sparsely documented in the literature, with few recorded sightings (Navarro-Cornejo and Gonzales, 2013). In Brazil, the species is closely associated with the Atlantic Forest domains, with confirmed records in the states of Espírito Santo and Minas Gerais, while the record in Santa Catarina is considered dubious (Nogueira *et al.*, 2019; Costa *et al.*, 2022). The specimen attributed to Santa Catarina (holotype) was initially designated as originating from “Santa Catharina, Brasilien” (Werner, 1900). However, some authors suggest that this locality refers to a small village in the city of Juramento, state of Minas Gerais, also named Santa Catarina, due to its proximity to another record of the species within the state of Minas Gerais. (Nogueira *et al.*, 2019; Costa *et al.*, 2022; Guedes *et al.*, 2023).

The genus *Chlorosoma* is known to include three species: *C. dunupyana* Melo-Sampaio, Passos, Martins, Jennings, Moura-Leite, Morato, Venegas, Chávez, Venâncio and Souza, 2020, *C. laticeps*, and *C. viridissimum* (Linnaeus, 1758) (Melo-Sampaio *et al.*, 2020). *C. laticeps* is a medium-sized South American

snake, characterized by a darkened oral mucosa, especially in the laryngeal region, distinguishing it from other congeners; it also has 17 rows of dorsal scales along the body (Zaher *et al.*, 2008).

Originally described by Werner (1900) based on a single individual deposited at the Museum für Naturkunde, Berlin, *C. laticeps* was later redescribed by Zaher *et al.* (2008), using the holotype and other specimens deposited at the Instituto Butantan, São Paulo, and the Museum für Naturkunde, Berlin. Its geographical distribution is disjointed, with one population found in Bolivia and another in Brazil (Navarro-Cornejo and Gonzales, 2013).

In Brazil, records are confined to the Atlantic forest domains in the states of Espírito Santo, Minas Gerais, and Santa Catarina, with the latter being attributed to its holotype (Zaher *et al.*, 2008; Guedes *et al.*, 2023). Here, we present the first record of the species for the state of Rio de Janeiro, Brazil, within a private conservation unit.

Throughout 2021 and 2023, we conducted five campaigns for monitoring herpetofauna in the Private Reserve of Natural Heritage Caruara, a conservation unit spanning 4,000 hectares, entirely located in a Restinga environment in the municipality of São João da Barra, state of Rio de Janeiro, Brazil. The campaigns were part of the Wildlife Monitoring Program for the Gás Natural Açú's (GNA) Biodiversity Action Plan and the Installation License of the GNA II Thermoelectric Power Plant. In each campaign, we sampled nine different areas using the limited-time active search method, with two observers covering each area for two hours. The total sampling effort amounted to 180 hours. During the monitoring, on September 14, 2022, around 03:00 pm, we encountered an individual of *C. laticeps*

crossing one of the access roads within the conservation unit in District of São João da Barra, state of Rio de Janeiro (21°47'43.9"S; 41°02'13.0"W) (Fig. 1). The specimen was collected and deposited in the Coleção Herpetológica do Norte Fluminense under the voucher CHNF1044. Tissue samples were stored in 90% ethanol, and individuals were fixed in a 10% formalin solution, then preserved in 75% ethanol.

The specimen recorded in this study is an adult male measuring 772 mm in total length with

a tail length of 301 mm. It possesses a total of 204 ventral scales and 123 subcaudal scales. The count of dorsal scales decreases along the body, with 20 near the head, 17 in the middle, and 13 near the tail (Table 1). The male in question has a total length smaller than the average of the males already collected, while its other measurements (tail length, and number of ventrals and subcaudals scales) are close to the average (Table 2). Despite the variation in the number of scales, the individual recorded by

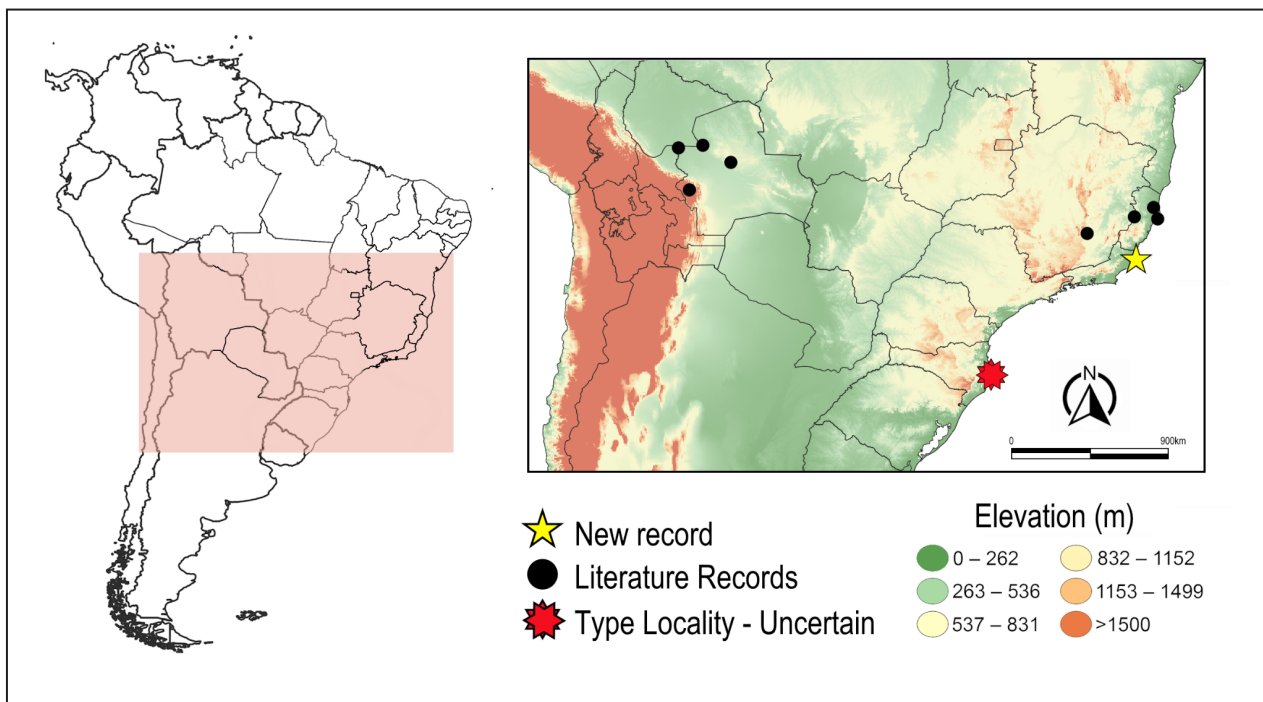


Figure 1. Distribution map of *Chlorosoma laticeps*. Black dots represent literature records, the red asterisk represents the type locality, and the yellow star represents our new record for the state of Rio de Janeiro, Brazil.

Table 1. Compilation of morphometric data for *Chlorosoma laticeps* available in the literature records.

| Specimens | Sex | Total Length | Tail length | Ventrals | Subcaudals | Dorsal scale rows | Reference |
|-------------|--------|--------------|-------------|----------|------------|-------------------|-------------------------------------|
| CHNF 1044 | Male | 772 | 301 | 204 | 123 | 20–17–13 | Present study |
| MZUSP 1389 | Male | 850 | – | 218 | – | 17–14–11 | Zaher <i>et al.</i> (2008) |
| IB 73141 | Male | 1165 | 314 | 212 | 112 | 19–17–13 | Zaher <i>et al.</i> (2008) |
| ZMB 69958 | Male | 1080 | 295 | 215 | 123 | 19–17–13 | Zaher <i>et al.</i> (2008) |
| FMNH 168003 | Male | 1081 | 296 | 205 | 113 | 17–15–13 | Zaher <i>et al.</i> (2008) |
| MNKR 687 | Male | 1489 | 382 | 208 | 111 | 17–17–13 | Navarro-Cornejo and Gonzales (2013) |
| MNKR 2149 | Male | 1279 | 340 | 205 | 114 | 17–17–13 | Navarro-Cornejo and Gonzales (2013) |
| MNKR 3475 | Male | 1143 | 308 | 205 | 111 | 17–17–13 | Navarro-Cornejo and Gonzales (2013) |
| ZMB 15704 | Female | 1045 | 295 | 204 | 116 | 19–17–13 | Zaher <i>et al.</i> (2008) |
| IB 7600 | Female | 1055 | 293 | 212 | 114 | 19–17–13 | Zaher <i>et al.</i> (2008) |

us exhibits all the characteristics described by Zaher *et al.* (2008), such as green dorsum and laterally angulated ventrals, with particular emphasis on the black mucosa surrounding the larynx and trachea on the floor of the mouth, a feature absent in all other species of *Chlorosoma* (Fig. 2).

This study not only expands the distribution of *C. laticeps* to the state of Rio de Janeiro, in an area approximately 254 km south of Baixo Guandu city, state of Espírito Santo, which is the closest known location, but also adds one more record of its presence in Restinga ecosystems, which are part of the Atlantic Forest domains. The Atlantic Forest domains encompass regions with the highest number of species threatened with extinction in Brazil (IBGE, 2022; Lima *et al.*, 2024). These areas face significant challenges, especially along the coast, where intense

degradation processes have led to substantial habitat alteration and loss (Rocha *et al.*, 2004).

Several authors have demonstrated similarity among Atlantic Forest and the Amazon Rainforest (Santos *et al.*, 2007; Batalha-Filho *et al.*, 2013) as a result of a past connection between these formations (Morley, 2000; Ledo and Colli, 2017). This may explain the disjointed distribution observed in *C. laticeps* and its presence in several vegetation types, such as dry forest areas and transitional zones, between the Amazon Rainforest and Cerrado, in Bolivia (Zaher *et al.*, 2008; Navarro-Cornejo & Gonzales, 2013), and lowland areas of the Atlantic Forest in Brazil (Zaher *et al.*, 2008; Fraga *et al.*, 2019).

Despite that, due to the low number of specimens observed in both Bolivia and Brazil, and few specimens deposited in collections, *C. laticeps* is

Table 2. Summary of mean and standard deviation values, along with minimum and maximum measurements, for seven male individuals of *Chlorosoma laticeps*. *(n=6) Missing data from MZUSP 1389.

| | Total Length* | Tail Length | Ventrals* | Subcaudals |
|---------------------------------------|--------------------------------|-----------------------------|----------------------------|--------------------------|
| Mean ± SD (Min.–Max) (n = 7 males) | 1155.3 ± 196.3 (850 – 1489) | 322.5 ± 33.4 (295 – 382) | 209.7 ± 5.3 (205 – 218) | 114 ± 4.5 (111 – 123) |



Figure 2. *Chlorosoma laticeps* (CHNF1044) from RPPN Caruara, municipality of São João da Barra, state of Rio de Janeiro, Brazil. Photo by Carlos Henrique de-Oliveira-Nogueira.

classified as a rare species and designated as Data Deficient (DD) in national (ICMBio, 2024) and international (IUCN, 2024) lists. Further research into its ecology, behavior, and habitat preferences is crucial for developing effective conservation strategies (Nogueira and Silveira, 2019).

We highlight that observations of seldom-seen and understudied species in a Private Natural Heritage Reserve underscore the importance of these protected areas in preserving biodiversity and providing critical habitats for elusive species, mainly restinga habitats. This observation in São João da Barra, Rio de Janeiro, not only contributes valuable data to the understanding of the distribution but also underscores the importance of continuous monitoring and conservation efforts in preserving the biodiversity of the Atlantic Forest domains.

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