Rediscovery of the snake *Siphlophis pulcher* (Raddi, 1820) (Serpentes: Dipsadidae: Pseudoboini) in the state of Paraná, southern Brazil

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The Neotropical dipsadid genus *Siphlophis* Fitzinger, 1843 comprises seven species distributed throughout South and Central America (Sheehy III et al., 2014). Except for the recently described species *S. ayauma* Sheehy III, Yánez-Muñoz, Valencia & Smith, 2014 whose distribution is restricted to the Ecuadorian Andes (Sheehy III et al., 2014), the other six species [*S. cervinus* (Laurenti, 1768), *S. compressus* (Daudin, 1803), *S. leucocephalus* (Günther, 1863), *S. longicaudatus* (Andersson, 1901), *S. pulcher* (Raddi, 1820), and *S. worontzowi* (Prado, 1940)] show cis-Andean distribution and are present in Brazil (Guedes et al., 2018; Nogueira et al., 2019). All species prefer humid forested habitats, are semiarboreal, nocturnal and feed mainly on lizards (Prudente et al., 1998; Gaiarsa et al., 2013; Marques et al., 2019).

The snake *Siphlophis pulcher* was described from the vicinity of Rio de Janeiro by Raddi (1820). Currently, the species is recognized as endemic to the Brazilian Atlantic Forest, with two disjunct populations recognized: one in the south of the state of Bahia in northeastern Brazil (between 14.669°S, 39.1908°W and 15.4667°S, 39.65°W) and the other occurring from the south of the state of Rio de Janeiro to Santa Catarina (between 22.9°S, 43.1883°W and 27.6°S, 48.4667°W) (all coordinates are provided in SIRGAS2000 Datum). Both populations are mainly from low elevation areas but there are records ranging up to 987 m above sea level in Parque Estadual da Serra do Mar in the state of São Paulo (Hartmann et al., 2009). The most recent summary of the distribution of Brazilian snakes contained 177 records of *Siphlophis pulcher* representing 109

unique localities: six are in the state of Bahia, northeastern Brazil and the other 103 assigned to the southern population (see table S2 in Nogueira et al., 2019). Although most data for the species is associated to the south of Brazil, there is a unique record for the species in the state of Paraná. This record is based in two specimens: IBSP 5587 (female, 820 mm SVL, 167 mm TL) and IBSP 5649 (male, 720 mm SVL, 165 TL), both from the municipality of Morretes (state of Paraná), reported by Amaral (1935). These specimens were probably lost in the Instituto Butantan fire (see Franco, 2012). There are no records for the species occurring in the state of Paraná for the last 85 years available in the literature and/or scientific collections. Here, we present the third known record of *Siphlophis pulcher* in the state of Paraná, by photographs of a living specimen.

The specimen of *Siphlophis pulcher* was found by GO on 25 April 2020 at 22:37 in a private property in the Colonia Marques region, municipality of Morretes, state of Paraná (25.4238°S, 48.8595°W; 23 m of elevation) (Fig. 1A-B). The snake (about 500 mm of total length) was found moving actively in the vegetation ca. 40 cm above ground level (Fig. 1C–F). It was observed during 20 minutes and several photos were taken in the same location were the individual was recorded. The locality is a well-preserved remnant of the Atlantic Forest, characterized by ombrophilous dense forest (Fig. 1G–H). This is an unprotected area, 5.92 km distant from the Parque Estadual Pico do Marumbi (25.4253°S, 48.91699°W) and 7.86 km from the Parque Estadual da Graciosa (25.3844°S, 48.9244°W).

Although the specimen was not collected, the photos plus the unique external morphology and pattern of coloration make the identification of the specimen as *Siphlophis pulcher* clear. The species exhibits red middorsal body blotches covering 4–7 scale rows and agrees with the known distribution of *S. pulcher* in Brazil and also in the state of Paraná (Nogueira et al., 2019). The lack of any additional record of the species in the state of Paraná since 1935 (Amaral, 1935) raises the relevance of this record. It is important to ensure this species is not extinct in nature in the state of Paraná, and this report can contribute to the assessment of its conservation status. Currently, *Siphlophis pulcher* is categorized as least concern in the IUCN and Brazilian red lists (IUCN, 2020; ICMBio, 2018). However, it could be of elevated conservation concern in the revision of the state red-list (IUCN, 2019), although the most recent Red List of threatened fauna for the state of Paraná did not mention this species (Bérnils et al., 2004). Moreover, the species seems to be associated to well-preserved forested areas within Atlantic Forest, which raises the importance and urgency to protect and

maintain the forest remnants of the threatened Atlantic forest of Brazil.

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The information provided in this study is based only in the approximate measurements and photographs taken from the snake in nature. We did not handle, collect or euthanize any specimen reported here. We are grateful to Karla M. Campião for the careful revision of the first draft and for the valuable suggestions that improved the quality of our manuscript. TBG thanks to Universidade Estadual do Maranhão for the Senior Researcher fellowship.

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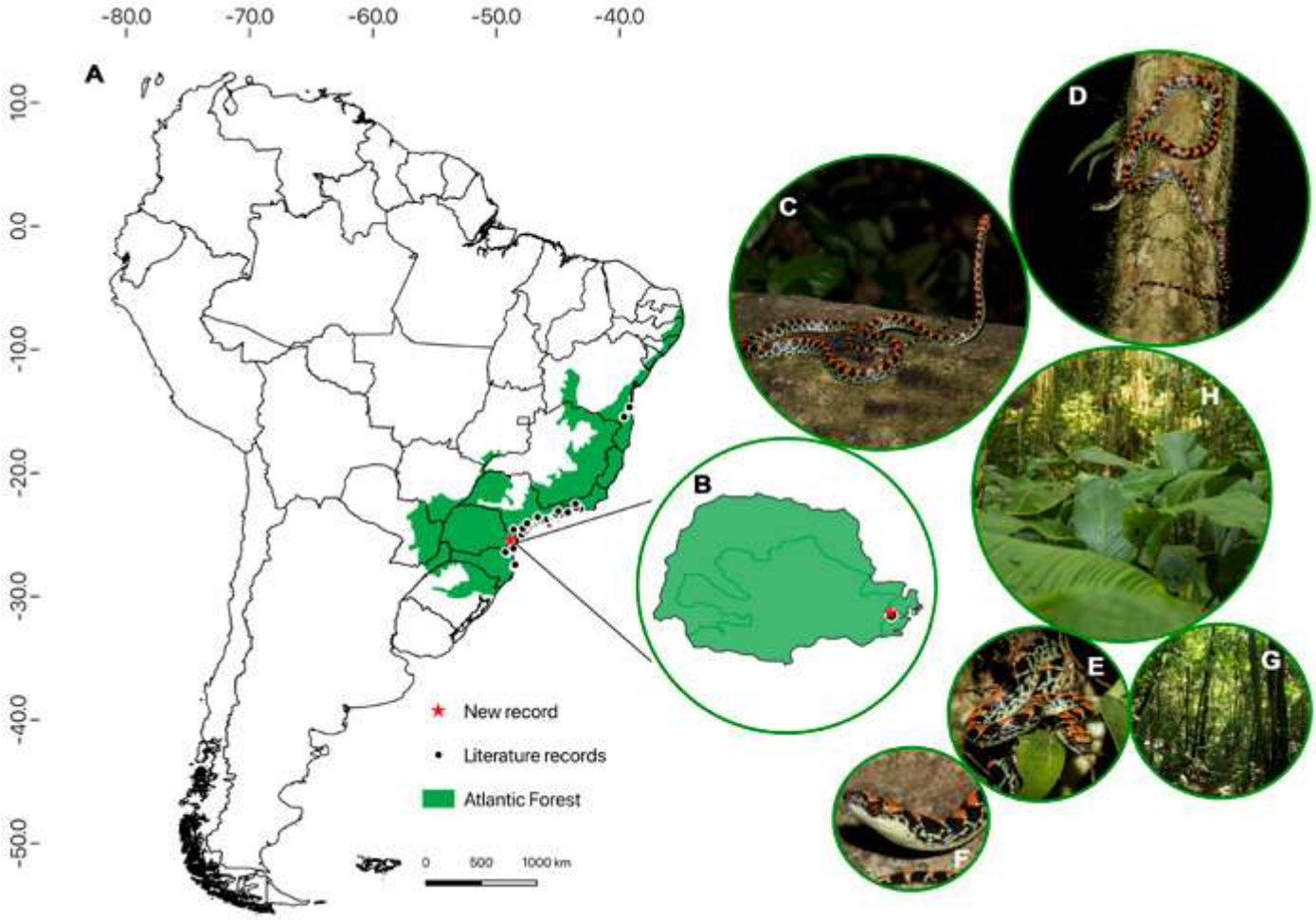


Figure 1. Rediscovery of *Siphlophis pulcher* in the state of Paraná, southern Brazil: (A) Geographic distribution of *S. pulcher* showing the two major populations along the Brazilian Atlantic Forest; (B) Geographic distribution of *S. pulcher* in the state of Paraná showing the new record in Colônia Marques region, municipality of Morretes; (C-D) *S. pulcher* found active during the night exhibiting its pattern of coloration of red middorsal body blotches occupying 4–7 scale rows; (E) Dorsal view of head; (F) Lateral view of head; (G–H) View of the location where *S. pulcher* was observed in the Atlantic Forest, characterized by ombrophilous dense forest. Map was drawn using QGis v. 3.4 and the limits of the Parana Dominion according to Morrone (2014). Literature records source is Nogueira et al. (2019). Photos by GO.



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