

New records and geographical distribution of the Tropical Banded Treesnake *Siphlophis compressus* (Dipsadidae) in Brazil

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The genus *Siphlophis* (Serpentes: Dipsadidae) currently comprises six valid species: *S. cervinus* (Laurenti, 1768), *S. compressus* (Daudin, 1803), *S. leucocephalus* (Günter, 1863), *S. longicaudatus* (Andersson, 1901), *S. pulcher* (Raddi, 1820) and *S. worontzowi* (Prado, 1940), distributed through South and Central America (Bailey, 1970; Cunha and Nascimento, 1978; Lancini, 1986; Nascimento, Ávila-Pires and Cunha, 1985).

Siphlophis compressus is an arboreal snake that usually occurs within humid forests. This species is nocturnal and feeds mainly on lizards, but occasionally on snakes, mammals, anurans, and lizard eggs (Sazima and Argôlo, 1994; Martins and Oliveira, 1998; Prudente, Moura-Leite and Morato, 1998; Marques, Eterovic and Sazima, 2001; Alencar et al., 2009). While *S. compressus* has been reported from Costa Rica southwards into South America, the distribution is likely discontinuous within Atlantic forests from Sergipe (10° S) to Rio de Janeiro (22° S), Amazonia and central Bolivia to Trinidad and Panama (Bailey, 1970; Marques, Eterovic and Sazima, 2001; Savage, 2002). In Brazil, this species has only been recorded in the states of Amazonas, Pará, Rondônia, southern Bahia, and Rio de Janeiro (Bailey, 1970; Martins and Oliveira, 1998; Argôlo, 2004; Rocha et al., 2004; Bernarde and Abe, 2006; Marques et al.,

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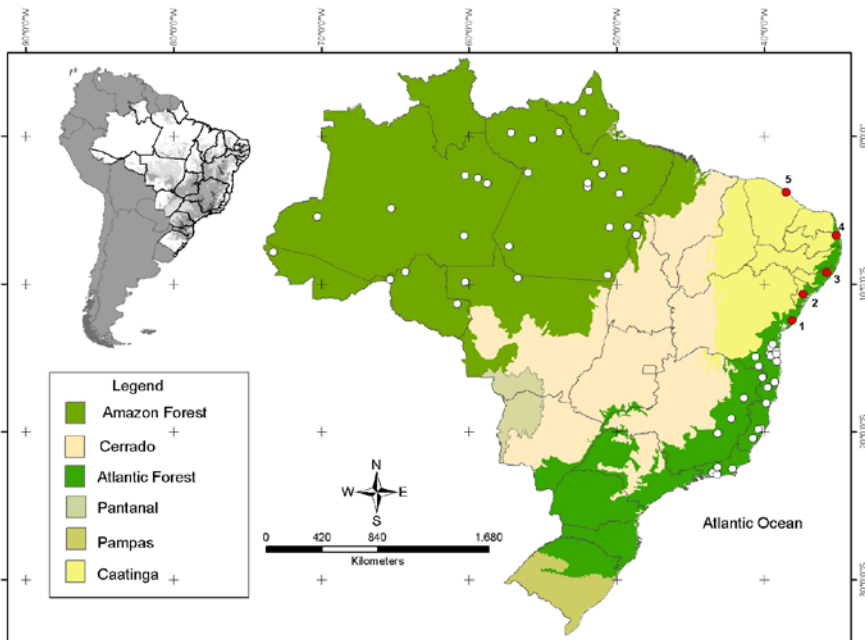


Figure 1. Distribution map of *Siphlophis compressus* indicating the previously known records (white circles) and new records (red circles) in the municipalities of Itabaiana (1), state of Sergipe; Murici (2), state of Alagoas (3); Mamanguape, state of Paraíba (4); and Fortaleza, state of Ceará (5).

Table 1. Morphological data (measurements in mm) of four *Siphlophis compressus* specimens from new occurrence records in the states of Ceará, Paraíba, Alagoas and Sergipe, Brazil.

| Character | IBSP 20295 | CHUNB 56716 | MUFAL 1773 | IBSP 77894 |
|-------------------|------------|-----------------|-----------------|--------------------------|
| Ventrals | 244 | 251 | 250 | 210 |
| Subcaudals | 119 | 127 | 126 | 120 |
| Snout-vent length | 650 | 620 | 352 | 484 |
| Tail length | 220 | 199 | 100 | 137 |
| Sex | Male | Male | Female | Female |
| Eco-region | Caatinga | Atlantic Forest | Atlantic Forest | Caatinga/Atlantic Forest |

2009; Salles, Weber and Silva-Soares, 2010). A record from the state of Sergipe (Bailey, 1970) is not supported by a voucher specimen.

Herein, we present a compilation (Appendix 1) of the known geographical distribution of *S. compressus* in Brazil based on 119 records taken from literature and herpetological collections (Figure 1). Additionally, we present four new records of occurrence for *S. compressus* in the Atlantic Forest and Caatinga ecoregions from northeastern Brazil, located within the states of Ceará, Paraíba, Alagoas and Sergipe. These records represent a range extension of ca. 950-1200 km northwards from the previously known distribution in eastern Brazil (Ibirapitanga, southern Bahia; 14.06°S, 39.43°W; Argôlo, 2004) and Rio Araguaia (6.66°S, 48.68°W, IBSP 34426) near Eldorado dos Carajás, state of Pará.

Individuals of *S. compressus* were collected in the municipality of Murici (Mata da Bananeira, Estação Ecológica de Murici (ESEC Murici): 9.23°S, 35.80°W; 640 m a.s.l.), state of Alagoas on the 4th November 1994. The specimen from Paraíba (field series GRColl 18943) was collected on 5th October 2008 within the Guaribas Biological Reserve (ReBio Guaribas: 6.68°S, 35.12°W; 35 m a.s.l.), in the municipality of Mamanguape. The specimen from Sergipe (field number GSSN 71) was collected during August 2006 in the Parque Nacional Serra de Itabaiana (PNSI: 10.68°S, 37.42°W; 188 m a.s.l.), in the municipality of Itabaiana. The individual from Fortaleza (in the surroundings of Aldeota: 3.789°S, 38.53°W; 21 m a.s.l.) was brought to Instituto Butantan by Alphonse Richard Hoge and Pedro Villela in 1960 (the specimen originally belonged to the Fernando de Castro Lima collection). Vouchers were deposited in the herpetological collection of the Instituto Butantan (IBSP 20295 and 77894), the herpetological collection of the Universidade de Brasília (CHUNB 56716) and the Museu de História Natural de Alagoas (MUFAL 1773).

The four specimens reported here possess 19/19/15 smooth dorsal scale rows, a single cloacal plate, 8/8 supralabials, 10/10 infralabials, 1+2/1+2 oculars and

2+3/2+3 temporal scales. Additional morphological data are provided in Table 1.

Siphlophis compressus was found in remnants of Atlantic Forest in ESEC Murici and ReBio Guaribas. While the ReBio Guaribas is within the Atlantic forest domain, its vegetation represents a transition towards the Caatinga-Cerrado (Langguth, 1995; Aguiar and Martins, 2002; Aguiar and Martins, 2003; Endres, Creão-Duarte and Hernández, 2007). The records of *S. compressus* in the PNSI and Fortaleza demonstrate occurrence of this species in relative dry areas. The PNSI is located on an ecotonal gradient between the Atlantic Forest and the Caatinga known as “agreste” (Ab’Saber, 1960). This area receives more humidity than the semi-arid Caatinga, hence its vegetation is partially shared with the coastal Atlantic Forest (Carvalho and Vilar, 2005; Nunes, 2010). The only herpetofaunal survey carried out in the PNSI (Carvalho and Vilar, 2005) recorded fourteen species of snakes, all ecological or biogeographic related to open areas of the Caatinga (Argôlo, 2004; Rodrigues, 2005) and Cerrado (França, Mesquita and Colli, 2006), making the record of *S. compressus* remarkable. The occurrence of *S. compressus* in Fortaleza at a low altitude inside the Caatinga may be due to the arboreal vegetation of the area, typical of the ecoregion of Depressão Sertaneja Setentorial (cf. Velloso *et al.*, 2002), which provides adequate habitat to this snake. Other snake species that usually inhabit humid forests were also recorded in Fortaleza (e.g. *Pseustes sulphureus* and *Taeniophallus occipitalis*).

The geographical distribution of *Siphlophis compressus* is similar to other Brazilian snakes (e.g. *Epicrates cenchria*, *Bothrops bilineata*, *Lachesis muta*, *Pseustes sulphureus*, *Oxybelis aeneus*), which occur in both the Amazon and the Atlantic rainforest, but do not reach a high latitude in the latter (below Capricorn tropic) (Marques, 1998; Marques, Eterovic and Sazima, 2001; Bérnils, 2009; Passos and Fernandes, 2009). This distribution pattern – also verified in several lizard species (Vanzolini, 1988) – might be related to the ecological constraints that exclude some squamata species in the southernmost portions of the Atlantic Forest (Marques, 1998).

Due to the fact that *S. compressus* is rarely observed (Marques, Eterovic and Sazima, 2001) the species remains poorly known and is presumably endangered in several regions (e.g. Rocha *et al.*, 2000). The records presented here may, therefore, be an important tool for conservation of this species throughout its area of occurrence.

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Appendix. Known localities of occurrence of *Siphlophis compressus* in Brazil, based on herpetological collection data and literature. Acronyms: CHUNB (Coleção Herpetológica da Universidade de Brasília); IBSP (Instituto Butantan); LSUMZ (Museum of Natural Science, Louisiana State University); MHNCI (Museu de História Natural Capão da Imbuia); MNRJ (Museu Nacional); MPEG (Museu Paraense Emílio Goeldi); MUFAL (Museu de História Natural da Universidade Federal de Alagoas); MZUFBA (Museu de Zoologia da Universidade Federal da Bahia); MZUFV (Museu de Zoologia da Universidade Federal de Viçosa); ZUEC (Museu de Zoologia da Universidade Estadual de Campinas).

| Municipality (Locality) | State | Latitude (°S) | Longitude (°W) | Altitude (m) | References |
|---|----------------|----------------------|-----------------------|---------------------|-----------------------------|
| Rodrigues Alves | Acre | 7,82 | 73,24 | 0 | ZUEC 1906 |
| Murici (Mata da Bananeira, Estação Ecológica de Murici) | Alagoas | 9,23 | 35,80 | 640 | MUFAL 1773 |
| Benjamin Constant | Amazonas | 5,44 | 70,29 | 65 | MNRJ 1451 |
| Borba (Rio Madeira) | Amazonas | 4,39 | 5,96 | 45 | MNRJ 1452 |
| Coari | Amazonas | 4,86 | 65,27 | 10 | MPEG 21155, 22259-61 |
| Itacoatiara | Amazonas | 3,17 | 58,78 | 26 | MPEG 23767 |
| Manaus | Amazonas | 2,63 | 60,26 | 92 | Martins and Oliveira (1998) |
| Novo Aripuanã (Mutum) | Amazonas | 6,73 | 60,33 | 20 | MPEG 21124 |
| Rio Preto da Eva (Lindóia) | Amazonas | 2,83 | 59,42 | 47 | MPEG 23524 |
| Oiapoque | Amapá | 3,09 | 51,90 | 10 | IBSP 13767 |
| Serra do Navio | Amapá | 1,65 | 52,27 | 0 | IBSP 19125 |
| Almadina | Bahia | 14,70 | 39,66 | 279 | Argôlo (2004) |
| Aurelino Leal | Bahia | 14,36 | 39,48 | 52 | Argôlo (2004) |
| Barra do Choça | Bahia | 14,90 | 40,58 | 847 | Argôlo (2004) |
| Barro Preto | Bahia | 14,76 | 39,42 | 100 | Argôlo (2004) |
| Buerarema | Bahia | 15,00 | 39,28 | 107 | Argôlo (2004) |
| Gongogi | Bahia | 14,28 | 39,58 | 115 | Argôlo (2004) |
| Ibicaí | Bahia | 14,85 | 39,57 | 162 | Argôlo (2004) |
| Ibirapitanga | Bahia | 14,06 | 39,43 | 113 | Argôlo (2004) |
| Ilhéus | Bahia | 14,75 | 39,20 | 52 | Argôlo (2004) |
| Itamarajú | Bahia | 17,00 | 39,76 | 112 | Argôlo (2004) |
| Macarani | Bahia | 15,55 | 40,38 | 324 | MZUFV 1212 |
| Mucurí | Bahia | 18,06 | 39,87 | 7 | Argôlo (2004) |
| Porto Seguro | Bahia | 16,62 | 39,29 | 49 | Franco et al. (1998) |
| Una | Bahia | 15,22 | 39,17 | 28 | IBSP 50229 |
| Uruçuca | Bahia | 14,52 | 39,22 | 102 | MZUFBA 1992 |
| Fortaleza (Aldeota) | Ceará | 3,79 | 38,53 | 21 | IBSP 20295 |
| Aracruz | Espírito Santo | 19,77 | 40,18 | 60 | Marques et al. (2001) |
| Ibiraçú | Espírito Santo | 19,83 | 40,41 | 36 | IBSP 9784-87 |
| Marechal Floriano | Espírito Santo | 20,43 | 40,77 | 560 | IBSP 7957 |
| Aripuanã | Mato Grosso | 9,86 | 60,26 | 105 | MZUFV 1693 |
| Parnaitá | Mato Grosso | 9,59 | 56,68 | 249 | ZUEC 3458 |
| Alvinópolis | Minas Gerais | 20,11 | 43,15 | 572 | IBSP 17392 |
| Periquito | Minas Gerais | 19,08 | 42,23 | 231 | IBSP 9476, 9536 |
| Santa Maria do Salto | Minas Gerais | 16,31 | 40,12 | 200 | MZUFV 1206-07 |
| Teophilo Ottoni | Minas Gerais | 17,71 | 41,38 | 334 | IBSP 984 |
| Almeirim | Pará | 0,28 | 53,89 | 65 | MPEG 20109 |
| Altamira | Pará | 3,41 | 51,95 | 109 | MPEG 23103 |
| Cametá | Pará | 2,25 | 49,51 | 150 | IBSP 226 |

Appendix. *continued*

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|--------------------------------------|----------------|-------|-------|-----|--|
| Canaã dos Carajás | Pará | 6,07 | 49,25 | 210 | Cunha <i>et al.</i> (1985) |
| Jacareacanga | Pará | 7,44 | 57,30 | 70 | ZUEC 3457 |
| Juruti | Pará | 2,47 | 56,00 | 36 | MPEG 20428, 21030, 22405-09, 22677, 23260-62, 23281-82, 23366 |
| Conceição do Araguaia (Araguaína) | Pará | 6,66 | 48,68 | 160 | IBSP 34426 |
| Melgaço | Pará | 1,79 | 51,43 | 12 | MPEG 18647, 18713, 20229, 20882, 20902, 20942, 22087-89 |
| Óbidos | Pará | 0,17 | 55,69 | 45 | MPEG 23751 |
| Oriximiná | Pará | 0,26 | 57,15 | 46 | MPEG 22161, 22167, 22355, 23853 |
| Parauapebas | Pará | 6,15 | 50,49 | 18 | MPEG 22918, 23317 |
| Portel | Pará | 2,57 | 50,96 | 19 | MPEG 22717 |
| Sant'Ana do Araguaia | Pará | 9,36 | 50,61 | 160 | IBSP 29157 |
| Tucuruí | Pará | 3,86 | 49,82 | 42 | IBSP 46174, 46448, 47075, 47084, 47617-18 |
| Vitória do Xingú | Pará | 3,15 | 51,95 | 0 | MPEG 23107-08 |
| Mamanguape (ReBio Guaribas) | Paraíba | 6,71 | 35,16 | 35 | CHUNB 56716 |
| Casemiro de Abreu | Rio de Janeiro | 22,48 | 42,14 | 17 | MNRJ 13151 |
| Duque de Caxias | Rio de Janeiro | 22,63 | 43,30 | 19 | Salles <i>et al.</i> (2010) |
| Nova Iguaçu (Tinguá) | Rio de Janeiro | 22,70 | 43,50 | 25 | MNRJ 7348 |
| Petrópolis | Rio de Janeiro | 22,40 | 43,16 | 809 | MNRJ 13150 |
| Rio de Janeiro | Rio de Janeiro | 22,90 | 43,21 | 2 | Bailey (1970); MNRJ 3145, 4825, 9758 |
| Rio de Janeiro (Serra do Medanha) | Rio de Janeiro | 22,80 | 43,52 | 15 | Pontes <i>et al.</i> (2008) |
| Espigão d'Oeste | Rondônia | 11,35 | 60,78 | 270 | Bernarde and Abe (2006) |
| Porto Velho | Rondônia | 9,15 | 64,31 | 85 | IBSP 17963, 41164, 47084, 52912, 53003-04, 53124, 53341; LSUMZ 27352; MHNCI 7963; MPEG 23998 |
| Porto Velho (Vila de Abuanã) | Rondônia | 9,70 | 65,36 | 102 | MPEG 21099 |
| Itabaiana (PNSI) | Sergipe | 10,68 | 37,42 | 188 | IBSP 20295 |