

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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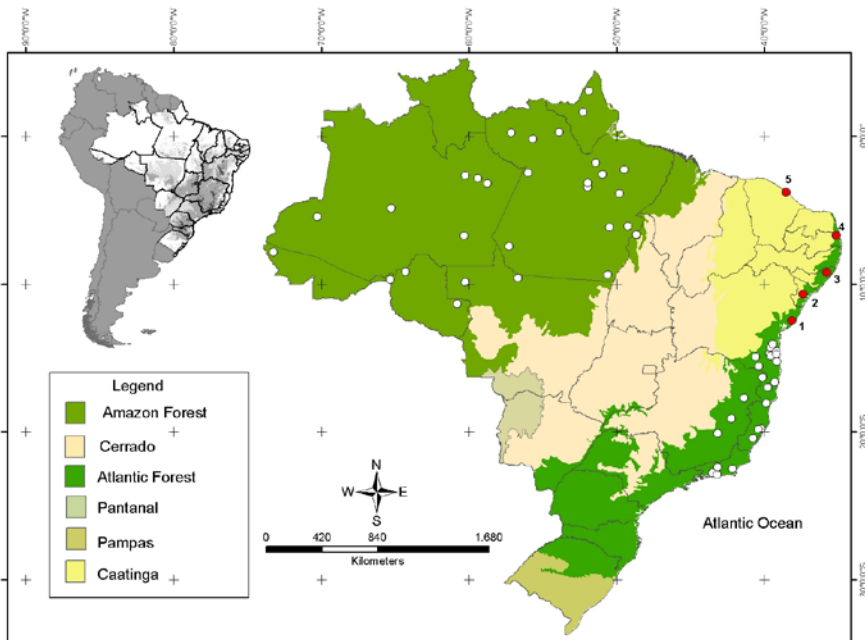


Figure 1. Distribution map of *Siphlophis compressus* indicating the previously known records (white circles) and new records (red circles) in the municipalities of Itabaiana (1), state of Sergipe; Murici (2), state of Alagoas (3); Mamanguape, state of Paraíba (4); and Fortaleza, state of Ceará (5).

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 GRColli 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*

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