



# First records of the snake *Siphlophis leucocephalus* (Günther, 1863) in Minas Gerais, Brazil, and a review of the geographic distribution of *S. longicaudatus* (Andersson, 1901) (Squamata: Dipsadidae)

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**Abstract:** We report *Siphlophis leucocephalus* in the Brazilian state of Minas Gerais. This species is now known to occur in ombrophilous and semidecidual forests in the state of Bahia, and Cerrado gallery forests in Tocantins and Minas Gerais. We also review the distribution of *S. longicaudatus*, a species inhabiting dense ombrophilous forests, ecotones with mixed ombrophilous forests or semidecidual forests, and Cerrado rocky outcrops (*campos rupestres*). This species is recorded from the Brazilian states of Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Santa Catarina and Rio Grande do Sul.

**Key words:** Brazil, Atlantic Forest, biogeography, Cerrado, Serpentes, snakes

*Siphlophis* Fitzinger, 1843 is a Neotropical genus of slender semiarboreal snakes assigned to Pseudoboini Bailey, 1967 (Bailey 1967; Ferrarezzi 1994; Zaher and Prudente 1999; Grazziotin et al. 2012). It contains seven species currently recognized: *S. cervinus* (Laurenti, 1768), from northern South America, Panama, and Trinidad and Tobago (Gaiarsa et al. 2013); *S. compressus* (Daudin, 1803), from Costa Rica through the Amazon basin, southward along the Atlantic Forest (Savage 2002; Guedes et al. 2011); *S. leucocephalus* (Günther, 1863), from eastern and central Brazil (Bailey 1970; Argôlo 2004); *S. longicaudatus* (Andersson, 1901) and *S. pulcher* (Raddi, 1820), from southeastern and southern Brazil (Bailey 1970; Gaiarsa

et al. 2013); *S. worontzowi* (Prado, 1940), from the Amazon basin (Costa et al. 2010); and the recently described *S. ayauma* Sheehy, Yáñez-Muñoz, Valencia & Smith, 2014, from the Amazonian slopes of the Ecuadorian Andes (Sheehy et al. 2014).

Meristic characters are conserved across *Siphlophis* species, with overlap in scale counts, with the exception of *S. ayauma* which has 17 dorsal scale rows (19 in remaining species of the genus) (Sheehy et al. 2014). Enlarged scales in the vertebral row are present only in *Siphlophis compressus* (Peters and Orejas-Miranda 1970), which can also be distinguished by a pinkish-red dorsum with black blotches or bands and a cream venter (Savage 2002; Fraga et al. 2014). The remaining five species are identified by color patterns: *Siphlophis worontzowi* has a black dorsum with white bands (usually with small orange marks), and a black venter (Bailey 1970; Costa et al. 2010); *Siphlophis cervinus* and *S. pulcher* share a similar color pattern, with an orange vertebral line and dorsolateral black and yellow marks, but the black lateral marks are irregularly shaped in *S. cervinus*, while in *S. pulcher* they form pairs of round or lozenge blotches (Bailey 1970; Lema 2002; Fraga et al. 2014); *Siphlophis longicaudatus* has a brown dorsum with dark brown round blotches, more or less offset from the midline, sometimes interconnected, not reaching the venter (Bailey 1970; this study). Finally, *S. leucocephalus* has a white or light brown ground color (with brown or black flecks), and dark brown or black bands or saddles, which reach the ventral scales (Bailey 1970; this study). Photographs of all *Siphlophis* species are in Figure 1.





**Figure 1.** Species currently assigned to *Siphlophis* can be easily identified based on color pattern. **A)** *S. leucocephalus* (near Serra Grande, state of Bahia, Brazil); **B)** *S. ayauma* (holotype; El Topo, Cantón Baños, province of Tungurahua, Ecuador); **C)** *S. compressus* (Wenceslau Guimarães, state of Bahia, Brazil); **D)** *S. cervinus* (Porto Velho, state of Rondônia, Brazil); **E)** *S. pulcher* (Guarulhos, state of São Paulo, Brazil); **F)** *S. longicaudatus* (São Paulo, state of São Paulo, Brazil); **G)** *S. worontzowi* (Porto Velho, state of Rondônia, Brazil). Photos by Rodrigo C.G. Souza (A), Eric N. Smith (B), Renato Gaiga (C, D, G), Antônio Bordignon (E), and Fausto E. Barbo (F).



Two species of *Siphlophis* are currently known from the state of Minas Gerais, in southeastern Brazil: *S. compressus*, from the semidecidual forests of the eastern part of the state, from ca. 200–570 m above sea level (a.s.l.) (Guedes et al. 2011), and *S. longicaudatus*, with only two records: one from semidecidual forests of Parque Estadual do Rio Doce (19.70° S, 042.60° W, 536 m a.s.l.; Prudente and Feio 2001), and one from rocky outcrops (*campos rupestres*) in the municipality of Diamantina (18.23° S, 043.59° W, 1,250 m a.s.l.; Alencar et al. 2009). Herein we report a third species of *Siphlophis* for Minas Gerais, *S. leucocephalus*, close to the northern distribution record of *S. longicaudatus*. We also review the geographic distribution of both species and discuss their biogeographical patterns.

### *Siphlophis leucocephalus*

On 9 February 2012, a juvenile *Siphlophis leucocephalus* was collected by H. Thomassen and M. Lindeman at the margins of a stream in a gallery forest, in an area of rocky outcrops (*campos rupestres*) (17.026575° S, 043.305056° W, datum WGS84, 1,230 m a.s.l.) at Serra de Itacambira,

Tamanduá village, municipality of Itacambira. The specimen was collected under permit #4123-1 issued by the *Instituto Chico Mendes de Conservação da Biodiversidade* and was deposited in the reptile collection of Universidade Federal de Minas Gerais (UFMG-R 1020). A second specimen (UFMG-R 197), collected on 6 March 2010 by F. N. S. Queirós, municipality of Datas (18.44° S, 043.54° W, ca. 1,300 m a.s.l.), is deposited in the same collection (Figure 2). Morphological data of both specimens are in Table 1. Both collection sites are in the Espinhaço Mountain Range (Derby 1906), in areas with a vegetation mosaic typical of transition zones between tropical savannas and tropical moist forests (Gontijo 2008; MMA and IBGE 2004).

Based on these two specimens, *Siphlophis leucocephalus* is recorded for the first time in the state of Minas Gerais. Until now, this species was known to occur in (a) ombrophilous and semidecidual forests in the southeast of the state of Bahia (Bahia Coastal Forests ecoregion [see Olson et al. 2001 for details about Terrestrial Ecoregions]); (b) semidecidual forests of Chapada Diamantina, also in the state of



**Figure 2.** Specimens of *Siphlophis leucocephalus* from Minas Gerais, Brazil. A) UFMG-R 197 (from Datas) in dorsal view; B) same specimen in ventral view; C) UFMG-R 1020 (from Itacambira) in dorsal view; D) same specimen in ventral view. Scale bar = 20 mm.

**Table 1.** Morphological data of two specimens of *Siphlophis leucocephalus* UFMG-R 197 (municipality of Datas), UFMG-R 1020 (municipality of Itacambira), and one of *S. longicaudatus* MCNR 1807 (municipality of Diamantina) from Minas Gerais, Brazil. A stroke (/) is used when the counts from left/right sides are different. SL+O = supralabials contacting the ocular; IL+C1 = infralabials contacting the first pair of chinshields; IL+C2 = infralabials contacting the second pair of chinshields.

|                        | <i>S. leucocephalus</i><br>(UFMG-R 197) | <i>S. leucocephalus</i><br>(UFMG-R 1020) | <i>S. longicaudatus</i><br>(MCNR 1807) |
|------------------------|-----------------------------------------|------------------------------------------|----------------------------------------|
| Snout-vent length (mm) | 766                                     | 252                                      | 788                                    |
| Caudal length (mm)     | 192                                     | 79                                       | 84+n                                   |
| Sex                    | Male                                    | Male                                     | Female                                 |
| Dorsals                | 19-19-15                                | 19-19-17                                 | 19-19-17                               |
| Preventrals            | 1                                       | 1                                        | 1                                      |
| Ventrals               | 240                                     | 230                                      | 247                                    |
| Subcaudals             | 85                                      | 113                                      | 33+n                                   |
| Cloacal                | Single                                  | Single                                   | Single                                 |
| Supralabials           | 8                                       | 8                                        | 7 / 8                                  |
| SL+O                   | iv-v                                    | iii-v                                    | iii-iv / iv-v                          |
| Infralabials           | 9*                                      | 9                                        | 8 / 9                                  |
| IL+C1                  | i-iv                                    | i-iv                                     | i-iv / i-iii,v                         |
| IL+C2                  | iv-v                                    | iv-v                                     | iv-v / v-vi                            |
| Nasal                  | Divided                                 | Divided                                  | Divided                                |
| Temporals              | 2+3                                     | 2+3                                      | 2+3                                    |
| Preocular              | 1                                       | 1                                        | 2                                      |
| Postocular             | 2                                       | 2                                        | 2                                      |
| Dark body bands        | 19                                      | 21                                       | 55                                     |
| Dark tail bands        | 7                                       | 9                                        | 8                                      |

\* The first pair of infralabials is not in contact with each other in UFMG-R 197.

Bahia (Caatinga ecoregion); and (c) gallery forests in the Cerrado ecoregion of Arraias (Cana Brava), state of Tocantins (Amaral 1935; Prudente et al. 1998 [see Nogueira et al. 2010 for the correct location of Amaral's Cana Brava]) (Figures 3 and 4; Table 2). Prudente (1998) considers Cana Brava a doubtful locality, but the new records here present reinforce the occurrence of this species in gallery forests of the Cerrado.

The elevation range of *Siphlophis leucocephalus* is 70–1,280 m a.s.l. (mean elevation 483 m a.s.l.). Its southernmost record is the municipality of Datas (18.44° S, 043.65° W), while the northernmost record is Cana Brava (12.78° S, 046.88° W).

The global conservation status of *Siphlophis leucocephalus* was recently reassessed (Martins et al. 2010) as Least Concern (LC). However, the spatial data presented by the IUCN (<http://maps.iucnredlist.org/map.html?id=177536>) does not include all previous known records for this species, such as those in southeastern Bahia (Argôlo 2004) and the northernmost/westernmost record in Cana Brava, Tocantins (Amaral 1935) (Figures 3 and 4), although Martins et al. (2010) explicitly cite this last locality. Although our data reinforce the conservation status proposed by Martins et al. (2010) for *S. leucocephalus*, we suggest a review of the spatial data of this species by the IUCN, considering the updated map presented herein.

*Siphlophis leucocephalus* is not present in the Brazilian list of threatened species (MMA 2014). Besides, the states of Tocantins and Bahia still have not published red lists, and the red list of Minas Gerais cites the species as LC (Fundação Biodiversitas 2007), although

we are unaware of any previous record of *S. leucocephalus* for this state. Curiously, *S. leucocephalus* is also cited as native to Minas Gerais by Martins et al. (2010), without further detail.

### *Siphlophis longicaudatus*

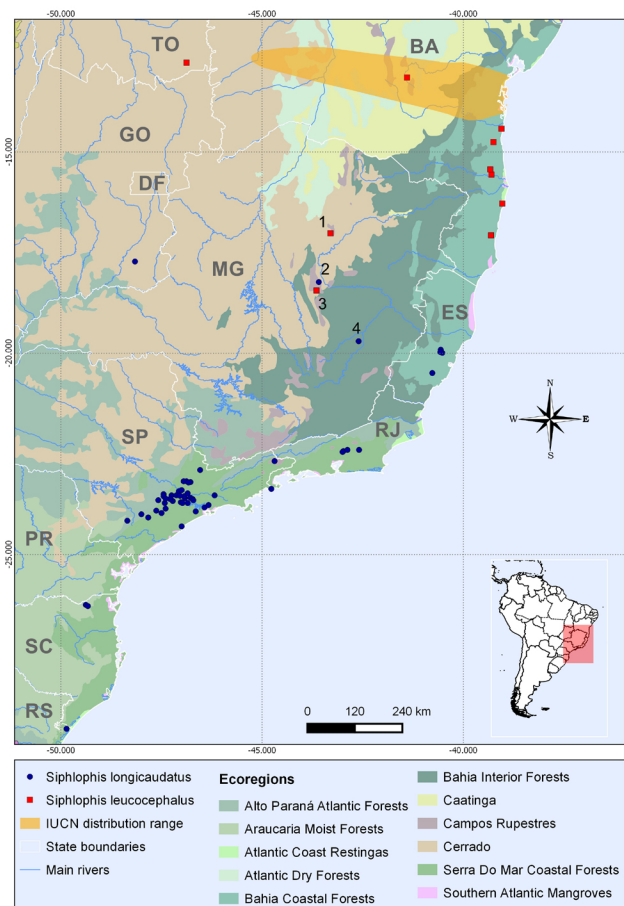
Itacambira and Datas (new records of *S. leucocephalus*) are, respectively, approximately 125 km N and 25 km S of Diamantina, the northernmost record of *S. longicaudatus*, also in the Espinhaço Mountain Range. We reexamined the specimen MCNR 1807, from Diamantina, referred to by Alencar et al. (2009), and confirm its identity as *S. longicaudatus* (Figure 5; Table 1). Thus, *S. longicaudatus* and *S. leucocephalus* may be sympatric in Cerrado areas of north-central Minas Gerais. However, there are no available data supporting syntopy of both species in rocky outcrops, since *S. leucocephalus* has not yet been recorded outside gallery forests, while *S. longicaudatus* has not been found in gallery forests in the Campos Rupestres ecoregion.

A review of specimens of *Siphlophis longicaudatus* (Bérnils 2009), together with a review of literature records provide a better idea of the geographic distribution of this species. Specimens from the following Brazilian collections were examined during 2005–2009: Instituto Butantan, São Paulo (IBSP), Museu de Biologia Professor Mello-Leitão, Espírito Santo (MBML), Museu de História Natural Capão da Imbuia, Paraná (MHNCI), Museu Nacional, Rio de Janeiro (MNRJ), and Universidade Federal do Rio de Janeiro, Rio de Janeiro (ZUFRRJ).

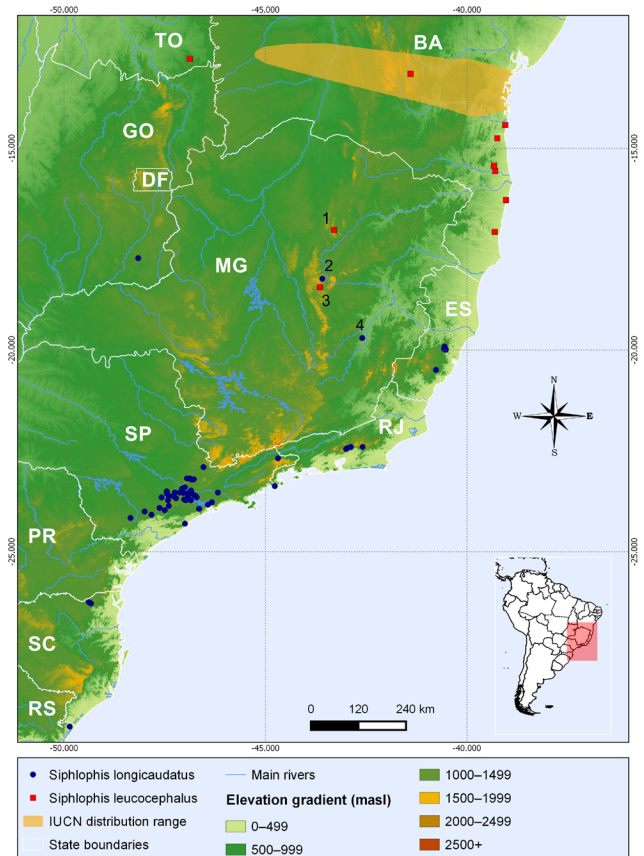
Based on these records, we conclude *Siphlophis*

*longicaudatus* mainly inhabits dense ombrophilous forests (*sensu* IBGE 2012) in the Bahia Coastal Forests and Serra do Mar Coastal Forests ecoregions. Records from mixed ombrophilous forests in the Araucária

Moist Forests ecoregion and most records from semideciduous forests in the Alto Paraná Atlantic Forests ecoregion are restricted to transitional areas with dense ombrophilous forests at elevations between *ca.* 750–1,000 m a.s.l. There are only two records outside this pattern, both in the state of Minas Gerais: one from semideciduous forests in the Parque Estadual do Rio Doce



**Figure 3.** Geographic distribution map of *Siphlophis leucocephalus* (red squares) and *S. longicaudatus* (blue dots) based on terrestrial ecoregions (Olson et al. 2001). Orange shaded area is the IUCN distribution range for *S. leucocephalus* (<http://maps.iucnredlist.org/map.html?id=177536>). BA = Bahia; DF = Distrito Federal; ES = Espírito Santo; GO = Goiás; MG = Minas Gerais; PR = Paraná; RJ = Rio de Janeiro; RS = Rio Grande do Sul; SC = Santa Catarina; SP = São Paulo; TO = Tocantins. Records in MG: 1) Itacambira, Serra de Itacambira, Tamanduá village; 2) Datas; 3) Diamantina; 4) Marliéria, Parque Estadual do Rio Doce. See Tables 2 and 3 for locality details.



**Figure 4.** Geographic distribution map of *Siphlophis leucocephalus* (red squares) and *S. longicaudatus* (blue dots) based on elevation gradient. Orange shaded area is the IUCN distribution range for *S. leucocephalus* (<http://maps.iucnredlist.org/map.html?id=177536>). Records in Minas Gerais: 1) Itacambira, Serra de Itacambira, Tamanduá village; 2) Datas; 3) Diamantina; 4) Marliéria, Parque Estadual do Rio Doce. See Tables 2 and 3 for locality details.

**Table 2.** Locality records of *Siphlophis leucocephalus*. When the source of record did not provide geographic coordinates, they were obtained from Paynter and Taylor (1991), IBGE (2011) or Google Earth™ software. Latitude (Lat.) and longitude (Long.) in decimal degrees.

| State        | Municipality, Locality                            | Lat.       | Long.      | Elevation (m) | Source of record                                                     | Source of coordinate |
|--------------|---------------------------------------------------|------------|------------|---------------|----------------------------------------------------------------------|----------------------|
| Bahia        | Ilhéus                                            | -14.75     | -39.25     | 90            | Freitas 2003; Argôlo 2004                                            | County seat          |
| Bahia        | Mascote                                           | -15.56     | -39.30     | 80            | Argôlo 2004                                                          | County seat          |
| Bahia        | Mucugê, district of Cascavel, Caraíbas            | -13.15     | -41.40     | 1160          | Freitas et al. 2012                                                  | Freitas et al. 2012  |
| Bahia        | Santa Cruz Cabrália                               | -16.28     | -39.03     | 80            | Prudente 1998                                                        | County seat          |
| Bahia        | Uruçuca, near Serra Grande                        | -14.416519 | -39.056836 | 70            | Rodrigo C. G. de Souza (Figure 1)                                    | GPS                  |
| Bahia        | Prado, Parque Nacional do Descobrimento           | -17.07657  | -39.30505  | 75            | Uetz 2014 (photograph)                                               | Approximate          |
| Bahia        | Santa Luzia                                       | -15.43     | -39.33     | 290           | Argôlo 2004                                                          | County seat          |
| Minas Gerais | Datas                                             | -18.44     | -43.65     | 1280          | UFMG-R 197                                                           | County seat          |
| Minas Gerais | Itacambira, Serra de Itacambira, Tamanduá village | -17.02     | -43.30     | 1230          | UFMG-R 1020                                                          | GPS                  |
| Tocantins    | Arraias, Cana Brava                               | -12.78     | -46.88     | 600           | Amaral 1935 (as <i>S. cervinus geminatus</i> ); Prudente et al. 1998 | Approximate          |





**Figure 5.** Specimen of *Siphlophis longicaudatus* (MCNR 1807) from Diamantina, Minas Gerais, Brazil, the northernmost record of this species. A) dorsal view; B) ventral view. Scale bar = 20 mm.

**Table 3.** Locality records of *Siphlophis longicaudatus*. When the source of record did not provide geographic coordinates, they were obtained from Paynter and Taylor (1991), IBGE (2011) or Google Earth® software. Latitude (Lat.) and longitude (Long.) in decimal degrees. Records with a more precise elevation data are marked with an asterisk (\*)

| State          | Municipality, Locality                          | Lat.       | Long.      | Elevation (m) | Source                         | Source of coordinate   |
|----------------|-------------------------------------------------|------------|------------|---------------|--------------------------------|------------------------|
| Espírito Santo | Marechal Floriano, Estação Ferroviária Araguaia | -20.49     | -40.77     | 720           | IBSP 9727                      | Approximate            |
| Espírito Santo | Santa Teresa, Estação Biológica de Santa Lúcia  | -19.97     | -40.54     | 650*          | MBML 723                       | Approximate            |
| Espírito Santo | Santa Teresa, Penha                             | -19.95     | -40.56     | 670*          | MBML 482                       | Approximate            |
| Espírito Santo | Santa Teresa, Valsugana Velha                   | -19.97     | -40.57     | 800*          | MBML 697                       | Approximate            |
| Minas Gerais   | Diamantina                                      | -18.232556 | -43.587472 | 1250*         | MCNR 1807; Alencar et al. 2009 | Alencar et al. 2009    |
| Minas Gerais   | Marliéria, Parque Estadual do Rio Doce          | -19.70     | -42.60     | 270*          | Prudente and Feio 2001         | Prudente and Feio 2001 |
| Rio de Janeiro | Cachoeiras de Macacu, Fazenda Santa Bárbara     | -22.40     | -42.59     | 500*          | MNRJ 16910                     | Approximate            |

Continued

Table 3. Continued.

| State             | Municipality, Locality                                                                                                                    | Lat.   | Long.  | Elevation (m) | Source                                                                 | Source of coordinate |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|---------------|------------------------------------------------------------------------|----------------------|
| Rio de Janeiro    | Teresópolis                                                                                                                               | -22.43 | -42.98 | 950           | IBSP 13179, 55702, MNRJ 7985, ZUFJR 305, 1533; Zaher and Prudente 1999 | County seat          |
| Rio de Janeiro    | Teresópolis, <i>Parque Nacional Serra dos Órgãos</i>                                                                                      | -22.45 | -43.00 | 1200          | MNRJ 2881; Levandeira-Gonçalves et al. 2007                            | Approximate          |
| Rio de Janeiro    | Teresópolis, <i>Rio das Bengalas</i>                                                                                                      | -22.40 | -42.88 | 800*          | MNRJ 8856                                                              | Approximate          |
| Rio Grande do Sul | Dom Pedro de Alcântara (former Colônia São Pedro, a district of the municipality of Torres; type-locality of <i>Siphlophis cinereus</i> ) | -29.33 | -49.86 | 100           | Lema 1964                                                              | County seat          |
| Santa Catarina    | São Bento do Sul                                                                                                                          | -26.25 | -49.38 | 850           | IBSP 6136, 52093                                                       | County seat          |
| Santa Catarina    | São Bento do Sul, <i>Estação Ferroviária Rio Vermelho</i>                                                                                 | -26.28 | -49.33 | 820           | IBSP 6898; Zaher and Prudente 1999                                     |                      |
| São Paulo         | Alumínio                                                                                                                                  | -23.53 | -47.25 | 800           | IBSP 41183                                                             | County seat          |
| São Paulo         | Araçariquama                                                                                                                              | -23.43 | -47.07 | 700           | IBSP 69178-9                                                           | County seat          |
| São Paulo         | Areias, <i>Fazenda Vargem Grande</i>                                                                                                      | -22.68 | -44.69 | 590           | Prudente 1998                                                          | Approximate          |
| São Paulo         | Bragança Paulista, <i>Estação Ferroviária Curitibaanos<sup>1</sup></i>                                                                    | -22.90 | -46.54 | 800           | IBSP 1557                                                              | Approximate          |
| São Paulo         | Campo Limpo Paulista                                                                                                                      | -23.20 | -46.78 | 760           | Prudente et al. 1998                                                   | County seat          |
| São Paulo         | Cotia                                                                                                                                     | -23.60 | -46.92 | 820           | IBSP 51992, 54639, 63892; Marques et al. 2004                          | County seat          |
| São Paulo         | Cotia, <i>Caucaia do Alto</i>                                                                                                             | -23.70 | -47.02 | 920           | IBSP 59881, MHNCI 8343                                                 | Approximate          |
| São Paulo         | Cotia, <i>Reserva Florestal Morro Grande</i>                                                                                              | -23.72 | -46.98 | 950*          | IBSP 23209                                                             | Approximate          |
| São Paulo         | Cubatão, <i>Rio Perequê</i>                                                                                                               | -23.83 | -46.43 | 410           | Prudente 1998                                                          | Approximate          |
| São Paulo         | Ibiúna                                                                                                                                    | -23.67 | -47.22 | 870           | IBSP 46181, 58725, 62674; Marques et al. 2004                          | County seat          |
| São Paulo         | Ibiúna, <i>Campo Verde</i>                                                                                                                | -23.62 | -47.29 | 850           | BSP 40722, 56975                                                       | Approximate          |
| São Paulo         | Itapeçerica da Serra                                                                                                                      | -23.72 | -46.85 | 880           | IBSP 54777                                                             | County seat          |
| São Paulo         | Itapevi                                                                                                                                   | -23.55 | -46.93 | 770           | IBSP 51991, 53827, 60612, 68907                                        | County seat          |
| São Paulo         | Jundiaí                                                                                                                                   | -23.18 | -46.88 | 730           | IBSP 10485                                                             | County seat          |
| São Paulo         | Jundiaí, <i>Pepsi-Cola</i>                                                                                                                | -23.18 | -46.95 | 700           | MHNCI 8345                                                             | Approximate          |
| São Paulo         | Mogi das Cruzes                                                                                                                           | -23.53 | -46.18 | 770           | IBSP 10225                                                             | County seat          |
| São Paulo         | Peruíbe                                                                                                                                   | -24.30 | -47.00 | 10†           | Prudente 1998                                                          | County seat          |
| São Paulo         | Piedade                                                                                                                                   | -23.72 | -47.42 | 840           | IBSP 56179, 56227; Condez et al. 2009                                  | County seat          |
| São Paulo         | Piedade, <i>Peixe de Cima</i>                                                                                                             | -23.86 | -47.40 | 980           | IBSP 57019; Condez et al. 2009                                         | Approximate          |
| São Paulo         | Pirapora do Bom Jesus                                                                                                                     | -23.40 | -47.00 | 700           | IBSP 33948                                                             | County seat          |
| São Paulo         | Ribeirão Grande, <i>Sumidouro</i>                                                                                                         | -24.16 | -48.35 | 730           | MHNCI 10871                                                            | Approximate          |
| São Paulo         | Salto de Pirapora                                                                                                                         | -23.65 | -47.58 | 600           | IBSP 9777                                                              | County seat          |
| São Paulo         | Santana de Parnaíba, <i>Melville</i>                                                                                                      | -23.48 | -46.85 | 760           | IBSP 62140                                                             | Approximate          |
| São Paulo         | Santo André, <i>Paranapiacaba, Estação Biológica Alto da Serra</i>                                                                        | -23.77 | -46.33 | 770*          | IBSP 23519, 26863, 40725                                               | Approximate          |
| São Paulo         | São Miguel Arcanjo, <i>Fazenda Santa Helena</i>                                                                                           | -24.00 | -48.00 | 730           | IBSP 44336                                                             | Approximate          |
| São Paulo         | São Miguel Arcanjo, <i>Parque Estadual Carlos Botelho</i>                                                                                 | -24.08 | -47.83 | 800*          | Forlani et al. 2010                                                    | Approximate          |
| São Paulo         | São Paulo, <i>Butantan</i>                                                                                                                | -23.59 | -46.78 | 767*          | Barbo et al. 2011                                                      | Approximate          |
| São Paulo         | São Paulo, <i>Campo Limpo</i>                                                                                                             | -23.62 | -46.73 | 780*          | Barbo et al. 2011                                                      | Approximate          |
| São Paulo         | São Paulo, <i>Estação Ferroviária Evangelista de Souza</i>                                                                                | -23.93 | -46.65 | 760           | IBSP 10191                                                             | Approximate          |
| São Paulo         | São Paulo, <i>Santo Amaro</i>                                                                                                             | -23.65 | -46.71 | 760*          | IBSP 54957                                                             | Approximate          |
| São Paulo         | São Roque                                                                                                                                 | -23.53 | -47.13 | 800           | IBSP 15575, 53567, 55239; Prudente et al. 1998                         | County seat          |
| São Paulo         | São Roque, <i>Estação Ferroviária São João Novo</i>                                                                                       | -23.54 | -47.04 | 830           | IBSP 9520, 10075; Zaher and Prudente 1999                              | Approximate          |
| São Paulo         | Sorocaba                                                                                                                                  | -23.50 | -47.45 | 560           | Zaher and Prudente 1999                                                | County seat          |
| São Paulo         | Tapiraí                                                                                                                                   | -23.97 | -47.50 | 900           | IBSP 44319; Condez et al. 2009                                         | County seat          |
| São Paulo         | Tapiraí, <i>Colônia do Chá</i>                                                                                                            | -23.91 | -47.63 | 900           | IBSP 28222; Prudente et al. 1998; Condez et al. 2009                   | Approximate          |
| São Paulo         | Ubatuba, <i>Sertão Camburi</i>                                                                                                            | -23.37 | -44.77 | 200           | MHNCI 8344                                                             | Approximate          |
| São Paulo         | Vargem Grande Paulista                                                                                                                    | -23.21 | -46.83 | 720           | IBSP 62709                                                             | County seat          |
| São Paulo         | Votorantim                                                                                                                                | -23.55 | -47.45 | 610           | IBSP 42944                                                             | County seat          |
| São Paulo         | Votorantim, <i>barragem Itupararanga</i>                                                                                                  | -23.61 | -47.40 | 840*          | IBSP 3079                                                              | Approximate          |

<sup>1</sup> Not the municipality of Curitibaanos, state of Santa Catarina.

† Elevation range in Perúibe varies from the sea level to above 800 m. Since there is no specific information about the collection site in Perúibe, we used the county seat elevation in this table.

(Bahia Interior Forests ecoregion) (Prudente and Feio 2001), and one from rocky outcrops in a Cerrado matrix at Diamantina, based on specimen MCNR 1807 (Alencar et al. 2009) (Figures 3 and 4; Table 3).

A second Cerrado record for *Siphlophis longicaudatus* is plausible, however; Prudente (1998) found in the Instituto Butantan a specimen (IBSP 55257) identified by her as *S. longicaudatus*. The specimen came from Ipameri, state of Goiás (17.72° S, 048.16° W), which was considered as an error, because Ipameri lies many km west of the distribution hitherto known for the species (Prudente 1998). In 2010, the Instituto Butantan suffered a fire and the extent of loss is still undetermined (Franco 2012). The registration book, however, was not lost, and states that some snakes typical of Central Brazil were donated to Butantan by the same collector and in the same period as the *S. longicaudatus* from Ipameri (e.g. *Oxyrhopus guibei*, *O. trigeminus*, *Sibynomorphus mikanii*, *Epicrates crassus*, and *Bothrops moojeni*). Furthermore, the Ipameri region is covered by semideciduous forests along rivers of the Paranaíba Basin (MMA and IBGE 2004). This suggests that Ipameri could also support species such as *S. longicaudatus*. Despite this, the record for Goiás remains suspicious, but the unusual relationship of *S. leucocephalus* and *S. longicaudatus* with tropical moist forests and tropical savanna biomes here demonstrated remains unresolved.

Another doubtful record is from Dom Pedrito, state of Rio Grande do Sul (31.07° S, 054.69° W), in the Uruguayan Savanna ecoregion (Prudente 1998), about 500 km SW from the southernmost record in Dom Pedro de Alcântara. We believe this record from Dom Pedrito is a mistake caused by confusion with Colônia São Pedro, former name of Dom Pedro de Alcântara, and thus is not a credible record.

Although most collection records lack exact elevation data (Table 3), there is an unequivocal preference of *Siphlophis longicaudatus* for mountainous areas, from intermediate (500–700 m) to high elevations (above 800 m). Overall, this species ranges between about 100–1,250 m a.s.l. Considering only records with more precise data, the elevation range varies between 270–1,250 m a.s.l. (mean 757 m a.s.l.).

Our results show that *Siphlophis longicaudatus* occurs in the Brazilian states of Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Santa Catarina and Rio Grande do Sul. Its occurrence in the state of Paraná is expected in ombrophilous forests above 750 m a.s.l. The southernmost record of *S. longicaudatus* is Dom Pedro de Alcântara, state of Rio Grande do Sul (29.36° S, 049.85° W). The lowest elevation record (considering only localities with more precise elevation data) is *Parque Estadual do Rio Doce* (Rio Doce State Park), municipality of Marliéria, state of Minas Gerais (19.70° S, 042.60° W, 270 m a.s.l.), while the highest elevation record is

Diamantina, state of Minas Gerais (18.23° S, 043.59° W, 1250 m a.s.l.).

The conservation status of *Siphlophis longicaudatus* was not evaluated by the IUCN, but due to its wide range, it probably will be considered globally LC. This taxon was not presented in the last available Red List of Brazilian endangered species (MMA 2014). It was considered “Endangered” in Rio Grande do Sul (Marques et al. 2002), but is absent from a recent update of the red list (Rio Grande do Sul 2014). In São Paulo *S. longicaudatus* is listed as LC (Marques et al. 2009). It was not evaluated in the Red List of Minas Gerais (Fundação Biodiversitas 2007) and was not included in the lists of Rio de Janeiro (Rocha et al. 2000), Espírito Santo (Almeida et al. 2007) and Santa Catarina (CONSEMA 2011).

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