



New records of the rare Troschel's Pampas Snake, *Phimophis guianensis* (Serpentes: Dipsadidae) in Brazil

OMAR M. ENTIAUSPE-NETO¹, WEVERTON S. AZEVEDO², VALQUIRIA O. PEREIRA²,
ARTHUR D. ABEGG², ANDERSON M. ROCHA³ and DANIEL LOEBMANN¹

¹Universidade Federal do Rio Grande, Instituto de Ciências Biológicas, Laboratório de Vertebrados, Avenida Itália, Km 8, Vila Carreiros, 96203-900 Rio Grande, RS, Brazil

²Instituto Butantan, Laboratório Especial de Coleções Zoológicas, Avenida Vital Brasil, 1500, Butantã, 05503-900 São Paulo, SP, Brazil

³Faculdade Cathedral de Ensino Superior, Laboratório de Zoologia Aplicada de Vertebrados Terrestres e Aquáticos, Avenida Luis Canuto Chaves, 293, Caçari, 69307-655 Boa Vista, RR, Brazil

Manuscript received on February 7, 2018; accepted for publication on April 10, 2018

ABSTRACT

The Troschel's Pampas Snake, *Phimophis guianensis* (Troschel, 1848), is widely distributed in Amazonian Savannas at northern South America and a small portion of southern Central America, being recorded to Brazil based on three historical records, that ranged from 1997 to 2002, in Amapá and Pará states. In this study, we revise all known records of *P. guianensis*, providing an updated distribution map, and the first record to Roraima state.

Key words: Amazonian Savannah, Roraima, distribution gap, Squamata, Pseudoboini.

INTRODUCTION

Amazonian Savannas are sparsely distributed and fragmented across northern South America, being characterized by a unique phytophysognomy of arbustive and grassland plant species, that contrast with the tall-canopy tropical rainforest that encircle it (Eiten 1978, França et al. 2006, Carvalho et al. 2016). It has also been suggested that these grassland enclaves within the Amazon forest constitute relictual portions of a once wide savanna formation, that encompassed most of northern South America, southwards to central Brazil, and rose during the Pleistocene epoch, as the outcome

of glacial periods (Eden 1974, Ab'Sáber 1982, Bigarella and Andrade-Lima 1982, Huber 1982, França et al. 2006). These areas usually present poorly diverse, although highly endemic reptile communities, that have been seldom studied (Ávila-Pires 1995, Vitt and Carvalho 1995, Colli 1996, França et al. 2006).

Phimophis Cope 1860 is a Pseudoboini genus that encompasses three species, *Phimophis guerini* (Duméril, Bibron, and Duméril 1854), *Phimophis guianensis* (Troschel 1848) and *Phimophis vittatus* (Boulenger 1896), distributed from Central America, in Panama, to South America, in Argentina and southern Brazil (Peters et al. 1970, Uetz et al. 2017). These are terrestrial or fossorial, nocturnal, small

Correspondence to: Omar Machado Entiauspe-Neto
E-mail: omarentiauspe@hotmail.com

to medium sized snakes, that prey upon lizards, amphibians and rodents (Yanosky et al. 1996, Sawaya et al. 2008, González-Carcacia et al. 2012).

The Troschel's Pampas Snake, *Phimophis guianensis* (Troschel 1848), has been recorded from Panamá, in Central America, to Colombia, Venezuela, Guyana, Surinam, French Guyana, and Brazil (Troschel 1848, Dunn 1944, Hoogmoed 1982, Lancini and Kornacker 1989, Frota et al. 2005, França et al. 2006, Cole et al. 2013, Blanco-Torres et al. 2013). *Phimophis guianensis* was first recorded in Brazil based on three specimens from Amazonian Savanna areas at Amapá and Pará states, in northern Brazil, that ranged from a timespan of 1997 to 2002 (Frota et al. 2005 and França et al. 2006). Herein, we provide new records of this species at Brazilian territory.

MATERIALS AND METHODS

While conducting fieldwork in the municipality of Cantá (2.2000N, -60.4833W, DATUM WGS 84), Roraima State, Brazil (Figure 1), on 28 April 2017, at 22:25 hours, the authors encountered two individuals of *P. guianensis*, shortly apart from each other, at the Km 16 of the BR-401. Identification follows Starace (1998) and Mumaw et al. (2015). Tissue samples were deposited in 90% ethanol, and individuals were fixated in a solution of 10% formalin, then preserved in 75% ethanol, and deposited in the herpetological collection of Universidade Federal do Rio Grande (Rio Grande, Rio Grande do Sul, Brazil) under the voucher CHFURG 5888 and CHFURG 5889. Measurements were taken with a flexible ruler or a dial caliper. SVL refers to "snout-vent length", TL

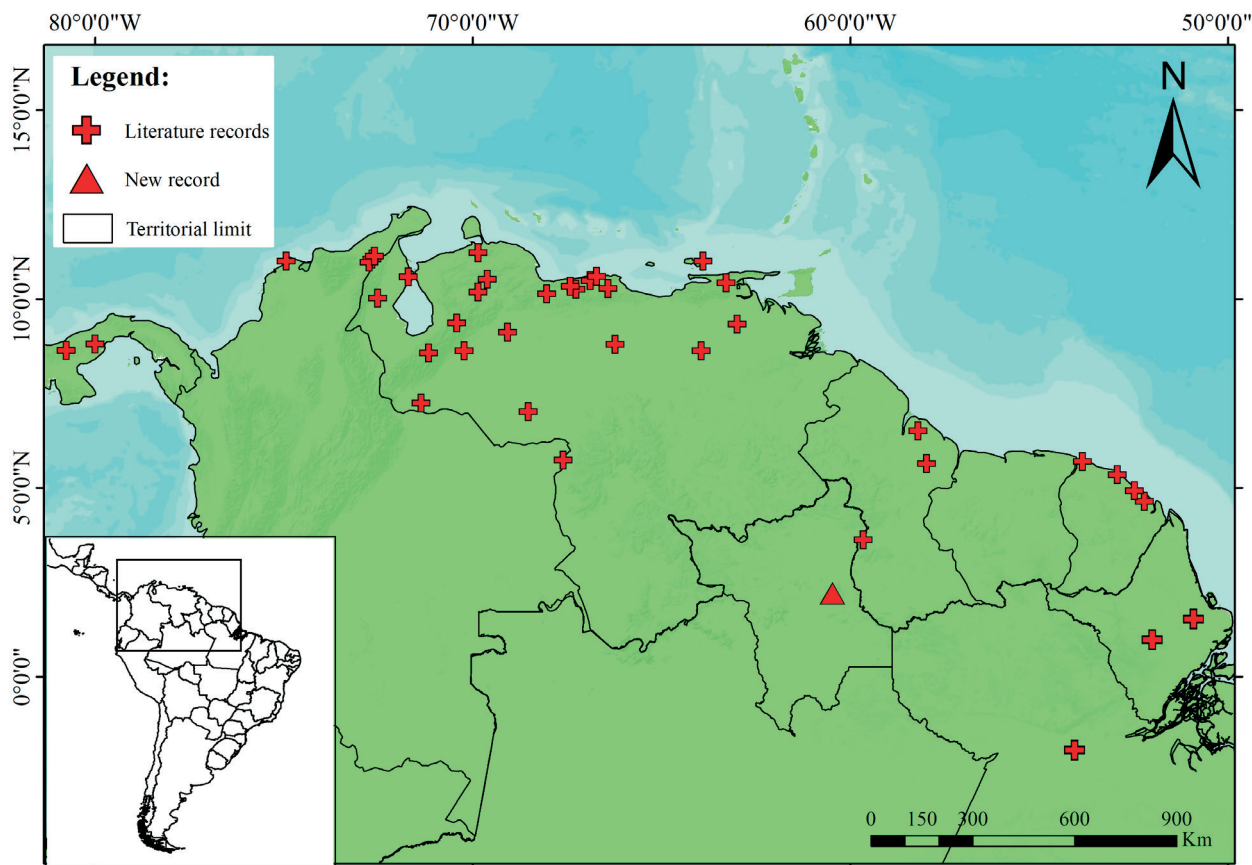


Figure 1 - Distribution of *Phimophis guianensis* (Triangle: new records; Crosses: literature records).

to “tail length”, HL to “head length”, and HW to “head width”.

RESULTS

The specimen CHFURG 5889 is a subadult male (Fig. 2a), that presents 350 mm snout-vent length, 120 mm tail length, 10.5 mm head length and 8.9 mm head width. Scale counts are 164 ventrals, 56 paired subcaudals, divided nasal scale, 8/8 supralabials, 7/8 infralabials, 2+3/2+3 temporals, 1 preocular and 1+1 postoculars. Specimen CHFURG 5888 is a subadult male (Fig. 2b), that presents 335 mm snout-vent length, 80 mm tail length, 9.2 mm head length, 7.4 mm head width. Scale counts are 169 ventrals, 56 paired subcaudals, divided nasal scale, 8/8 supralabials, 8/9 infralabials, 1+1 fused temporals, 1 preocular and 1+1 postoculars.

In life, both individuals presented a white supralabial and gular region, with a black stripe that extended 14 dorsal scale rows from the head, with grey scale margins on the head surface; dorsal coloration composed of an irregular black pattern, over an orange background, with a white dorsolateral surface. Ventral coloration immaculate white on both specimens.

DISCUSSION

Phimophis guianensis (Troschel 1848) was first recorded to Brazil by Frota et al. (2005), based on a specimen from Monte Alegre (CHUNB 33929), Pará state, northern Brazil. França et al. (2006), seemingly unaware of the work of Frota et al. (2005), presented three new individuals for Amapá (CHUNB 03824-5, locality given as “Amapá, 22.vii.1997”; CHUNB 33929, locality given as “Tartarugalzinho, 02.v.1997”), claiming these, erroneously, as the first record to Brazil of the species. Since then, no new records arose from highly sampled areas (e.g. Thomas 1976, Cunha and Nascimento 1980, 1993, Hoogmoed 1982, Cunha et al. 1985, Vanzolini 1986, Zaher 1996, Vanzolini and Callego 2002), and this



Figure 2 - *Phimophis guianensis* individuals found in the municipality of Cantá, Roraima.

species has been only known based on specimens from outside Brazil (Table I), which corroborates the hypothesis that this species might be rare in Brazil (França et al. 2006). The individuals from Cantá here described represent new records to Brazil, filling a distribution gap of approximately 140 km southward from the record of Pirara, Sabana, Guyana, and 882 km northward from the record of Monte Alegre, Pará, Brazil, and the first record of the species to Roraima state. These specimens also fit the literature diagnosis of the species (Troschel 1848, Starace 1998, Gaiarsa et al. 2013, Mumaw et al. 2015).

Roraima state is located in the northern portion of the Brazilian Amazon, presenting an area of 224.299 km² (Barbosa and Lima 2008, Carvalho et al. 2016), of which nearly 20% is composed of savannas (Flores 2014), being these savannas largely composed of “lavrado” (Morais and

TABLE I
Geographic distribution of *Phimophis guianensis*.

Country	State/departament	Municipality/locality	Latitude	Longitude	Source
Brazil	Amapá	Amapá	00°58' N	52°00' W	França et al. (2006)
Brazil	Amapá	Tartarugalzinho	01°31' N	50°54' W	França et al. (2006)
Brazil	Pará	Monte Alegre	01°57' S	54°03' W	Frota et al. (2005), França et al. (2006)
Brazil	Roraima	Cantá	02°12' N	60°28' W	New record
Colombia	La Guajira	Cerrejón	11°03' N	72°40' W	Blanco-Torres et al. (2013)
Colombia	La Guajira	Palomino	10°58' N	72°45' W	Blanco-Torres et al. (2013)
Colombia	La Guajira	Río Ranchería	11°07' N	72°36' W	Blanco-Torres et al. (2013)
Colombia	Atlántico	Puerto Colombia	11°00' N	74°57' W	Dugand and Toloza (1975)
Guiana	Demerara-Mahaica	Ceiba Biological Station, Madewini River	06°29' N	58°13' W	Cole et al. (2013)
Guiana	Alto Demerara-Berbice	Dubulay Ranch	05°38' N	57°59' W	Cole et al. (2013)
Guiana	Pirara	Sabana	03°37' N	59°40' W	Mumaw et al. (2015)
French Guiana	Mana	-	05°41' N	53°52' W	Starace (1998)
French Guiana	Roura	-	04°38' N	52°13' W	Starace (1998)
French Guiana	Cayenne	Caiena	04°55' N	52°29' W	Chippaux (1986), França et al. (2006)
French Guiana	Cayenne	Sinnamary	05°20' N	52°56' W	Chippaux (1986), França et al. (2006)
Panama	Panamá	-	08°37' N	80°46' W	Ray and Ruback (2015)
Panama	Panamá Oeste	-	08°48' N	80°00' W	Ray and Ruback (2015)
Venezuela	Amazonas	-	05°43' N	67°37' W	Mumaw et al. (2015)
Venezuela	Anzoátegui	-	08°37' N	63°57' W	Mumaw et al. (2015)
Venezuela	Apure	-	07°00' N	68°32' W	Mumaw et al. (2015)
Venezuela	Aragua	-	10°15' N	67°16' W	Mumaw et al. (2015)
Venezuela	Bolívar	-	10°19' N	67°25' W	Mumaw et al. (2015)
Venezuela	Carabobo	-	10°07' N	68°2' W	Mumaw et al. (2015)
Venezuela	Distrito Capital	-	10°28' N	66°54' W	Mumaw et al. (2015)
Venezuela	Falcón	-	11°13' N	69°52' W	Mumaw et al. (2015)
Venezuela	Guárico	-	08°47' N	66°14' W	Mumaw et al. (2015)
Venezuela	Lara	-	10°10' N	69°52' W	Mumaw et al. (2015)
Venezuela	Mérida	-	08°34' N	71°10' W	Mumaw et al. (2015)

TABLE I (continuation)

Country	State/departament	Municipality/locality	Latitude	Longitude	Source
Venezuela	Miranda	-	10°16' N	66°25' W	Mumaw et al. (2015)
Venezuela	Monagas	-	09°19' N	63°0' W	Mumaw et al. (2015)
Venezuela	Nueva Esparta	-	11°00' N	63°54' W	Mumaw et al. (2015)
Venezuela	Portuguesa	-	09°06' N	69°05' W	Mumaw et al. (2015)
Venezuela	Sucre	-	10°25' N	63°17' W	Mumaw et al. (2015)
Venezuela	Trujillo	-	09°21' N	70°26' W	Mumaw et al. (2015)
Venezuela	Vargas	-	10°35' N	66°44' W	Mumaw et al. (2015)
Venezuela	Zulia	-	10°00' N	72°31' W	Mumaw et al. (2015)
Venezuela	Barinas	Barinas	08°37' N	70°14' W	Barrio-Amorós and Ortiz (2015)
Venezuela	Zulia	Jardin Botánico de Maracaíbo, San Francisco	10°35' N	71°42' W	Larreal et al. (2012)
Venezuela	Lara	Parque Nacional Cerro Saroche	10°31' N	69°37' W	Suárez et al. (2013)
Venezuela	Apure	Paez	07°14' N	71°22' W	Infante-Rivero (2009)

Carvalho 2016). The Lavrado is an ecorregion of open vegetation, covering approximately 43.281 km² (De Carvalho and De Carvalho 2012, Carvalho et al. 2016). The municipality of Cantá presents 10.48% of its territory over lavrado areas (Morais and Carvalho 2016).

Little is known about the biodiversity of the lavrado, since these areas have been scarcely sampled in the past (Barbosa and Ferreira 2004, Flores 2014). The lavrado also lacks a specific protection within conservation units, also suffering a large anthropic pression, harboring most of the state population (Campos et al. 2008, Flores 2014). Given these circumstances, large impacts could interfere in the faunal conservation of these areas, highlighting the importance of faunal samplings and directed conservation efforts to these areas.

ACKNOWLEDGMENTS

The authors thank Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for a financial aid (PIBIC Grant, 136628/2016-

8), Editor Igor Luis Kaefer and two anonymous reviewers for their suggestions to our manuscript.

REFERENCES

- AB'SABER AN. 1982. The paleoclimate and paleoecology of Brazilian Amazonia. In: Prance GT (Ed), Biological Diversification in the Tropics, New York: Columbia University Press, p. 41-59.
- ÁVILA-PIRES TC. 1995. Lizards of brazilian amazonia (Reptilia: Squamata). Zool Verhandelingen 299(1): 1-706.
- BARBOSA RI AND FERREIRA CAC. 2004. Biomassa acima do solo de um ecossistema de "campina" em Roraima, norte da Amazônia Brasileira. Acta Amaz 34(4): 577-586.
- BARBOSA RI AND LIMA CGB. 2008. Notas sobre a diversidade de plantas e fitofisionomias em Roraima através do Banco de Dados do Herbário INPA. Amaz Cien e Des 4: 131-154.
- BARRIO-AMORÓS CL AND ORTIZ JC. 2015. Material herpetológico colectado por Roberto Donoso Barros em Venezuela (excepto geckos) en el Museo de Zoología de la Universidad de Concepción, Chile. Gayana 79(1): 68-93.
- BIGARELLA JJ AND ANDRADE-LIMA D. 1982. Paleoenvironmental changes in Brazil. In: Prance GT (Ed), Biological Diversification in the Tropics, New York: Columbia University Press, p. 27-40.
- BLANCO-TORRES A, BÁEZ SL, PATIÑO-FLORES E AND RENJIFO RJM. 2013. Herpetofauna from the middle

- valley of the Ranchería river, La Guajira, Colombia. *Rev Biodivers Neotrop* 3(2): 113-122.
- CAMPOS C, PINTO F AND BARBOSA RI. 2008. O Lavrado de Roraima: importância biológica, desenvolvimento e conservação na maior savana do Bioma Amazônia. Ministério da Ciência e Tecnologia, Instituto Nacional de Pesquisas da Amazônia, Núcleo de Pesquisas de Roraima.
- CARVALHO TM, CARVALHO CM AND MORAIS RP. 2016. Fisiografia da paisagem e aspectos biogeomorfológicos do lavrado, Roraima, Brasil. *Rev Bras Geomorf* 17: 93-107.
- CHIPPAUX JP. 1986. Les Serpents de la Guyane française. Paris: Collection Faune Tropicale XXVII, 167 p.
- COLE CJ, TOWNSEND CR, REYNOLDS RP, MACCULLOCH RD AND LATHROP A. 2013. Amphibians and reptiles of Guyana, South America: illustrated keys, annotated species accounts, and a biogeographic synopsis. *P Bio Soc Wash* 125(4): 317-578.
- COLLI GR. 1996. Amazonian savanna lizards and the biogeography of Amazonia. Ph.D. Dissertation, University of California, Los Angeles.
- CUNHA OR AND NASCIMENTO FP. 1980. Ofídios da Amazônia. XI- Ofídios de Roraima e notas sobre *Erythrolamprus bauperthuisii* Duméril, Bibron & Duméril, 1854, sinônimo de *Erythrolamprus aesculapii aesculapii* (Linnaeus, 1758). *Bol Mus Para Emílio Goeldi* 102: 1-2.
- CUNHA OR AND NASCIMENTO FP. 1993. Ofídios da Amazônia. As cobras da região leste do Pará. *Bol Mus Para Emílio Goeldi* 9: 1-191.
- CUNHA OR, NASCIMENTO FP AND ÁVILA-PIRES TCS. 1985. Os répteis da área de Carajás, Pará, Brasil (Testudines e Squamata). I. *Pub Avulsas Mus Para Emílio Goeldi*: 9-92.
- DE CARVALHO TM AND DE CARVALHO CM. 2012. Interrelation of geomorphology and fauna of Lavrado region in Roraima, Brazil - suggestions for future studies. *J Quat Sci* 61(2): 146-155.
- DUGAND A AND TOLOZA PR. 1975. Serpentinafauna de la Llanura Costera del Caribe. *Caldasia* 11(53): 61-82.
- DUNN ER. 1944. Los géneros de anfibios y reptiles de Colombia, III. Orden de las serpientes. *Caldasia* 3(12): 155-224
- EDENMJ. 1974. Paleoclimatic influences and the development of savanna in Southern Venezuela. *J Biogeogr* 1: 95-109.
- EITEN G. 1978. Delimitation of the Cerrado concept. *Vegetatio* 36: 169-178.
- FLORES AS. 2014. "Os segredos das flores dos lavrados": Relato de uma ação educativa na área de Botânica no extremo norte do Brasil. *Bol Mus Int Ror* 8(1): 10-18.
- FRANÇA FGR, MESQUITA DO AND COLLI GR. 2006. A checklist of snakes from Amazonian Savannas in Brazil, housed in the Coleção Herpetológica da Universidade de Brasília, with new distribution records. *Occ Pap Sam Noble Oklahoma Mus Nat* 17: 1-13.
- FROTA JG, SANTOS-JR AP, CHALKIDIS HM AND GUEDES AG. 2005. As serpentes da região do baixo Rio Amazonas, Oeste do Estado do Pará, Brasil (Squamata). *Biociências* 13(2): 211-220.
- GAIARSA MP, ALENCAR LR AND MARTINS M. 2013. Natural history of Pseudoboine snakes. *Pap Avulsos Zool* 53(19): 261-283.
- GONZALEZ-CARACÍA JÁ, ROMERO VP AND RIVAS G. 2012. *Phimophis guianensis* (Troschel's Pampas Snake). *Diet. Herp Rev* 43(3): 496.
- HOOGMOED MS. 1982. Snakes of the Guianan region. *Mem Inst Butantan* 46: 219-254.
- HUBER O. 1982. Significance of savanna vegetation in the Amazon Territory of Venezuela. In: Prance GT (Ed), *Biological diversification in the tropics*. New York: Columbia University Press, p. 57-97.
- INFANTE-RIVERO EE. 2009. Anfíbios y Reptiles de La Guajira Venezolana. *Bol Cent Investig Biol Univ Zulia* 43(2): 263-277.
- LANCINI AR AND KORNACKER PM. 1989. Die Schlangen von Venezuela. Caracas: Armitano Editores C.A., 381 p.
- LARREAL JT, RIVAS GA, PORTILLO-QUINTERO C AND BARROS TR. 2012. Squamata reptiles of a fragment of tropical dry forest in northwestern Venezuela (Lake Maracaibo region). *Check List* 8(6): 1220-1224.
- MORAIS RP AND DE CARVALHO TM. 2016. Aspectos dinâmicos da paisagem do lavrado, nordeste de Roraima. *Geociências* 34(1): 55-68.
- MUMAW MN, GONZÁLEZ LFE AND FERNÁNDEZ MC. 2015. Atlas Serpientes de Venezuela: Una Visión Actual de su Diversidad. Santiago de Chile: Dimacofi Negocios Avanzados S.A., 462 p.
- PETERS JA, OREJAS-MIRANDA, B AND DONOSO-BARROS R. 1970. Catalogue of the Neotropical Squamata: Lizards and Amphisbaenians (No. 297). Smithsonian Institution Press.
- RAY JM AND RUBACK P. 2015. Updated checklists of snakes for the provinces of Panamá and Panamá Oeste, Republic of Panama. *Mesoam Herpetol* 2(2): 168-188.
- SAWAYA RJ, MARQUES OAV AND MARTINS M. 2008. Composição e história natural das serpentes de Cerrado de Itirapina, São Paulo, sudeste do Brasil. *Biota Neotrop* 8: 127-149.
- STARACE F. 1998. Guide des Serpents et Amphisbènes de Guyane. Cayenne: IBIS Rouge Editions, 450 p.
- SUÁREZ CLV, RODRÍGUES JGV, PEÑA FER AND TOJEIRO YSM. 2013. Lista actualizada y distribución espacial de la riqueza de anfibios y reptiles del Parque Nacional Cerro Saroche, Estado Lara, Venezuela. *Ecotrópicos* 26(1-2): 40-54.
- THOMAS RA. 1976. A revision of the South American colubrid snake *Philodryas* Wagler, 1830. Doctoral

- Dissertation, Texas A&M University College Station. (Unpublished).
- TROSCHER FH. 1848. Amphibien. In: M.R. Schomburgk. Reisen in Britisch-Guiana in den Jahren 1840-44. Im Auftrage Sr. Majestät des Königs von Preussen ausgeführt. Theil 3. Versuch einer Zusammenstellung der Fauna und Flora von British-Guiana. Leipzig, p. 645-661.
- UETZ P, FREED P AND JIRÍ HOŠEK. 2017. The Reptile Database, <http://www.reptile-database.org>, accessed at 05/02/2018.
- VANZOLINI PE. 1986. Levantamento Herpetológico da Área do Estado de Rondônia sob Influência da Rodovia BR 364. Brasília, Distrito Federal, Brasil, Conselho Nacional do Desenvolvimento Científico e Tecnológico, Assessoria Editorial.
- VANZOLINI PE AND CALLEFFO MEV. 2002. A taxonomic bibliography of the South American snakes of the *Crotalus durissus* complex (Serpentes, Viperidae). *An Acad Bras Cienc* 74: 37-83.
- VITT LJ AND DE CARVALHO CM. 1995. Niche partitioning in a tropical wet season: lizards in the lavrado area of northern Brazil. *Copeia* 305-329.
- YANOSKY A, DIXON J AND MERCOLLI C. 1996. Ecology of a snake community of El Bagual Reserve, Argentina. *Herpetol Nat Hist* 4: 97-110.
- ZAHER H. 1996. A new genus and species of pseudoboine snakes, with a revision of the genus *Clelia* (Serpentes, Xenodontinae). *Boll Mus Regionale Sci Nat Torino* 14(2): 289-337.