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NOTES ON GEOGRAPHIC DISTRIBUTION

Chiroptera, Emballonuridae, *Saccopteryx leptura* (Schreber, 1774): Range extension and first record for the states of São Paulo and Minas Gerais, southeastern Brazil

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ABSTRACT: This study reports the first record of the sac-winged bat *Saccopteryx leptura* (Schreber, 1774) from the states of São Paulo and Minas Gerais, southeastern Brazil. The record from São Paulo is also the southernmost known record of any species of the genus.

Five species of sac-winged bats are included in the genus *Saccopteryx*: *S. antioquensis* Muñoz and Cuartas, 2001; *S. bilineata* (Temminck, 1838); *S. canescens* Thomas, 1901; *S. gymnura* Thomas, 1901, and *S. leptura* (Schreber, 1774). The genus is distributed from Mexico to southeastern Brazil and all five species occur in South America (Hood and Gardner 2008). *Saccopteryx leptura* is considered monotypic (Simmons 2005) and has a distribution that is similar to the larger, darker *S. bilineata*, occurring from southern Mexico through Central America, Colombia, Venezuela, Guianas, Ecuador, eastern Peru, northern Bolivia, and northern, central and southeastern Brazil. Although records of *S. leptura* are relatively common in its northern range (*e.g.* Sanborn 1937; Simmons and Voss 1998; Kalko and Handley 2001), there are but a few records of the species in southern Brazil (*e.g.* Lima 1926; Nogueira *et al.* 2002; Dias and Peracchi 2008).

Even though the state of São Paulo, southeastern Brazil, is one of the Brazilian states in which the chiropterofauna is better known (de Vivo 1998), from the five emballonurid species cited in one of its latest checklist of mammal species (de Vivo *et al.* 2009): *Diclidurus scutatus* Peters, 1869, *Peropteryx macrotis* Wagner, 1843, *Peropteyx kappleri* Peters, 1867, *Rhynchonycteris naso* Wied-Neuwied, 1820 and *Saccopteryx bilineata*, only three (*D. scutatus*, *P. macrotis* and *P. kappleri*) have confirmed records as voucher specimens deposited in museums as far as we know (Vieira 1942; Trajano 1985; Sodré and Uieda 2006; pers. obs.). Moreover, this checklist does not include *S. leptura*. The latest checklist of the mammalian fauna of São Paulo, however, includes *S. leptura* and does not include *S. bilineata* and *Rhynchonycteris naso* (de Vivo *et al.* 2011). The inclusion of *S. leptura* in this list was based on unpublished data from the present author (Garbino and de Vivo 2009). In a recent list of the bats of the state of Minas Gerais (Tavares *et al.* 2010), the only species of the genus reported to occur is *S. bilineata*.

The goal of this study is to report the first record of *S. leptura* from the states of São Paulo and Minas Gerais, and to provide an updated distribution map of the species in southeastern Brazil.

The records presented in this note are based on two specimens collected more than 50 years ago. Those are deposited at the mammal collection of the Museu de Zoologia da Universidade de São Paulo. Identification was based on characters described by Davis (1976), Jones and Hood (1993) and Hood and Gardner (2008); the estimated forearm length for the species is 37.4-42.3 mm (Hood and Gardner, 2008); while there is no overlap between the forearm length of *S bilineata* (more than 44 mm) and *S. leptura*, some overlap may occur between *S. leptura* and *S. canescens* (which has a forearm length between 35.8-37.5 mm). The two examined specimens, however, had a forearm length that fell between 41 mm and 42 mm (Table 1). The maxillary toothrow was longer than 5 mm (in *S. canescens* it is less than 5 mm and in *S. bilineata* it is more than 7 mm). The dorsal pelage of both specimens from southeastern Brazil showed a uniformly brown color with two distinct white stripes. In *S. canescens* the dorsal pelage is grayish brown and the stripes are less evident; *S. bilineata* has a darker dorsal pelage and more evident white stripes.

In the neighboring state of Rio de Janeiro, the first record of the species is from Nogueira *et al.* (2002). Other published records from the same state come from the municipalities of Nova Iguaçu (Dias and Peracchi 2008) and Mangaratiba, both located near the border of the state of São Paulo (Esbérard and Bergallo 2008). Before those three publications, the previous known records of the species in southeastern Brazil were from the state of Espírito Santo (Lima 1926; Ruschi 1952; Peracchi and Albuquerque 1993). Carvalho (1979/80) cited *S. leptura* as occurring in the state of São Paulo, but the author did not give information on voucher specimen(s) or cited the source of the record.

The voucher specimen from the state of São Paulo (MZUSP 11481) is an adult male, preserved in alcohol and with the skull removed. It was collected in June 30th, 1961, at the "Estação Biológica de Boracéia" (approximately 23°39' S, 45°54' W, *ca*. 830 m a.s.l.), a research station located at a pluvial rainforest area. The closest previous record (Esbérard and Bergallo 2008) is situated at approximately 196 kilometers NE from this site. The specimen was previously identified as "*Saccopteryx* sp.". According to the information present in the label, the bat was collected in a cave ("Gruta da Santa").

The specimen from the state of Minas Gerais (MZUSP 5830) is a skin of an adult female with the skull removed, collected in October 5th, 1940. The locality is "Rio Doce (Baixo Piracicaba)" which is located at 19°31' S, 42°38' W (*ca*. 390 m a.s.l.). From this site, the closest previous record (Lima 1926; Vieira 1945) is located at approximately 209 kilometers W. This specimen was previously identified as *S. bilineata* and was probably based on this specimen that Vieira (1955) cited *S. bilineata* as occurring in the state of Minas Gerais.

For measurements comparisons, I have analyzed 24 specimens of *S. leptura*, from southeastern and northern Brazil and also from Colombia (Tables 1 and 2). Unless otherwise noted, all measurements were taken by the author following Vizotto and Taddei (1973). The specimens from Brazil are deposited in the Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZUSP) collection and the specimens from Colombia are deposited in the Museo de La Salle, Universidad de La Salle, Bogotá, Colombia (MLS). Data from specimens housed at other institutions were obtained through literature research. Those Institutions are: Adriano Lúcio Peracchi collection, Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro, Brazil (ALP); Museu de Biologia Mello Leitão, Linhares, Espírito Santo, Brazil (MBML) and

Table 1. Selected measurements (in mm) of *Saccopteryx leptura* from southeastern Brazil and from the amazonic region of Brazil and Colombia. Means are followed by extreme values (in parenthesis); when no extreme values are shown, only one specimen was measured. Measur. = Measurements; FL = foot length; FAL = forearm length; TL = tibia length; M3L = metacarpal III length; GSL = greatest skull length; CCL = condylocanine length; CIL = condyloincisive length; UTL = upper toothrow length; MB = mastoid breadth; BB = braincase breadth; ZB = zygomatic breadth; POC = postorbital constriction; BAUM = Breadth across upper molars. BRA = Brazil; SP = São Paulo; MG = Minas Gerais; ES = Espírito Santo.
* Measurements taken from Nogueira *et al.* (2002) and Dias and Peracchi (2008).

MEASUR.	SP	MG	ES	Rio de Janeiro		Amazonas		Pará	Tolima	Cundinamarca	
	Bra	Bra	Bra	Brazil		Brazil		Brazil	Colombia	Colombia	
	1 ♂	1 ♀	1 ♀	3 ♂*	3 ♀*	4 ♂	5 ♀ (2 skulls)	4 ♀ (2 skulls)	3 ♂ (1 skull)	3 ♂ (1 skull)	2 ♀
FL	8.47	8.68	-	8.55	8.75 (8.60-8.90)	7.88 (7.42-8.29)	8.21	8.11 (8.01-8.21)	8.19 (7.95-8.43)	7.84 (7.6 – 8.12)	8.16 7.39 – 8.93)
FAL	41.76	41.87	41.71	40.60 (40.20-41.10)	43.33 (42.7-43.80)	39.39 (38.54-40.32)	39.92 (38.01-40.93)	39.54 (38.13-40.00)	37.78 (37.65-37.91)	39.13 (38.76 – 39.33)	39.71 (38.35 – 41.07)
TL	17.51	17.05	16.78	16.67 (16.65-16.70)	19.20 19.10	16.28 (15.61-16.78)	16.50 (16.08-17.01)	16.09 (15.63-16.55)	15.30 (15.89-14.71)	16.61 (16.45 - 16.92)	16.10 (14.98 - 17.23)
M3L	41.48	-	-	-	-	38.25 (38.23 -39.04)	39.55 (38.20-40.91)	38.47 (37.63-39.32)	37.02 (36.88-37.17)	39.46 38.72 - 39.94)	38.02 (36.09 - 39.95)
GSL	14.35	14.22	14.11	14.58 (14.45-14.70)	14.58 (14.45-14.80)	-	14.16	13.13 (12.98-13.29)	13.97	14.16	-
CCL	12.38	-	12.45	12.40 (11.66-13.05)	12.63 (12.10-12.95)	-	-	11.90 (11.87-11.93)	11.45	11.41	-
CIL	12.66	-	13.08	13.14 (12.75-13.40)	13.36 (13.20-13.54)	-	-	12.40 (12.18-12.63)	11.89	12.07	-
UTL	5.29	5.54	5.14	5.35 (5.20-5.50)	5.57 (5.55-5.60)	-	5.39 (5.25-5.54)	5.05 (5.03-5.07)	5.18	5.42	-
MB	-	-	7.57	7.99 (7.55-8.84)	7.78 (7.75-7.86)	-	-	7.13	7.31	7.39	-
BB	6.7	6.08	7.14	7.29 (7.10-7.50)	7.18 (6.90-7.50)	-	6.95	6.34 (6.08-6.60)	6.5	7	-
ZB	8.56	7.53	9.2	9.20 (9.06-9.30)	9.43 (9.30-9.64)	-	-	-	8.53	8.77	-
POC	3.35	2.37	2.71	2.53 (2.35-2.70)	2.59 (2.44-2.75)	-	2.32 (2.13-2.52)	2.51 (2.37-2.66)	2.39	2.14	-
BAUM	5.64	5.07	6	6.00 (5.80-6.20)	6.22 (6.20-6.25)	-	5.90 (5.75-6.05)	5.37 (5.07-5.68)	6.06	6.09	-

"Projeto Morcegos Urbanos" collection (PMU). A total of eight localities from SE Brazil, which are present in Table 2, were plotted on the map of Figure 1.

The updated map of the species' distribution in southeastern Brazil shows the state of São Paulo record as the southernmost record of the genus. The record from Minas Gerais is the first for that state (Figure 1). A summary of the known occurrence records of the species in southeastern Brazil is provided in Table 2, along with information on other analyzed specimens from the Colombian Amazonia, with localities from the Magdalena river valley and the eastern slope of the Andes and Brazilian Amazon, north of the Amazon River. The specimens from southeastern Brazil showed larger cranial and external measurements, when compared to specimens from the Colombian and Brazilian Amazon. The length of the upper toothrow, however, showed little variation when compared to Amazonian specimens. As more specimens from southeastern Brazil become available, it would be interesting to study the geographical variation among Amazonian and Atlantic Forest population for this species, especially since studies on this topic involving widely distributed emballonurid genera are inexistent. External and cranial measurements presented here for the specimens of *S. leptura* from Minas Gerais and São Paulo are similar to those presented by Nogueira *et al.* (2002) and Dias and Peracchi (2008) for specimens from the state of Rio de Janeiro.

Table 2. Records of *Saccopteryx leptura* from southeastern Brazil and from the amazonic region of Colombia and Brazil. The numbers after some localities refer to the records plotted in the map of Figure 1. Specimens from the ALP, MBML and PMU collections were not examined by the author.

SPECIMEN	LOCALITY	SEX	COORDINATES	REFERENCE
MLS 1584, 1585, 1587	Colombia, Tolima: Gualanday	M	04°16'N, 75°01'W	MLS
MLS 860, 863, 2153	Colombia, Cundinamarca: Sasaima, Rio Dulce	M	04°53'N, 74°26'W	MLS
MLS 861, 862	Colombia, Cundinamarca: Sasaima, Rio Dulce	F	04°53'N, 74°26'W	MLS
MZUSP 18916	Brazil, Amazonas: Lago Mamirauá, foz do Japurá	F	02°51'S, 64°55'W	MZUSP
MZUSP 19858	Brazil, Amazonas: Manaus, Colônia Santo Antônio	F	03°02'S, 60°00'W	MZUSP
MZUSP 1050, 11540, 11542, 11545	Brazil, Amazonas: Rio Juruá	M	06°38'S, 69°50'W	MZUSP
MZUSP 701, 1071, 1072	Brazil, Amazonas: Rio Juruá	F	06°38'S, 69°50'W	MZUSP
MZUSP 12935	Brazil, Pará: Lago Leonardo, Rio Trombetas	F	01°11'S, 56°40'W	MZUSP
MZUSP 18703	Brazil, Pará: BR-010 Km 93	F	03°45'S, 47°29'W	MZUSP
MZUSP 21354, 22567	Brazil, Pará: Cachoeira do Espelho, Rio Xingu	F	03°39'S, 52°23'W	MZUSP
MZUSP 5830	Brazil, Minas Gerais: Rio Doce, baixo Piracicaba[1]	F	19°31' S, 42°38'W	This study
MZUSP 2287	Brazil, Espírito Santo: Colatina[2]	F	19° 31' S, 40° 37' W	MZUSP
MBML	Brazil, Espírito Santo: Santa Teresa[3]	-	19° 56' S, 40° 36' W	Ruschi (1952)
ALP	Brazil, Espírito Santo: Estação Experimental Linhares[4]	-	19°25'S, 40°03'W	Peracchi and Albuquerque (1993)
ALP 5927	Brazil, Rio de Janeiro: Guapimirim, Campo Escoteiro Geraldo Hugo Nunes[5]	M	22°35'S, 43°02'W	Nogueira *et al.* (2002)
ALP 5928	Brazil, Rio de Janeiro: Rio de Janeiro, American School of Rio de Janeiro[6]	M	22°58'38''S, 43°14'45''W	Nogueira *et al.* (2002)
ALP 5929, 5930	Brazil, Rio de Janeiro: Rio de Janeiro, American School of Rio de Janeiro[6]	F	22°58'38''S, 43°14'45''W	Nogueira *et al.* (2002)
ALP 6549	Brazil, Rio de Janeiro: Reserva Biológica do Tinguá[7]	M	22°34'S, 43°22'W	Dias and Peracchi (2008)
ALP 6550	Brazil, Rio de Janeiro: Reserva Biológica do Tinguá[7]	F	22°34'S, 43°22'W	Dias and Peracchi (2008)
PMU	Brazil, Rio de Janeiro: Mangaratiba, Reserva Rio das Pedras[8]	-	22°59'26''S, 44°06'03''W	Esbérard and Bergallo (2008)
MZUSP 11841	Brazil, São Paulo: Estação Biológica de Boracéia[9]	M	23°39' S, 45°54' W	This study

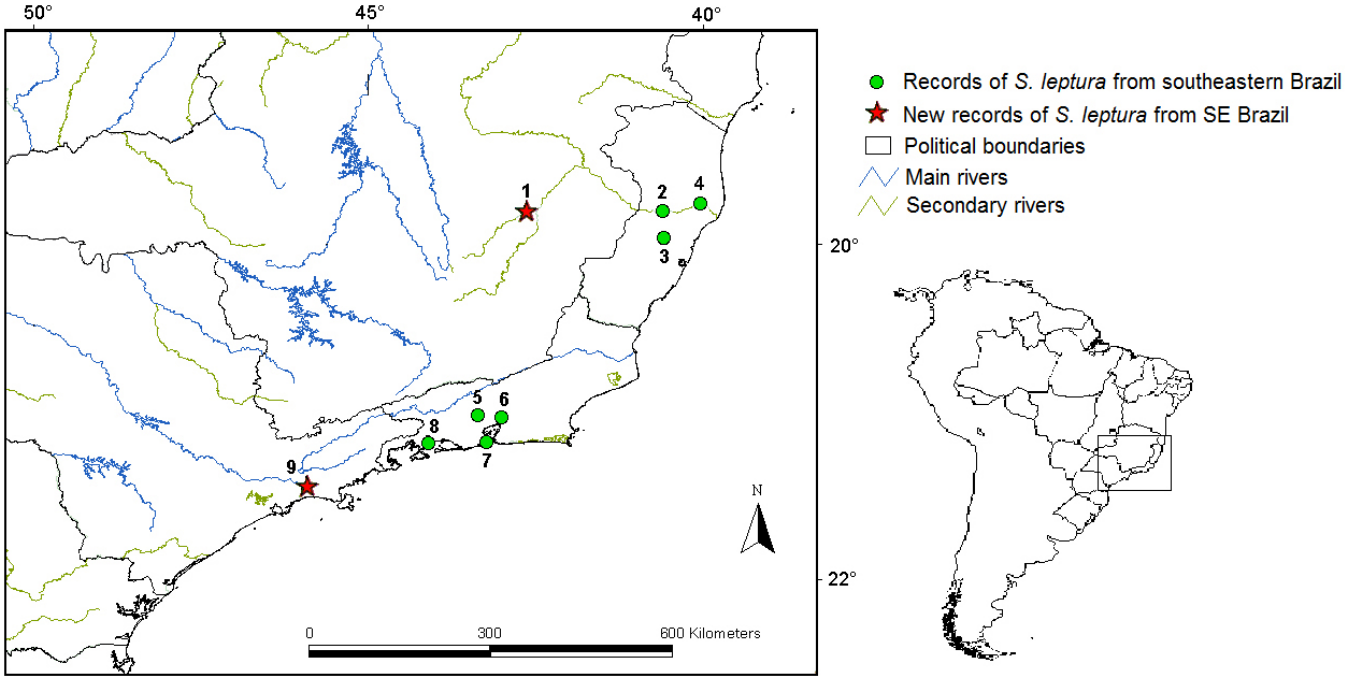

Figure 1. Known records of Saccopteryx leptura in southeastern Brazil.

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