

**FIRST RECORD OF *LONCHOPHYLLA PERACCHII* DIAS,  
ESBÉRARD AND MORATELLI, 2013 (CHIROPTERA, PHYLLOSTOMIDAE)  
IN SÃO PAULO STATE, SOUTHEASTERN BRAZIL**

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The genus *Lonchophylla* comprises small to medium-sized Neotropical bats, with fifteen valid species (see Woodman and Timm 2006; Griffiths and Gardner 2008; Dávalos and Corthals 2008; Dias *et al.* 2013). Five species occur in Brazil (Peracchi *et al.* 2011; Dias *et al.* 2013): *Lonchophylla thomasi* J. A. Allen, 1904 occurs from northern South America east of the Andes, northward to Panamá (Woodman and Timm 2006), recorded in Brazil only in the Amazonian basin (Peracchi *et al.* 2011); *L. mordax* Thomas, 1903 occurs in all major ecosystems along the eastern coast Brazilian; *L. dekeyseri* Taddei, Vizotto and Sazima, 1983 occurs sparsely along Cerrado of midwestern and northeastern Brazil, and eastern Bolivia (Griffiths and Gardner 2008; Aguiar *et al.* 2010); *L. bokermanni* Sazima, Vizotto and Taddei, 1978 is endemic and restricted to Cerrado; and *L. peracchii* Dias, Esbérard and Moratelli, 2013 occurs in the Atlantic Forest of the southeastern Brazil (Dias *et al.* 2013). The latter was recently described as result of a taxonomic assessment of populations from Atlantic Forest of Rio de Janeiro state which were previously assigned to *L. bokermanni* or misidentified as *L. mordax* (e.g. Taddei *et al.* 1988; Dias *et al.* 2002; Esbérard 2003; 2007; 2009; Esbérard *et al.* 2006; 2010; Baptista and Mello 2001; Brito *et al.* 2004; Moratelli and Peracchi 2007; Dias and Peracchi 2008; Bolzan *et al.* 2010; Lourenço *et al.* 2010; and Novaes *et al.* 2010).

Here we report the results of a search for *L. peracchii* in three localities in São Paulo State, to the south of its currently known distribution, with the

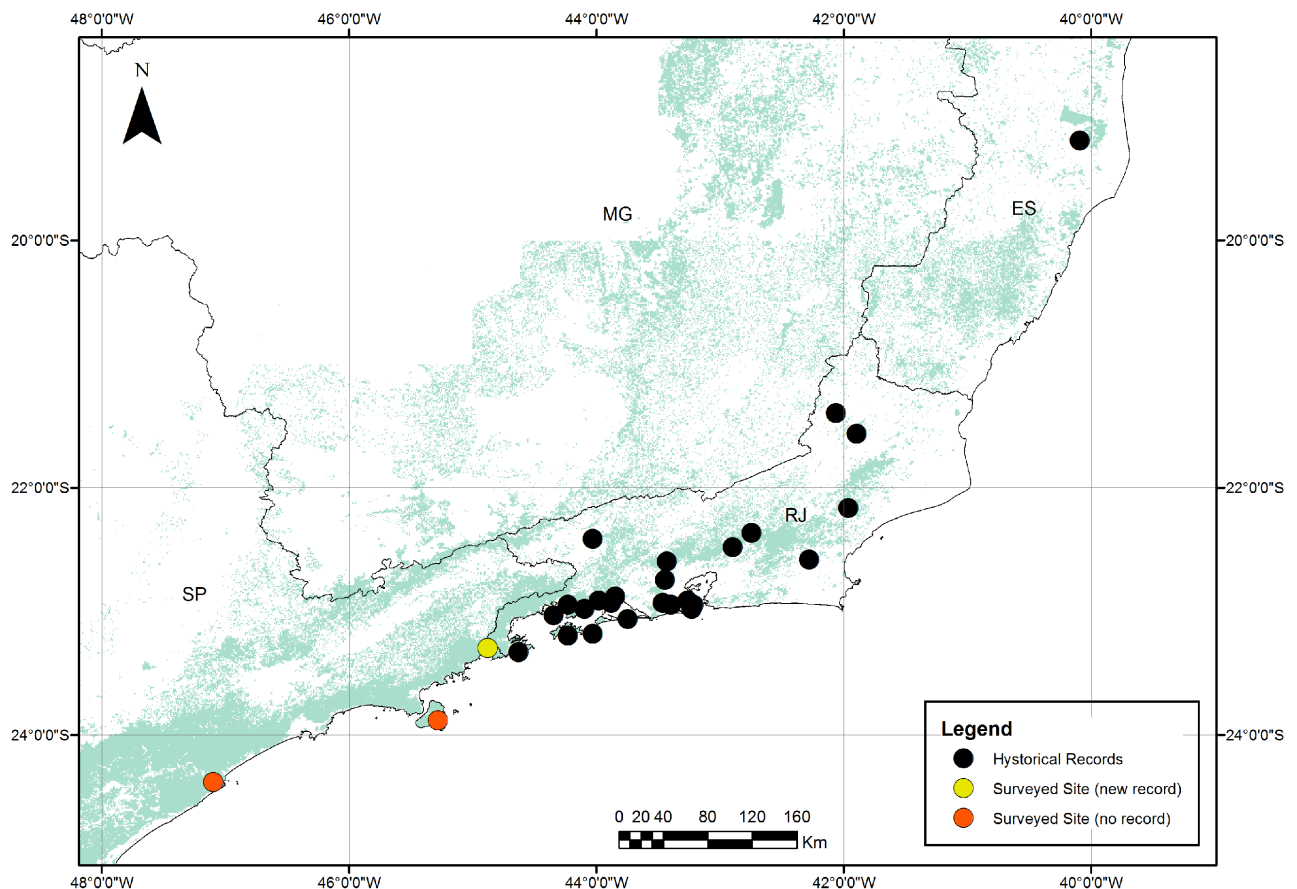
objective of further exploring the southernmost limit of the species' distribution. : i) Picinguaba, Serra do Mar State Park, Ubatuba municipality (23°18' S, 44°53' W), ii) Ilhabela, Ilhabela State Park, Ilhabela municipality (23°53' S, 45°17' W) and, iii) Juréia-Itatins Ecological Station, Peruíbe municipality (24°23' S, 47°06' W) (Fig. 1). These sites were selected for their proximity to the species' southernmost record (Paraty, Rio de Janeiro State, Bolzan *et al.* 2010), because they still retain a relatively large forest cover, and are climatically similar to other sites where the species was previously recorded (Teixeira 2013).

We spent just one surveying night in Picinguaba, where we captured eight individuals belonging to four species (Table 1). That night an adult male of *L. peracchii* was captured at 19h45min (3 hours and 20 minutes after sunset), at the entrance of a trail, between the forest edge where the trail began and a waterlogged spot with several banana trees, in front of a blooming banana tree. Pollen grains were found on its fur. The survey lasted seven nights in Ilhabela, where we put the nets at different points seeking to cover the maximum amount of habitats within the island. We captured 58 individuals belonging to eight species (Table 1), but no *L. peracchii* was caught. Finally, in Juréia-Itatins the survey also lasted seven nights, covering areas very close to the coast, in riverbanks and in forests at elevations around 450 m. We captured 40 individuals of six species (Table 1), but again no *L. peracchii*.

The specimen collected in Picinguaba had been first identified as *L. bokermanni*, but later reidentified

as *L. peracchii* based on description of this species by Dias *et al.* (2013), which also provided measurements and useful characters for differentiation of *Lonchophylla* species. Our specimen has the diagnostic characters of *L. peracchii*: medium-sized ear with narrow tip; tragus with rounded tip; ventral fur brownish, with slight contrast between hair bases and tips; forearm length less than 37.0 mm; first upper molar (M1) with parastyle poorly developed and labially oriented, mesostyle almost absent and metastyle poorly developed; second upper molar (M2) with parastyle, mesostyle and metastyle poorly developed. Additionally, our specimen has other characters described for *L. peracchi*, such as: ventral and dorsal pelages contrasting slightly; elongated and narrow muzzle; medium-sized ears and tragus rounded at the tip; large and elongated noseleaf spear, with indistinct central rib extending up to the tip; mesopterygoid

fossa U-shaped anteriorly; pterygoid processes narrow, divergent and not inflated; basisphenoid pits shallow, with intervening septum broad; posteromedial edge of the palate positioned posteriorly to the posterior border of the optic foramen; dentary long and slender; coronoid process low, with rounded tip slightly above the line of the articular condyle; upper canines distinctly grooved along the anterior surface; upper premolars triangular, anteroposteriorly elongated in lateral view, and narrow in occlusal view and P4 with inner lobe reduced and lingual root displaced posteriorly (Dias *et al.* 2013). This specimen is deposited under the number ALP 10242 at the Adriano Lúcio Peracchi Zoological Collection (ALP) – Universidade Federal Rural do Rio de Janeiro (UFRRJ), and the measurements obtained (Table 2) match the variation reported for the specimens of *L. peracchii* (Dias *et al.* 2013) and Espírito Santo states (Pimenta *et al.* 2010).



**Figure 1.** Occurrence records for *Lonchophylla peracchii* compiled from the literature and museum collections, and the three sites surveyed in São Paulo State. Forest remnants within the Atlantic Forest biome (SOS Mata Atlântica & INPE 2010) are shown in green. SP = São Paulo State, RJ = Rio de Janeiro State, ES = Espírito Santo State, MG = Minas Gerais State.

**Table 1.** Chiroptera species recorded at the three sites surveyed in São Paulo State for the presence of *Lonchophylla bokermanni*. Species present (p); species absent (-).

SPECIES	PICINGUABA	ILHABELA	JURÉIA-ITATINS
Phyllostomidae			
<i>Lonchophylla peracchii</i> Dias, Esbérard & Moratelli, 2013	p	-	-
<i>Anoura caudifer</i> (E. Geoffroy, 1818)	-	p	p
<i>Glossophaga soricina</i> (Pallas, 1766)	-	-	p
<i>Carollia perspicillata</i> (Linnaeus, 1758)	p	p	p
<i>Sturnira lilium</i> (E. Geoffroy, 1810)	p	p	p
<i>Artibeus lituratus</i> (Olfers, 1818)	-	p	-
<i>Artibeus obscurus</i> (Schinz, 1821)	-	p	p
<i>Lonchorhina aurita</i> Tomes, 1863	p	-	-
<i>Tonatia bidens</i> (Spix, 1823)	-	p	-
<i>Trachops cirrhosus</i> (Spix, 1823)	-	p	p
Vespertilionidae			
<i>Myotis nigricans</i> (Schinz, 1821)	-	p	-

**Table 2.** Selected measurements (mm) of the *Lonchophylla peracchii* specimens from southeastern Brazil. Measurements (following Sazima *et al.* 1978): forearm length (FA); greatest length of skull, including incisors (GLS); condylo-incisive length (CIL); basal length (BAL); maxillary tooththrow length (MTL); breadth across molars (BAM); breadth across canines (BAC); postorbital breadth (POB); braincase breadth (BCB); mastoid breadth (MAB); mandibular tooththrow length (MAN); mandibular length (MAL). SP = São Paulo State, RJ = Rio de Janeiro State, ES = Espírito Santo.

CHARACTERS	PICINGUABA, UBATUBA, SP <sup>1</sup>	ATLANTIC FOREST POOLED LOCALITIES, RJ <sup>2</sup>	SOORETAMA, ES <sup>3*</sup>	SANTA TERESA, SANTO IZIDORIO AND SANTA LEOPOLDINA (POOLED), ES <sup>4*</sup>
FA	36.30	34.50–36.90	35.97	34.20–36.60
GLS	25.10	23.80–25.40	24.47	23.30–23.90
CIL	24.12	22.70–24.60	x	23.00–23.50
BAL	21.98	20.20–22.70	20.66	20.60–21.10
MTL	8.08	7.50–8.40	7.50	7.30–7.90
BAM	4.90	4.80–5.80	4.96	4.90–5.10
BAC	4.12	3.50–4.10	3.75	3.40–3.80
POB	4.76	4.40–5.00	4.70	4.40–4.80
BCB	9.30	8.40–9.60	9.16	8.70–8.90
MAB	9.40	8.50–9.70	9.49	8.80–9.20
MAN	8.52	8.00–8.80	7.90	7.80–8.10
MAL	17.32	16.00–17.80	16.34	16.00–16.50

<sup>1</sup> N = one male (present study); <sup>2</sup> N = 36, males and females pooled (Dias *et al.* 2013); <sup>3</sup> N = one male (Pimenta *et al.* 2010); <sup>4</sup> N = two male and one female (Nascimento *et al.* 2013); \* specimens cited as *L. bokermanni*.

In this study, *L. peracchii* was recorded in only one of the three sites surveyed: Picinguaba, Ubatuba municipality in São Paulo State. The municipality of Ubatuba borders the southern portion of the Paraty municipality, in Rio de Janeiro State, where the previously southernmost records was made in Praia do Sono (Bolzan *et al.* 2010). Although representing an increase in distribution of only about 32 km to the south, this is the first record of the species in São Paulo State, right at the Serra do Mar State Park, which protects 1,353 km<sup>2</sup> of Atlantic Forest (IF 2006). The absence of *L. peracchii* in the other two sites, after a survey targeted towards the species, may suggest that its southern distribution boundary is located around Picinguaba, in São Paulo State. However, we cannot disregard the possibility of failure to detect the species' presence, a common problem when population size is small, or sampling effort is limited (Gu and Swihart 2004). To have a better understanding of the *L. peracchii* distribution and biology, which are critical for the determination of its conservation status under IUCN criteria, we suggest that similar surveys should be made on the species' known northern distribution limit in Reserva Biológica de Sooretama, Espírito Santo State (Pimenta *et al.* 2010).

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## METHODS

We searched for *L. peracchii* in three localities in São Paulo State, to the south of its currently known distribution: i) Picinguaba, Serra do Mar State Park, Ubatuba municipality (23°18' S, 44°53' W), ii) Ilhabela, Ilhabela State Park, Ilhabela municipality (23°53' S, 45°17' W) and, iii) Juréia-Itatins Ecological Station, Peruíbe municipality (24°23' S, 47°06' W) (Fig. 1). These sites were selected for their proximity to the species' southernmost record (Paraty, Rio de Janeiro State, Bolzan *et al.* 2010), because they still retain a relatively large forest cover, and are climatically similar to other sites where the species was previously recorded (Teixeira 2013).

Between May 15 and June 3, 2012, each site was sampled until capturing an individual of *L. peracchii* or for up to seven nights. We used mist nets (6 x 2.5 m, 9 x 2.5 m and 12 x 2.5 m) to capture the bats. Ten mist-nets were used, along trails and glades, near flowering plants on rivers and nearby water bodies. Mist nets were opened during the sunset and kept open until around midnight in a sampling effort of 1440 m<sup>2</sup>/h per night (*sensu* Straube and Bianconi 2002). Every night the sampling was done at a different point in order to sample the greatest possible diversity of environments. Active searches for *L. peracchii* individuals were also made in natural shelter (caves, rock crevices, hollow trees) and human made shelters (roof liners, abandoned buildings). Captured bats were identified in the field (following Emmons and Feer 1997, Dias *et al.* 2002, Dias and Peracchi 2008, Reis *et al.* 2007). For each captured individual we recorded the species name, capture date, forearm length (mm), body mass (g), sex, age category, reproductive stage, important qualitative external characters for taxonomic identification, and other relevant information. All captured individuals of other species were released, and at least one individual of each species was photographed. Only the *Lonchophylla* specimen was collected to confirm identification. One external and eleven cranial dimensions were measured from the specimen, using a caliper accurate to 0.02 mm and criteria proposed by Sazima *et al.* (1978).

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