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Nota

NEW RECORDS OF *Lampronycteris brachyotis* IN BRAZIL

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ABSTRACT. *Lampronycteris* is a monotypic genus distributed throughout the Neotropical region. Brazil presents the largest number of reports of *L. brachyotis*, most of which occur within Amazonia, with only limited records in Cerrado and Atlantic Forest. The present report provides an updated distribution of *L. brachyotis* in these three biomes, including the first records for the states of Rondônia and Goiás and additional records in the states of Mato Grosso, Pará and São Paulo. We highlight that mesic areas in open formations such as Cerrado might support relictual populations of *L. brachyotis*, highlighting the importance of these areas for bat diversity.

RESUMEN. Nuevos registros de *Lampronycteris brachyotis* en Brasil. *Lampronycteris* es un género monotípico de amplia distribución en la región neotropical. Brasil tiene el mayor número de registros de *L. brachyotis* concentrados en la Amazonía y solo unos pocos registros en el Cerrado y Bosque Atlántico. Este artículo ofrece una actualización de la distribución de *L. brachyotis* en estos tres biomas, con el primer registro en Rondônia y Goiás, y registros adicionales en los estados de Mato Grosso, Pará y São Paulo. Con los registros presentados aquí, destacamos que los ambientes mésicos presentes en bosque estacional seco, como el Cerrado, pueden mantener poblaciones relictuales de *L. brachyotis*, destacando la importancia de estas áreas para la diversidad de murciélagos.

Key words: Amazon. Atlantic Forest. Cerrado. Chiroptera. Distribution. Orange-throated bat.

Palabras clave: Amazonía. Bosque Atlantico. Cerrado. Chiroptera. Distribución. Murciélago orejón de garganta amarilla.

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The orange-throated bat *Lampronycteris brachyotis* (Dobson, 1879), originally treated as subgenus within *Micronycteris* Gray, 1866 (Sanborn, 1949), is now considered the single representative of the genus *Lampronycteris* Sanborn, 1949 (Simmons, 2005). This decision was based on morphological data (Simmons and Voss, 1998) and later consolidated in studies using morphological, karyological, and molecular data (Wetterer et al., 2000). Therefore, nowadays, it is considered a wide distributed monotypic genus in Neotropical region (Williams and Genoways, [2008]).

The current known distribution of *L. brachyotis* ranges throughout southern Mexico, Guatemala, Panama, Colombia, Venezuela, Bolivia, Trinidad and Tobago, Guyana, Suriname, Ecuador, Peru, and Brazil (Weinbeer and Kalko, 2004; Acosta and Aguanta, 2005; Simmons, 2005; Williams and Genoways, [2008]; Tirira et al., 2010). Most of the reports for the species are in Brazil, with records through the Amazon in the states of Acre, Amazonas, Amapá, Mato Grosso, and Pará (Sampaio et al., 2003; Bernard et al., 2011a; Miranda et al., 2015). There are scarce reports for the Atlantic Forest, most of them from the state of São Paulo (Taddei and Pedro, 1996; Gimenez and Ferrarezzi, 2004; Geraldes, 2005), and only one record in each of the following states: Bahia (Faria et al., 2006), Espírito Santo (Peracchi and Albuquerque, 1993), and Paraná (Scultori et al., 2009). Finally, recent reports have mentioned this species to be present in the Cerrado formations of the state of Mato Grosso (Louzada et al., 2015; Oliveira and Faria, 2015) (**Fig. 1**; **Table 1**).

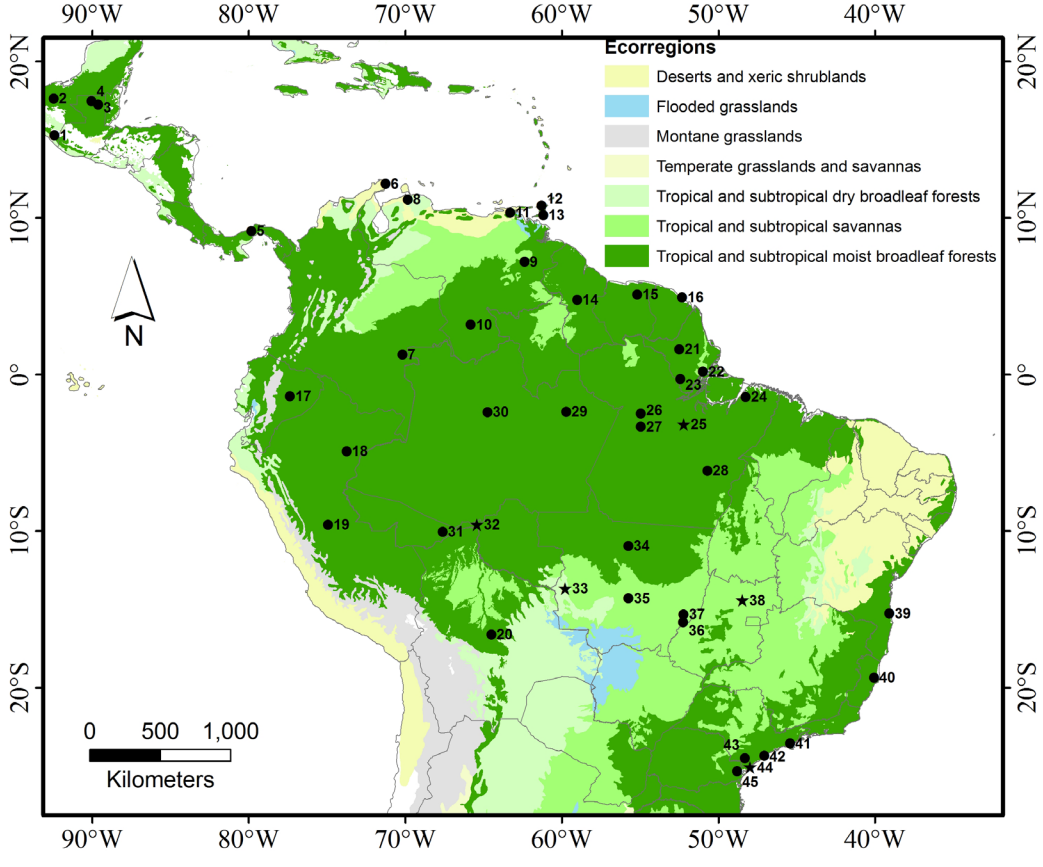

Fig. 1. Map showing the known localities for *L. brachyotis*. Stars represent the new records here presented and circles are records taken from literature. Localities numbered as in **Table 1**.

Table 1

Localities at which the occurrence of the *L. brachyotis* has been confirmed. The code numbers refer to the points showed in **Fig. 3**.

Country/ Point	Coordinates		Locality	Reference
	Lat y	Long x		
Mexico				
1	1,526,667	-924,167	Motozintla - Chiapas	Estrada et al. (2006)
2	1,761,667	-924,667	Agua Blanca State Park - Tabasco	Castro-Luna et al. (2007)
Guatemala				
3	17,23	-89,61	Tikal – Petén	Rick (1968)
4	17,23	-90,11	Chuntuqui – Petén	Jones (1966)
Panama				
5	9,15	-798,333	Barro Colorado Island	Weinbeer and Kalko (2004)
Colombia				
6	1,216,667	-712,667	Nazareth - Guajira	Marinkelle and Cadena (1972)
7	1,266,667	-701,833	Durania - Vaupés	Marinkelle and Cadena (1972)
Venezuela				
8	1,116,667	-69,85	19 km NW of Urama - Falcón	Handley (1976)
9	7,183,333	-623,667	Los Patos, 25 km SE El Manteco - Bolívar	Handley (1976)
10	3,166,667	-658,167	Tamatama, Rio Orinoco - Amazonas	Handley (1976)
11	1,033,333	-63,3	Managas, 40km NW Carapito - Sucre	Arnold et al. (1983)
Trinidad and Tobago				
12	1,078,333	-61,3	Blanchisseuse	Carter et al. (1981)
13	1,016,667	-611,833	Victoria-Mayaro Forest Reserve	Clarke et al. (2005)
Guyana				
14	4,75	-590,167	Iwokrama Forest - Potaro-Siparuni - Pakatau falls	Lim and Engstrom (2001)
Surinam				
15	5,1	-551,833	Gros - Brokopondo	Husson (1978)
French Guiana				
16	4,916,667	-523,167	Cayenne	Brongniart (1792)
Ecuador				
17	-1,4	-773,667	Tarangaro,Pastaza Province	Tirira et al. (2010)
Peru				
18	-491,667	-73,75	Loreto, Jenaro Herrera	Solari et al. (1999)
19	-961,667	-749,333	Panguana Biological Station - Huanuco	Hutterer et al. (1995)
Bolivia				
20	-166,333	-64,5	Yapacaní, Provincia Ichilo	Acosta and Aguanta (2005)
Brazil				
21	1,6	-524,833	Parque Nacional Montanhas do Tumucumaque- AP	Martins and Bernard (2008)
22	0,166667	-509,833	APA Rio Curiaú - Macapá - AP	Castro (2009)
23	-0,3	-524,333	Reserva de Desenvolvimento Sustentável do Rio Iratapuru - AP	Martins et al. (2011)

(Table 1, cont.)

Country/ Point	Coordinates		Locality	Reference
	Lat y	Long x		
24	-1,45	-48,25	Área de Pesquisas Ecológicas do Guamá - Belém - PA	Handley (1967)
25	-3,2	-52,2	Altamira - PA	This study
26	-2,5	-54,95	Alter do Chão - PA	Bernard and Fenton (2002)
27	-3,35	-54,95	Floresta Nacional dos Tapajós - PA	Castro-Arellano et al. (2007)
28	-6.1666	-50.7	Floresta Nacional dos Carajás - PA	Martins et al. (2012)
29	-2,4	-597,167	Manaus - AM	Sampaio et al. (2003)
30	-241,667	-64,75	Reserva de Desenvolvimento Sustentável Amanã - AM	Pereira et al. (2010)
31	-100,667	-676,167	Senador Guiomard - AC	Marciente et al. (2009)
32	-10	-65	Porto Velho - RO	This study
33	-13,73	-60,32	Comodoro - MT	This study
34	-109,667	-55,75	Nova Canaã do Norte - MT	Miranda et al. (2015)
35	-14.3166	-55.733	APA Cabeceiras do Rio Cuiabá, Rosário Oeste - MT	Louzada et al. (2015)
36	-15.85	-52.25	Serra Azul State Park, Barra do Garça - MT	Oliveira and Faria (2015)
37	-15.3333	-52.2166	Barra do Garça, Barra do Garça - MT	Oliveira and Faria (2015)
38	-14,332	-487,147	Niquelândia - GO	This study
39	-152,833	-390,667	Una-BA	Faria et al. (2006)
40	-193,833	-40,05	Linhares - ES	Peracchi and Albuquerque (1993)
41	-245,333	-48,3	Pedro Cubas - Eldorado Paulista - SP	Taddei and Pedro (1996)
42	-235,833	-454,167	Parque Estadual Serra do Mar - SP	Geraldes (2005)
43	-243,667	-470,667	Estação Ecológica Juréia-Itatins - SP	Gimenez and Ferrarezzi (2004)
44	-25	-48	Ilha do Cardoso - SP	Fazzolari-Corrêa (1995)/this study
45	-253,667	-48,8	Reserva Natural Morro da Mina - PR	Scultori et al. (2009)

Herein, we provide additional records of *L. brachyotis* for São Paulo, Pará and Mato Grosso, and the first record for the states of Rondônia and Goiás. All these records fill gaps in the distribution of the species in Brazil and improve the knowledge about its habitat usage.

We recorded five specimens of *L. brachyotis* (**Fig. 1**; **Table 1**), two from the Cerrado, two from the Amazon, and one from the Atlantic Forest (detailed information in **Table 2**). All individuals were netted at ground level and handled in accordance with Sikes et al. (2011), fixed in 10% formaldehyde and preserved in 70% ethanol, and the skulls were removed and cleaned (**Fig. 2**). External and cranial measurements are in **Table 3**. The specimens are housed at the zoological collections of the Museu de Zoologia da Universidade de São Paulo (MZUSP) and of the Universidade Federal de Goiás (MZUFG).

Lampronycteris brachyotis is a peculiar species of the subfamily Micronycterinae (sensu Baker

Table 2

Information about the five specimens of *Lampronycteris brachyotis* reported in the present study.

Code	Locality	Biome	Locality number (Table 2)	Habitat	Season	Date of capture	Sex	Reproductive stage
MZUSP 35419	Lower Xingu River Altamira, Pará	Amazon	25	Fragmented open rainforest under intense human pressure by agricultural plots surroundings[1]	Dry	20/08/2012	♂	Scrotal testes
MZUSP 35420	Middle Madeira River, Mutum Paraná (Porto Velho), Rondônia	Amazon	32	Trail next to primary forest[1]	Wet	04/03/2013	♂	Non-scrotal testes
MZUSP 35421	Middle Madeira River, Mutum Paraná (Porto Velho), Rondônia	Amazon	32	Trail next to primary forest[1]	Dry	05/10/2014	♀	Lactating
MZUSP 27706	Parque Estadual da Ilha do Cardoso, Cananéia, São Paulo	Atlantic Forest	44	Clearing near a trail in a Slope Forest[2]	Dry (end) / Wet (beginning)	14/11/1990	♂	Scrotal testes
Specimen released	Comodoro, Mato Grosso	Cerrado	33	Cerrado stricto sensu[3]	Dry (end)	28/08/2012	♀	Post lactation
MZUFG 86	Niquelândia, Goiás	Cerrado	38	Eucalyptus plantation surrounded by cerrado stricto sensu[4]	Dry	21/07/2012	♀	Non-reproductive

[1] Original vegetation refers to Dense Alluvial Ombrophilous Forest according to Veloso et al. (1991)
[2] Specimen not captured by the present authors, for details of the area see unpublished thesis of Fazzolari-Corrêa (1995).
[3] Located at a transitional area between Cerrado and Amazonia, where moist and flooded vegetation predominates (see Santos et al., 2000).
[4] Brooks et al., (1990) characterized the region as a vegetation complex with forestry, savannah and grassland formations

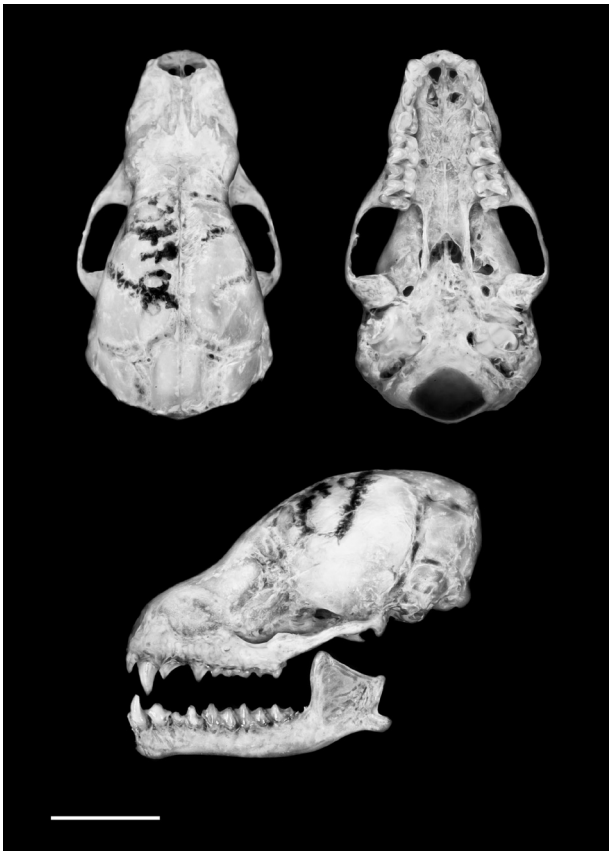

Fig. 2. Dorsal, ventral and lateral views of the skull and lateral view of the mandible of *Lampronycteris brachyotis* (MZUSP 27706) from Ilha do Cardoso, São Paulo, Brazil. Scale bar = 6 mm.

et al., 2003), easily distinguished by its small (less than 16 mm) and peculiar shaped ears (short and pointed; see **Fig. 3**); calcar about the same length as the foot; upper incisors chisel shaped and in line with canines; second phalanx of the middle finger conspicuously longer than the first; the dorsal pelage is orange while the ventral is yellowish-orange; the lower rim of the horseshoe of the noseleaf is defined by a ridge; and the lower lip presents two smooth tubercles separated by a V-shaped groove (see **Fig. 3**) (Dobson, 1879; Williams and Genoways, [2008]).

Our specimens include one non-reproductive female, collected in July (from Goiás), one lactating female in October (from Rondônia), and one post-lactating female in August (from Mato Grosso) (**Table 2**). The literature reports lactating females in July (from Mexico; Estrada et al., 2006), and pregnant and lactating females in July (from Guatemala; Rick, 1968).

In spite of the fact that the wide distribution of *L. brachyotis* includes both the Atlantic Forest and the Amazon in Brazil, until recently there was a large gap of records between those areas (see Williams and Genoways, [2008]). That gap corresponds to dry/open vegetation areas, such as Caatinga and Cerrado. Recently, Rocha et al. (2015), using distribution models of forest dwelling bats, predicted a pattern of low suitability for *L. brachyotis* in dry seasonal forest areas, suggesting that its presence along the Cerrado and Caatinga would be associated to mesic phytophysiognomies, sparsely found within these biomes. Corroborating this statement, both recent records from Cerrado (Louzada et al., 2015; Oliveira and Faria, 2015) are from gallery forest. Furthermore, two of the new records provided here (Comodoro and Niquelandia), although coming from areas of Cerrado sensu stricto, are comprised within regions characterized by a complex of phytophysiognomies, including mesic areas.

It is possible that these mesic savanna areas may be acting as stepping-stones (i.e. discontinuous patches that connect otherwise isolated patches) between more suitable biomes to *L. brachyotis*, such as the Amazon and Atlantic Forest, and can explain the occurrence and persistence of this rare species in the Cerrado (see Irwin and Taylor, 2000; Loehle, 2007). Alternatively, they may represent isolated local populations. Additional sampling and mark-recapture data are needed to document the distribution and understand the demography of this species in the area (see Bernard et al., 2011b). With the recent literature records and additional ones reported here, we highlight that mesic areas in semiarid vegetation such as Cer-

Table 3

Sex, external and cranial measurements of the *Lampronycteris brachyotis* specimens collected during the present study.

Parameter[1]	MZUSP 27706	MZUSP 35419	MZUSP 35420	MZUSP 35421	MZUFG 86
Body mass	18.00	14.00	-	12.00	12.40
Body length	55.00	54.60	50.10	56.10	46.44
Tail length	11.00	10.62	11.60	12.00	8.24
Hind foot length	12.00	10	10.46	10.80	11.74
Ear length	18.00	14.4	14.37	14.00	13.96
Forearm length	40.80	39.79	39.80	42.30	40.68
Greatest length of skull	21.34	-	21.15	-	-
Condylobasal length	19.13	-	19.03	-	-
Mastoid breadth	10.12	-	10.06	-	-
Zygomatic breadth	11.20	-	10.70	-	-
Breadth of braincase	9.13	-	8.80	-	-
Postorbital constriction	5.02	-	5.10	-	-
Palatal length	3.26	-	3.34	-	-
Breadth across upper canines	4.26	-	4.00	-	-
Breadth across upper molars	7.27	-	6.90	-	-
Length of maxillary toothrow	8.30	-	8.32	-	-
Length of mandible	13.93	-	14.24	-	-

[1] Based on Vizotto and Taddei (1973).

Fig. 3. Live individuals of *Lampronycteris brachyotis*. A – From Porto Velho, Rondônia (MZUSP 35420). B - From Comodoro, Mato Grosso. Note the peculiar shape of the ears (short and pointed), the yellowish-orange pelage, the lower rim of the horseshoe of the noseleaf defined by a ridge, and presence of two smooth tubercles separated by a V-shaped groove at the lower lip.

rado and Caatinga, might support peripheric and relictual populations or assist in dispersion.

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