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NEW RECORDS OF *Micronycteris schmidtorum* SANBORN, 1935 (PHYLLOSTOMIDAE, CHIROPTERA) FOR NORTHEASTERN BRAZIL

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ABSTRACT. We present three new records of *Micronycteris schmidtorum* for the Atlantic Forest of northeastern Brazil. An adult female was collected in the Serra de Itabaiana National Park, Sergipe State; a post-lactating female was caught in the Reserva Particular do Patrimônio Natural Sítio Pau-Brasil, Coruripe, Alagoas State; and an adult female was collected in the Reserva Biológica Guaribas, Paraíba State. These records fill a gap of approximately 800 km between previously known localities of the species.

RESUMO. Novos registros de *Micronycteris schmidtorum* Sanborn, 1935 (Phyllostomidae, Chiroptera) para o Nordeste do Brasil. Apresentamos três novos registros de *Micronycteris schmidtorum* para a Floresta Atlântica do Nordeste do Brasil. Uma fêmea adulta foi coletada no Parque Nacional Serra de Itabaiana, Sergipe; uma fêmea pós-lactante foi capturada na Reserva Patricular do Patrimônio Natural Sítio Pau-Brasil, Coruripe, Alagoas; e uma fêmea adulta foi coletada na Reserva Biológica Guaribas, Paraíba. Nossos registros preenchem uma lacuna de aproximadamente 800 km entre os registros prévios conhecidos da espécie.

Key words: Alagoas. Atlantic Forest. *Micronycteris*. Paraíba. Sergipe.

Palavras-chaves: Alagoas. Mata Atlântica. *Micronycteris*. Paraíba. Sergipe.

The genus *Micronycteris* Gray, 1866 comprises small phyllostomid bats (forearm length: 31-46 mm) occurring in a variety of habitats in the Neotropical region (Simmons & Voss 1998; Fonseca et al. 2007; Williams & Genoways 2008; Larsen et al. 2011; Siles et al. 2013; Feijó et al. 2015a). Species of *Micronycteris* constitute a large fraction of the gleaning-insectivorous bat fauna of Neotropical moist forests, where many species can occur sympatrically (Simmons et al. 2002). Among the 12 species of the genus currently recognized (Fonseca et al. 2007; Williams & Genoways 2008; Larsen et al. 2011; Siles et al. 2013), eight occur in Brazil (Nogueira et al. 2014) and exhibit diverse distributional patterns. Whereas some species are restricted to a single biome, such as *M. homezorum* Pirlot, 1967 restricted to the Amazon, other species, such as *M. megalotis* (Gray, 1842), *M. minuta* (Gervais, 1856), and *M. schmidtorum* Sanborn, 1935, are widespread (Williams & Genoways 2008; Paglia et al. 2012; Moras et al. 2014).

The geographical distribution of *Micronycteris schmidtorum* includes the Yucatan Peninsula and northeastern Chiapas, Mexico, through Central America to Venezuela, Peru, and Brazil (Williams & Genoways 2008). In Brazil, it has been reported from the Amazon (Bernard 2001; Bernard et al. 2001; Bernard & Fenton 2002; Nunes et al. 2005; Martins et al. 2006; Bernard et al. 2011; Silva et al. 2013), the Atlantic Forest (Ascorra et al. 1991; Tavares & Taddei 2003; Falcão et al. 2005; Faria et al. 2006), Caatinga (Ascorra et al. 1991; Simmons 1996; Sá-Neto & Marinho-Filho 2013), and Cerrado biomes (Louzada et al. 2015; Félix et al. 2016; Olímpio et al. 2016). Despite its widespread distribution, *M. schmidtorum* is rarely captured (Escobedo-Cabrera et al. 2006) and there are few specimens deposited in collections (Simmons 1996), resulting in limited information about its biology. *M. schmidtorum* has been found roosting in tree holes and has been collected in a variety of habitats, including evergreen forest, thorn forest, swamps, pastures, and orchards (Williams & Genoways 2008).

Here, we present new records of *M. schmidtorum* for northeastern Brazil, based on three specimens collected in fragments of the Atlantic Forest in the states of

Alagoas, Paraíba and Sergipe. The specimens from Alagoas and Sergipe were collected and fixed in 10% formalin and preserved in 70% alcohol with the skulls removed and cleaned; the specimen from Paraíba is preserved as dry skin and skull. The individuals were deposited as voucher specimens in the mammal collection of the Museu de História Natural of the Universidade Federal de Alagoas (MUFAL), the Coleção Adriano Lúcio Peracchi (ALP), Universidade Federal Rural do Rio de Janeiro, and in the mammal collection of the Universidade Federal da Paraíba (UFPB). Six external and eleven cranial measurements (**Table 1**) were taken using a digital caliper accurate to 0.01 mm and following the measurements delimited by Vizotto & Taddei (1973). Identifications were based on analyses of the characters reported as relevant for identification of the different species of *Micronycteris* (Simmons 1996; Simmons & Voss 1998; Williams & Genoways 2008; Larsen et al. 2011; Siles et al. 2013; Feijó et al. 2015a).

A non-reproductive adult female (ALP 8897) was collected with a mist net in the Serra de Itabaiana National Park (10°40' S, 37°25' W), Sergipe), and preliminary identified as *Micronycteris* sp. by Mikalauskas (2005). This reserve is located within the municipalities of Areia Branca and Itabaiana, and covers a total area of 7966 ha. It is characterized by extensive deforestation and a complex of habitats ranging from shrubby-arboreal vegetation on sandy soils to dense forests along water courses (Carvalho & Vilar 2005).

The second specimen, a post-lactating female (MUFAL 0245; **Figs. 1** and **2**), was caught in 2014 with a mist net set in the understory in the Reserva Particular do Patrimônio Natural (RPPN) Sitio Pau-Brasil (10°17'07" S, 36°21'07" W), Coruripe, Alagoas. This area is a fragment of approximately 300 ha of the Atlantic Forest in an advanced stage of regeneration, with trees reaching about 25 meters in height. It harbors a large concentration of Brazilwood (*Paubrasilia echinata*), an endangered species (Varty 1998).

The third specimen, a non-reproductive adult female (UFPB 9240), was collected in the Reserva Biológica Guaribas (6°43'44.9" S,

Table 1

Selected measurements (mm) of the *Micronycteris schmidtorum* specimens from Brazilian Atlantic Forest of Northeastern Brazil and other localities in South America.

Measurements	This study			Tavares and Taddei (2003)	Simmons (1996)	Simmons and Voss (1998)
	ALP 8897	MUFAL 0245	UFPB 9240	1 ♀	n=25	2 ♂♂
Total length	-	54.1	54	52.7	61.1	56.5
Body length	-	42.2	43.4	-	-	-
Tail length	-	11.9	10.6	13.0	13.1	11
Ear length	17.8	19.1	15.8	-	19.2	19
Forearm length	34.2	33.0	34.2	34.4	35.3	33.5
Calcar length	9.8	10.9	9.5	9.6	-	-
Hind foot length	9.5	10.0	8.3	9.2	9.7	9.5
Greatest length of skull	18.9	19.2	18.9	19.3	-	18.5
Condylbasal length	17.0	16.9	16.6	-	-	-
Maxillary toothrow length	7.5	7.2	7.1	7.3	7.5	7.1
Breadth across upper canines	3.2	3.2	3.1	3.2	-	-
Breadth across upper molars	5.9	6.2	5.9	5.8	-	5.9
Postorbital constriction	4.3	4.2	4.1	-	-	4.1
Breadth of braincase	7.9	7.8	7.8	7.9	7.9	7.7
Zygomatic breadth	8.9	9.1	8.8	-	9.3	8.7
Mastoidal breadth	8.7	8.6	8.6	8.6	-	8.5
Mandible length	12.1	-	12.0	11.8	-	-
Lower toothrow length	7.9	7.1	7.6	7.7	-	-



Fig. 1. *Micronycteris schmidtorum* from Alagoas, Northeastern Brazil (MUFAL 0245): A. Pale gray ventral fur, B. Dorsal fur; C. white arrow indicates the interauricular membrane with a moderate notch. Scale bar=10 mm.

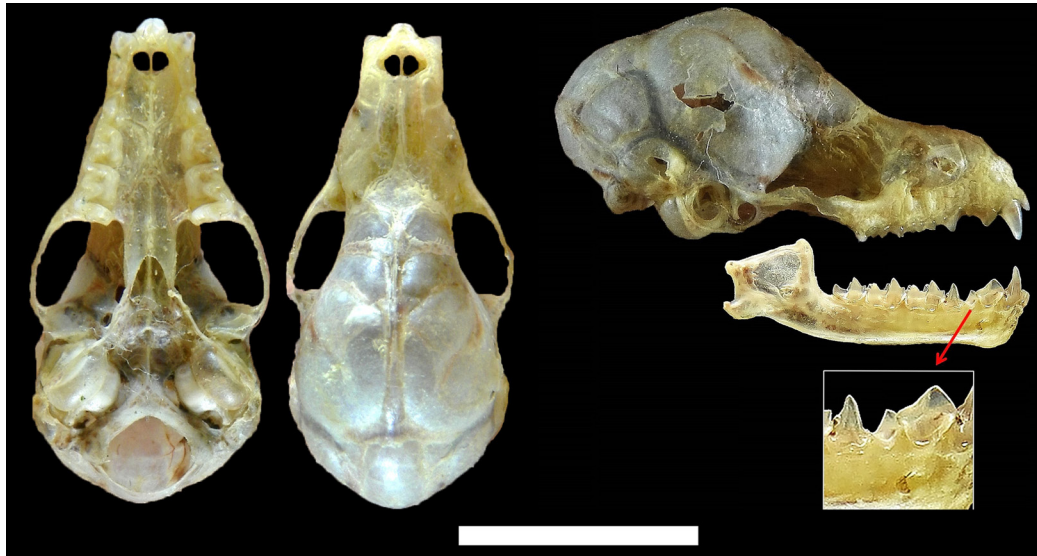


Fig. 2. Ventral, dorsal e lateral view of the skull, and lateral view of mandible of *Micronycteris schmidtorum* from Alagoas, Northeastern Brazil (MUFAL 0245). The insert to the right shows the size differences among the lower premolars. Scale bar = 10 mm.

35°08'22.4" W), Mamanguape, Paraíba state. The area is composed of a mosaic of seasonal semi-deciduous forests and typical savanna formations on sandy soils, with an average annual rainfall and temperature of 1700 mm and 24°C-26°C, respectively (Barbosa et al. 2011). Zeppelini et al. (2016) reported the presence of *Micronycteris schmidtorum* for the state of Paraíba, but after a reexamination of the specimen (UFPB 9792) we reidentified it as *M. megalotis* (dark-bellied group), making our *M. schmidtorum* record the first report of this species for the state.

Our specimens conform closely to the combination of characters that distinguishes *M. schmidtorum* from other closely related species, as well from other species of pale-bellied *Micronycteris* (*M. brosetti*, *M. homezorum*, *M. minuta*, *M. sanborni*, and *M. yatesi*). *M. schmidtorum* is easily distinguished from the dark-bellied *M. buriri*, *M. giovanniae*, *M. hirsuta*, *M. matses*, *M. megalotis*, and *M. microtis* by its pale ventral pelage (Simmons and Voss 1998; Simmons et al. 2002; Fonseca et al. 2007; Larsen et al. 2011; Siles et al. 2013). Among the pale-bellied species, *M. schmidtorum* presents the following set of

diagnostic characteristics: interauricular membrane with a moderate notch (**Fig. 1C**); dark brown dorsal pelage (**Fig. 1B**); individual hairs with white bases comprising approximately one-third of the length in the upper back region; calcar slightly longer than hindfoot; metacarpal formulae III<IV<V; mastoid breadth less than zygomatic breadth (**Table 1**); upper premolars subequal in height and anteroposterior length; second lower premolar shorter than the first and third (**Fig. 2**) (Simmons 1996; Simmons & Voss 1998; Williams & Genoways 2008). In addition, the measurements of our three specimens are close to the variation range known for *M. schmidtorum*, with small deviations in some traits (**Table 1**; see Simmons 1996; Simmons & Voss 1998; Tavares & Taddei 2003).

Micronycteris schmidtorum is morphologically similar to *M. brosetti*, being distinguished mainly by size (Simmons & Voss 1998; Tavares & Taddei 2003). According to Simmons & Voss (1998), *M. brosetti* is one of the smallest species of the genus and consistently smaller than *M. schmidtorum* in all craniodental measurements. All measurements of our specimens are larger than those reported for *M. brosetti* (see Simmons & Voss 1998), except

ear length, hind foot length, forearm length, and zygomatic breadth.

The specimens MUFAL 0245 and ALP 8897 have the second upper premolar (P4) with a moderated inner posterolingual heel and a poorly developed and rounded lingual cusp. Intraspecific variation in the presence of a lingual cusp in P4 is known to occur in *M. schmidtorum* (Simmons 1996; Simmons & Voss 1998).

In Brazil, *M. schmidtorum* has been recorded in 19 localities of 11 Brazilian states (Table 2; Fig. 3). Our records fill a gap of approximately 800 km between previous records (Fig. 3) and

increase the known bat diversity of the Sergipe to 51 species (see Rocha et al. 2017), and to 61 species for Paraiba (Feijó & Langguth 2011; Nunes et al. 2013; Vilar et al. 2015; Leal et al. 2014; Feijó et al. 2015b).

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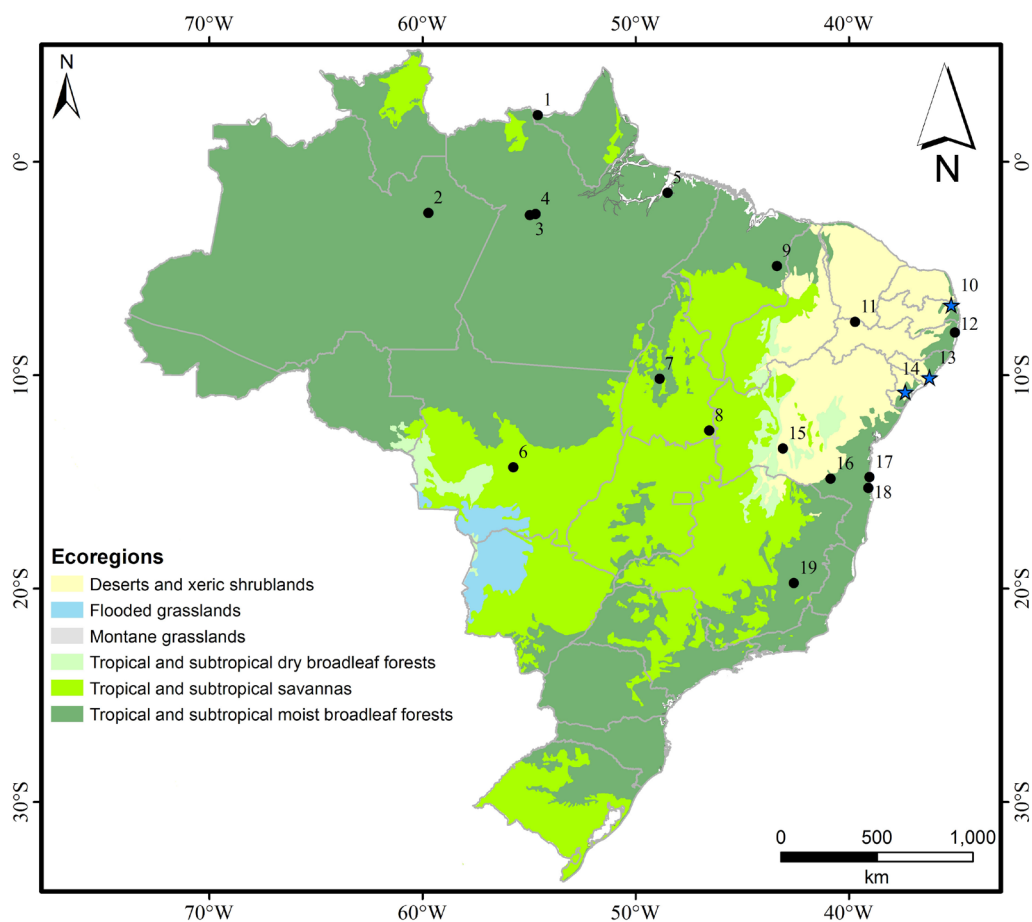


Fig. 3. Geographic distribution of *Micronycteris schmidtorum* in Brazil. Stars: new records from the Sergipe, Alagoas and Paraiba states, Northeast Brazil. Black circles: previous records. The numbers correspond to the records as indicated in the Table 2.

Table 2

Locality records of *Micronycteris schmidtorum* in Brazil. Asterisks indicate the new records for Northeastern Brazil. The code numbers correspond to the records as indicated in Fig. 3.

Code	Localities	Latitude	Longitude	Reference
1	Parque Nacional Montanhas do Tumucumaque, Amapá	2.18	-54.58	Martins et al. 2006
2	Manaus, Amazonas	-2.40	-59.72	Bernard 2001
3	Alter do Chão, Pará	-2.50	-54.95	Bernard & Fenton 2002
4	Santarém, Pará	-2.45	-54.68	Bernard et al. 2001
5	Belém, Pará	-1.45	-48.50	Simmons 1996
6	APA Cabeceiras do Rio Cuiabá, Rosário Oeste, Mato Grosso	-14.32	-55.73	Louzada et al. 2015
7	Paraíso do Tocantins, Tocantins	-10.17	-48.87	Nunes et al. 2005
8	Aurora do Tocantins, Tocantins	-12.59	-46.54	Felix et al. 2016
9	Inhamum Municipal Environmental Protection Area, Caxias, Maranhão	-4.89	-43.37	Olimpio et al. 2016
10*	Reserva Biológica Guaribas, Paraíba	-6.71	-35.19	This study
11	Exu, Pernambuco	-7.50	-39.70	Ascorra et al. 1991
12	São Lourenço da Mata, Pernambuco	-8.00	-35.02	Ascorra et al. 1991
13*	Reserva Particular do Patrimônio Natural (RPPN) Sítio Pau-Brasil, Cururipe, Alagoas	-10.11	-36.22	This study
14*	Parque Nacional Serra de Itabaiana, Areia Branca, Sergipe	-10.78	-37.35	This study
15	Médio Rio São Francisco, Bahia	-13.43	-43.08	Sá-Neto & Marinho-Filho 2013
16	Vitória da Conquista, Bahia	-14.85	-40.85	Falcão et al. 2005
17	Ilhéus, Bahia	-14.78	-39.02	Faria et al. 2006
18	Una, Bahia	-15.28	-39.07	Faria et al. 2006
19	Parque Estadual Rio Doce, Minas Gerais	-19.74	-42.58	Tavares & Taddei 2003

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