



***Dryadonycteris capixaba* (CHIROPTERA: PHYLLOSTOMIDAE: GLOSSOPHAGINAE): FIRST RECORD FOR THE CERRADO AND UPDATED GEOGRAPHIC DISTRIBUTION MAP**

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Abstract: We report a new record for the bat species *Dryadonycteris capixaba* (Chiroptera, Phyllostomidae), the first for the Cerrado biome, based on two specimens collected in palm swamps (“veredas”) in the municipality of Turmalina, state of Minas Gerais, southeastern Brazil. This record confirms that *D. capixaba* is not endemic to Atlantic rainforest areas, although it may be associated with mesic habitats.

Keywords: capixaba nectar-feeding bat; Choeronycterini; *Glossophaga soricina*; range extension; taxonomic collection.

The nectar-feeding bat *Dryadonycteris capixaba* Nogueira, Lima, Peracchi and Simmons, 2012 (Chiroptera, Phyllostomidae) is the only species of its genus, described based on three specimens from two Atlantic Forest remnants in the municipality of Linhares, state of Espírito Santo, southeastern Brazil (Nogueira *et al.* 2012). It is diagnosed by a combination of external and craniodental characters: small size (forearm length 29.00–32.00 mm); tricolored dorsal fur; calcar and foot subequal in length; small upper incisors, both completely visible in lateral view; absence of lower incisors; well-developed premaxilla; inflated anterior maxilla; mandibular prognathism; and the mandibular condyle as high as the upper border of the coronoid process (Nogueira *et al.* 2012).

Gregorin *et al.* (2014) recorded two female *D. capixaba* about 270 km W of the municipality of Linhares, at Rio Doce State Park (Parque Estadual do Rio Doce), the largest lowland Atlantic Forest

(37.000 ha) remnant in the state of Minas Gerais. In the same year, Rocha *et al.* (2014) revised the identification of specimens of *Choeroniscus minor* Peters, 1868 and *Lichonycteris obscura* Thomas, 1895 (Chiroptera, Phyllostomidae) from northeastern Brazil, and concluded that they were misidentified specimens of *D. capixaba*. This resulted in four new locality records for *D. capixaba*, the farthest more than 1200 km N of the type locality, in the municipality of Caruaru, state of Pernambuco. Rocha *et al.* (2014) also assumed that the remaining records of *C. minor* from the Atlantic Forest, in the states of Minas Gerais (Aguiar *et al.* 1995) and Bahia (Faria *et al.* 2006, Faria & Baumgarten 2007), might belong to *D. capixaba*, with *C. minor* restricted to the Amazon basin.

Based in the information available, *D. capixaba* is known to occur in 10 localities from northeastern to southeastern Brazil (Gregorin *et al.* 2014, Rocha *et al.* 2014). The records from Rio Doce State Park

are also the western limit of the species known distribution. Along its known range, *D. capixaba* is recorded in the Atlantic Forest and Caatinga biomes (*sensu* IBGE 2004), in three different vegetation formations: dense ombrophilous forests, seasonal semideciduous forests, and highland rainforest enclaves (“brejos de altitude”). In this note we report a new locality record for *D. capixaba*, the first for the Cerrado biome.

During a review of bat specimens housed at the Mammal Collection of the Centro de Coleções Taxonômicas, Universidade Federal de Minas Gerais (CCT-UFMG), we found two adult male specimens of *D. capixaba* (UFMG 5374 and UFMG 5375) previously identified as *Glossophaga soricina* (Chiroptera, Phyllostomidae). Their body measurements, skull and dental characters fit well the diagnostic features of *D. capixaba* (Nogueira *et al.* 2012) (Table 1; Figures 1 and 2). However, the specimen UFMG 5374 has only the anterior premaxillary foramen, while UFMG 5375 lacks both the premaxillary foramina. These conditions are similar to those described for specimens from Rio Doce State Park (CMUFLA 1516 and CMUFLA 1517) by Gregorin *et al.* (2014), suggesting that the presence of premaxillary foramina, a supposedly unique feature of *D. capixaba* (Nogueira *et al.* 2012), is not a reliable character for the identification of this species.

Specimens were collected during the wildlife assessment for the Irapé dam, in 31 January, 1990, by Dália Rizel Nogueira, at “Veredas de Botumirim”, 32 km NW of Caçaratiba, córrego da Estiva, municipality of Turmalina”, state of Minas Gerais. The precise coordinates could not be found for this locality, nor did we have success in contacting the collector of the specimens, but some approximation can be done based on available information. Caçaratiba is a district in the extreme west of the municipality of Turmalina. Any locality 32 km NW of Caçaratiba will not be in the municipality of Turmalina, but in Itacambira or Botumirim municipalities. We could not find a specific locality called “Veredas de Botumirim”, but a decade ago this name was used for a priority area for conservation of mammals in the state of Minas Gerais (Drummond *et al.* 2005). Based on an official document from the state Secretary of Environment (http://www.meioambiente.mg.gov.br/images/stories/COPA_NM/Reuniao-31/08050000620-15.pdf) we found a stream (“córrego”) called Estiva at about 17°08' S, 43°01' W (*datum* WGS84), in the south of the municipality of Botumirim, about 12 km NW of the district of Caçaratiba. This is close to a locality called “veredas da Estiva” (17°08'13" S, 43°06'06" W, *datum* WGS84). The specimens of *D. capixaba* probably were collected around this area, which was a mosaic with rocky outcrops, gallery forests, palm swamps (“veredas”), grassy-woody savanna (“campo-limpo”), and parkland savanna (“campo-sujo”) (*sensu* IBGE 1991; R. N. Feio, personal communication).

The region of collection is in the Cerrado biome (*sensu* IBGE 2004), from where *D. capixaba* have not been recorded before. It is about 380 km NW of the type locality and 260 km N of the Rio Doce State Park, the closest locality with records of *D. capixaba* (Table 2; Figure 3).

At the time of its description, *D. capixaba* was thought to be endemic to the Atlantic Forest. This supposed endemism was questioned by the record of *D. capixaba* in rainforest enclaves of the Caatinga, although the species is possible dependent of mesic habitats (Rocha *et al.* 2014). The new records presented here confirm that *D. capixaba* is not endemic to the Atlantic Forest. However, its record in palm swamps (“veredas”) reinforces the hypothesis that populations of this species may be heavily associated with mesic habitats.

“Veredas”, as well other humid forested habitats within Cerrado, as gallery forests, are important resources that maintain the regional biodiversity in this relatively dry biome (Alho 2005, Carmignotto *et al.* 2012). Therefore, the occurrence of species typical of South American forested formations in humid enclaves within the Cerrado support the regional biodiversity, and can be largely attributed to the heterogeneity caused by the introgression of these mesic corridors (Souza *et al.* 2004, Carmignotto *et al.* 2012). Species previously thought to be endemic both the Atlantic Forest and the Amazon were posteriorly found in mesic formations in the Cerrado, including bats (Souza *et al.* 2004). The discovery of *D. capixaba* within the “veredas” emphasizes the importance of this phytophysiology for the maintenance of the diversity of mammalian fauna of the Cerrado. The present record is from the Jequitinhonha river basin, which flows from the Cerrado of central Minas Gerais through the Atlantic Forest of northeastern Minas

Table 1. Selected measurements of *Dryadomycteris capixaba* (Chiroptera, Phyllostomidae) from the type locality in the state of Espírito Santo (Nogueira *et al.* 2012); the Atlantic Forest (Gregorin *et al.* 2014) and Cerrado (present study) localities in the state of Minas Gerais (southeastern Brazil); and the states of Alagoas, Pernambuco, and Sergipe (northeastern Brazil) (Rocha *et al.* 2014). Measurements follow Nogueira *et al.* (2012). All measurements were taken with digital calipers 0.05 mm of precision. Measurements are in millimeters.

Variables	Type series - Espírito Santo				Minas Gerais				Northeastern Brazil					
	ALP9667		ALP9599		Atlantic Forest		Cerrado		Sergipe		Pernambuco		Alagoas	
	♀	♂	♂	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂
Total length	56.40	49.90	50.60	50.60	—	45.11	42.63	42.63	54.00	—	56.50	—	—	—
Tail length	6.30	6.40	4.40	4.40	8.40	6.30	6.12	6.12	8.00	—	6.40	—	—	—
Hindfoot length	8.30	7.80	7.50	7.50	8.40	6.30	6.74	6.74	8.00	—	7.70	—	—	—
Calcar length	8.00	7.30	7.80	7.80	7.00	8.30	6.70	6.70	—	—	—	—	—	—
Ear length	10.00	10.00	9.00	9.00	8.90	13.50	11.33	11.33	12.00	—	12.10	—	—	—
Forearm length	32.30	29.10	30.50	30.50	31.70	31.30	30.02	30.02	30.00	31.0	31.20	—	—	—
Greatest length of the skull	20.20	19.58	—	—	19.90	20.40	19.49	19.49	18.90	19.4	19.90	19.70	18.30	—
Condylolincisive length	19.80	18.99	19.05	19.05	19.50	19.60	18.79	18.79	—	—	—	—	—	—
Condylolcanine length	19.08	18.30	18.41	18.41	18.70	18.40	18.02	18.02	—	—	—	—	—	—
Maxillary tooththrow length	6.81	6.18	6.28	6.28	6.60	6.60	7.07	7.07	6.80	5.9	6.80	6.30	5.80	—
Braincase breadth	7.75	7.66	7.71	7.71	7.60	7.70	7.61	7.61	7.70	7.50	7.60	7.40	7.40	—
Mandibular tooththrow length	7.02	6.27	6.50	6.50	7.00	6.80	—	—	—	—	6.90	—	—	—

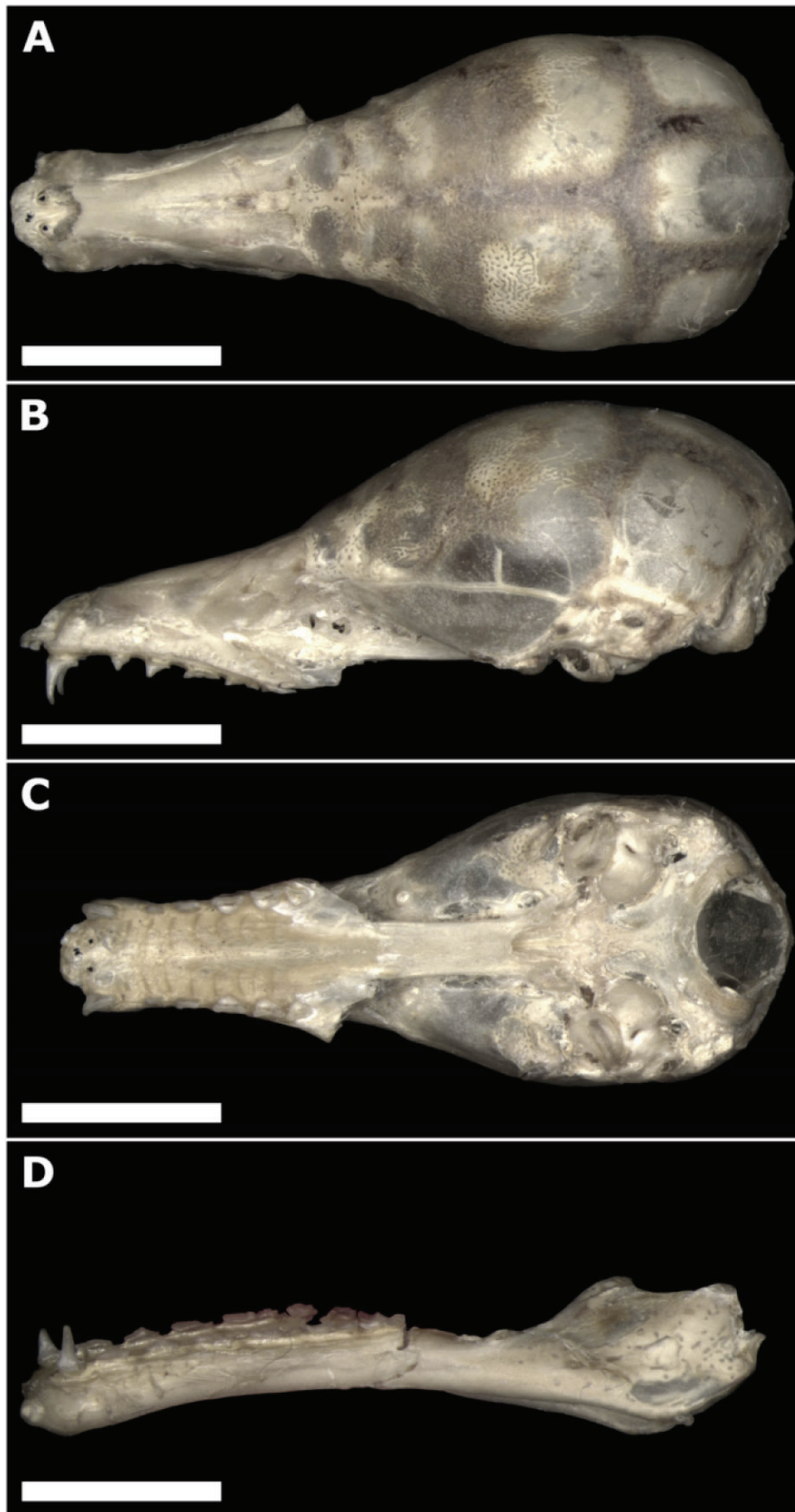


Figure 1. Dorsal (A), lateral (B), and ventral (C) views of the skull and lateral (D) view of the mandible of *Dryadonycteris capixaba* (Chiroptera, Phyllostomidae; UFMG 5374). In lateral view both upper incisors are completely visible and it could be perceived that the rostrum is shorter than the braincase. In the mandible, the lower incisors are absent and the mandibular condyle is positioned approximately at the same height as the upper border of the coronoid process. These are some diagnostic features of the genus *Dryadonycteris*. Scale bar: 5 mm.



Figure 2. Dorsal (A) and ventral (B) views of the skin of *Dryadonycteris capixaba* (Chiroptera, Phyllostomidae; UFMG 5374). Close up, showing the tricolored fur with a pale middle band and darker basal and distal bands.

Table 2. Locality records of *Dryadonycteris capixaba* (Chiroptera, Phyllostomidae), in Brazil. *Doubtful records, pending confirmation (specimens not examined). *Datum* WGS 84 from geographical coordinates.

Voucher	State	Municipality	Locality	Latitude (S)	Longitude (W)	Source	Precision of coordinates
UFPE 301	PE	Caruaru	Brejo dos Cavalos	8°21'57"	36°00'57"	Rocha <i>et al.</i> 2014	proximate
UFPE 4203	AL	Ibateguara	"Atlantic Forest"	8°55'58"	35°52'58"	Rocha <i>et al.</i> 2014	proximate
UFPB 6104, 6105	SE	Poço Redondo	Serra da Guia	9°57'57"	37°51'57"	Rocha <i>et al.</i> 2014	proximate
ALP 9740	SE	Capela	Refúgio de Vida Silvestre Mata do Junco	10°31'58"	37°03'00"	Rocha <i>et al.</i> 2014	proximate
UESC*	BA	Ilhéus	"Isolated cabucas"	14°42'25"	39°14'34"	Faria & Baumgarten 2007, Faria <i>et al.</i> 2006	proximate
UESC*	BA	Una	"Cabucas of Una"	15°10'48"	39°06'00"	Faria <i>et al.</i> 2006, Faria & Baumgarten 2007	proximate

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Table 2. ...Continued

Voucher	State	Municipality	Locality	Latitude (S)	Longitude (W)	Source	Precision of coordinates
UFMG 5374, 5375	MG	Botumirim	Córrego da Estiva	17°07'48"	43°00'57"	this study	proximate
ALP 9667 (holotype)	ES	Linhares	Reserva Natural Vale, Estrada Oitica	19°09'14"	40°00'18"	Nogueira <i>et al.</i> 2012	local
ALP 9599 (paratype)	ES	Linhares	Reserva Natural Vale, Estrada Oitica	19°09'14"	40°00'18"	Nogueira <i>et al.</i> 2012	proximate
MN 78305 (paratype)	ES	Linhares	Floresta Nacional de Goytacazes	19°25'51"	40°04'20"	Nogueira <i>et al.</i> 2012	proximate
DZUNESP*	MG	Caratinga	RPPN Feliciano Miguel Abdala, Fazenda Montes Claros	19°43'37"	41°49'15"	Aguiar <i>et al.</i> 1995, Rocha <i>et al.</i> 2014	proximate
CMUFLA 1516, 1517	MG	Marliéria	Parque Estadual do Rio Doce, trilha do Vinhático	19°45'50"	42°37'19"	Gregorin <i>et al.</i> 2014	local

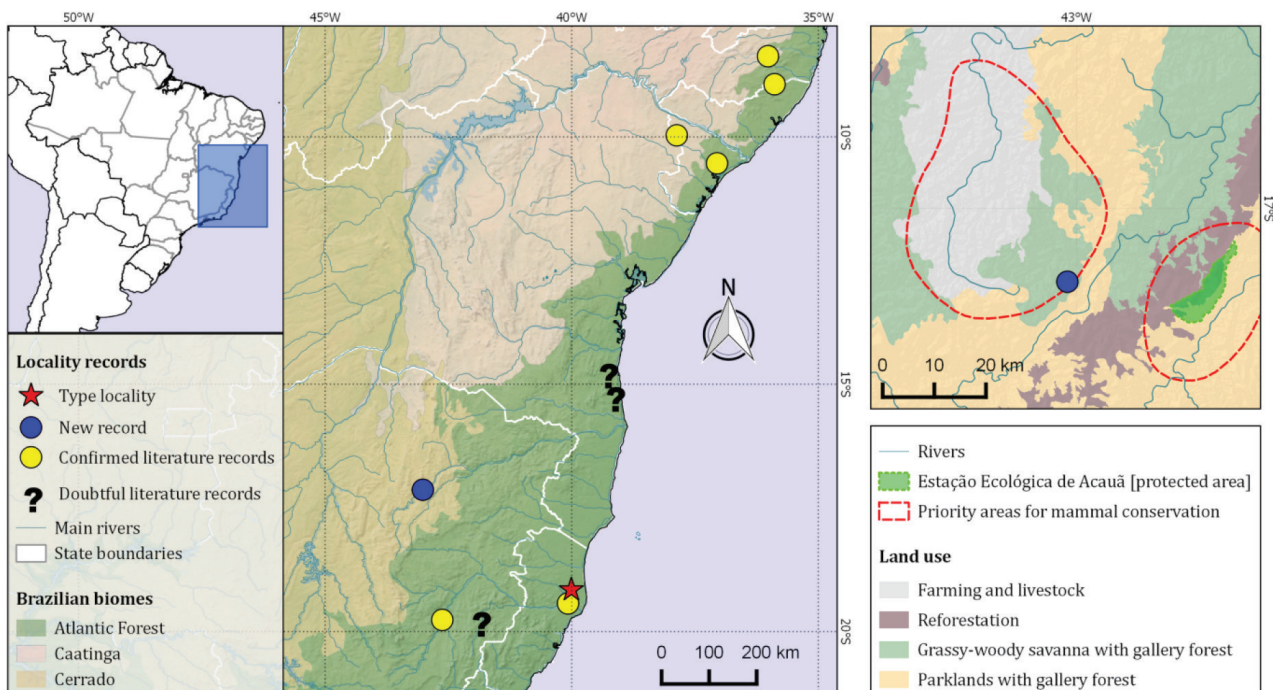


Figure 3. Geographic distribution of known records of *Dryadonycteris capixaba* (Chiroptera, Phyllostomidae) in Brazil. For locality details see Table 2. Priority areas for mammal conservation follow Drummond *et al.* (2005).

Gerais and eastern Bahia, where it reaches the sea. Based on available information on the distribution of *D. capixaba*, we propose that the species is present along the forests of the Jequitinhonha River, and may reach the Cerrado through gallery forests.

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