

Extension of the geographical distribution of *Lonchophylla dekeyseri* Taddei, Vizotto and Sazima, 1983 (Chiroptera: Phyllostomidae): New record in northeastern Brazil

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SHORT COMMUNICATION

Manuscript history:

Submitted in 11/Aug/2013

Accepted in 26/Dec/2013

Available on line in 21/Jan/2014

Section editor: Ludmilla M.S. Aguiar

Abstract

This paper aims to extend the geographical distribution of *Lonchophylla dekeyseri* in Brazil, as well as to register its first record in the State of Paraíba, northeastern Brazil. This record was based on two captured specimens, one male and one female. Measures and qualitative morphological characters were in accordance to those described in the literature. The city of Buíque, State of Pernambuco, located approximately 570 km away from the last record of *L. dekeyseri* in the Caatinga biome, is now the oriental limit of known geographical distribution for this species in Brazil.

Keywords: Bats, Dekeyser's nectar bat, geographical distribution, threatened species.

The bats of the genus *Lonchophylla* (Tribe Lonchophylini) present elongated snout and tongue (Reis et al. 2011), reflecting their nectarivorous habits. They differ from those of the genus *Glossophaga* by presenting an incomplete zygomatic arch and the upper central incisors larger than the external, spatulated, and projected forward (procumbent) (Peracchi et al. 2006; 2011). Currently, there are thirteen species recognized in this South American genus: *Lonchophylla bokermanni* Sazima, Vizotto & Taddei 1978; *Lonchophylla cadenai* Woodman & Timm 2006; *Lonchophylla chocoana* Dávalos

2005; *Lonchophylla concava* Goldman 1914; *Lonchophylla dekeyseri* Taddei, Vizotto and Sazima, 1983; *Lonchophylla handleyi* Hill 1980; *Lonchophylla hesperia* Allen 1908; *Lonchophylla mordax* Thomas, 1903; *Lonchophylla orcesi* Albuja & Gardner 2005; *Lonchophylla pattoni* Woodman & Timm 2006; *Lonchophylla peracchii* Dias, Esbérard & Moratelli, 2013; *Lonchophylla robusta* Miller 1912, and *Lonchophylla thomasi* Allen, 1904 (Albuja & Gardner 2005, Gardner 2008, Woodman 2007, Dávalos & Corthals 2008). Among these species, only *L. bokermanni*, *L. dekeyseri*, *L. mordax*, *L. peracchii*, and *L. thomasi*

occur in Brazil (Peracchi et al. 2011; Dias, Esbérard & Moratelli 2013).

Lonchophylla dekeyseri is very similar in appearance to *L. mordax*, being the analysis of dental and cranial characters essential to securely identify these species. *L. dekeyseri* has the skull smaller and less robust, presenting the greatest length of the skull < 22.6 mm, length of maxillary tooththrow < 0.21 mm, ratio greatest length of skull / length of forearm < 0.65 mm, and product greatest length of skull x breadth across molars divided by the length of forearm < 3.20 mm (characters generally larger in *L. mordax*) (Taddei et al. 1983). This species also presents a groove in the anterior surface of the upper canines, absent in *L. mordax* (Woodman & Timm 2006).

Regarding geographical distribution, *L. dekeyseri* (type-locality: National Park of Brasília, Distrito Federal) occurs only in Bolivia and Brazil (Peracchi et al. 2011), where it has been reported in areas of Cerrado, in the states of Goiás (Rodrigues et al. 2002; Esbérard et al. 2005), Minas Gerais (Taddei et al. 1983; Pinto et al. 2010), Distrito Federal (Taddei et al. 1983; Brecht & Uieda 1996; Sá 1998; Brecht et al. 1999; Coelho & Marinho-Filho 2002; Chiarello et al. 2008), Mato Grosso (Gonçalves & Gregorin 2004) Tocantins (Gregorin et al. 2011), Piauí (Taddei et al. 1983) and Mato Grosso do Sul (Cunha et al. 2011) (Figure 2). Previously considered as endemic to the Cerrado (Zortéa 2003), this species was recorded recently in areas of Caatinga in the state of Bahia (Woodman & Timm, 2006), Pernambuco (Woodman & Timm, 2006) and Ceará (Silva et al. 2011) (Figure 2).

In this paper we report the easternmost record of *L. dekeyseri* and the first record in the State of Paraíba, extending the geographical distribution of this species in northeastern Brazil. This species is classified in the "near threatened" category by the IUCN (2012). Considered "vulnerable" in the Red Book of the Brazilian fauna threatened of extinction (Chiarello et al. 2008). The Ministry of Environment, through Normative Instruction No. 3 of 27 May 2003, and Machado et al. (2005) classify it as "threatened", being one of the five endangered species of bats in the country (Machado et al. 2005).

During a survey of bats conducted between May and December 2011 (dry season) at Fazenda Tamanduá, in the municipality of Santa Terezinha (07°01'S, 37°23'W), State of Paraíba, two specimens of *L. dekeyseri* were collected in a Legal Reserve (614 ha) and a Natural Heritage Private Reserve (RPPN Tamanduá; 350 ha) (Neves et al. 1999; Lyra-Neves & Telino-Júnior 2010), areas that, together, constitute the largest protected remain of preserved Caatinga in Paraíba, and one of the largest in northeastern Brazil.

The capture sites are characterized as late successional stage caatinga. In this area, preserved for about 50 years, the arboreal vegetation stands out for its diversity of species, including several well-developed individuals of climax species, such as *Amburana cearensis* (Allemão) A. C. Smith 140 (Cumaru) (Leguminosae), *Commiphora leptophloeos* (Mart.) J. B. Gillett (Imburana) (Burseraceae), and *Pseudobombax marginatum* (A. St.-Hil.) A. Robyns (Embiratanha) (Bombacaceae).

Specimens were collected in mist-nests set at ground level, with a maximum height of 3 m, and deposited in the Collection of Mammals at the Federal University of Pernambuco in Recife, Brazil (UFPE). Specimens were taxidermized under the criteria of Monteiro (1993) with skulls removed. External measurements were taken using calipers accurate to 0.001 mm, and body mass was measured using a portable spring balance (1 g scale). The morphology of the specimens was compared with descriptions available in the literature.

Both individuals were captured during night time and presented the epiphyses of the metacarpals and digital phalanges of the wings ossified. The male (UFPE 2822) did not present visible testicles (Figure 1) and the female (UFPE 2823) was pregnant. These specimens present the height of the ear lower than specimens from Bolivia, Bahia, and Pernambuco studied by Woodman & Timm (2006). The lengths of third metacarpal and third phalanx were also out of the range described by Taddei et al. (1983), but all other measurements for which comparative data were available prove to be in agreement with the literature (Table 1).

The Dekeyser's nectar bat, *L. dekeyseri*, was considered for a long time as an endemic species to the Brazilian Cerrado. However, it is known today that its distribution also reaches Bolivia, and



Figure 1. Live photograph of an adult male of *Lonchophylla dekeyseri* (UFPE 2822) from Fazenda Tamanduá. Photo by Edson Silva Barbosa Leal.

Table 1. External and skull measurements (in mm) and body weights (g) of *L. dekeyseri* (♂ - male; ♀ - female) from Fazenda Tamanduá, Santa Terezinha-PB, compared with the data available in literature.

| References | Current study | | Taddei et al. 1983 | Gonçalves & Gregorin 2004 | Woodman & Timm 2006 | Gregorin et al. 2011 | |
|--------------|-------------------------------|------|-----------------------|------------------------------|------------------------|-------------------------|-------------|
| | PB | | DF, PI, MG | MT | Bolivia, BA, PE | TO | |
| | ♂ | ♀ | | | | | |
| Body weights | 11.5 | 12.0 | - | - | 9.0 | - | |
| External | Length of head and body | 47.8 | 50.7 | 48.5 – 52.0 | - | 48.0 – 63.0 | - |
| | Length of ear | 13.8 | 11.9 | - | - | 15.0 – 16.0 | - |
| | Length of forearm | 35.7 | 35.5 | 34.7 – 37.7 | 33.9 – 34.9 | 34.0 – 37.7 | 34.7 – 35.8 |
| | Length of third metacarpal | 33.6 | 32.4 | 34.2 – 36.6 | - | - | - |
| | Length of first phalanx | 10.0 | 11.3 | 11.8 – 12.7 | - | - | - |
| | Length of second phalanx | 16.4 | 16.8 | 16.9 – 18.7 | - | - | - |
| | Length of third phalanx | 9.4 | 9.3 | 7.0 – 7.4 | - | - | - |
| Skull | Greatest length of skull | 22.6 | 22.5 | 22.0 – 22.6 | 21.2 – 21.4 | 22.0 – 22.8 | 21.6 – 22.0 |
| | Condylbasal length | 20.7 | 20.8 | 20.4 – 21.1 | - | 20.3 – 20.6 | - |
| | Condylocanine length | 20.0 | 20.0 | 19.2 – 19.7 | - | - | - |
| | Basal length | 20.7 | 20.8 | 18.6 – 19.2 | - | - | - |
| | Length of maxillary toothrow | 7.8 | 8.0 | 7.5 – 7.6 | 7.5 – 7.6 | 7.5 – 7.9 | 7.3 – 7.8 |
| | Length of mandibular toothrow | 8.3 | 8.4 | 7.8 – 7.9 | - | 7.8 – 8.4 | 7.6 – 8.2 |
| | Length of mandible | 15.2 | 15.8 | 14.8 – 15.3 | 14.8 – 15.3 | 14.2 – 14.9 | 14.4 |
| | Breadth across molars | 5.1 | 5.2 | 4.8 – 5.2 | 4.8 – 5.1 | 4.8 – 5.2 | - |
| | Postorbital breadth | 4.0 | 4.0 | 4.2 – 4.5 | - | 4.1 – 4.5 | 4.3 – 4.6 |
| | Breadth of braincase | 8.2 | 8.6 | 8.3 – 8.6 | - | 8.3 – 8.7 | 8.3 – 8.5 |
| | Mastoid breadth | 9.0 | 9.0 | 8.7 – 9.5 | - | 8.5 – 9.6 | - |

even in Brazil *L. dekeyseri* is not restricted to the Cerrado (Gregorin et al. 2011). In addition to the records to Distrito Federal, available since the 80s (e.g. Taddei et al. 1983), this species has been found in the central-western, southeastern, and northeastern Brazil (Peracchi et al. 2011), where it occurs in Caatinga areas (Silva et al. 2004; Woodman & Timm, 2006; Silva et al. 2011).

This paper increases to sixty-six the number of bats species recorded for Paraíba (Leal et al. in press) and significantly expands the distribution of this species in the Caatinga. The city of Buíque, State of Pernambuco, located approximately 570 km away from the last record of *L. dekeyseri* in the Caatinga biome, is now the oriental limit of known geographical distribution for this species in Brazil.

According to Silva et al. (2011), the occurrence of *L. dekeyseri*, listed as endemic to the region recognized as the diagonal of open landscapes (Chaco-Pantanal-Cerrado-Caatinga) of South America (Gregorin et al. 2008), corroborates with the presence of an unique fauna and shared between different tropical open formations of South America. Thus, more studies in different Caatinga locations, as well as the Cerrado and Pantanal, formations that feature various natural cavities that can be used as shelters (SBE 2013), make it necessary to make more records of this species endangered and belongs to a conservation plan national (ICMBio 2010), because its endemism must be an artifact of the lack of data in some areas (Aguiar & Zortea unpublished data).

Acknowledgments

We are very grateful to Mr. Pierre Landolt, president of the Instituto Fazenda Tamanduá, as well as its current director, Mr. Jean Didier, for permitting and supporting the development of this research. To the Post-Graduate Program in Ecology of the Universidade Federal de Pernambuco (UFRPE) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for providing a masters scholarship to the first author. To Dr. Diego A. de Moraes, curator of the Mammals' Collection of UFPE for receiving and depositing the obtained material. To Mr. Mario F. da Silva, taxidermist of the UFPE Zoology Department, for the procedures related to taxidermy of the specimens. We would also like to extend our thanks to the team of the Project "Biodiversity and Natural Regeneration of Brazilian Tropical Dry Forests" (SISBIOTA), which has been supported by CNPq (process 563304/2010-3) and FAPEMIG (CRA process - APQ-00001-11), for the partnership in field work. Specimens were collected under permits ICMBio/SISBIO no 30865-1 and ICMBio/SISBIO no 3719-1.

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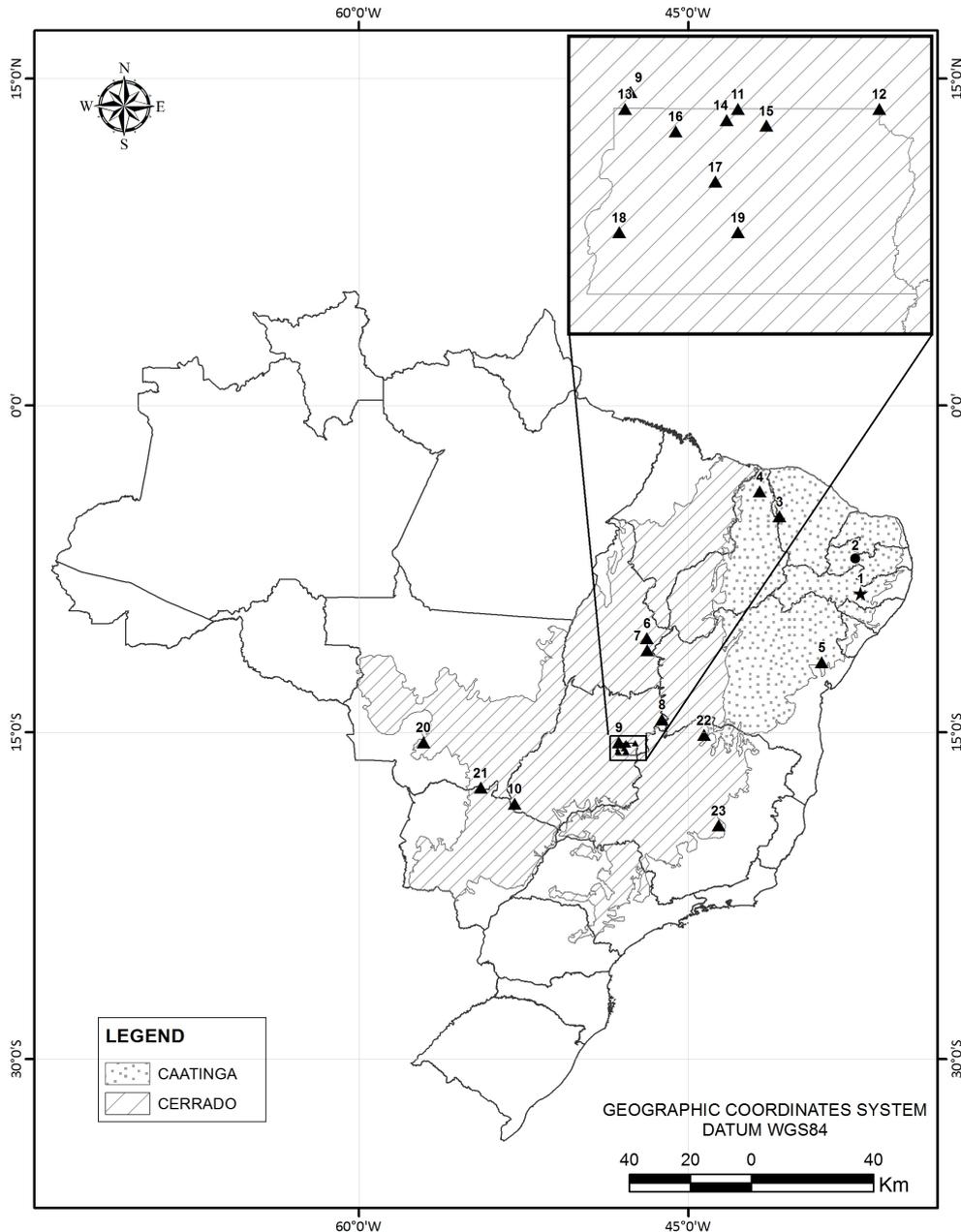


Figure 2. Distribution of the available records of *Lonchophylla dekeyseri* in Brazil (star = easternmost record; circles = new records; triangles = existing records): (1) locality not identified, Buíque, Pernambuco (Woodman & Timm 2006); (2) Fazenda Tamanduá, Santa Terezinha, Paraíba (current study); (3) Reserva Particular do Patrimônio Natural (RPPN) Serra das Almas, Sul da Serra da Ibiapaba, Ceará (Silva et al. 2004; Silva et al. 2011); (4) Parque Nacional (PARNA) de Sete Cidades, Piracuruca, Piauí (Taddei et al. 1983); (5) locality not identified, Lamarão, 300m, Bahia (Woodman & Timm 2006); (6) Estação Ecológica (ESEC) Serra Geral do Tocantins, Complexo do Jalapão, 60 km próximo Mateiros, Tocantins (Gregorin et al. 2011); (7) ESEC Serra Geral do Tocantins, Complexo do Jalapão, 70 km próximo a Mateiros, Tocantins (Gregorin et al. 2011); (8) Área de Proteção Ambiental (APA) Nascentes do Rio Vermelho, Goiás (Esbérard et al. 2005); (9) Caverna Morro, Padre Bernardo, Goiás (Bredt et al. 1999); (10) PARNA das Emas, Goiás (Rodrigues et al. 2002); (11) APA da Cafuringa, Distrito Federal (Sá 1998); (12) Área Rural do Distrito Federal, Distrito Federal (Bredt & Uieda 1996); (13) Caverna Fenda II, Brazlândia, Distrito Federal (Bredt et al. 1999); (14) Caverna da Saúva, Sobradinho, Distrito Federal (Bredt et al. 1999); (15) Caverna Dança do Vampiro, Planaltina, Distrito Federal (Bredt et al. 1999); (16) Caverna Dois Irmãos, Brazlândia, Distrito Federal (Bredt et al. 1999); (17) PARNA de Brasília (Type-Locality), DF, Distrito Federal (Taddei et al. 1983); (18) Caverna Toca do Falcão, Ceilândia, Distrito Federal (Bredt et al. 1999); (19) APA Gama Cabeça de Veado, Distrito Federal (Chiarello et al. 2008); (20) ESEC Serra das Araras, Porto Estrela-Caceres-Bar Bugres, Mato Grosso (Gonçalves & Gregorin (2004); (21) Remanescentes de Savana, Sonora, Mato Grosso do Sul (Cunha et al. 2011); (22) PARNA Cavernas do Peruaçu, Itacarambi-Januária, Minas Gerais (Pinto et al. 2010); (23) PARNA Serra do Cipó, Jaboticatubas, Minas Gerais (Taddei et al. 1983).