

New record of *Furipterus horrens* (Cuvier, 1828) (Mammalia, Chiroptera) from the Cerrado of Tocantins state with a compilation of the known distribution within Brazil

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ABSTRACT: *Furipterus horrens* is an insectivorous bat that occurs from Costa Rica to southeastern Bolivia and southern Brazil, with records in the Amazon, Caatinga, Cerrado and Atlantic Forest biomes. Despite this broad distributional range across South America, the species is currently known from few localities, and its habitat preferences are poorly known. We report the first record of *Furipterus horrens* for the Tocantins state, northern Brazil, based on four individuals collected in two caves surrounded by Neotropical savanna (Cerrado) in the Aurora do Tocantins municipality.

The family Furipteridae (Mammalia: Chiroptera) is currently composed by only two genera, both monotypic: *Amorphochilus schnablii* Peters, 1877 and *Furipterus horrens* (Cuvier, 1828) (Simmons 2005). *Furipterus horrens* occurs in Costa Rica, Panama and Trinidad southward to southeastern Bolivia and southern Brazil (Emmons 1990, Gardner 2008, Peracchi *et al.* 2011). Within Brazil this species has been recorded for 12 states in all regions, covering the Amazon, Caatinga, Cerrado and Atlantic Forest biomes (Reis and Gazarini 2007, Tavares *et al.* 2008, Peracchi *et al.* 2011). We report here the first record of *F. horrens* for the state of Tocantins, northern Brazil. This is the northernmost record within Brazilian Cerrado, being about 300 km away from the last record to the Cerrado.

The record of this species was made during the survey activities of the bat fauna in a karstic area of the Aurora do Tocantins municipality, Southeast Tocantins state, northern Brazil (Figure 1). The site has several massive limestones with dozens of caves (Figure 2). The massifs are inserted into a mosaic landscape composed of large remnants of the Neotropical savanna (Cerrado) and agricultural properties with cattle ranching and maize, cassava, rice and soybeans plantations. We performed eight nights of bats sampling, being five nights of 12 h (18:00 - 06:00 h) and three nights of 6 h (18:00 - 00:00h), using 10 mist nets (Zootech® 9 x 3 m, 20 mm), totaling 21,260 m².h of sampling effort (Straube and Bianconi 2002). The mist-nets were placed (1) at the caves entrance (6,390m².h), (2) to a distance of 15m from the caves entrance (6,380m².h), (3) in edges, trails and glades in the fragments of Cerrado (6,380m².h) and (4) around artificial ponds (2,110m².h). We also performed diurnal active searches and manual catches using hand-nets. Individuals collected under permits SISBIO/IBAMA (4028-1 / 28717) (MN78114, MN78116, MN78115, MN78117) were deposited in the mammal collection of the Museu Nacional do Rio de Janeiro, Rio de Janeiro, Brazil. We followed the guidelines of Sikes *et al.*

(2011) use of animals for scientific purposes.

In January 14, 2012 four adult individuals of *F. horrens* were collected at the Gruta dos Moura (12°34'53.4" S/ 46°30'59.0" W, altitude ca. 400 m), Aurora do Tocantins municipality, Tocantins state, northeastern Brazil. The specimens collected during the present study were part of a colony with more than 100 individuals sheltering in the ceiling at the cave entrance at about 1.50 m above the ground. Two adult individuals were males with abdominal testes (MN78114: forearm 34,1mm, weight 4.0g and MN78116: forearm 34.0, weight 3.0g) and two were inactive females (MN78115: forearm 34.5, weight 4.0g and MN78117: forearm 35.6, weight 3.5g) (Figure

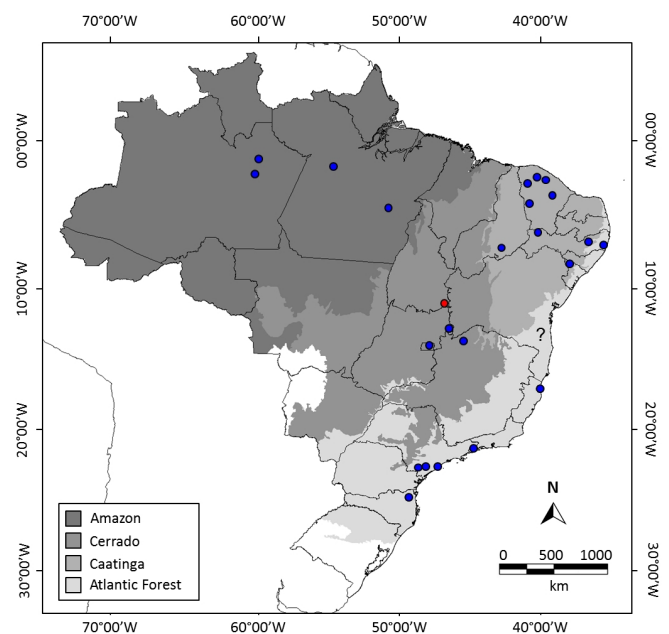


FIGURE 1. Capture localities of *Furipterus horrens* within Brazil (blue circles), including the new record from Aurora do Tocantins (red circle) on Brazilian biomes.

3). Measurements and morphological characters fall within the expected variation for the species (e.g. Husson 1978, Brosset and Charles-Dominique 1990, Simmons and Voss 1998, Reis and Gazarini 2007, Peracchi et al. 2010). *F. horrens* can be easily identified due to its peculiar morphology, including a reduced thumb included in the wing membrane with a rudimentary nail, and a truncated snout with a disk-shaped extremity, the large and round-shaped ears funnel-shaped, with a short and triangular tragus (Vieira 1942, Cabrera and Yapes 1960).

Mist nets were not effective to capture this species, since even the grids placed in front of two previously identified shelters were not able to capture any individual. *F. horrens* has a diet composed exclusively by insects (Wilson 1973,



FIGURE 3. *Furipterus horrens* female captured in a cave in the city of Aurora do Tocantins, southeastern of Tocantins state, Brazil.

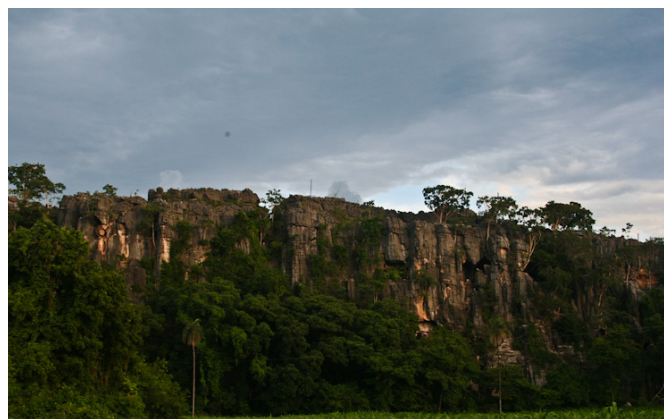


FIGURE 2. Massive limestones includes the Gruta dos Moura, in agricultural landscape composed of Cerrado fragments, cornfield and pasture.

Nowak 1994), located with the help of echolocation, which may facilitate the mist nets detection (Arita and Fenton 1997; Schnitzler and Kalko 2001), and appears to have high flight maneuverability. Accordingly, we observed several individuals quickly deviating from the mist-nets. Gregorin et al. (2008) during a survey of bats in the Piauí State, captured this species only manually in roosts. Within Brazil, *F. horrens* is now documented in 26 locations (Table 1, Figure 1) including the present record from Tocantins. The knowledge about the distribution of this species within Brazil is clearly incomplete, and probably biased to sampling methods that have been most commonly used in surveys.

TABLE 1. Occurrence locations of *Furipterus horrens* in Brazil.

LOCALITY	STATE	BIOME	COORDINATES	AUTHOR
80 km north of Manaus	AM	Amazon	02°30' S, 59°43' W	Voss and Emmons (1996)
Taperinha, Santarém	PA	Amazon	02°32' S, 54°17' W	Piccinini (1974)
Manaus	AM	Amazon	03°06' S, 60°00' W	Piccinini (1974)
Itapipoca	CE	Atlantic Forest	03°29' S, 39°34' W	Piccinini (1974)
Irauçuba	CE	Caatinga	03°44' S, 39°47' W	Fabián (2008)
PN Ubajara	CE	Caatinga	03°48' S, 40°42' W	Uieda et al. (1980)
Quixadá	CE	Caatinga	04°58' S, 39°01' W	Ástua and Guerra (2008)
Serra das Almas, Crateús	CE	Caatinga	05°10' S, 40°40' W	Silva et al. (2004)
FLONA Carajás	PA	Amazon	06°04' S, 50°13' W	Tavares et al. (2012)
Exu	PE	Caatinga	07°30' S, 39°42' W	Mares et al. (1981)
Brejo da Madre de Deus	PE	Caatinga	08°08' S, 36°22' W	Souza et al. 2004
Rio Formoso	PE	Atlantic Forest	08°39' S, 35°09' W	Bonato and Facure (2000)
PN Serra das Confusões	PI	Caatinga	09°13' S, 43°29' W	Gregorin et al. (2008)
Canindé de São Francisco	SE	Caatinga	09°38' S, 37°47' W	Ástua and Guerra (2008)
Aurora do Tocantins	TO	Cerrado	12°34' S, 46°30' W	Present study
Southern of Bahia	BA	Atlantic Forest	?	Faria et al. (2006)
Mambáí	GO	Cerrado	14°29' S, 46°06' W	Coimbra et al. (1982)
Nascentes Rio Vermelho	GO	Cerrado	14°24' S, 46°11' W	Esbérard et al. (2005)
PNM Cavernas do Peruaçu	MG	Cerrado	15°05' S, 44°15' W	Tavares et al. (2010)
Rural area	DF	Cerrado	15°44' S, 47°57' W	Bredt and Uieda (1996)
FLONA Rio Preto	ES	Atlantic Forest	18°21' S, 39°50' W	Duda et al. (2012)
APA Cairuçu, Parati	RJ	Atlantic Forest	23°17' S, 44°31' W	Pol et al. (2003)
PE Intervales	SP	Atlantic Forest	24°16' S, 48°24' W	Portfors et al. (2000)
PETAR, Iporanga	SP	Atlantic Forest	24°35' S, 48°37' W	Trajano (1985)
ESEC Juréia-Itatins	SP	Atlantic Forest	24°40' S, 47°21' W	Gimenez and Ferrarezi (2004)
Colônia Hansa, Corupá	SC	Atlantic Forest	26°21' S, 48°29' W	Cherem et al. (2004)

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