

The distribution of the spectral bat, *Vampyrum spectrum*, reaches the Southern Pantanal

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Abstract: The largest New World bat, *Vampyrum spectrum*, is a locally rare top predator, which occurs from Mexico to South America. Here, we report for the first time its occurrence in the southern Pantanal floodplain, basing our records on specimens that are also the first to be reported for the State of Mato Grosso do Sul, Brazil. We conducted bat surveys in two sites 120 km apart, in the Aquidauana and Nhecolândia regions. Among 2,498 bat captures, two individuals of *V. spectrum* were mist-netted, one at each site. These records expand southward the distribution range of *V. spectrum*, and in addition to other records in the Northern Pantanal border and Bolivia support that *V. spectrum* is widely distributed in the upper Paraguay basin.

Keywords: Chiroptera, wetlands, Paraguay river basin, Mato Grosso do Sul, Phyllostominae.

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Resumo: O maior morcego do Novo Mundo, *Vampyrum spectrum*, é um predador de topo localmente raro que ocorre do México à América do Sul. Reportamos aqui pela primeira vez sua ocorrência na região sul da planície inundável do Pantanal, tomando como base espécimes que também são os primeiros registrados para o Estado de Mato Grosso do Sul, Brasil. Realizamos inventários em dois sítios distantes 120 km, nas regiões de Aquidauana e Nhecolândia. Dentre 2498 capturas de morcegos, dois indivíduos de *V. spectrum* foram registrados, um em cada sítio. Esses registros expandem a distribuição de *V. spectrum* para o sul, e somados a outros registros na borda Norte do Pantanal e na Bolívia sustentam que *V. spectrum* é amplamente distribuída na bacia do alto Paraguai.

Palavras-chave: Chiroptera, áreas úmidas, bacia do rio Paraguai, Mato Grosso do Sul, Phyllostominae.

Introduction

The spectral bat, *Vampyrum spectrum* (Linnaeus, 1758), is the largest New World bat. Its body weight varies from 135 to 230 g, the forearm length ranges from 88 to 115 mm, and the wing span may reach 1 m (Navarro & Wilson 1982, Nowak 1994). Based on scarce published data, *V. spectrum* is mainly carnivore and preys on birds, rodents, and small bats as well. However, its diet also includes insects and fruits (Gardner 2007, Navarro & Wilson 1982, Bonato et al. 2004, Vargas-Espinoza et al. 2004, Discher et al. 2009). *Vampyrum spectrum* is locally rare and widely distributed from southern Mexico to the central region of South America, with known records in Colombia, Ecuador, Guyana, Peru, Venezuela, Bolivia, and Brazil (Navarro & Wilson 1982, Emmons & Feer 1997, Vargas-Espinoza et al. 2004, Acosta & Azurduy 2006). To date, the southernmost record of *V. spectrum* is at 18° 20' S, in the Chiquitana Forest region, Bolivia (Acosta & Azurduy 2006). The condition of being a top predator occurring at low densities increases its vulnerability to local extinctions, and led to classification of *V. spectrum* as a nearly threatened species by the International Union for Conservation of Nature (Aguirre et al. 2008).

Most records of *V. spectrum* in Brazil come from the Amazon rainforest, in the States of Acre, Amazonas, Amapá, Mato Grosso, Pará, Rondônia, Roraima, and Tocantins (Bernard 2001, Nogueira et al. 2007, Discher et al. 2009). One record in Northern Pantanal floodplain (Eisenberg & Redford 1999) and another in its northern upland border (Vieira 1955) indicate the occurrence of *V. spectrum* in the Pantanal. However, multiple records are still needed for sustaining that it occurs widely in the floodplain. We report here the first records of *V. spectrum* in the southern Pantanal floodplain, and in the State of Mato Grosso do Sul as well, which significantly expand southward the distribution range of the species.

Material and Methods

Two individuals of *Vampyrum spectrum* were mist-netted during bat surveys at Campo Lourdes (19° 33' S e 55° 35' W) and Nhumirim (18° 59' S e 56° 37' W) ranches, in the Aquidauana and Nhecolândia regions of southern Pantanal, respectively. Climate is Aw of Köppen, with average annual temperatures ranging from 20 to 27 °C, and annual precipitation from 800 to 1400 mm. Physiognomic types comprise floodable grasslands, gallery forests, open woodland savannas, deciduous and semideciduous forests - named "cordilheiras" - surrounding temporary or permanent lagoons (Araujo & Sazima 2003). The total netting efforts in Campo Lourdes and Nhumirim were 97632 and 96646 h.m², respectively.

Results and Discussion

Among 1931 bat individuals of 31 species sampled in Campo Lourdes, it was captured one adult male of *V. spectrum* at 23:30 hours, on August 29th, 2008. The specimen presented developed testicles and forearm length of 114 mm. After inspection, this individual was released in the same place of the capture. At Nhumirim, one non-reproductive female of *V. spectrum* (Figure 1) was recorded among 567 sampled bats of 21 species. It was captured at 00:00 hour on February 20th, 2010. Its forearm measured 109 mm. This individual was collected and deposited as voucher in the Embrapa Pantanal's Vertebrate Reference Collection (M-CPAP-307), representing the only specimen of *V. spectrum* collected in the State of Mato Grosso do Sul.

The two individuals were captured in latitudes higher than that of Chiquitana Forest in Bolivia (Acosta & Azurduy 2006), expanding the geographical distribution of *V. spectrum* towards southern (Figure 2).

The two records were about 120 km distant from each other, in the western and eastern regions of the Pantanal in Mato Grosso do Sul. Our records added to those obtained in the northern Pantanal (Vieira 1955, Eisenberg & Redford 1999) and in Bolivia (Acosta & Azurduy 2006) support that *V. spectrum* is widely distributed in the upper Paraguay basin. The captures of only two individuals of *V. spectrum* among more than 10,000 bats already surveyed by us in the southern Pantanal indicate that this species is locally rare in the floodplain, as it is elsewhere (Emmons & Feer 1997, Sampaio et al. 2003).

The records of *V. spectrum* reported in the upper Paraguay basin were obtained in forest habitats. Vieira (1955) collected one specimen in riparian forest, and Acosta & Azurduy (2006) collected two specimens at the border of a forest corridor associated to cultivated pasture areas. Our records were obtained in the typical Pantanal "cordilheiras", which are interconnected forest corridors and patches located in non-floodable terrain. These records, therefore, support that *V. spectrum* is able to



Figure 1. *Vampyrum spectrum* (Phyllostomidae) captured in the Nhumirim farm, Southern Pantanal, Mato Grosso do Sul, Brazil.

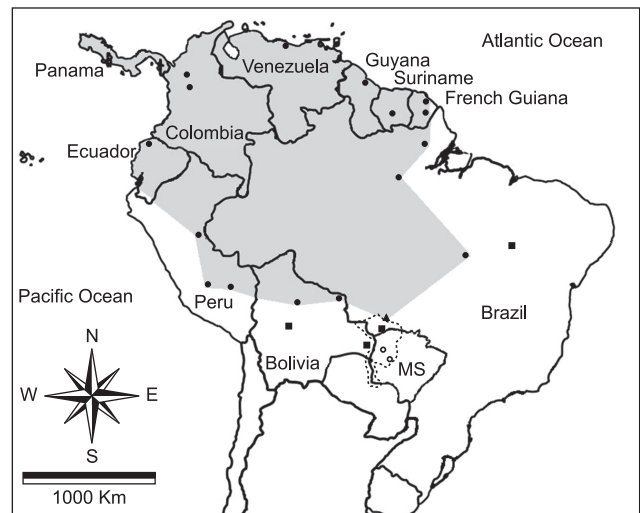


Figure 2. Distribution of *Vampyrum spectrum* (Phyllostomidae) in South America. Gray area encircles marginal localities compiled by Gardner (2007), indicated by black circles and black triangle for the Vieira's (1955) record. Additional records, not included in Gardner (2007), are from Bolivia (Acosta & Azurduy 2006), northern Pantanal (Eisenberg & Redford 1999) and State of Piauí (Gregorin et al. 2008) (black squares); and the new records in the Campo Lourdes and Nhumirim farms (white circles), in the State of Mato Grosso do Sul (MS), Brazil (this study). Dashed line indicates the Pantanal floodplain.

occur in patchy forest landscapes, in addition to other types of forests (Handley Jr. 1976, Vehrencamp et al. 1977, Emmons & Feer 1997, Sampaio et al. 2003, Vargas-Espinoza et al. 2004). The implications of the two new records presented here indicate that further, widespread bat inventories are still necessary in the Pantanal and the surrounding regions (Longo et al. 2007, Cáceres et al. 2008, Tomás et al. 2010).

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