ORIGINAL ARTICLE

First records and range extension of Striped Hog-nosed Skunk *Conepatus amazonicus* in Mato Grosso, Brazil

J. C. DALPONTE[1], F. K. UBAID[2], C. A. B. MEDOLAGO[3], L. H. A. CAMILO[4] and A. C. R. LACERDA[5]

1. Instituto para a Conservação dos Carnívoros Neotropicais (PRÓ-CARNÍVOROS), Av. Horácio Neto, 1030 - Centro, Atibaia, São Paulo, Brasil.
2. Universidade Estadual do Maranhão, Departamento de Química e Biologia, Laboratório de Ornitologia, Morro do Alecrim, Caxias, MA, Brasil.
3. Programa de Pós-Graduação em Ecologia e Recursos Naturais, Universidade Federal de São Carlos, Rod. Washington Luís, São Carlos, SP, Brasil.
4. Rua Jordano Durigan, 49, São Brás, Curitiba, Paraná, Brasil.
5. Departamento de Zoologia, Universidade de Brasília, Brasília, Brasil.

Correspondence:
J. C. Dalponte
jcdalponte@hotmail.com

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Abstract.

The distribution of the Striped Hog-nosed Skunk in Brazil encompasses the Caatinga and Cerrado biomes, but the limits of its occurrence in the country remains unclear, especially in the westernmost portion of the Brazilian central plateau. Here we report the first records from the Mato Grosso state, within the Cerrado biome, and suggest the distribution of the species in this state based on reliable occurrence data. In general, the conservation status the Striped Hog-nosed Skunk is categorized as Least Concern, due to its wide distribution range, tolerance to human disturbances, and occurrence in several habitat types. However, we consider the Striped Hog-nosed Skunk a priority species for regional conservation, due to be locally rare and vulnerable to road mortality and other emergent threats within the southeast of Mato Grosso.

Keywords: Cerrado, *Conepatus semistriatus*, Mephitidae, occurrence.

Introduction

The Hog-nosed Skunks *Conepatus* (Gray, 1837) are the only representatives of the Mephitidae in South America, represented by three living species (Redford & Eisenberg, 1992). Two species are recognized in Brazil, the Striped Hog-nosed Skunk *Conepatus semistriatus* (Boddaert 1785) and the Molina's hog-nosed skunk *C. chinga* (Molina 1782) (Eisenberg & Redford 1999, Dragoo 2009).

The Brazilian population of *C. semistriatus* is recognized as *C. s. amazonicus*, which is apparently isolated from the others (Dragoo 2009). However, zoogeographic and genetic evidence show that the name *C. semistriatus* does not apply to the species of *Conepatus* in eastern Brazil and suggesting *C. amazonicus* as available name for the species in the region (Feijó & Langguth 2013). We adopt here *C. amazonicus* as the valid name.

As other species of *Conepatus*, the Striped Hog-nosed Skunk has a long, naked, broad and projected nose (Nowak & Paradiso 1983). Its black body also has two white dorsal stripes (Dragoo & Honeycutt 1999a, 1999b). The tail is less than half the total body length, which in turn tends to get smaller from the north to the south of Brazil (Dragoo 2009). The species uses grasslands containing scattered palms, sparse deciduous forests, shrub woodlands, and grasslands containing sedges and herbaceous plants during the dry season. Clearings and pastures near evergreen forests are frequently occupied by this species (Dragoo 2009).

The Striped Hog-nosed Skunk is categorized as Least Concern - LC (Cavalcanti *et al.* 2013; Cuarón *et al.* 2016) due to its wide distribution range, occurrence in several habitat types and tolerance to human disturbances. However, mortality due to collisions with vehicles is a great threat to *Conepatus* spp. across its distribution area (Kasper *et al.* 2009).

The Striped Hog-nosed Skunk has a disjunct distribution in Mesoamerica, the northern Andes and eastern Brazil. Its range begins in southern Mexico and continues south into northern Peru along the western Andes and east across northern Venezuela and northern Colombia, with an isolated population in northeastern Brazil (Nowak & Paradiso 1983, Eisenberg 1989, Reid 1997, Eisenberg & Redford 1999). Emmons (1997) suggested a southernmost distribution in Brazil across Caatinga and Cerrado biomes. Kasper *et al*. (2009) reported occurrence in the states of Maranhão, Goiás, Minas Gerais, São Paulo, Piauí, Bahia and Distrito Federal, in the Cerrado and/or Caatinga biomes. However, the distribution limits of Striped Hog-nosed Skunk in Brazil remains unclear (Kasper *et al.* 2009).

Lack of data about occurrence of Striped Hog-nosed Skunk and knowledge gaps lead to the dissemination of uncertain information, such as some distribution maps available (Cavalcanti *et al.* 2013, Cuarón *et al.* 2016). Nevertheless, geographic distribution data is of great interest for the design of adequate conservation strategies for this species in Brazil (Kasper *et al.* 2009).

The Mato Grosso state extends over a large geographic area (903,358 km²) in Central Brazil. Originally, the Cerrado biome (comprising a mosaic of natural covers, from open fields to savannas and forests) covered about 352,309 km², about 40% of the territory. The Amazon Forest biome covers 487,813.27 km² (54%), and the Pantanal biome 63,235.05 km² (7% of the territory), according to IBGE-MMA (2017). Until 2011, about 47.30% of the original vegetation of the Cerrado biome had already been cleared (Mato Grosso 2017).

Despite of the occurrence of the Striped Hog-nosed Skunk being indicated for the central region of Brazil (Eisenberg & Redford 1999) and its distribution associated with the Cerrado biome (Cavalcanti *et al.* 2013), the species had not been recorded in the Mato Grosso state until now. In fact, the species is absent in the checklist of large and medium-sized mammalian species from the Cerrado, Pantanal wetland and Amazon Forest biomes in Mato Grosso state (Schneider 2000, FEMA-MT 2002, Santos-Filho & Silva 2002, Marques &

Santos Júnior 2003, Marques *et al.* 2005, Santos Júnior 2005, Rocha *et al*. 2006, Rocha & Dalponte 2006, Schaller 1983, De Lázari 2011, Rossi *et al*. 2001, Rocha *et al*. 2012).

The lack of records in Mato Grosso probably represents non-occurrence of *C. amazonicus* throughout most of the territory. In part, this does not seem to be the result of insufficient surveys, considering the conspicuousness of their features and behaviour, very easy to notice and differentiate from other local small carnivores. Moreover, footprints and trail patterns of Striped Hog-nosed Skunk are typical and easily found and identified.

In this work, we report eight records of Striped Hog-nosed Skunk in the Mato Grosso state, from 2009 to 2013 (Figure 1). The records were made on different occasions during fauna surveys and sporadic records of road-killed individuals.

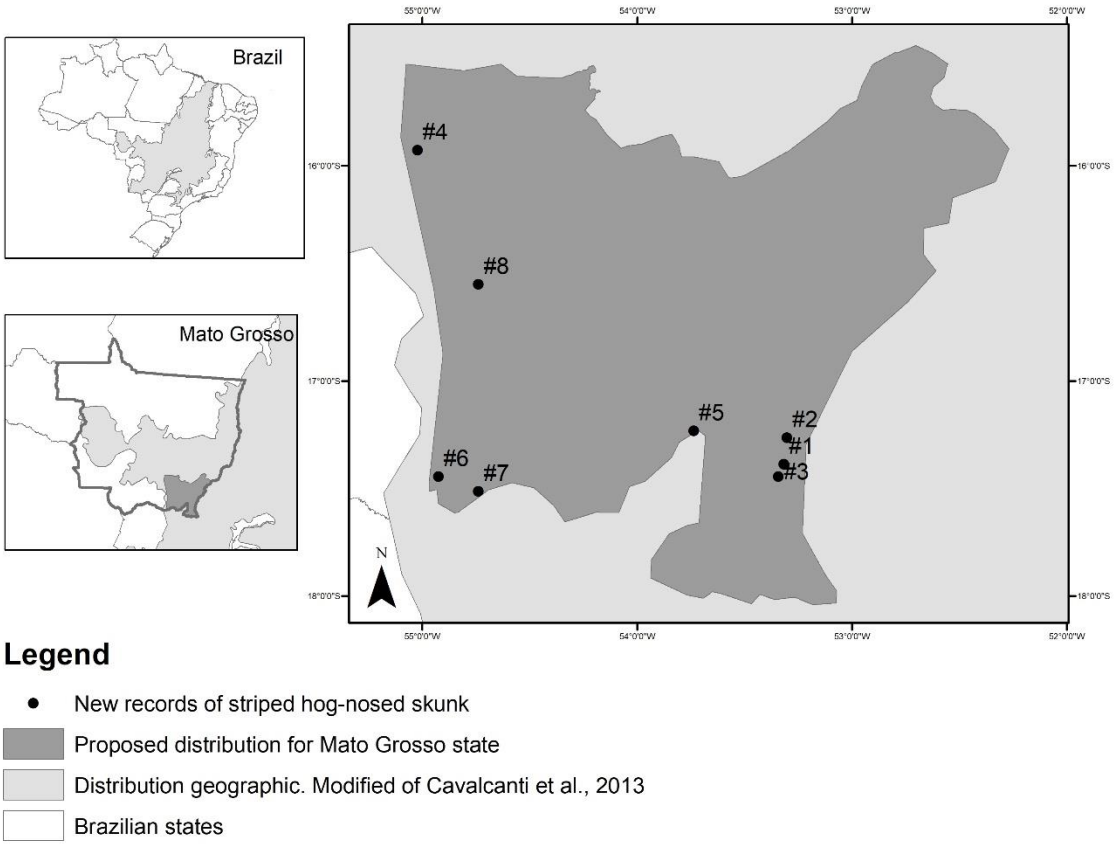

Figure 1. New occurrences of the Striped Hog-nosed Skunk and proposed distribution in Mato Grosso state, Brazil.

The first record consisted on a sighting of an adult individual (Figure 2a) on December 3, 2009 at 08h30, on a woodland savanna (cerrado *sensu stricto*) habitat, 10 km southwest from the city of Alto Araguaia municipality (17°23'10.30" S, 53°19'09.12" W, altitude: 788 m, point # 1, Figure 1).

Figure 2. First records of the Striped Hog-nosed Skunk *Conepatus amazonicus* in the southeast of Mato Grosso state, Brazil. (A) Adult photographed in Alto Araguaia municipality (point#1), December 2009. C. Medolago; (B) Adult male in the Itiquira municipality (point #5), February 2013. L Camilo.

A second record correspond to an individual found dead on the December 3, 2009 at 11h30 along the road BR-364 within a fragment of woodland savanna, 10 km northwest of Alto Araguaia municipality (17°15'44.82" S, 53°18'14.40" W, altitude 740 m, point # 2; Figure 1). The third record was made through the direct observation of an adult individual on the December 9, 2009 at 21h00 in a woodland savanna, 12.5 km west of the left bank of the Araguaia river (17°26'32.90" S, 53°20'38.35" W, altitude 748 m, point # 3; Figure 1). Another specimen was found on the October 10, 2012 on road BR-364, 4.5 km northwest of Jaciara municipality (15°55'36.45" S, 55°01'23.01" W, altitude 482 m, point # 4; Figure 1), where the road crosses a matrix of cattle pastures, woodland savanna and semi-deciduous forest.

On the February 11, 2013 at 05h34 a male Striped Hog-nosed Skunk was sighted in the Itiquira municipality (17°13'51.71" S, 53°44 '16,90" W, altitude 696 m, point # 5; Figure 1), near the right bank of Correntes river. A second sighting at the same site was obtained on the February 11, 2013 at 20h38. On both occasions, the animals were foraging in woodland savanna.

Another sighting of an active individual was recorded on the December 30, 2014 in a woodland savanna in the vicinity of the state road MT-299, 20.3 km north of the right bank of the Correntes river (17°26'15,06" S, 54°55'31.26" W, altitude 366 m, point # 6; Figure 1). Two other records correspond to two road-killed individuals. One of them was found on the highway BR-163, in January 2, 2015 at 08h00 in a fragment of woodland savanna 450 m north of the right bank of the Correntes river near Mato Grosso do Sul state border (17°30'40.17" S, 54°44'22.98" W, altitude 421 m, point # 7; Figure 1).

A last record was obtained on the January 15, 2015 through direct observation at 21h30 in an area of woodland savanna near to Parque Ecológico João Basso, a private natural heritage reserve, 17 km southwest of the city of Rondonópolis (16°32'59.57" S,

54°49’04,92” W, altitude 471 m, point # 8; Figure 1). This record represents the only confirmed occurrence of the Striped Hog-nosed Skunk for a protected area in Mato Grosso state.

The data presented here shows that the distribution of the Striped Hog-nosed Skunk within the Cerrado biome extends to approximately 200 km W from the current records of the most extreme western boundary of the species distribution in Central Brazil (Emas National Park in the Goiás state; 18°15’50” S, 52°53’33” E, Rodrigues *et al.* 2002).

Considering the data presented and the lack of records in other regions and biomes of the state, we point out that Striped Hog-nosed Skunk occurrence in the Mato Grosso is locally restricted to the northernmost portion of the Paraná Sedimentary Basin plateau, at southeast portion of the state. Its distribution seems to be limited to the southwest by the eastern border of the northern Pantanal wetlands, to the west and northwest by the scarps of the São Jerônimo and Coroados mountain ranges, correspondingly, to the north by the south ridges of the Guimarães Plateau, and to the northeast by the south foothills of Serra dos Gerais and the Araguaia River (downstream from the city of Barra do Garças; Figure 1). The Araguaia River, at least downstream of the city of Barra do Garças, represents a limit for the distribution of Striped Hog-nosed Skunk in most of Mato Grosso territory, as a wide and easternmost barrier of about 700 km.

To improve Striped Hog-nosed Skunk conservation, further research should address other emerging threats in the region such as the effects of invasive species (Kasper *et al.* 2009) and pesticides (Pignati *et al.* 2014). Moreover, studies indicate that mortality due to collisions with vehicles is the greatest threat to *Conepatus* spp. across its entire distribution (Kasper *et al.* 2009). Of the eight records of Striped Hog-nosed Skunk obtained in the present study, three (37.5 %) were road-killed, indicating that vehicles can be a significant contributor to population decline of Striped Hog-nosed Skunk in Mato Grosso state.

Although conservation status of mammals has not categorized in Mato Grosso state, we suggest that Striped Hog-nosed Skunk be considered as threatened in the state, primarily due to its locally restricted occurrence. Only 13% of the area previously suggested for Striped Hog-nosed Skunk in Mato Grosso is actually occupied by the species. Therefore, considering the absence of Striped Hog-nosed Skunk in most of the Cerrado biome in Mato Grosso, differently from what is presented in the available distribution maps (Cavalcanti *et al.* 2013, Cuarón *et al.* 2016), the conservation status of the species in Brazil and globally should be reviewed.

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