

First record of the bush dog *Speothos venaticus* in the Atlantic Forest of Minas Gerais, Brazil

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Abstract The bush dog *Speothos venaticus* is a highly social Neotropical canid categorized globally on the IUCN Red List as Near Threatened, as Vulnerable in Brazil and as Critically Endangered in Minas Gerais, south-eastern Brazil, and the Atlantic Forest as a result of human pressure. As part of the monitoring of this mammal, during January 2019–March 2020 we placed one camera trap in each of 22 forest fragments in various landscapes in 15 municipalities in the state of Minas Gerais and one municipality in the state of Rio de Janeiro. On average, each camera trap was active for 4.3 months in each fragment. In a total of 2,856 trap-days we obtained the first record of *S. venaticus* in south-eastern Minas Gerais, c. 2 km from Serra de Santa Rita Mítzi Brandão Biological Reserve. This is the northernmost record of *S. venaticus* in the Atlantic Forest and highlights the importance of forest remnants in a fragmented landscape for this species. Further monitoring of this area should be a priority, to increase knowledge regarding the distribution of this species and for developing conservation strategies appropriate to these fragmented landscapes.

Keywords Atlantic Forest, Brazil, bush dog, camera trapping, neotropical canid, Minas Gerais, *Speothos venaticus*

The bush dog *Speothos venaticus* occurs in Central and South America (DeMatteo & Loiselle, 2008), is a strict carnivore (Beisiegel & Zuercher, 2005; Lima et al., 2009) and is considered the smallest and most social Neotropical canid (Azevedo et al., 2016; Oliveira et al., 2018). Previous research has examined the conservation status, distribution and ecological requirements of this species (DeMatteo & Loiselle, 2008; Oliveira, 2009; Michalski, 2010; Ferreira et al., 2015; Lima et al., 2015; Jorge et al., 2018). Nevertheless, because of its elusive behaviour, low density, fragmented occurrence and large home range, the biology of the bush dog is poorly known (DeMatteo & Kochanny, 2004; Michalski & Pérez,

2005; DeMatteo & Loiselle, 2008; Lima et al., 2012, 2015; Azevedo et al., 2016; Tiepolo et al., 2016; Jorge et al., 2018; Oliveira et al., 2018).

The bush dog is categorized as Near Threatened globally on the IUCN Red List (DeMatteo et al., 2011), as Vulnerable on the Brazilian National List and as Threatened in several Brazilian states and all biomes (Jorge et al., 2018). In the Atlantic Forest, the bush dog is categorized as Critically Endangered (Jorge et al., 2018), with a few records in the states of São Paulo (Beisiegel, 2009), Paraná (Fusco-Costa & Ingberman, 2013; Tiepolo et al., 2016), Santa Catarina and Rio Grande do Sul (Fick et al., 2021) and Mato Grosso do Sul, in the Atlantic Forest and the Cerrado ecotone (Teribele et al., 2012). In the state of Minas Gerais, the bush dog is categorized as Critically Endangered (COPAM, 2010; Jorge et al., 2018) and was considered probably extinct (Costa, 1998) until the species was recorded in the north and west of the state (Ferreira et al., 2015; Azevedo et al., 2016; Silva et al., 2022). Here we report the first record of the bush dog in southern Minas Gerais, the current northernmost known occurrence of this species in the Brazilian Atlantic Forest.

We conducted this study in 22 fragments in various landscapes in 16 municipalities in south-eastern Minas Gerais, and Rio de Janeiro (Fig. 1). The temperature range in this region is 12.2–19.8 °C and the annual precipitation is 1,476–2,175 mm (Instituto Brasileiro de Geografia e Estatística, 2012). The lowlands are predominantly humid, and the montane areas have dry or rainy winters. During January 2019–March 2020, we placed a single camera trap (Bushnell HD, Bushnell, Overland Park, USA) in each forest fragment for a mean of 4.3 months, at altitudes of 887–2,087 m. We followed the protocols for camera trapping proposed by Rovero & Spitale (2016) and Sharma et al. (2020).

After 2,856 trap-days, we obtained two photographs of one bush dog (Plate 1) in the municipality of Santa Rita do Sapucaí (Fig. 1) at 7.40 on 20 May 2019. The images are not clear but typical characteristics of the species can be distinguished, such as its short legs and tail, typical leg shape and elongated, cylindrical and thick body. We obtained five independent assessments from Brazilian carnivore specialists to confirm that these images were of a bush dog. The nearest known records in the state of Minas Gerais are 474–797 km north of this new record (Fig. 1). The survey effort was less than that required to detect the bush dog in other localities, where recording the species required 4,818 (Beisiegel, 2009), 4,112 (Fusco-Costa & Ingberman, 2013), 6,000, 7,000 and 27,000 (Ferreira et al., 2015), 4,036 (Azevedo et al., 2016) and 15,888 trap-days (Oliveira et al., 2018).

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Received 22 June 2022. Revision requested 27 September 2022.

Accepted 24 February 2023.

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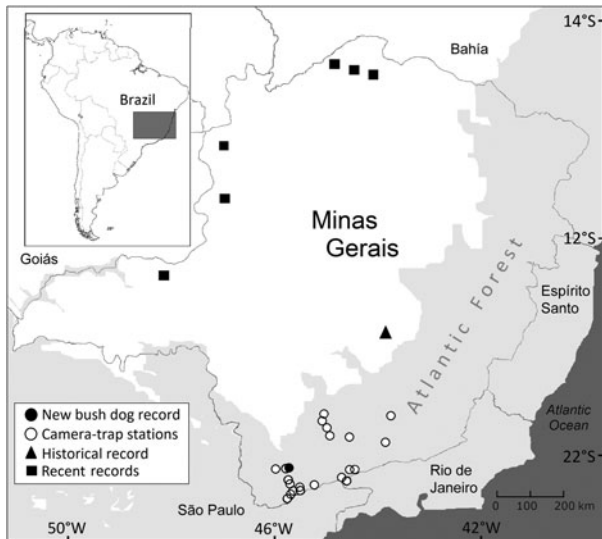


FIG. 1 Locations of all camera traps and the one at which the bush dog *Speothos veneticus* was recorded (Plate 1), and the nearest historical (Lund, 1842) and recent (Azevedo et al., 2016; Ferreira et al., 2015; Silva et al., 2022) records in Minas Gerais, Brazil.

We recorded the bush dog in a 164-ha fragment of seasonal forest at an altitude of 1,014 m. The fragment is 2 km from Serra de Santa Rita Mítzi Brandão Biological Reserve, a conservation unit and water recharge region with the Sapucaí River and seven main springs. The bush dog could be using this area as a corridor to access areas with greater availability of forest cover and water. A long-term monitoring project for the bush dog in this area would increase our knowledge of this species and, through its use as a flagship species, help to promote increased connectivity in the Atlantic Forest through corridors and stepping-stones that favour animal dispersal among fragmented populations.

Acknowledgements We thank the specialists who confirmed the bush dog record: Ricardo Sampaio, Gabriela Butti de Freitas Guilherme, Malu Jorge and Rodrigo Jorge (Centro Nacional de Pesquisa e Conservação de Mamíferos Carnívoros–National Predator Center) and Adriano Garcia Chiarello (Universidade de São Paulo–Ribeirão Preto). This project was partially funded by the Biodiversity Conservation in Hyper-fragmented Tropical Forest project supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico. ASW received a PhD scholarship from the PAEC-OAS-GCUB-Program–Organization of American States and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.

Author contributions Study design: ASW, MP; fieldwork: MP; data processing, analysis and writing: all authors.

Conflicts of interest None.

Ethical standards This research followed ethical procedures for conducting camera-trapping (Sharma et al., 2020), the cameras only recorded photographs of wildlife, and this research otherwise abided by the *Oryx* guidelines on ethical standards.



PLATE 1 The two camera-trap photographs of the bush dog *Speothos veneticus* obtained on 20 May 2019 in the municipality of Santa Rita do Sapucaí, in the state of Minas Gerais, Brazil (Fig. 1).

Data availability Not applicable.

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