



A new record of *Pseudoryzomys simplex* (Winge, 1887) (Rodentia, Sigmodontinae) in the Mineira Forest Zone, Minas Gerais, Brazil

Michel Barros Faria^{1,2}, Lizandra Regina Bigai², Rayque de Oliveira Lanes³

1 Universidade do Estado de Minas Gerais Unidade Carangola, Departamento de Ciências Biológicas. Praça dos estudantes, 23. Santa Emília, Carangola, MG, 36.800-00, Brazil. **2** Universidade do Estado de Minas Gerais Unidade Carangola, Museu de Zoologia da Zona da Mata Mineira. Praça dos estudantes, 23. Santa Emília, Carangola, MG, 36.800-00, Brazil. **3** Departamento de genética, Universidade Federal do Rio de Janeiro (UFRJ). Centro de Ciências da Saúde (ccs), Bloco A, 2º andar, sala A2-099, Cidade Universitária, Rio de Janeiro, RJ, 21941-901 Brazil.

Corresponding author: Michel Barros Faria, michelfaria@yahoo.com.br

Abstract

Pseudoryzomys simplex (Winge, 1887) is a widely distributed rodent in South America, yet it is difficult to capture. In Brazil, it occurs in open areas such as the Chaco, Cerrado, and Caatinga. In the present study, using analyses of owl pellets, we extend the distribution of this species by more than 400 km to southeastern Minas Gerais state, Brazil. This is the first record in the state from the Atlantic Forest and the first record from the municipality of Carangola, which has a Semideciduous Seasonal Forest phytogeography.

Keywords

Geographical distribution, false *Oryzomys*, *Orizomyini*, owl pellets, skull, tooth.

Academic editor: Diego Astúa | Received 26 March 2019 | Accepted 3 July 2019 | Published 9 August 2019

Citation: Faria MB, Bigai LR, Lanes RO (2019) A new record of *Pseudoryzomys simplex* (Winge, 1887) (Rodentia, Sigmodontinae) in the Mineira Forest Zone, Minas Gerais, Brazil. Check List 15 (4): 641–643. <https://doi.org/10.15560/15.4.641>

Introduction

Pseudoryzomys simplex (Winge, 1887) is a medium-sized oryzomyine rodent (Weksler and Percequillo 2011) with a terrestrial habit. The tail varies in length from 102 to 133 mm and is shorter, or similar to, the length of the head and body combined. It weighs between 45 and 55 g. It has small interdigital membranes in its hind paws and a long and soft pelage, which is grizzled-brownish or grayish dorsally and straw-colored or buffy ventrally, with gray-based hairs ventrally (Bonvicino et al. 2008). Although this species is widely distributed, few specimens are deposited in scientific collections; it is considered not abundant (Bonvicino et al. 2002; Pardiñas et al. 2004). This species is difficult to capture by traditional trap methods, and most of the records were obtained from

owl pellets (Teta et al. 2009; Wolf et al. 2016). The species is distributed from northeastern Argentina, through Paraguay and Bolivia to eastern Brazil (Prado and Percequillo 2013). In Brazil, it commonly inhabits Cerrado and Caatinga wetlands and has been rarely recorded in the Pantanal (Bonvicino et al. 2008; Prado and Percequillo 2013; Wolf et al. 2016). We report the first record of *P. simplex* in the Mineira Forest Zone; the new record expands the distribution of this species by more than 400 km to the southeast of its previously known range.

Methods

Pellets of the owl *Tyto furcata* (Temminck, 1827) (Strigiformes, Tytonidae) were collected between 2016 and 2018 in caves in the rural zone of the district of Alvorada,

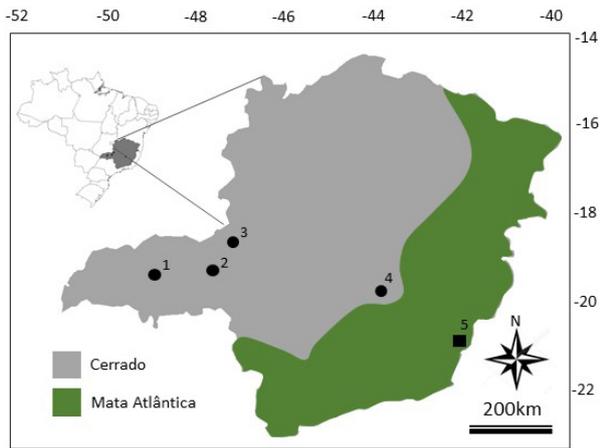


Figure 1. Map showing the current distribution of *Pseudoryzomys simplex* in Minas Gerais: **1.** Conceição Lagoa Feia Farm, 18°28'S, 047°12'W. **2.** Lagoa Santa, 19°37'S, 043°53'W. **3.** Nova Ponte, 19°08'S, 047°40'W. **4.** Prata, 19°18'S, 048°55'W (Prado and Percequillo 2013) **5.** Alvorada, Carangola, (present study).

a part of the municipality of Carangola, Minas Gerais. The study area is characterized by a transitional regime of two well-defined seasons: dry (winter) and rainy (summer) (Abreu 1997). It is inserted in the Atlantic Forest biome with Semideciduous Seasonal Forest formations (Velloso and Goes-Filho 1982). This vegetation is predominantly dense forest with trees that reach 30 m high (SOS Mata Atlântica 2015). Currently, the natural vegetal physiognomy of the mesoregion is almost nonexistent due to marked devastation of the primary forest by agricultural activities (Marchi et al. 2005).

After collection, the owl pellets were manually cleaned with a brush. Fragments of jaws and skulls were separated and identified at the lowest possible taxonomic level using works of Voss and Myers (1991), Weskler and Percequillo (2011), and Pires et al. (2016).

Results

Because the studied material is from owl pellets, bones are commonly fragmented and jaws are sometimes found without molars. Only one jaw fragment containing the two lower molars (m1 and m2) was found. It was attributed to *Pseudoryzomys simplex*.

This is the first record of *P. simplex* from the Atlantic Forest in Minas Gerais state, and previous reports of this species from Minas Gerais were only from the Cerrado (Prado and Percequillo 2013; Patton et al. 2015) (Fig. 1).

New records. Brazil: Minas Gerais, Carangola City, Alvorada district (20°43'36"S, 042°08'38"W, 683 m), Rayque de Oliveira Lanes collector, October 2016.

Identification. We confirmed the identification of a fragment of a mandible of *P. simplex* by comparing its the dental morphology with specimens housed in the mammal collection of the Museu Nacional, Rio de Janeiro (MN13581, MN34201, and MN60714). We identified our specimen based on the following combinations

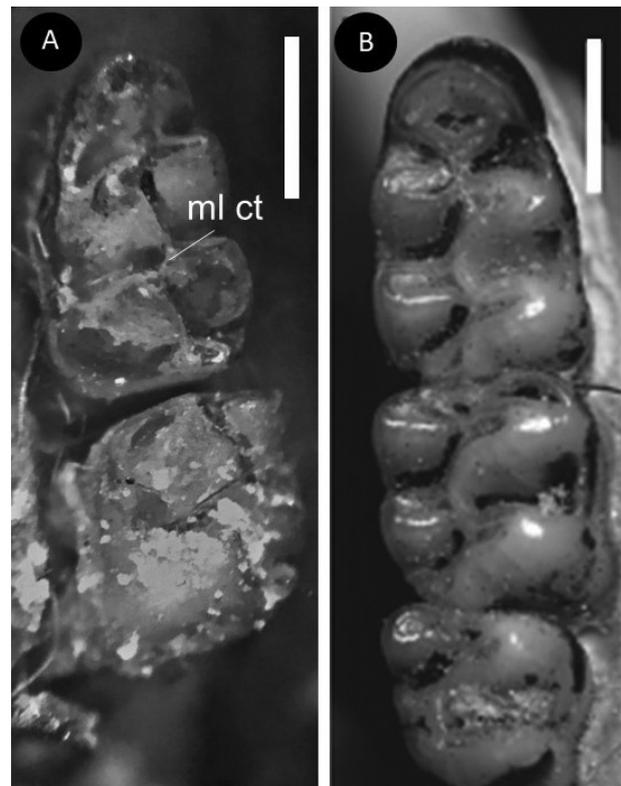


Figure 2. Lower molars of the specimen found in the present study compared to Pires et al.'s (2016) specimen of *Pseudoryzomys simplex*. **A.** MZZM 520. **B.** LBCE17377. Abbreviation: ml ct: short mesoloph.

of morphological characters: i) absence of the anterior labial cingulum (M1) and mesolophid (M1e M2); ii) presence of the anterior cingulate (M1); and iii) presence of a short mesoloph (M1 and M2) (Fig. 2).

Our specimen was deposited in the collection of the Museum of Zoology of the Mineira Forest Zone of the State University of Minas Gerais (MZZM 520).

Discussion

Pseudoryzomys simplex is a generalist species and is usually found in areas with open formations such as Caatinga and Chaco (Stallings 1989; Prado and Percequillo 2013). One possibility to explain the occurrence of this species in the region the Carangola County is that the great fragmentation and degradation of the Atlantic Forest, in the Mineira forest, due to clearing areas for pastures and fields. The reduction of forest to small, isolated fragments decreases the diversity of small non-volant mammals natives, as communities become less abundant, less rich, and more spatially variable (Pardini et al. 2005), that can indirectly benefit *P. simplex*. Alternatively, the presence of this rodent may be explained by its association with naturally existing microenvironments in biomes where they occur, because, in other areas, *P. simplex* is visibly affected by anthropic disturbances and not able to adapt or opportunistically use such areas (Teta et al. 2014). Our study corroborates studies showing the importance of analyzing owl pellets

for the understanding of the faunistic formation and geographic distribution of small mammals in environments with high degree of disturbance and different levels of ecological succession.

Acknowledgements

We are thankful to Dr Marcelo Weksler and Dr Cibele Bonvicino for the time spent assisting with the identification of the specimen and for offering access to the Museu Nacional, Rio de Janeiro. We are also thankful to Diego Astua (subject editor of the journal), Pablo Teta reviewer, and the anonymous reviewers for their important contributions.

Authors' Contributions

ROL collected the data, MBF and LRB analyzed the data, and wrote the manuscript.

References

- Abreu ML (1997) Climatologia da estação chuvosa de Minas Gerais: de Nimer (1977) à Zona de convergência do atlântico sul. *Geonomos* 6 (2): 17–22. http://www.igc.ufmg.br/geonomos/PDFs/6_2_17_22_Abreu.pdf
- Bonvicino CR, Oliveira JA, D'andrea, PS (2008) Guia dos Roedores do Brasil, com chaves para gêneros baseadas em caracteres externos. Centro PanAmericano de Febre Aftosa, Rio de Janeiro, 120 pp.
- Bonvicino CR, Lindbergh SM, Maroja LS (2002) Small non-flying mammals from conserved and altered areas of Atlantic forest and Cerrado: comments on their potential use for monitoring environment. *Brazilian Journal of Biology* 62 (4B): 1–12. <https://doi.org/10.1590/S1519-69842002000500005>
- Feliciano BR, Fernandez FAS, Freitas D, Figueiredo MSL (2002) Population dynamics of small rodents in a grassland between fragments of Atlantic Forest in southeastern Brazil. *Mammalian Biology* 67: 304–314. <https://doi.org/10.1078/1616-5047-00045>
- Marchi OAM, Calijuri ML, Costa SHG, Lugão WG, Souza P JA (2005) Leitura e caracterização da paisagem em auxílio ao planejamento da ocupação urbana de Ponte Nova – MG. *Natureza & Desenvolvimento* 1 (1): 41–50.
- Pardiñas, AF, Cirignoli J S, Galliari CA (2004) Distribution of *Pseudoryzomys simplex* (Rodentia: Cricetidae) in Argentina. *Mastozoología Neotropical* 11: 105–108.
- Pardini R, Souza SM, Braga-Neto R, Metzger JP (2005) The role of forest structure, fragment size and corridors in maintaining small mammal abundance and diversity in an Atlantic forest landscape. *Biological Conservation* 124 (2): 253–266. <https://doi.org/10.1016/j.biocon.2005.01.033>
- Pires C, Gudinho F, Weksler M (2016) Morfologia dentária de gêneros de Sigmodontinae (Rodentia: Cricetidae) com ocorrência no Cerrado Brasileiro. *Boletim da Sociedade Brasileira de Mastozoologia* 75 (1): 1–32.
- Prado JR, Percequillo AR (2013) Geographic distribution of the genera of the tribe Oryzomyini (Rodentia: Cricetidae: Sigmodontinae) in South America: patterns of distribution and diversity. *Arquivos de Zoologia* 44 (1): 1–120. <https://doi.org/10.11606/issn.2176-7793.v44i1p1-120>
- SOS Mata Atlântica (2015) A Mata Atlântica. <http://www.sosma.org.br/nossa-causa/a-mata-atlantica/Brazil>. Accessed on: 2015-03-05.
- Stallings JR (1989) Small mammal inventories in an Eastern Brazilian Park. *Bulletin of Florida State Museum, Biological Science* 34 (4): 153–200.
- Teta P, Pereira JA, Muschetto E, Fracassi N (2009) Mammalia, Didelphimorphia, Chiroptera, and Rodentia, Parque Nacional Chaco and Capitán Solari, province of Chaco, Argentina. *Check List* 5 (1): 144–150. <https://doi.org/10.15560/15.1.144>
- Veloso HP, Goes Filho L (1982) Fitogeografia brasileira, classificação fisionômica ecológica da vegetação neotropical. IBGE Projeto RADAMBRASIL, Salvador, 80 pp.
- Voss RS, Myers, P (1991) *Pseudoryzomys simplex* (Rodentia, Muridae) and the significance of Lund's collections from the caves of Lagoa Santa, Brazil. *Bulletin of the American Museum of Natural History* 206: 414–432. <https://doi.org/10.1590/1519-6984.09015>
- Weksler M, Percequillo AR (2011) Key to the genera of Tribe Oryzomyini (Rodentia: Cricetidae: Sigmodontinae). *Mastozoología Neotropical* 18 (2): 281–291.
- Wolf RW, Rossi RV, Aragona M, Aguiar DM (2016) Primeiro registro de *Pseudoryzomys simplex* (Cricetidae, Sigmodontinae) em área alagada do Pantanal, Brasil. *Brazilian Journal of Biology* 75 (4): 1054–1057. <https://doi.org/10.1590/1519-6984.09015>