

New occurrences and biological aspects to four species of rodents (Mammalia: Cricetidae) from Brazil

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Abstract

The most representative group among mammals are rodents for presenting high ratio to the total of species. However, rodents are considered a “taxonomic chaos” and some species such as *Blarinomys breviceps*, *Bibimys labiosus*, *Akodon lindberghi* and *Pseudoryzomys simplex* are little known. That can be explained because of low occurrence of small terrestrial mammals in wildlife inventories and/or reduced abundance. The objective is to describe the occurrence of these species and analyze these locations presenting descriptive comments about their biological aspects. Therefore, in addition to specimens collected in the field, some scientific collections were visited and reviews in relevant literature were conducted in order to obtain information about the locations and biological aspects. *Akodon lindberghi* was found in five sites, *Bibimys labiosus* was found in 15, *Blarinomys breviceps* in 39 and *Pseudoryzomys simplex* in 13. Each species has specific information and they are included in two threatened areas, Atlantic Forest and Cerrado. The occurrences are disconnected and related to taxonomic and methodological problems.

Keywords: New records. Rodentia. Sigmodontinae. Occurrence area.

Introduction

The group of mammals from Brazil has been recently compiled by Paglia et al. (2012), presenting 701 mammalian species. The most representative group of mammals is the sigmodontine rodents, representing 34.7 % of all diversity compiled. On average, as mentioned by Patterson (2000), scientists described a new genus and eight new species each year.

Despite the representativeness, the group of rodents is considered a “taxonomic chaos”. Taxonomic information and natural history are disjoint affairs. Specialists are compelled to gather a lot of books and articles to collect the necessary information to fully understand the group. Recently, some efforts to systematize these information generated unprecedented papers. Among them, we can men-

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tion the taxonomic keys (which are vital for understanding biodiversity) in Bonvicino et al. (2008), Weksler and Percequillo (2011) and Patton et al. (2015). Even so, some groups are poorly known. De Vivo (2007) mentions that these problems are a result of the small number of taxonomists, repulse in sacrificing and collecting specimens for scientific collections, preparation of material in wet and dry way in the wrong form, lack of source from material, problems in identification and the method not being appropriate to capture certain groups.

Besides these problems, some species still present low occurrence in small terrestrial mammal wildlife inventories and/or low abundance. These species are considered rare for this paper. The species *Blarinomys breviceps* and *Bibimys labiosus* began to be caught more frequently in the late 1990s by increasing the use of pitfall traps (Silva et al., 2003). *Akodon lindberghi* was commonly mistaken for young animals of the same genus due to its small size (Gonçalves et al., 2005). Finally, *Pseudoryzomys simplex* has not been typically captured by conventional methods such as tomahawks, Sherman traps and pitfall traps (commonly recorded by owl regurgitation - TALAMONI et al., 2000; PARDIÑAS et al., 2004; TETA et al., 2009; TETA; PARDIÑAS, 2010).

Then, targeting the relevant problematic understanding of that group, the objectives were to show new localities of occurrence of *Blarinomys breviceps*, *Bibimys labiosus*, *Akodon lindberghi* and *Pseudoryzomys simplex*; describe their geographic distributions and, additionally, present comments on its biological aspects.

Material and methods

Specimen collection and sites of occurrence

Individuals were collected from June 2009 to April 2010 in five sites that comprised two stretches of semi deciduous forest (one at 1,300 m and the other at 1,400 m high), one of natural grassland (at 1,500 m) and two at cloud forests (at 1,550 m) in the “Chapada das Perdizes” (21° 35’S 44°33’W), located between the cities of Minduri and Carrancas (Minas Gerais state, Brazil). At each of these locations, different types of live-traps were installed: Shermann®, Tomahawk® and pitfall. Individuals were collected through license of IBAMA – ICMBio (permanent license 18528-2) and deposited at the Coleção de Mamíferos da Universidade Federal de Lavras (CMUFLA). The material consisted of skins, skulls and carcasses preserved on alcohol 70 %. All the proceedings of capture, manipulation, collection and preservation of material followed the protocol of Sikes et al. (2011).

Specimens deposited in scientific collections and data from the literature were used (Tables 1, 2, 3 and 4). The collections visited were: Coleção de Mamíferos da UFLA (CMUFLA), Museu de Zoologia da Unicamp (ZUEC), Laboratório de Diversidade e Conservação de Mamíferos da Universidade de São Paulo (DICOM/USP) and Laboratório de Ecologia e Conservação de Mamíferos da UFLA (LECOM/UFLA). The vegetation type of each location is presented according to the literature or registration in Tombo book /identification card (Livro de Registo/Livro de Tombo in Portuguese).

The specimens were identified based on morphological description according to Bonvicino et al. (2008), Matson and Abravaya (1977), Silva et al. (2003), Hershkovitz (1990), Gonçalves et al. (2005), Gonçalves et al. (2007) and Voss and Myers (1991).

Results

The known geographic distribution of *A. lindberghi* comprises the state of Minas Gerais and Distrito Federal with only five sites of occurrence (Figure 1). The sites are located in Cerrado, Atlantic Forest and the ecotonal zone between both domains. The altitude in which *A. lindberghi* appeared varied from 550 to 1,500 m. Table 1 contains information about the areas.

Table 1. *Akodon lindberghi* records in Brazil. The number of each report corresponds to the localities representation on Figure 1.

Localities (with coordinates)	Vegetation type	Reference
1. Carrancas/Minduri, Mata Triste, MG 21°35'37"S 44°33'47"W	High grassland	Current study
2. Simão Pereira, Fazenda Maglândia, MG 21°58'S 43°19'W	Anthropic field	GEISE et al., 1996; GONÇALVES et al., 2005; DE CONTO and CERQUEIRA, 2007
3. Parque Estadual Serra da Canastra, MG 20°20'S 46°40'W	Grassland (open grassland with predominance of herbaceous plants and shrubs)	QUEIROLO and GRANZINOLLI, 2009; VENTURA et al., 2006
4. Juiz de Fora, MG 21°41'S 43°27'W	Semi deciduous forest surrounded by pasture and crops	QUEIROLO and GRANZINOLLI, 2009; VENTURA et al., 2006
5. Parque Nacional de Brasília, DF 15°41' S 47°56' W	Grassland	HERSHKOVITZ, 1990

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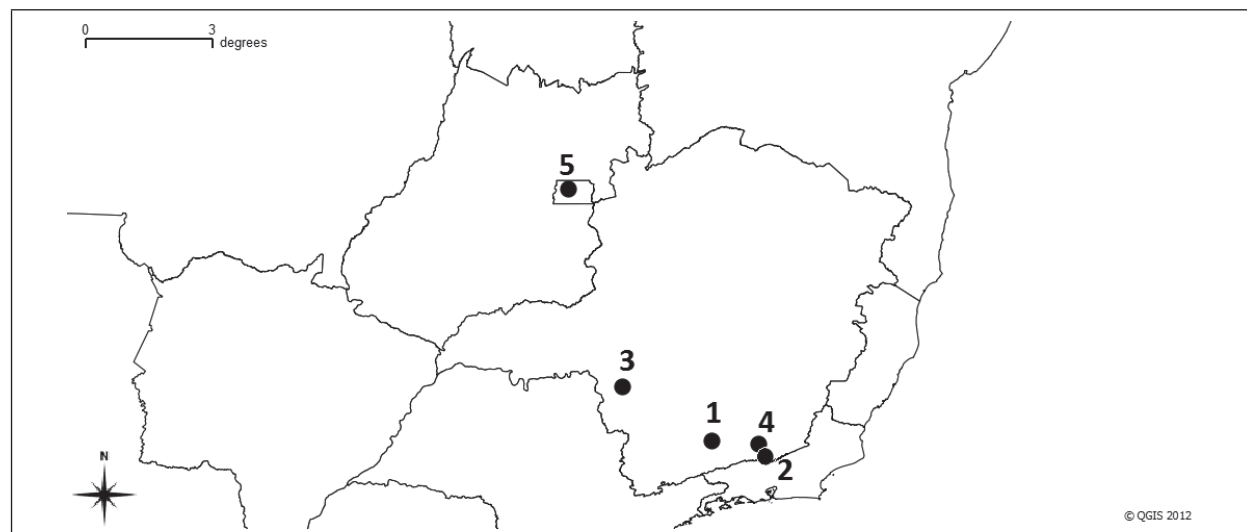


Figure 1. Geographic distribution for *A. lindberghi*. The numbers refer to the localities on Table 1. Record 5 represents the type locality, Parque Nacional de Brasília, Distrito Federal.

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Bibimys labiosus is found in the states of Minas Gerais, Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul, reaching a total of 17 sites of occurrence (Figure 2). The localities include the domains of Cerrado, Atlantic Forest and the ecotonal zone between both domains. The

occurrence of this species ranged from 650 to 1,550 m high. Table 2 presents information related to the records of *B. labiosus*.

Table 2. *B. labiosus* records in Brazil. The number of each report corresponds to the localities representation on Figure 2.

Localities (with coordinates)	Vegetation type	Reference
1. Minduri, MG 21°45'S 44°37'W	-	Current study
2. Viçosa, MG. 20°45'S 42°53'W	-	D'ELIA et al., 2005
3. Piedade, SP 23°53'9"S 47°29'1"W	-	MARTINS, 2011
4. Carrancas, MG 21°30'S 44°38'W	-	Current study
5. Lagoa Santa, MG 19°37'S 43°53'W	-	D'ELIA et al., 2005; GONÇALVES et al., 2005
6. Itapeva, SP 24°10'S 49°5'W	-	MARTIN et al., 2009
7. Parque Estadual da Cantareira, SP 23°22'S 46°36'W	-	FUNDAÇÃO FLORESTAL, 2009
8. Ouro Branco, MG 20°29"S 43°37"W	-	BRAGA et al., 2008
9. UHE Mauá, PR 24°03'48"S 50°42'05"W	-	MAUÁ, 2011
10. Rio Macacu, RJ 22°27'S 42°45'W	-	MACACU, 2009
11. Muitos Capões, Ecological Station of Aracuri-Esmeralda, RS 28°13'S 51°10'W	-	PERINI, 2010
12. São Luiz do Paraitinga, SP. 23°13'19"S 45°18'36"W	-	ZUEC
13. Ribeirão Grande, SP 24°05'11"S 48°19'32"W	Forest fragments	DICOM/USP; MARTINS, 2011
14. Cotia, Reserva Florestal Morro Grande, SP 23°39'4"S 46°57'14"W	Continuous Atlantic Forest compounded by stretches of secondary forests or by better-structured mature forests.	DICOM/USP; PINOTTI, 2011; MARTINS, 2011
15. Lavras, Cerradinho UFLA, MG 21°14'S 45°00'W	Small fragments of Cerrado s.s.	LECOM/UFLA
16. Campo Belo do Sul, SC 27°53'S 50°45' W	Mixed Ombrophilous Forest	SILVEIRA et al., 2012
17. Cotiporã, RS 29° 0'S 51°42'W	Deciduous forest	SILVEIRA et al., 2012

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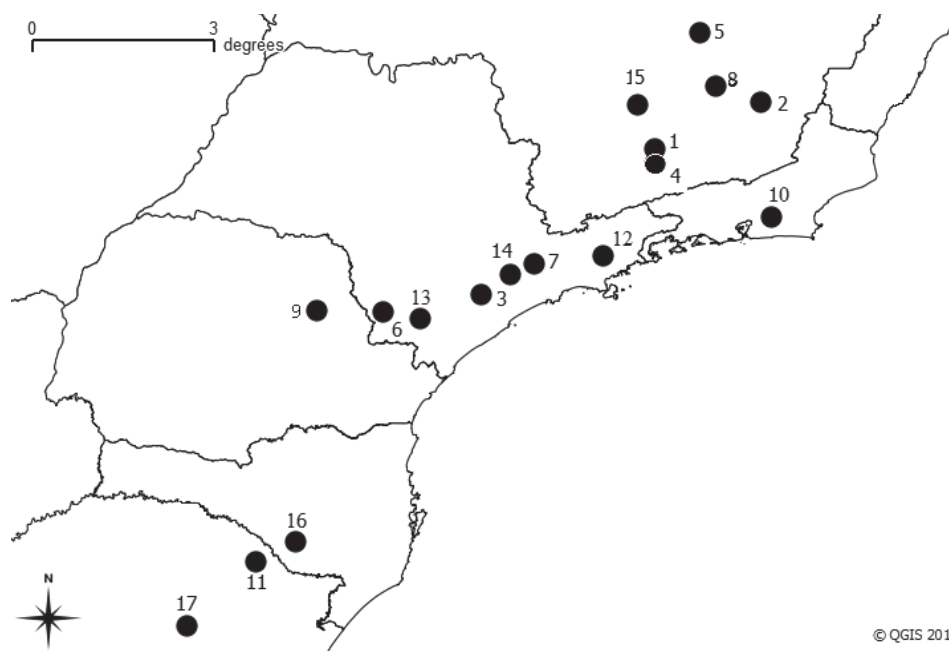


Figure 2. Geographic distribution for *B. labiosus* in Brazil. Numbers refer to the localities on Table 2.
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The records of *B. breviceps* appeared in the states of Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro and São Paulo, with a total of 39 sites of occurrence (Figure 3). The Atlantic domain is predominant in the areas of occurrence, but the species was also found in areas of Cerrado and ecotonal regions between Atlantic and Cerrado. The points of occurrences ranged from four to 1,570 m high. Table 3 contains information related to *B. breviceps* records.

Table 3. *B. breviceps* records in Brazil. The number on each report corresponds to the localities representation on Figure 3.

Locality (with coordinates)	Vegetation type	References
1. Minduri/Carrancas, Mata Triste, MG 21°35'35"S 44°35'1"W	Cloud forest	Current work
2. Ilhéus, BA 14°47'20"S 39°02'57"W	-	MATSON and ABRAVAYA, 1977; GEISE et al., 2008
3. Buerarema, Ribeirão da Fortuna, Mata da Lagoa, BA / Jussari, RPPN Serra do Teimoso, BA 14°57'34"S 39°17'59"W	Predominantly primary forests	SILVA et al., 2003; GEISE et al., 2008
4. Una, Estação Experimental CEPLAC, BA / Una, Fazenda Bolandeira, BA 15°09'00"S 39°31'00"W	Edges of primary and secondary forests	SILVA et al., 2003; PARDINI, 2004; GEISE et al., 2008
5. Una, Reserva Biológica de Una, BA 15°16'10"S 39°4'9"W	-	PARDINI, 2004
6. Porto Seguro, Estação Ecológica de Pau Brasil, BA 16°26'58"S 39°3'52"W	-	GEISE et al., 2008

7. Prado, Fazenda Imbaçuaba, BA 17°20'27"S 39°13'14"W	-	GEISE et al., 2008
8. Conceição do Mato Dentro, Boca da Mata, MG 19°01'43"S 43°25'31"W	-	MATSON and ABRAYAYA, 1977; SILVA et al., 2003; GEISE et al., 2008
9. Lagoa Santa, Lapa do Capão Seco, MG 19°37'37"S 43°53'22"W	-	ABRAYAYA and MATSON, 1975; MATSON and ABRAYAYA, 1977; SILVA et al., 2003; GEISE et al., 2008
10. Aracruz, ES 19°49'S 40°16'W	-	SILVA et al., 2003; GEISE et al., 2008
11. São Gonçalo do Rio Abaixo e Santa Bárbara, Estação de Proteção e Desenvolvimento Ambiental de Peti, MG 19°53'57"S 43°22'07"W	Secondary forest, transition between semi deciduous seasonal forest and Cerrado s. s. Open areas with small fragments of secondary forest	PAGLIA et al., 2005; GEISE et al., 2008
12. Reserva Florestal de Nova Lombardia, Mata da Caixa D'Água, Santa Teresa, ES 19°55'S 40°35'W		ABRAYAYA and MATSON, 1975; MATSON and ABRAYAYA, 1977; SILVA et al., 2003; GEISE et al., 2008
13. Castelo, Forno Grande, Fazenda Barnabé, ES 20°30'S 41°04'W	-	ABRAYAYA and MATSON, 1975; MATSON and ABRAYAYA, 1977; SILVA et al., 2003; GEISE et al., 2008
14. Viçosa, Mata do Paraíso, MG 20°5'S 42°3'W	-	GEISE et al., 2008
15. Cachoeiro do Itapemirim, Castelinho, ES 20°50'56"S 41°06'46"W	Open areas with small fragments of secondary forest	ABRAYAYA and MATSON, 1975; SILVA et al., 2003
16. Cariacica, Reserva Biológica de Duas Bocas, ES 20°16'S 40°28'W	Dense ombrophilous forest with mosaic of primary and secondary vegetation with 50 years of regeneration	FAGUNDES and COSTA, 2008
17. Juiz de Fora, MG 21°41'S 43°27'W	-	GEISE et al., 2008
18. Teresópolis, Fazenda Colônia Alpina e Fazenda Boa Fé, RJ 22°19'S 42°59'W	Approximately 70 years old secondary forest	MATSON and ABRAYAYA, 1977; SILVA et al., 2003; GEISE et al., 2008
19. Mauá, Fazenda Marimbondo, SP 22°21'38"S 44°34'9"W	Mixed ombrophilous forest	GEISE et al., 2008
20. Valença, Santuário Serra da Concórdia, RJ 22°22'18S 43°47'23"W	Semi deciduous forest	GEISE et al., 2008; MODESTO et al., 2008
21. Santa Isabel, RPPN Rio dos Pilões, SP 3°17'48"S 46°17'26"W	-	PILÕES, 2007
22. São Paulo, Parque Estadual da Cantareira, SP 23°22'S 46°36'W	-	GEISE et al., 2008

23. Santo André, SP 23°39'50"S 46°32'18"W	Tropical forest with recent history of deforestation	SILVA et al., 2003, GEISE et al., 2008
24. Cotia, Morro Grande Forest Reserve, SP 23°39'S 47°01'W	-	PARDINI and UMETSU, 2006; GEISE et al., 2008
25. São Miguel Arcanjo e Pilar do Sul, Fazenda João XXIII, SP 23°53'S 48°0'W	Altered dense ombrophilous forest, fragments of secondary forest circled by eucalypts	ANTUNES and ESTON, 2010
26. Tapiraí, Capão Bonito, SP 23°57'S 47°30'W	Altered dense ombrophilous forest	ANTUNES and ESTON, 2010
27. Parque Estadual da Cantareira e Sete Barras, SP 24°22'S 47°56'W	Altered dense ombrophilous forest	NIERI BASTOS et al., 2004
28. Iporanga, Parque Estadual Turístico do Alto Ribeira (PETAR), SP 24°35'08"S 48°35'35"W	Mosaic of primary and secondary formations	SILVA et al., 2003; GEISE et al., 2008
29. Camacan, Serra Bonita, BA 15°25' S 39°29' W	-	VENTURA et al., 2012
30. Jequitinhonha, Mata Escura, MG 16°26' S 41°00' W	-	VENTURA et al., 2012
31. Trancoso, Fazenda Nova Alegria, BA 16°31' S 39°07' W	-	VENTURA et al., 2012
32. Pinheiros, REBIO Córrego do Veado, ES 18°21' S 40°09' W	-	VENTURA et al., 2012
33. Linhares, ES 19°39' S 40°07' W	-	VENTURA et al., 2012
34. Catas Altas, Estr. Mariana-Catas Altas, MG 20°11' S 43°29' W	-	VENTURA et al., 2012
35. Ouro Branco, Serra do Ouro Branco, MG 20°30' S 43°37' W	-	VENTURA et al., 2012
36. Alto Caparaó, PARNA Caparaó-Linha 2 e Córrego do Calçado, MG 20°25' S 41°50' W e 20°28' S 41°44'W	-	VENTURA et al., 2012
37. Biritiba-Mirim, SP 23°57'S 46°03'W	-	VENTURA et al., 2012
38. Natividade da Serra, PE Serra do Mar, SP 23°19' S 45°05' W	-	VENTURA et al., 2012
39. São Bernardo do Campo, SP 23°69' S 46°56' W	-	VENTURA et al., 2012

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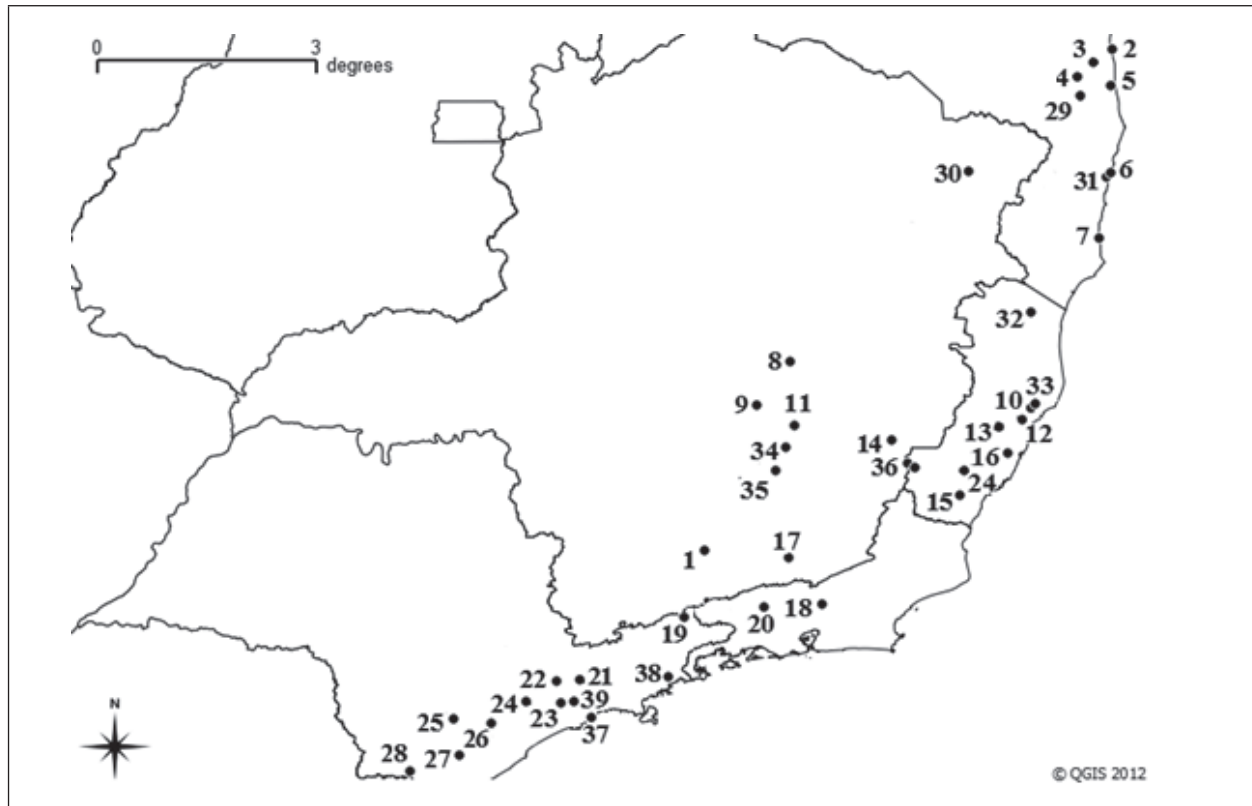


Figure 3. Geographic distribution for *B. breviceps* in Brazil. The numbers refer to the localities on Table 3. Point 8 represents the type-locality Lagoa Santa, MG.
Source: Created by the authors

Pseudoryzomys simplex appears in the states of Pernambuco, Bahia, Minas Gerais, São Paulo, Tocantins, Goiás and Distrito Federal meeting a total of 14 sites of occurrence (Figure 5). The predominant domain in which *P. simplex* appeared was Cerrado. Although, there are records for Atlantic Forest and ecotonal regions between Cerrado and Atlantic Forest. The occurrence ranged from 140 to 1,550 m high. Table 4 contains information related to *P. simplex* records.

Recently, Patton et al. (2015) increase the number of records out of Brazil. The records include records at northeastern Argentina, western Paraguay, eastern Bolivia and the Pampas del Heath in extreme southeastern Peru. To Brazil, other records include the states of Amapá and Amazonas (see map of distribution to *P. simplex* in Patton et al. 2015).

Table 4. *P. simplex* records in Brazil. The number on each report corresponds to the localities representation on Figure 4.

Localities (with coordinates)	Vegetation type	Reference
1. Minduri and Carrancas, Mata Triste, MG 21°35'35"S 44°35'1"W	-	Current study
2. São Lourenço da Mata, Estação Ecológica Tapacurá, PE 8°02'S 35°13'W	-	RODA, 2006
3. Santa Rita do Passa Quatro, ARIE Cerrado Pé-de-Gigante, SP 21°40'S 47°43'W	-	JORGE, 1999
4. Parque Nacional da Chapada dos Veadeiros, GO 13°31'S 47°34'W	Humid grassland, "Vereda", Cerrado s. s., grassland, Rupestrian Cerrado and gallery forest.	BONVICINO et al., 2002
5. Prata, Salto and Parque Estadual Ponte, MG 19°12'46"S 48°48'43"W	-	BELENTANI, 2001
6. Estação Ecológica Serra Geral do Tocantins, TO 10°24'S 47°12'W	Grassland	CARMIGNOTTO and AIRES, 2011
7. Palmeiras, Chapada Diamantina, BA 12°25'S 41°25'W	Open vegetation, Rupestrian Cerrado	PEREIRA and GEISE, 2009
8. Mucugê, Chapada Diamantina, BA 12°59'S 41°23'W	Open area, Cerrado	PEREIRA and GEISE, 2009
9. Ilha do Bananal, Parque Nacional do Araguaia, TO 10°27'S 50°29'W	Open area	BEZERRA et al., 2009
10. Parque Nacional das Emas, GO 18°15'50"S 52°53'33"W	Open area	RODRIGUES et al., 2002
11. Panga, Reserva Ecológica de Panga, MG 19°10'S 48°23'W	-	BRUNA et al., 2010
12. Parque Nacional das Emas, GO 18°6'23"S 52°55'40"W	-	CÁCERES et al., 2008
13. Brasília, Reserva Ecológica do IBGE, DF 15°56'41"S 47°53'07"W	Gallery forest	FONSECA and REDFORD, 1984
14. Lagoa Santa, Lapa do Capão Seco, MG 19°37'37"S 43°53'22"W	-	VOSS and MYERS, 1991

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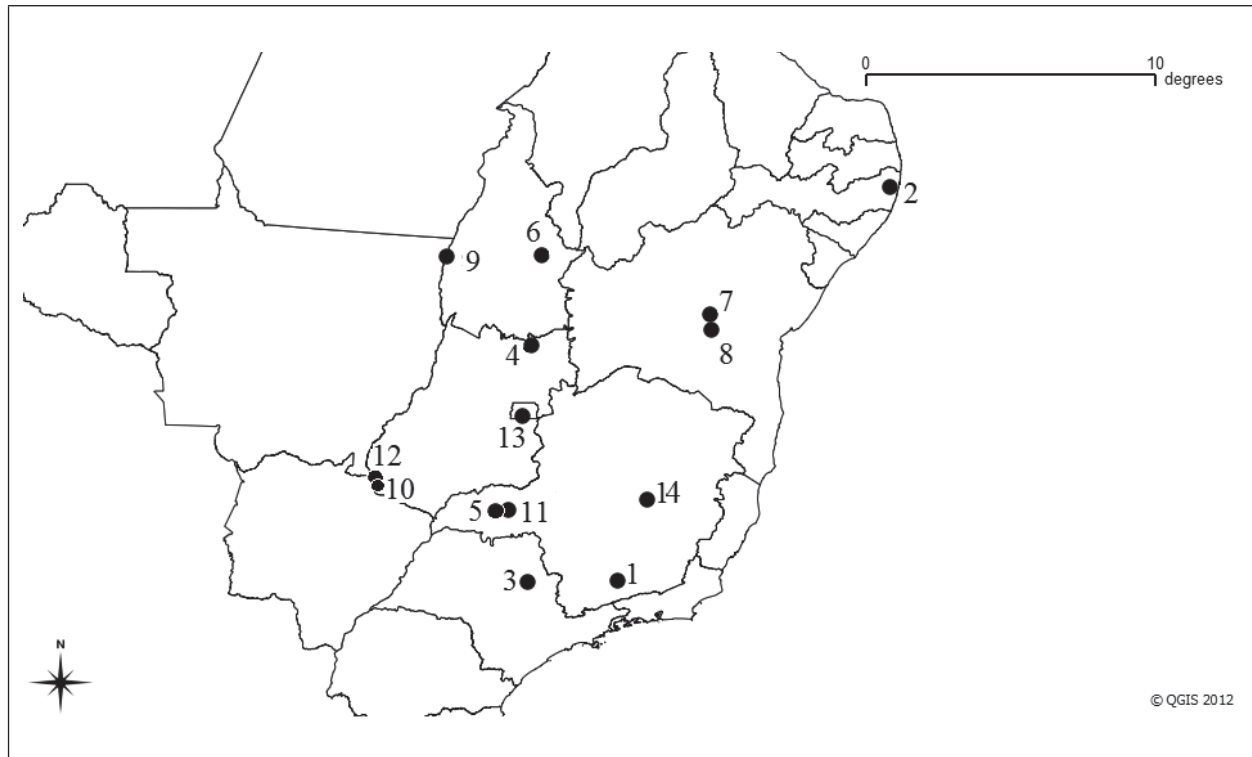


Figure 4. Geographic distribution for *P. simplex* in Brazil. The numbers refer to the localities on Table 4. Point 14 represents the type-locality Lagoa Santa, MG.

Source: Created by the authors

Discussion

Information related to *Akodon lindberghi* on the literature is scarce; hence, the species is classified as vulnerable on Cerrado by IUCN (MARINHO-FILHO et al., 2008). Our record (Minduri/Carrancas towns) adds information about this species occurrence. Figure 1 evidences the considerable gap in the points and this may be caused mainly by problems with the correct identification of animals from the genus *Akodon* in the field, as well as lack of material collection and appropriate proceedings in identifying specimens, non-karyotyping for example. Indeed, Vivo (2007) pointed out that those proceedings are doubtful because they do not have control material to make the identification, which prevents the comprehension of part of its biology.

Furthermore, Gonçalves et al. (2005) mention the need for a taxonomic revision of *A. lindberghi* and *Akodon mystax*. Both species belong to the group of small *Akodon* and what differentiates one from the other is qualitatively the presence or absence of masseteric tubercle. If a species is a synonym of the other, the number of locality can triple (see occurrence to both species in Gonçalves et al., 2005).

The type locality of *A. lindberghi* is the Parque Nacional de Brasília inserted in the biome Cerrado, but the species also were found in areas of Atlantic Forest and the ecotone Atlantic Forest/Cerrado, corroborating Queirolo and Granzinolli (2009) and Paglia et al. (2012).

Although *B. labiosus* is not classified in any threaten degree, its population are fragmented and tend to decrease (PARDIÑAS et al., 2008a), chiefly due to the current situation of biomes preservation in which it occurs, Cerrado (PARDIÑAS et al., 2008a) and Atlantic Forest (PAGLIA et al., 2012). Rovida (2010) asserted that this species is endemic of Cerrado; Paglia et al. (2012) mentioned the

occurrence of this species exclusively to Atlantic Forest. However, records from CMUFLA show its occurrence in an ecotonal region between Cerrado and Atlantic Forest. Therefore, more studies related to biology and zoogeographies of those species are necessary.

In addition, the specimen in LECOM/UFLA was captured within the urban area of Lavras, near a forest called “Cerradinho” that is highly modified for various research activities conducted by UFLA. Thus, and as exposed by Lessa et al. (1999), it is believed that *B. labiosus* requires low demands from the environment.

Blarinomys breviceps is not classified in any threaten degree. However, its populations are fragmented and tend to decrease (PARDIÑAS et al., 2008b). This species presents wide distribution (PAGLIA et al., 2012), including the Atlantic domain (predominant in the occurrence areas), Cerrado (SILVA et al., 2003) and ecotonal regions between these two domains. This species is associated to both montane regions and forests of low elevation (SILVA et al., 2003; PARDINI, 2004). All of the specimens from CMUFLA, for example, were captured in pitfalls, at approximately 1,550 m in cloudy forests. The species is considered rare, but the scarcity of records may be explained by the potential low population density (PEREIRA et al., 2008) and also by sampling aspects. Indeed, Umetsu et al. (2006) pointed out that small pitfalls (35 L capacity) may be efficient on capturing more individuals of *Blarinomys*, but that is a recently used technique to capture small mammals.

Pseudoryzomys simplex suggests a lack of knowledge about its biology (TALAMONI et al., 2000; BONVICINO et al., 2002; PARDIÑAS et al., 2004) despite the fact that studies involving important information about this species are being developed. In effect, reports about this species are rare due to problems on identification in field, lack of samples and methodological issues. However, new records have extended the occurrence of the species up to 2,000 km from the nearest previous records (PARDIÑAS et al., 2004). Reports of occurrence of *P. simplex* have been increasing due to the great amount of carcass found in owl regurgitation (mainly *Tyto alba*) (TALAMONI et al., 2000; PARDIÑAS et al., 2004; TETA et al., 2009; TETA and PARDIÑAS, 2010). Most of those records are concentrated near the region of Rio Paraná, region considered the east limit of this species (PARDIÑAS et al., 2004). Bonvicino et al. (2002) commented that *P. simplex* is a rare species of Cerrado, being restricted to humid environments, wet grasslands vegetation and low altitudes, facts corroborated by Voss and Myers (1991) and Pardiñas et al. (2004). However, the specimen of *P. simplex* from CMUFLA was captured in cloud forest at 1,550 m high and 50 m from a stream, what excludes the possibility of this species being restricted to low altitude habitat.

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Resumo

O grupo mais representativo entre os mamíferos são os roedores, por apresentarem elevada proporção em relação ao total de espécies. Apesar da representatividade, esse grupo é considerado um “caos taxonômico” e algumas espécies são pouco conhecidas, entre elas *Blarinomys breviceps*, *Bibimys labiosus*, *Akodon lindberghi* e *Pseudoryzomys simplex*, pela baixa ocorrência em inventá-

rios faunísticos de pequenos mamíferos terrestres e/ou reduzida abundância. O objetivo é descrever os locais de ocorrência dessas espécies e, posteriormente, analisar essas localidades apresentando comentários descritivos sobre seus aspectos biológicos. Para isso, além de coletas de espécimes em campo, algumas coleções científicas foram visitadas, pesquisas em bibliografia especializada foram realizadas com o intuito de obter informações sobre as localidades e aspectos biológicos. *Akodon lindberghi* foi encontrada em cinco locais, *Bibimys labiosus* foi encontrada em 15, *Blarinomys breviceps* em 39 e *Pseudoryzomys simplex* em 13. Cada espécie apresenta características específicas e elas estão incluídas em dois domínios ameaçados, Mata Atlântica e Cerrado. As ocorrências são disjuntas e relacionadas a problemas taxonômicos e metodológicos.

Palavras-chave: Novos relatórios. Rodentia. Sigmodontinae. Área de ocorrência.

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