

Updated list of mammals of Rio Doce State Park, Minas Gerais, Brazil

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RESUMO: (Atualização da lista de mamíferos do Parque Estadual do Rio Doce, Minas Gerais, Brasil) O presente estudo tem como objetivo apresentar uma lista atualizada de espécies de mamíferos com ocorrência confirmada para o Parque Estadual do Rio Doce (PERD). O PERD é o maior remanescente de Mata Atlântica no Estado de Minas Gerais. Dados de estudos realizados na década de 90 e nos anos 2000, e, mais recentemente (2008), do projeto de Ecologia, Avaliação e Monitoramento de Florestas Tropicais – Iniciativa TEAM - foram compilados. A listada aponta a presença de 89 espécies de mamíferos, representando um acréscimo de 48% das espécies conhecidas para PERD. Foram encontradas 14 espécies avaliadas como ameaçadas na lista da fauna de extinção para o estado de Minas Gerais, 12 espécies na lista da fauna brasileira e, das 10 espécies presentes na lista mundial, seis constam como ameaçadas e quatro como de interesse para a conservação. Três espécies (*Priodontes maximus*, *Chrysocyon brachyurus* e *Lontra longicaudis*) apresentaram seus primeiros registros para a região do parque. A riqueza de mamíferos terrestres encontrada é de extrema relevância, com espécies distribuídas em vários habitats, especialmente aquelas espécies com exigências ecológicas específicas, como grandes áreas de uso e ambientes preservados. O presente estudo demonstra a importância da área do PERD para a conservação da biodiversidade e para a manutenção de espécies de mamíferos ameaçados.

Palavras-chave: Minas Gerais, lista de espécies, mamíferos, Mata Atlântica.

ABSTRACT: This paper presents an updated list of mammals with confirmed occurrence in the Rio Doce State Park (PERD). PERD is the largest area of

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continuous Atlantic Forest in Minas Gerais State. The list comprises studies since 90 decade and the more recent project “Tropical Ecology, Assessment, and Monitoring – TEAM initiative”. We listed 89 species of mammals which increased 48% the species are known for PERD. We have found 14 endangered species in Minas Gerais Red List, 12 in Brazilian Red List and six in IUCN’s Red List. Four other species in the world list were found to be of interest for conservation (NT). Giant armadillo *Priodontes maximus*, Maned wolf *Chrysocyon brachyurus* and Neotropical otter *Lontra longicaudis* presented their first records for the region. The species richness registered is relevant, especially those species with specific ecological requirements as large home ranges and habitat preserved. The present study demonstrates the importance of PERD area for biodiversity conservation and for the maintenance of threatened mammal species.

Key-words: Atlantic Forest, Minas Gerais, mammals, species list.

Introduction

Rio Doce State Park (PERD) mammals’ community has been investigated over the past 40 years. However, the only species list available was published in the 1990 decade (Stallings *et al.* 1990). Published studies conducted in PERD presents several lists with qualitative and quantitative data about small nonvolant mammals (Stallings, 1989a, 1989b; Fonseca & Kierulff, 1989; Fonseca & Robinson, 1990; Stallings *et al.*, 1990; Grelle, 2003); occasional records and review about small flying mammal’s species (Stallings *et al.*, 1990; Tavares & Anciães, 1998; Tavares & Taddei, 2003; Nogueira *et al.*, 2003; Tavares *et al.*, 2007); ecological and population data on primates (Aguirre, 1971; Mittermeier *et al.*, 1982; Fonseca, 1985b; Stallings & Robinson, 1991) and on terrestrial mammals of medium and large size (Scoss *et al.*, 2004; Viana & Scoss, 2005; Srbek-Araujo *et al.*, 2009). Furthermore, other studies conducted in PERD discuss the importance of disturbance in maintaining fauna’s diversity (Stallings *et al.*, 1990), sampling methods and environmental impacts evaluation (Scoss *et al.*, 2004).

PERD is one of the main critical areas for conservation of the Atlantic Forest in Minas Gerais (see Mittermeier *et al.*, 1999; Myers *et al.*, 2000). This biome is ranked as second in species richness in Brazil and second worldwide in mammals richness with 298 species, which approximately 90 are endemic (Paglia *et al.*, 2012). Most of the diversity and endemism of mammals is concentrated on Rodentia, Chiroptera, Primates and Didelphimorphia Orders (Fonseca *et al.*, 1996; Fonseca *et al.*, 1999; Costa *et al.*, 2000; Reis *et al.*, 2011;

Paglia *et al.*, 2012). Notwithstanding, natural ecosystems comprising Atlantic Forest biome are altered due to historical modifications as a result to human occupancy, farming expansion and other anthropogenic actions that leads to lost and fragmentation of remaining vegetation (Fonseca, 1985a; Chiarello, 1999; Ribeiro *et al.*, 2009; Fundação SOS Mata Atlântica & INPE, 2010).

This work presents an updated list of species of mammal community of PERD, considering registries and more recent taxonomic reviews with the objective of support future researches with mammals and ecological processes in the study area. It's important to update the past list by incorporating new scientific knowledge based on recent published taxonomic reviews and new records.

Material and Methods

Study area. Rio Doce State Park (PERD) is located in eastern portion of Minas Gerais State (19°29'30" N - 19°48'48" S and 42°28'30" E - 42°38'37" W), distant 248km from Belo Horizonte, in Vale do Aço region. The Park is located among Mariléia, Dionísio and Timóteo municipalities. With an area of 35.976,43 hectares, the park is currently the largest area of continuous forest in the state of Minas Gerais (IEF, 2001; IEF, 2002). The PERD is classified as Semideciduous Seasonal Forest and is characterized for containing several lakes and swampy areas that were formed through migration of Doce River over geological time (Pflug, 1966; Mello *et al.*, 1999; IBGE, 2004) (Figure 1).

Data collection. To elaborate the terrestrial mammal species list of PERD we considered two main database banks: i) bibliographical references with data on species list or new registries for the park; and ii) primary data in mammals of medium and large size obtained through the project "Tropical Ecology, Assessment, and Monitoring – TEAM initiative".

TEAM project initiated in 2004 and remained active until 2008, monitoring several different groups. The present paper considered only two groups and two methodologies used by TEAM. First one was diurnal census via linear transect which the main objective was to monitor the primates that occur in PERD (Lacher, 2003). Second one, as part of program of monitoring terrestrial mammals, was camera trap sampling protocol (Sanderson, 2002; Sanderson & Sunquist, 2005). Also, all registries obtained during field activities are occasional records.

Information on the mammalian fauna of PERD was additionally compared from studies conducted at other preserved areas of Atlantic Forest in the state of Minas Gerais. The mammal's species list was compiled by: Lessa

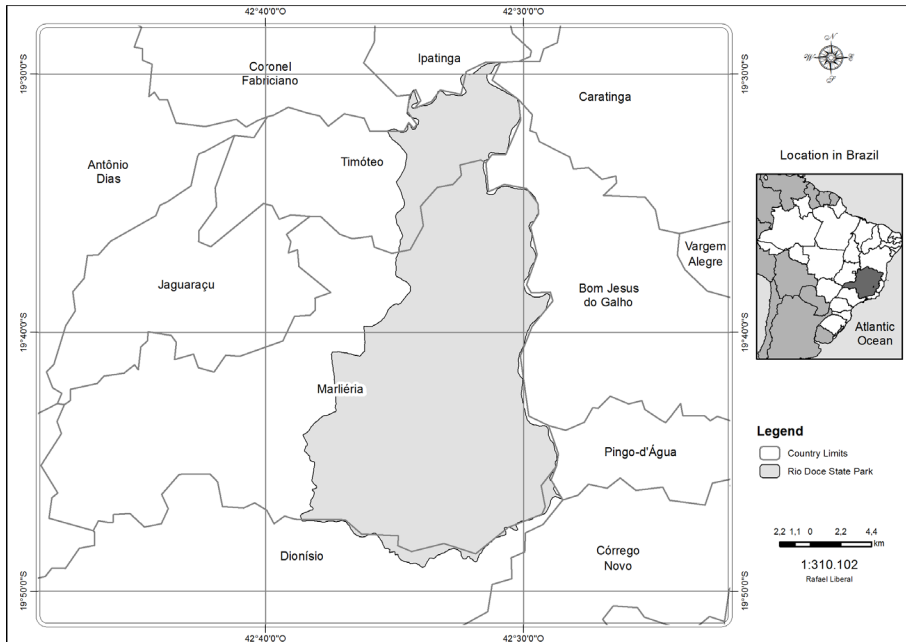


Figure 1. Location of Rio Doce state park, municipality of Marliéria, Dionísio and Timóteo, Minas Gerais, Brazil.

et al. (1999); Prado *et al.* (2008) and Nascimento *et al.* (2013) for Research Station, Training and Environmental Mata do Paraíso; Nery & Tabacow (2012) for Reserva Particular do Patrimônio Natural (RPPN) Feliciano Miguel Abdala; Strang (1981) and Talamoni *et al.* (2014) for Reserva Particular do Patrimônio Natural (RPPN) Santuário do Caraça; Pinto *et al.* (2007), Moreira *et al.* (2009) and Nunes *et al.* (2013) for Serra do Brigadeiro State Park.

Taxonomic nomenclature of final species list follows: Gonçalves & Oliveira (2004) for *Oxymycterus* genera; Wilson and Reeder (2005) for mammals species; Weksler *et al.* (2006) for *Oryzomys* genera; Gardner (2007) for Chiroptera, Cingulata and Pilosa order; Bonvicino *et al.* (2008) for Rodentia order; Alfaro *et al.* (2012) for *Sapajus* genera; Bornholdt *et al.* (2013) for *Galictis* genera; Nogueira *et al.* (2012) for *Dryadonycteris capixaba* species; Brennad *et al.* (2013) for *Hylaeamys* genera; Mittermeier *et al.* (2013) for Primate order and Trigo *et al.* (2013) for *Leopardus tigrinus* species. There were considered only identifications to species level, except for *Cavia* sp. due to the impossibility of identification by morphological characters. We also used Minas Gerais Red list of endangered species (COPAM, 2010), Brazilian Red list (Brasil, 2014) and IUCN Red list (IUCN, 2015).

Results

The updated list of species of mammals to the State Park of Rio Doce (PERD) presented here registers 89 species in 10 orders, 28 families (five subfamilies of Phyllostomidae) and 77 genera (Table 1). This result represents an increase of 48% of the PERD known species described by Stallings *et al.* (1990), which listed 60 species. The total species richness for the PERD is higher when compared to other preserved areas of Atlantic Forest in the state of Minas Gerais (Figure 2). The majority of the species registered in PERD is from the Orders Chiroptera (38.20%), Rodentia (20,22%) and Carnivora (15.73%) (Figure 3). Considering all studies developed in the park, Chiroptera has five families, 27 genera and 34 species (Stallings *et al.*, 1990; Tavares & Anciães, 1998; Tavares & Taddei, 2003; Nogueira *et al.*, 2003; Tavares *et al.*, 2007; Gregorin *et al.*, 2015). For further details see Tavares *et al.* (2007) and Gregorin *et al.* (2015). Eleven species are restricted to the Atlantic Forest. The primates have the largest number of species endemic for this biome (*Brachyteles hypoxanthus*, *Alouatta guariba clamitans*, *Callithrix geoffroyi*, *C. aurita*, *C. flaviceps* e *Sapajus nigritus*), followed by rodents (*Abrawayaomys ruschii* and *Hylaeamys seuanezi*), marsupials (*Didelphis aurita* e *Gracilinanus microtarsus*) (Paglia *et al.*, 2012) and the bat *Dryadonycteris capixaba* recently recorded by Gregorin *et al.* (2015).

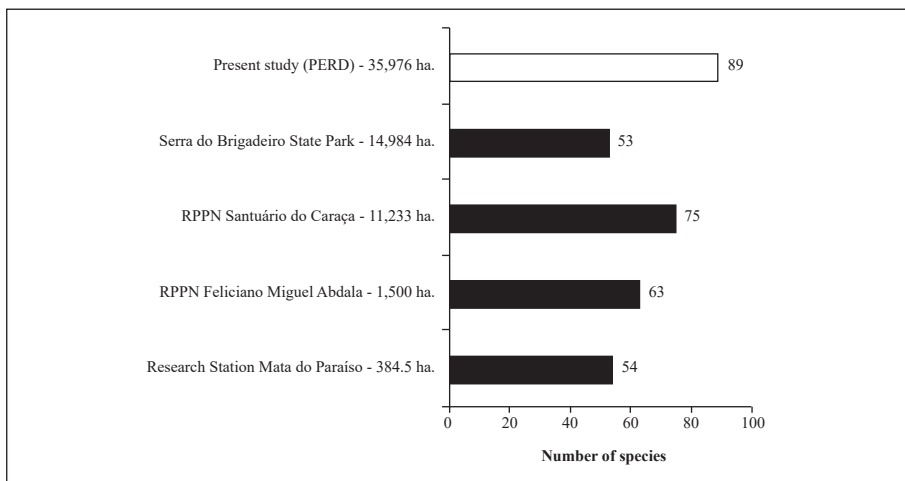


Figure 2. Species richness of terrestrial mammals recorded in the PERD compared to other areas of Atlantic Forest in the state of Minas Gerais: 1 – RPPN Santuário do Caraça, 2 – RPPN Feliciano Miguel Abdala, 3 – Research Station, Training and Environmental Mata do Paraíso, 4 – Serra do Brigadeiro State Park.

Table 1. List of mammalian species with occurrence in Rio Doce State Park, Minas Gerais, Brazil.

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
CHIROPTERA			
Family Emballonuridae			
<i>Peropteryx macrotis</i> (Wagner, 1843)	Lesser Dog-like Bat	–	Tavares <i>et al.</i> (2007)
<i>Rhynchonycteris naso</i> (Wied-Neuwied, 1820)	Proboscis Bat	–	Stallings <i>et al.</i> (1990), Tavares and Anciães (1998), Tavares <i>et al.</i> (2007)
Family Noctilionidae			
<i>Noctilio leporinus</i> (Linnaeus, 1758)	Greater Bulldog Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
Family Phyllostomidae			
Subfamily Desmodontinae			
<i>Desmodus rotundus</i> (É. Geoffroy, 1810)	Common Vampire Bat	–	Tavares <i>et al.</i> (2007)
Subfamily Glossophaginae			
<i>Anoura caudifer</i> (É. Geoffroy, 1818)	Tailed tailless Bat	–	Stallings <i>et al.</i> (1990)
<i>Anoura geoffroyi</i> Gray, 1838	Geoffroy's Tailless Bat	–	Stallings <i>et al.</i> (1990)
<i>Glossophaga soricina</i> (Pallas, 1766)	Pallas's Long-tongued Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
<i>Dryadonycteris capixaba</i> Nogueira, Lima, Peracchi and Simmons 2012	Bat	–	Gregorin <i>et al.</i> (2015)
Subfamily Phyllostominae			
<i>Chrotopteris auritus</i> (Peters, 1856)	Woolly False Vampire Bat	–	Stallings <i>et al.</i> (1990)
<i>Macrophyllum macrophyllum</i> (Schinz, 1821)	Long-legged Bat	–	Tavares and Anciães (1998), Tavares <i>et al.</i> (2007)
<i>Micronycteris schmidtorum</i> Sanborn, 1935	Schmidt's Big-eared Bat	–	Tavares and Taddei (2003)
<i>Phyllostomus hastatus</i> (Pallas, 1767)	Greater Spear-nosed Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
<i>Tonatia bidens</i> (Spix, 1823)	Greater Round-eared Bat	–	Tavares <i>et al.</i> (2007)
<i>Trachops cirrhosus</i> (Spix, 1823)	Fringe-lipped Bat		Tavares <i>et al.</i> (2007)
Subfamily Carolliinae			
<i>Carollia perspicillata</i> (Linnaeus, 1758)	Seba's Short-tailed Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
Subfamily Stenodermatinae			
<i>Sturmira litium</i> (É. Geoffroy, 1810)	Little Yellow-shouldered Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
<i>Artibeus fimbriatus</i> Gray, 1838	Fringed Fruit-eating Bat	–	Tavares <i>et al.</i> (2007)
<i>Artibeus lituratus</i> (Olfers, 1818)	Great Fruit-eating Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
<i>Artibeus obscurus</i> Schinz, 1821	Dark Fruit-eating Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
<i>Artibeus planirostris</i> (Spix, 1823)	Flat-faced Fruit-eating Bat	–	Stallings <i>et al.</i> (1990)
<i>Chiroderma doriae</i> Thomas, 1891	Brazilian Big-eyed Bat	–	Tavares <i>et al.</i> (2007)
<i>Chiroderma villosum</i> Peters, 1860	Hairy Big-eyed Bat	–	Tavares <i>et al.</i> (2007)
<i>Platyrrhinus lineatus</i> (É. Geoffroy, 1810)	White-lined Broad-nosed Bat	–	Stallings <i>et al.</i> (1990), Tavares <i>et al.</i> (2007)
<i>Platyrrhinus recifinus</i> (Thomas, 1901)	Recife Broad-nosed Bat	–	Tavares <i>et al.</i> (2007)
<i>Pygoderma bilabiatum</i> (Wagner, 1843)	Ipanema Broad-nosed Bat	–	Tavares <i>et al.</i> (2007)
<i>Uroderma magnirostrum</i> Davis, 1968	Brown Tent-making Bat	–	Nogueira <i>et al.</i> (2003)
<i>Vampyressa pusilla</i> (Wagner, 1843)	Southern Little Yellow-eared Bat	–	Tavares <i>et al.</i> (2007)
Family Molossidae			
<i>Molossus molossus</i> (Pallas 1766)	Pallas's Mastiff Bat	–	Tavares <i>et al.</i> (2007)
Family Vespertilionidae			
<i>Eptesicus brasiliensis</i> (Desmarest 1819)	Brazilian Brown Bat	–	Tavares <i>et al.</i> (2007)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
<i>Histiotus velatus</i> (L. Geoffroy, 1824)	Tropical Big-eared Brown Bat	–	Tavares <i>et al.</i> (2007)
<i>Lasturus ega</i> (Gervais 1855)	Southern Yellow Bat	–	Tavares <i>et al.</i> (2007)
<i>Myotis albescens</i> (E. Geoffroy 1806)	Silver-tipped Myotis	–	Tavares and Anciães (1998)
<i>Myotis nigricans</i> (Schinz 1821)	Black Myotis	–	Tavares <i>et al.</i> (2007)
<i>Rhogeessa hussoni</i> (Genoways & Baker 1996)	Husson's Yellow Bat	–	Tavares <i>et al.</i> (2007)
DIDELPHIMORPHIA			
Family Didelphidae			
<i>Caluromys philander</i> (Linnaeus, 1758)	Bare-tailed Woolly Opossum	–	Fonseca (1989), Stallings <i>et al.</i> (1990), Grelle (2003)
<i>Didelphis aurita</i> (Wied-Neuwied, 1826)	Big-eared Opossum	–	Fonseca (1989), Stallings <i>et al.</i> (1990), Grelle (2003)
<i>Gracilinanus microtarsus</i> (Wagner, 1842)	Brazilian Gracile Opossum	–	Stallings <i>et al.</i> (1990)
<i>Marmosops incanus</i> (Lund, 1840)	Gray Slender Opossum	–	Stallings <i>et al.</i> (1990), Grelle (2003)
<i>Metachirus nudicaudatus</i> (Desmarest, 1817)	Guianan Brown Four-eyed Opossum	–	Stallings <i>et al.</i> (1990), Grelle (2003), TEAM Rio Doce (this study)
<i>Micoureus paraguayanus</i> (Tate, 1931)	Tate's Woolly Mouse Opossum	–	Stallings <i>et al.</i> (1990), Grelle (2003)
<i>Monodelphis americana</i> (Müller, 1776)	Northern Three-striped Opossum	–	Stallings <i>et al.</i> (1990)
CINGULATA			
Family Dasypodidae			
<i>Dasypus novemcinctus</i> (Linnaeus, 1758)	Nine-banded Armadillo	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Euphractus sexcinctus</i> (Linnaeus, 1758)	Six-banded Armadillo	–	Stallings <i>et al.</i> (1990)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
<i>Priodontes maximus</i> (Kerr, 1792)	Giant Armadillo	VU ^{JUCN} , VU ^{BR} , EN ^{JMG}	TEAM Rio Doce (this study), Srbek-Araujo <i>et al.</i> (2009)
PILOSA			
Family Myrmecophagidae			
<i>Tamandua tetradactyla</i> (Linnaeus, 1758)	Southern Tamandua	–	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
Family Bradypodidae			
<i>Bradypus variegatus</i> (Schinz, 1825)	Brown-throated Sloth	–	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
ARTIODACTYLA			
Family Cervidae			
<i>Mazama americana</i> (Erxleben, 1777)	South American Red Brocket	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
Family Tayassuidae			
<i>Pecari tajacu</i> (Linnaeus, 1758)	Collared Peccary	VU ^{JMG}	Scoss <i>et al.</i> (2004), Viana and Scoss (2005), TEAM Rio Doce (this study)
PERISSODACTYLA			
Family Tapiridae			
<i>Tapirus terrestris</i> (Linnaeus, 1758)	South American Tapir	VU ^{JUCN} , VU ^{BR} , EN ^{JMG}	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
PRIMATES			
Family Atelidae			
<i>Alouatta guariba clamitans</i> (Cabrera, 1940)	Brown Howler Monkey	VU ^{BR} , VU ^{JMG}	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
<i>Brachyteles hypoxanthus</i> (Kuhl, 1820)	Northern Muriqui	CR ^{JUCN} CR ^{BR} ; EN ^{MG}	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
Family Cebidae			
<i>Callithrix geoffroyi</i> (É. Geoffroy in Humboldt, 1812)	Geoffroy's Tufted-ear Marmoset	–	TEAM Rio Doce (this study)
<i>Callithrix aurita</i> (É. Geoffroy, 1812)	Buffy-tufted-ear Marmoset	VU ^{JUCN} ; EN ^{BR} ; EN ^{MG}	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
<i>Callithrix flaviceps</i> (Thomas, 1903)	Buffy-headed Marmoset	EN ^{JUCN} ; CR ^{BR} ; EN ^{MG}	TEAM Rio Doce (this study)
<i>Sapajus nigritus</i> (Alfaro, 2011) (Goldfuss, 1809)	Black-horned Tufted Capuchin	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
Family Pitheciidae			
<i>Callicebus nigrifrons</i> (Spix, 1820) (Spix, 1823)	Black-fronted Titi Monkey	–	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
RODENTIA			
Family Dasyproctidae			
<i>Dasyprocta azarae</i> (Lichtenstein, 1823)	Azara's Agouti	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
Family Cuniculidae			
<i>Cuniculus paca</i> (Linnaeus, 1766)	Spotted Paca	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
Family Cavidae			
<i>Cavia</i> sp. (Pallas, 1766)	Brazilian Guinea Pig	–	Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Hydrochoerus hydrochaeris</i> (Linnaeus, 1766)	Capybara	–	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
Family Cricetidae			
<i>Abrawayaomys ruschii</i> (Cunha & Cruz, 1979)	Ruschii's Rat	VU ^{MG}	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Akodon cursor</i> (Winge, 1887)	Cursorial Grass Mouse	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Calomys tener</i> (Winge, 1887)	Delicate Laucha	–	Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Cerradomys subflavus</i> (Wagner, 1842)	Flavescent Rice Rat	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990), Grelle (2003)
<i>Hylaeomys seuanezi</i> (Lund, 1840)	Azara's Broad-headed Rice Rat	–	Grelle (2003), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Nectomys squamipes</i> (Brants, 1827)	Atlantic Forest Water Rat	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Oecomys catherinae</i> Thomas, 1909	Long-furred Arboreal Rice Rat	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Oligoryzomys nigripes</i> (Olfers, 1818)	Black-footed Colilargo	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Oxymycterus dasytrichus</i> (Schinz, 1821)	Northern Atlantic Forest Hociucudo	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)
<i>Rhipidomys mastacalis</i> (Lund, 1840)	Atlantic Forest Climbing Mouse	–	Grelle (2003)
Family Echimyidae			
<i>Euryzgomatomys spinosus</i> (G. Fischer, 1814)	Guiara	–	Fonseca (1989), Fonseca & Kierulff (1989), Stallings (1989), Stallings <i>et al.</i> (1990)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
Family Erethizontidae			
<i>Coendou spinosus</i> (F. Cuvier, 1823)	Paraguayan Hairy Dwarf Porcupine	—	L. M. Scoss, com. pess.
Family Muridae			
<i>Rattus rattus</i> (Linnaeus, 1758)	Black rat	—	Stallings <i>et al.</i> (1990)
Family Sciuridae			
<i>Guerlinguetus ingrami</i> (Linnaeus, 1766)	Squirrel	—	Stallings <i>et al.</i> (1990), Grelle (2003), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
LAGOMORPHA			
Family Leporidae			
<i>Sylvilagus brasiliensis</i> (Linnaeus, 1758)	Tapeti	—	Stallings <i>et al.</i> (1990), Grelle (2003), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
CARNIVORA			
Family Canidae			
<i>Cerdocyon thous</i> (Linnaeus, 1766)	Crab-eating Fox	—	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004)
<i>Chrysocyon brachyurus</i> (Illiger, 1815)	Maned Wolf	NT ^{UCN} ; VU ^{BR} ; VU ^{MG}	A. L. Ribeiro, com. pess.
Family Felidae			
<i>Leopardus guttulus</i> (Hensel, 1872)	Oncilla	VU ^{UCN} VU ^{BR}	L. M. Scoss, com. pess.
<i>Leopardus wiedii</i> (Schinz, 1821)	Margay	NT ^{UCN} ; VU ^{BR} ; EN ^{MG}	Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Leopardus pardalis</i> (Linnaeus, 1758)	Ocelot	VU ^{MG}	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Puma yagouaroundi</i> (É. Geoffroy Saint-Hilaire, 1803)	Jaguarundi	VU ^{BR}	Stallings <i>et al.</i> (1990)

Table 1 (cont.)

TAXON	COMMON NAME	CATEGORY OF THREAT	RECORD
<i>Puma concolor</i> (Linnaeus, 1771)	Cougar	VU ^{BR} ; VU ^{MG}	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Panthera onca</i> (Linnaeus, 1758)	Jaguar	NT ^{IUCN} ; VU ^{BR} ; CR ^{MG}	Stallings <i>et al.</i> (1990), TEAM Rio Doce (this study)
Family Mustelidae			
<i>Eira barbara</i> (Linnaeus, 1758)	Tayra	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Conepatus semistriatus</i> (Boddaert, 1785)	Striped Hog-nosed Skunk	–	Scoss <i>et al.</i> (2004)
<i>Galictis cuja</i> (Molina, 1782)	Lesser Grison	–	Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Lontra longicaudis</i> (Olfers, 1818)	Neotropical Otter	NT ^{IUCN} ; VU ^{MG}	M. Canuto, com. pess. L. M. Scoss, com. pess.
Family Procyonidae			
<i>Procyon cancrivorus</i> (G. [Baron] Cuvier, 1798)	Crab-eating Raccoon	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)
<i>Nasua nasua</i> (Linnaeus, 1766)	South American Coati	–	Stallings <i>et al.</i> (1990), Scoss <i>et al.</i> (2004), TEAM Rio Doce (this study)

Legend: VU – vulnerable, NT – near threatened, LC – least concern, EN – Endangered. Categories of threat of extinction, according to the global list of IUCN (2014), the national list of Brazil (2014) and Minas Gerais (MG) red list (COPAM, 2010).

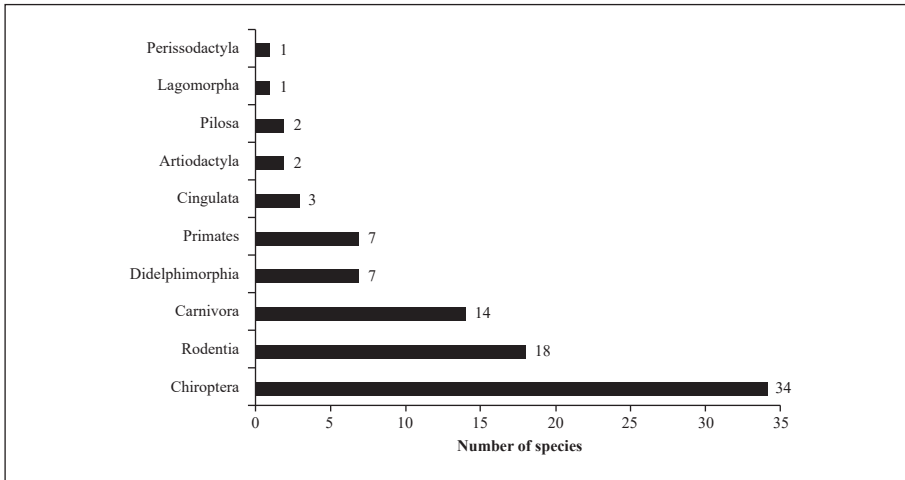


Figure 3. Number of mammal's species per Order registered in Rio Doce State Park, Minas Gerais, Brazil.

Among the species recorded primates, *C. geoffroyi* and *C. flaviceps* not have expected geographic distribution for the PERD (Ferrari, 1991; Mendes, 1993; Rylands *et al.*, 1996). Specimens seized by the Environmental Military Police have been arbitrarily introduced in the forest matrix of the Park, on the border with the municipality of Pingo D'água (Photographic records of Leandro Scoss in 2005). The species *C. geoffroyi* was spotted during collection of data from this study – TEAM primate protocol.

Sixteen species of mammals recorded in the present study are included in regional (COPAM, 2010), national (Brasil, 2014) or global (IUCN, 2015) red lists of endangered species. In Minas Gerais State Red list (COPAM, 2010), six species of mammals of medium and large size are cited as EN (endangered), one species is cited as CR (critically endangered) and seven are classified as VU (vulnerable). In Brazilian official list of endangered species (Brasil, 2014), one species of mammals are considered EN, two species are considered CR and nine are considered VU. According to the International Union for Conservation of Nature (IUCN) red list, one species is considered endangered, one species is considered critically endangered, four are considered vulnerable and four are considered NT (near threatened) (IUCN, 2015) (see Table 1). Among small non-flying mammal species, *Abrawayomys ruschii* is considered vulnerable in Minas Gerais State red list (COPAM, 2010). Three of the registries of mammals of medium and large size were new for the park area: *Priodontes maximus* (Giant Armadillo), *Lontra longicaudis* (Neotropical Otter) and *Chrysocyon brachyurus*

(Maned Wolf). However, that the photographic records of *P. maximus* obtained during the implementation of the TEAM camera trap protocol were used as part of the analysis on the occurrence of this species in the Atlantic Forest in Minas Gerais and Espírito Santo (see details on Srbek-Araújo *et al.*, 2009).

Discussion

The results emphasize how crucial populations of large sized are to maintain the dynamics and equilibrium of forests, such as *Brachyteles hypoxanthus*, *Panthera onca* and *Tapirus terrestris*. This protect area is probably the only remnant of forest in Minas Gerais that harbors one of rare populations of *P. onca* (jaguar) for Atlantic Forest, with 4.8 individuals per 100 square kilometer (L. R. Viana, unpublished data). PERD also harbors one of the biggest populations of Lowland Tapir (*T. terrestris*) in Atlantic Forest (L. M. Scoss, unpublished data) that can contribute to a long-term survival of the species and reduce extinction vulnerability in Vale do Rio Doce regions (see details on Eduardo *et al.*, 2012). Moreover, the PERD is considered one of the five protected areas among 42 regions of the Atlantic Forest, which has demographic structure to maintain genetically viable populations of the northern-muriqui (*B. hypoxanthus*) (Brito *et al.*, 2008).

We also registered *Lontra longicaudis* (Neotropical Otter) which was not confirmed for PERD until this study. The species was seen in the region of Juquita Lake (M. Canuto, com. pess.) and in northeastern portion of the park during a mammal inventory in Silvana Lake (L.M. Scoss, unpublished data). Most of the studies with this species discuss aspects of diet (Quadros & Monteiro-Filho, 2001; Quadros & Monteiro-Filho, 2002; Kasper *et al.*, 2004) and little is known about its ecology and how this predator affects aquatic environments in Neotropical ecosystems (Kasper *et al.*, 2004). The PERD is the third biggest lake complex of Brazilian territory (Tundisi *et al.*, 1981) and the species is expected to occur in all this lacustrine system. However, the low number of sightings and footprints, feces and other evidence probably are indicative of the species present low population density.

Finally, *Chrysocyon brachyurus* (Maned Wolf) had just one registry in northwestern portion of PERD, next to the lakes Juquita and Preta. This species is common in open areas, but has been frequently registered in areas of Atlantic Forest in Minas Gerais State (Prado *et al.*, 2008; Reis *et al.*, 2011) and even in areas of this biome in the south region of Brazil (Bazilio *et al.*, 2009).

Basics information about abundance, richness, distribution, systematic and ecology of marsupials and rodents within the park are scarce and outdated.

The few studies about this group community are the ones from Fonseca (1989), Stallings *et al.* (1991) and Grelle (2003). Even though, PERD has a considerable richness and rare records of species of this group, such as *Abrawayaomys ruschii* that it is not commonly registered in portion east of Atlantic Forest (D'Elia, 2003; Pereira *et al.*, 2008). *A. ruschii* was registered in the end of 80-90 decades (Fonseca, 1989; Stallings *et al.*, 1990). Since Grelle (2003) did not registry this rodent in his study, is uncertain if there are still individuals from this species in study area. This fact reinforces the need for new studies, new surveys and an increase of sampling effort in order to better evaluate the conservation status of this species community in PERD.

There are historical records of White-lipped Peccary *Tayassu pecari* (Link, 1795), Giant Otter *Pteronura brasiliensis* (Gmelin, 1788) and Giant Anteater *Myrmecophaga tridactyla* Linnaeus, 1758 to the Doce River basin (Carter & Rosas, 1997; Drummond *et al.*, 2005; Moreira *et al.*, 2008) but no convincing evidence to this species presence in the whole region of Rio Doce State Park has been recorded in the last 80-100 years, suggesting that all three species might be locally extinct. *T. pecari* was classified as critically endangered (CR) in Minas Gerais and, as they are very susceptible to local extinctions (Fragoso, 1998) even in areas such as the PERD appear not to be sufficient to maintain viable populations of this species. Meanwhile *P. brasiliensis* was classified as regionally extinct (RE) and, therefore, is extinct in Minas Gerais (COPAM, 2010).

However, the last reliable historical records of *P. brasiliensis* in Minas Gerais were the late 1930 (collection of the Museum of Zoology João Moojen de Oliveira; Viçosa, MG) (Drummond *et al.*, 2005). Regarding Giant Anteater, Moreira *et al.* (2008) describe a 1906 record made by naturalist E. Garbe of the Museum of Zoology of the University of São Paulo (MZUSP) but the origin isn't exact, appearing as "Rio Doce". For instance, the disappearance of white-lipped peccary, giant otter and giant anteater populations from Doce River basin in the last century reinforces the hypothesis that even in large and protected areas, large mammal species are still highly susceptible to ongoing negative anthropogenic effects.

Comparing the results with the updated list of mammals of Brazil, as well as other protected areas near the park, such as the State Park of Brigadeiro and Feliciano Miguel Abdala RPPN, it is observed that PERD records 30% of the described species in the Atlantic Forest, according to the criteria of the annotated list of mammals of Brazil (Paglia *et al.*, 2012). Therefore, the composition and species richness of mammals registered makes the Rio Doce State Park an important area for the conservation of endangered and endemic species.

Final Remarks. The PERD is an area of extreme importance for conservation of several biological groups (Drummond *et al.*, 2005) and also can be considered refuge for many endangered species. These species also show great sensitivity to loss and changing effects of habitat and play a fundamental importance in the dynamics and evolution of the ecosystem, such as the northern-muriqui, jaguars and lowland-tapir. The park also harbors species like *Abrawayomys ruschii*, one species that was registered in the area in the past but requires more knowledge about its biology. In this concept, the PERD and the species of mammals that occurs in its area are considered, in an ecological sense, very important. Maintaining and conserving Atlantic Forest of Medium Doce River remnant is fundamental to minimize anthropogenic pressures that affect natural dynamics in the park since 1960 decade.

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