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Artículo

MAMMALS OF MATO GROSSO, BRAZIL: ANNOTATED SPECIES LIST AND HISTORICAL REVIEW

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ABSTRACT. The state of Mato Grosso is one of the largest (903 357 km^2) and most diverse in terms of vegetation in Brazil, encompassing three distinct Neotropical biomes –the Amazon, Cerrado, and Pantanal– therefore holding high faunal diversity. Our goal in this paper was to review the history of mammalogy in this state, and to provide a checklist of mammals, with comments on taxonomy, distribution, conservation status and type of records for the species present in Mato Grosso. These records were based primarily on voucher specimens housed in scientific collections, but a few were based on personal observations and photographs. We listed 268 species belonging to 149 genera, 36 families and 10 orders, which represent 38% of mammal species occurring in Brazil. The most representative families were Phyllostomidae (63 species), Cricetidae (42) and Didelphidae (31). Our list includes 33 threatened species, representing 12% of Mato Grosso mammal species and 30% of all threatened mammal species of Brazil. We discuss the main threats to this group, and argue that social and political projects together with basic scientific knowledge are urgent to ensure a profound change in the current scenario.

RESUMO. Mamíferos de Mato Grosso, Brasil: lista anotada e revisão histórica. O estado de Mato Grosso é um dos maiores (903 357 km^2) e mais diversos do país em termos de fitofisionomias, abrangendo três biomas Neotropicais distintos –Amazônia, Cerrado e Pantanal – apresentando, consequentemente, uma elevada diversidade faunística. Os objetivos do presente estudo foram revisar a história da Mastozoologia neste estado e fornecer uma lista atual de mamíferos com comentários a respeito da taxonomia, distribuição, estado de conservação e tipos de registro para as espécies que ocorrem no Mato Grosso. Os registros aqui obtidos basearam-se, primordialmente, em espécimes-testemunho depositados em coleções científicas, mas algumas

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espécies foram registradas por observações pessoais e fotografias. Foram registradas 268 espécies pertencentes a 149 gêneros, 36 famílias e 10 ordens, o que representa 38% das espécies de mamíferos do Brasil. As famílias mais representativas foram Phyllostomidae (63 espécies), Cricetidae (42) e Didelphidae (31). Nossa lista inclui 33 espécies ameaçadas, representando 12% das espécies de mamíferos do Mato Grosso e 30% das espécies de mamíferos ameaçados do Brasil. Discutimos as principais ameaças associadas a este grupo e apontamos a importância de projetos sociais e políticos, aliados ao conhecimento científico básico, em promover uma mudança profunda nesse cenário atual.

Key words: Amazon, Cerrado, History, Mammalia, Pantanal.

Palabras-chaves: Amazônia, Cerrado, História, Mammalia, Pantanal.

INTRODUCTION

Among the 6 495 species of mammals in the world (Burgin et al. 2018), 722 (11%) occur in Brazil, making it one of the richest countries in species of mammals (Paglia et al. 2012; Nogueira et al. 2014; Percequillo et al. 2017). This great diversity, however, is still poorly known throughout most of the country, and even basic information, such as lists of mammal species, is lacking for most Brazilian states. Among the 27 Brazilian federative units, only a few have checklists of mammals: Espírito Santo (Moreira et al. 2008), Santa Catarina (Cherem et al. 2004), São Paulo (Vivo 1998; Vivo et al. 2011), Rio de Janeiro (Rocha et al. 2004), Mato Grosso do Sul (Cáceres et al. 2008; Tomas et al. 2017), and Amapá (Silva et al. 2013). Considering the large Brazilian territory (8 516 000 km^2), most of these lists are from relatively small (less than 360 000 km^2) and well-studied states, and all of them covered, in part, by Atlantic Forest, except Amapá, which is entirely inserted in the Amazon biome.

Mato Grosso is the third largest state in Brazil (903 357 km^2) and encompasses three distinct biomes, including a vast Amazon/Cerrado ecotone and part of the Pantanal, one of the largest wetlands of the world (Veloso et al. 2001; IGBE 2004; Pott & Pott 2004; Marimon et al. 2006). Considering that a checklist of mammals is the first step in order to plan inventories, conduct biogeographic and systematic studies, and develop conservation actions, a review of the mammal fauna of the state is warranted. Our goals in this paper were to review the history of mammalogy in Mato Grosso and provide the first checklist of its mammals, with comments on taxonomy, distribution, conservation status and type of record of the species present in the state.

MATERIAL AND METHODS

Study Site

The Brazilian state of Mato Grosso is a landlocked federative unit located in the middle of South America (7° to 18°S, and 50° to 61°W) represented by three biomes: Amazon, Cerrado and Pantanal, as well as transitional zones (Governo do Estado de Mato Grosso 2017)(**Fig.** 1).

The Amazon corresponds to 67 111 km^2, or approximately 8% of the state area (**Fig.** 1). Lowland areas, such as depressions, as well as high plateaus up to 1550 m, such as the Serra do Cachimbo, characterize this northern portion of the state. The climate is marked by hot and wet summers that concentrate around 87.5% of the annual precipitation from October to April, with a drier period in the winter (May to September) restricted to one to two dry months (IGBE 1997). The mean rainfall varies from 1800 to 2300 mm, with areas from the northernmost portion reaching values above 2750 mm (Rosa et al. 2007; Marcuzzo et al. 2010).

The Amazon and the Cerrado are adjacent biomes, defining large tracts of transitional areas in South America (ca. 7 950 km) (Ab'Sáber 1977; Dinerstein et al. 1995; Silva 1996). These transitional regions are also known as zones of ecological tension, where mosaics of the Cerrado savanna and the Amazon rainforest influence each other (RADAMBRASIL 1982; Marimon et al. 2006). A large portion of these transitional areas are located in western and northern Mato Grosso (**Fig.** 1), occupying ca. 413 880 km^2, mainly represented by semideciduous dry forests, which display unique characteristics along the contact zone (Olson et al. 2001; Veloso et al. 2001; Ivanauskas et al. 2008). The seasonality in this region is well marked, with a dry season varying from four to seven months, leading to the semideciduous character of these forests (Marimon et al. 2006; Ivanauskas et al. 2008).

The Amazon Forest, together with these transitional areas, is represented by five distinct ecoregions in Mato Grosso: Interfluvium Madeira/Tapajós, Dry Forests of Mato Grosso, Dry Forests of Chiquitano, Interfluvium Xingu/Tocantins-Araguaia and Interfluvium Tapajós/Xingu, of which the most representative are the ombrophilous forests of the Interfluvium Madeira /Tapajós and the Dry Forests of Mato Grosso (Olson et al. 2001; MMA 2005).

Historically, the Cerrado covered 359 847 km^2, or 40% of the state territory, located mainly in the depressions of upper Paraguai–Guaporé rivers, the south and south-

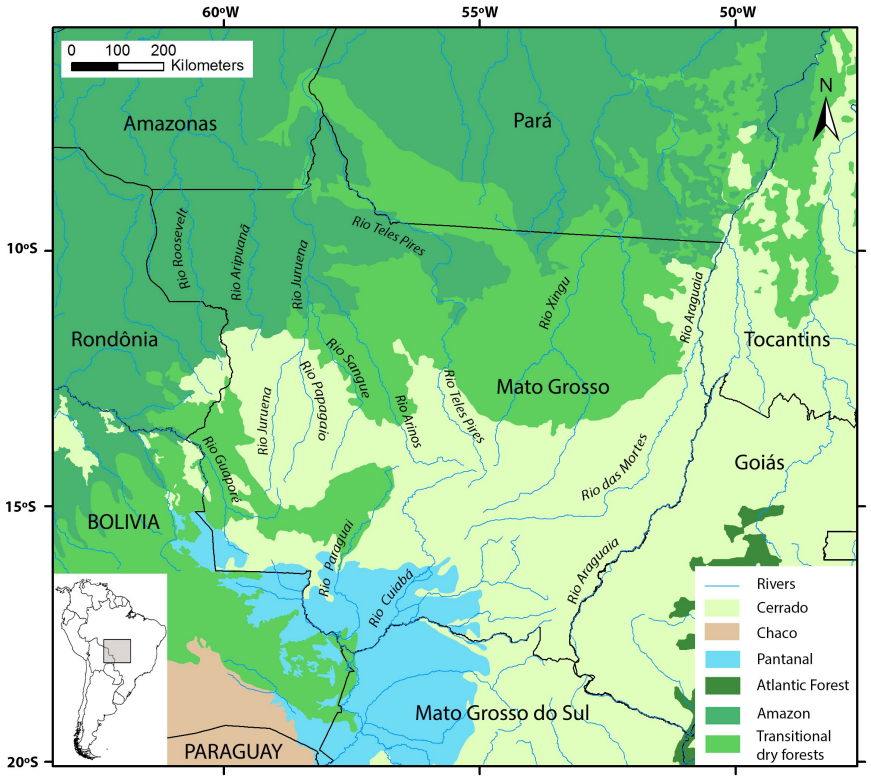

Fig. 1. Map of Mato Grosso, Brazil, showing vegetation types and main rivers (adapted from Olson et al. 2001). Black lines indicate political geographic boundaries. Degrees of southern latitude and western longitude are shown along the leftthand and top margins, respectively. Uppercase are used in all letters in countries names, while for the Brazilian states only in the first letter. River names are in italic.

east of the Parecis plateau, and to the south of the 13th parallel to the border of Mato Grosso do Sul state (Governo do Estado de Mato Grosso 2017) (**Fig.** 1). The Cerrado is characterized by different physiognomies, including forested areas, such as gallery and seasonally dry forests, as well as open habitats, such as shrublands and grasslands (Ribeiro & Walter 2008). The climate is seasonally well marked, with dry (May to September) and rainy (October to April) seasons (IGBE 1997). The Cerrado is among the 25 world hotspots for conservation due to its high level of endemism, as well as the high threats to its biodiversity (Myers et al. 2000; Mittermeier et al. 2004).

The Pantanal is one of the largest continuous tropical wetlands on Earth, spanning approximately 150 000 km^2, occupying the middle of the upper Rio Paraguai basin and its draining portions in Bolivia, Brazil and Paraguay (IGBE 2004). In Mato Grosso, this biome extends for about 61 102 km^2 or 7% of the state area (Governo do Estado de Mato Grosso 2017). The Pantanal has dry (March to September) and rainy (October to February) seasons, creating an annual rise and fall of water level that supports an abundant vertebrate fauna (Junk et al. 2006; Alho 2008). Only a few habitats occupying a minor portion of the entire Pantanal (20–30%) are covered permanently by water or are waterlogged year-long. The remaining area belongs to the aquatic/terrestrial transition zone, which extends between permanently terrestrial and permanently aquatic habitats (Nunes da Cunha & Junk 2009).

Besides the diversity of biomes, the state also harbors one of the largest watersheds in South America, where three hydrographic regions are located: Amazon basin, with 592 382 km^2 (65.7% of the state); Paraguai basin, with 176 800 km^2 (19.6% of the state); and Tocantins-Araguaia basin, with 132 238 km^2 (14.7% of the state), which includes headwaters and rivers that will form some of the most important rivers of the continent, such as the Xingu, Madeira, Tapajós, Araguaia, and Paraguai (Secretaria de Estado de Meio Ambiente 2009).

Data collection

We recorded the species of mammals based primarily on specimens housed in scientific collections that were examined by at least one of the authors: American Museum of Natural History, New York, USA (AMNH); Natural History Museum, London, United Kingdom (BMNH); Coleção de Chiroptera, Departamento de Zoologia da

Universidade Estadual Paulista "Júlio de Mesquita Filho", São José do Rio Preto, São Paulo, Brazil (DZSJRP); Coleção de Mamíferos, Universidade Federal de Lavras, Lavras, Brazil (CMUFLA); Field Museum, Chicago, USA (FMNH); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (MN); Museu Paraense Emílio Goeldi, Belém, Brazil (MPEG); Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (MZUSP); Museu de Zoologia da Universidade Estadual de Campinas, Campinas, Brazil (ZUEC); Museum für Naturkunde, Berlin, Germany (ZMB_MAM); National Museum of Natural History, Smithsonian Institution, Washington DC, USA (USNM); Universidade de Brasília, Brasília, Brazil (UnB); Universidade Federal de Mato Grosso, Cuiabá, Brazil (UFMT); and Universidade do Estado de Mato Grosso, Alta Floresta, Brazil (CZAFMA).

Additional records based on voucher specimens examined by other authors in the literature were also included. When vouchers were not examined by one of us, we cite the reference instead of voucher number. It is therefore possible to verify the identity of any species listed here by either checking the voucher or the cited reference. We also considered records based on personal observations made by one of us (cited in the checklist), as well as based on photos in which the diagnostic characters were unambiguous and readily recognized.

The taxonomy of Didelphimorphia followed Voss & Jansa (2009), updated for *Marmosa* (Gutiérrez et al. 2010; Rossi et al. 2010b; Voss et al. 2014a; Lima-Silva et al. 2019), *Gracilinanus* (Semedo et al. 2015), *Metachirus* (Voss et al. 2019), *Monodelphis* (Pavan et al. 2012; Voss et al. 2012; Pavan & Voss 2016; Pavan et al. 2017) and *Philander* (Voss et al. 2018). For Rodentia, we followed Patton et al. (2015), updated for *Neacomys* (Hurtado & Pacheco 2017; Di-Nizo et al. 2017), *Oligoryzomys* (Weksler et al. 2017) and *Oecomys* (Suarez-Villota et al. 2018). For Lagomorpha, the taxonomy follows Ruedas et al. (2017). For Chiroptera, the taxonomy follows Gardner (2008a) updated for *Platyrrhinus* (Velazco et al. 2010), *Natalus macrourus* (Garbino & Tejedor 2013), *Hsunycteris* (Parlos et al. 2014), and *Gardnerycteris* (Hurtado & Pacheco 2014). The taxonomy of *Sturnira* is unresolved (Velazco & Patterson 2013), and we provisionally consider only three species occurring in Brazil following Nogueira et al. (2014).

The taxonomic arrangement of Pilosa and Cingulata follows Gardner (2008b), with the following updates: Miranda et al. (2017) for the silky anteaters, *Cyclopes*; Gibb et al. (2016) for the family classification of Cingulata, using the new arrangments of Chlamyphoridae and Dasypodidae; and Feijó & Cordeiro-Estrela (2016) and Feijó et al. (2018) for the *Dasypus kappleri* complex. Additionally, we considered *Cabassous squamicaudis* as a full species (see RESULTS AND DISCUSSION for further explanation). Primate taxonomy follows Schneider & Sampaio (2015) and Garbino & Martins-Junior (2017) for genera and families, and Mittermeier et al. (2013) for species. We consider *Pithecia irrorata* as the only saki monkey occurring in Mato Grosso (Serrano-Villavicencio et al. 2019). We do not classify the Amazonian *Callicebus* south of Rio Amazonas in the distinct genus *Plecturocebus*, as proposed by Byrne et al. (2016); instead, we follow Serrano-Villavicencio et al. (2016) and Garbino & Aquino (2018) in keeping the name *Callicebus* for all titi monkeys. The capuchin monkeys are classified in the genus *Cebus*, with the gracile species placed in the subgenus *Cebus* and the robust species in the subgenus *Sapajus*, following Feijó & Langguth (2013), Garbino (2015), and Gutiérrez & Marinho-Filho (2017). Carnivora taxonomy follows Wilson & Reeder (2005), updated for *Leopardus tigrinus* group (Trigo et al. 2013; Nascimento & Feijó 2017), *Herpailurus* and *Puma* (Segura et al. 2013; Caso et al. 2015; Kitchener et al. 2017), *Leopardus braccatus* (García-Perea 1994; Wozencraft 2005; Nascimento 2010), and *Conepatus amazonicus* (Feijó & Langguth 2013). We followed Duarte & González (2010) for Cervidae taxonomy and Hrbek et al. (2014) for Iniidae taxonomy, treating *Inia araguaiaensis* as valid and *Inia boliviensis* as full species. We followed Asher & Helgen (2010) in retaining the name Artiodactyla for the clade that contains the terrestrial artiodactyls and includes Cetacea. We do not consider *Tapirus kabomani* as a valid species (see further comments in RESULTS AND DISCUSSION) and we agree with Voss et al. (2014b) that compelling data are still needed to corroborate the validity of this species.

We included undescribed species in our list based on previous works, using the same nomenclature as cited in the references of **Table** 1) (e.g., Suarez-Villota et al. 2018: *Oecomys paricola* western clade, *Oecomys catherinae* western clade, *Oecomys catherinae* westernmost clade, and so forth). Species not identified at the species level in the literature (e.g., *Rhagomys* sp. in Percequillo et al. 2011) or based on our own analyses (e.g., *Cyclopes* sp.) were cited as such (sp.). See further comments in the RESULTS AND DISCUSSION for each order.

Conservation status

We retrieved the conservation status of the species based on the most recent assessments of the International Union for the Conservation of Nature (IUCN 2019) and of the Instituto Chico Mendes de Conservação da Biodiversidade, Brazilian Ministry of the Environment (ICMBio 2018). Taxa that were not included in these assessments were classified into two categories:

(1) Not applicable (N/A): For undescribed taxa (e.g., *Neacomys* sp. in Di-Nizo et al. 2017) and those unidentified at species level (e.g., *Rhagomys* sp. in Percequillo et al. 2011).

(2) Pending (re)evaluation (P/R): For taxa which conservation status has never been evaluated due to being recently described (e.g., *Histiotus diaphanopterus*), recently revalidated (e.g., *Gracilinanus peruanus*) or resulting from a recent taxonomic change, either lumped into a single species (e.g., *Guerlinguetus aestuans*) or split into two or more species (e.g., *Saguinus niger*).

RESULTS AND DISCUSSION

Mammalogy in the state of Mato Grosso: the Colonial period (1500–1808)

The first accounts of Brazilian mammals date back to the beginning of the XVI century, as narratives of European travelers to the New World. Most reports came from accessible coastal areas of the country or were restricted to a few hundred kilometers, at most, into the Brazilian interior (Papavero 1971;

Table 1

Checklist of mammals of Mato Grosso, Brazil. Conservation status based on the Brazilian and international lists of threatened species (ICMBio 2018; IUCN 2019). Acronyms: CR = critically endangered, DD = data deficient, EN = endangered, N/A = not applicable, NT = near threatened, P/R = pending (re)evaluation, VU = vulnerable. Acronyms of institutions cited in Material and Methods – Data collection section. Dir. obs. = direct observation.

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
DIDELPHIMORPHIA Gill, 1872					
DIDELPHIDAE Gray, 1821					
Caluromys lanatus (Olfers, 1818)	Cuíca-lanosa	Brown-eared Woolly Opossum	UFMT 1511		
Caluromys philander (Linnaeus, 1758)	Cuíca-lanosa	Bare-tailed Woolly Opossum	UFMT 1843		
Caluromysiops irrupta Sanborn, 1951	Cuíca-de-colete	Black-shouldered Opossum	Barbosa et al. (2016)	CR A2c	
Chironectes minimus (Zimmermann, 1780)	Cuíca-d'água	Water Opossum, Yapok	UFMT 357	DD	
Cryptonanus agricolai (Moojen, 1943)	Cuíca	Gracile Opossum	UFMT 4023		DD
Cryptonanus chacoensis (Tate, 1931)	Cuíca	Chacoan Gracile Opossum	UFMT 1068	DD	
Cryptonanus unduaviensis (Tate, 1931)	Cuíca	Unduavi Gracile Opossum	MZUSP APC 3059	P/R	DD
Didelphis albiventris Lund, 1840	Gambá-de-orelha-branca	White-eared Opossum	UFMT 2046		
Didelphis marsupialis Linnaeus, 1758	Gambá-de-orelha-preta	Common Opossum	UFMT 1528		
Glironia venusta Thomas, 1912	Cuíca	Bushy-tailed Opossum	UFMT 969		
Gracilinanus agilis (Burmeister, 1854)	Cuíca	Agile Gracile Opossum	UFMT 1039		
Gracilinanus cf. *emiliae* (Thomas, 1909)	Cuíca	Emilia's Gracile Opossum	MZUSP 12574		DD
Gracilinanus peruanus (Tate, 1931)	Cuíca	Peruvian Gracile Opossum	UFMT 1333	P/R	P/R
Marmosa constantiae Thomas, 1904	Mucura-chichica	White-bellied Woolly Mouse Opossum	BMNH 3.7.7.157 (type of *constantiae* Thomas, 1904)		
Marmosa demerarae (Thomas, 1905)	Mucura-chichica	Woolly Mouse Opossum	UNB 2680		
Marmosa lepida (Thomas, 1888)	Cuíca	Rufous Mouse Opossum	UFMT 1506		
Marmosa macrotarsus Wagner, 1842	Cuíca	Quechuan Mouse Opossum	USNM 545520		P/R

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Marmosa murina (Linnaeus, 1758)	Cuíca	Murine Mouse Opossum	UFMT 2037		P/R
Marmosops bishopi (Pine, 1981)	Cuíca	Bishop's Slender Opossum	UFMT 948		
Marmosops noctivagus (Tschudi, 1844)	Cuíca	White-bellied Slender Opossum	UFMT 971		
Marmosops ocellatus (Tate, 1931)	Cuíca	Spectacled Slender Opossum	UFMT 3683	NT	
Marmosops pinheiroi (Pine, 1981)	Cuíca	Pinheiro's Slender Opossum	UFMT 3074		
Metachirus cf. *myosuros* (Temminck, 1824)	Jupatí, cuíca-quatro-olhos-marrom	Brown Four-eyed Opossum	UFMT 1357		
Monodelphis domestica (Wagner, 1842)	Catita	Gray Short-tailed Opossum	UFMT 642		
Monodelphis emiliae (Thomas, 1912)	Catita	Emilia's Short-tailed Opossum	UFMT 1073		
Monodelphis glirina (Wagner, 1842)	Catita	Amazonian Red-sided Opossum	UFMT 1313		
Monodelphis kunsi Pine, 1975	Catita	Pygmy Short-tailed Opossum	UFMT 898		
Monodelphis saci Pavan, Mendes-Oliveira and Voss, 2017	Catita	Amazonian Red-headed Short-tailed Opossum	UFMT 1355	P/R	P/R
Monodelphis cf. *sanctaerosae* Voss, Pine and Solari, 2012	Catita	Santa Rosa Short-tailed Opossum	MZUSP 35081	P/R	P/R
Philander canus (Osgood, 1913)	Cuíca-quatro-olhos-cinza	Gray Four-eyed Opossum	UFMT 724	P/R	P/R
Thylamys karimii (Petter, 1968)	Cuíca	Karimi's Fat-tailed Mouse Opossum	UFMT 1301		VU (A2c+3c)
BRADYPODIDAE Gray, 1821					
Bradypus variegatus Linnaeus, 1758	Preguiça-bentinha, preguiça-de-três-dedos	Brown-throated Sloth	Photo (Fig. S3)		
MEGALONYCHIDAE P. Gervais, 1855					
Choloepus hoffmanni Peters, 1858	Preguiça-real, preguiça-de-dois-dedos	Hoffmann's Two-toed Sloth	MPEG 36871		DD
CYCLOPEDIDAE Pocock, 1924					
Cyclopes sp.	Tamanduaí	Silky Anteater	Photo (Fig. S4)	P/R	P/R

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
MYRMECOPHAGIDAE Gray, 1825					
Myrmecophaga tridactyla Linnaeus, 1758	Tamanduá-bandeira	Giant Anteater	UFMT 444	VU A2c	VU A2c
Tamandua tetradactyla (Linnaeus, 1758)	Tamanduá-de-colete, tamanduá-mirim	Southern Tamandua	MZUSP 7038		
CINGULATA Illiger, 1811					
CHLAMYPHORIDAE Bonaparte, 1850					
Cabassous squamicaudis (Lund, 1845)	Tatu-de-rabo-mole	Southern naked-tailed Armadillo	UFMT 4011	P/R	P/R
Cabassous tatouay (Desmarest, 1804)	Tatu-de-rabo-mole-grande	Greater naked-tailed Armadillo	Wetzel (1980)	DD	
Cabassous unicinctus (Linnaeus, 1758)	Tatu-de-rabo-mole	Northern naked-tailed Armadillo	Anacleto et al. (2013)		
Euphractus sexcinctus (Linnaeus, 1758)	Tatu-peba	Six-banded Armadillo	MZUSP 25593		
Priodontes maximus (Kerr, 1792)	Tatu-canastra	Giant Armadillo	UFMT 69	VU A2cd	VU A2cd
Tolypeutes matacus (Desmarest, 1804)	Tatu-bola-do-chaco	Southern Three-banded Armadillo	Sanborn (1930)	DD	NT
DASYPODIDAE Gray, 1821					
Dasypus beniensis Lönnberg, 1942	Tatu-quinze-quilos	Eastern Greater Long-nosed Armadillo	UFMT 302	P/R	P/R
Dasypus novemcinctus Linnaeus, 1758	Tatu-galinha	Nine-banded Armadillo	MN 25903		
Dasypus septemcinctus Linnaeus, 1758	Tatu-china, mulita	Brazilian Lesser Long-nosed Armadillo	UNB 795		
CHIROPTERA Blumech, 1779					
EMBALLONURIDAE Gervais, 1855					
Diclidurus ingens Hernández-Camacho, 1955	Morcego-branco	Greater Ghost Bat	Dalponte & Aguiar (2009)	DD	DD
Peropteryx kappleri Peters, 1867	Morcego	Greater Dog-like Bat	Dalponte et al. (2016)		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Peropteryx leucoptera Peters, 1867	Morcego	White-winged Dog-like Bat	Dalponte et al. (2016)		
Peropteryx macrotis (Wagner, 1843)	Morcego	Lesser Dog-like Bat	MZUSP 28249		
Rhynchonycteris naso (Wied-Neuwied, 1820)	Morcego	Proboscis Bat, Brazilian Long-Nosed Bat	MZUSP 5758		
Saccopteryx bilineata (Temminck, 1838)	Morcego	Greater Sac-winged Bat	MZUSP 6907		
Saccopteryx leptura (Schreber, 1774)	Morcego	Lesser Sac-winged Bat	MZUSP 6906		
NATALIDAE Gray, 1866					
Natalus macrourus (Gervais, 1856)	Morcego	Brazilian Funnel-eared Bat	Mok et al. (1982)	VU A3c	NT
PHYLLOSTOMIDAE Gray, 1825					
Ametrida centurio Gray, 1847	Morcego	Little White-shouldered Bat	Pine et al. (1970)		
Artibeus anderseni Osgood, 1916	Morcego	Andersen's Fruit-eating Bat	Gonçalves & Gregorin (2004)		
Artibeus cinereus (P. Gervais, 1856)	Morcego	Gervais's Fruit-eating Bat	Pine et al. (1970)	DD	
Artibeus concolor Peters, 1865	Morcego	Brown Fruit-eating Bat	MZUSP 28212		
Artibeus gnomus Handley, 1987	Morcego	Gnome Fruit-eating Bat	Gonçalves & Gregorin (2004)	DD	
Artibeus lituratus (Olfers, 1818)	Morcego	Great Fruit-eating Bat	MZUSP PEV 898/899		
Artibeus obscurus (Schinz, 1821)	Morcego	Dark Fruit-eating Bat	MZUSP PEV 825/826		
Artibeus planirostris (Spix, 1823)	Morcego	Flat-faced Fruit-eating Bat	MZUSP PEV 1241/1242		
Anoura caudifer (É. Geoffroy, 1818)	Morcego-beija-flor	Tailed Tailless Bat	Thomas (1904)		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Anoura geoffroyi Gray, 1838	Morcego-beija-flor	Geoffroy's Tailless Bat	Lima et al. (2016)		
Carollia brevicauda (Schinz, 1821)	Morcego	Silky Short-tailed Bat	Dalponte et al. (2016)		
Carollia benkeithi Solari and Baker, 2006	Morcego	Benkeith's Short-tailed Bat	ZUEC 1018		P/R
Carollia perspicillata (Linnaeus, 1758)	Morcego	Seba's Short-tailed Bat	MZUSP 34680		
Chiroderma trinitatum Goodwin, 1958	Morcego	Little Big-eyed Bat	CMUFLA 1284		
Chiroderma villosum Peters, 1860	Morcego	Hairy Big-eyed Bat	CMUFLA 1299		
Choeroniscus minor (Peters, 1868)	Morcego	Lesser Long-tongued bat	MZUSP 35006		
Choeroniscus cf. *godmani*	Morcego	Godman's Long-tailed Bat	MZUSP PEV 734/735		
Chrotopterus auritus (Peters, 1856)	Morcego	Woolly False Vampire Bat	MZUSP PEV 789/790		
Desmodus rotundus (É. Geoffroy, 1810)	Morcego-vampiro	Common Vampire Bat	MZUSP 7732		
Diaemus youngii (Jentink, 1893)	Morcego	White-winged Vampire Bat	MZUSP 35713		
Gardnerycteris crenulata (É. Geoffroy, 1803)	Morcego	Striped Hairy-nosed Bat	Wagner (1843)		
Glyphonycteris behnii (Peters, 1865)	Morcego	Behn's Big-eared Bat	ZMB_MAM 5154 (type of *behnii* Peters, 1865)	VU A4c	DD
Glyphonycteris daviesi (Hill, 1964)	Morcego	Davies's Big-eared Bat	MZUSP 35369		
Glyphonycteris sylvestris Thomas, 1896	Morcego	Tricolored Bat	Miranda et al. (2015)		
Glossophaga soricina (Pallas, 1766)	Morcego-beija-flor	Pallas's Long-tongued Bat	MZUSP 6924		
Hsunycteris thomasi (J.A. Allen, 1904)	Morcego	Thomas's Nectar Bat	DZSJRP 15369		
Lampronycteris brachyotis (Dobson, 1879)	Morcego	Yellow-Throated Big-eared Bat	Brandão et al. (2016)		
Lionycteris spurrelli Thomas, 1913	Morcego	Chestnut Long-tongued Bat	Miranda et al. (2015)		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Lonchophylla dekeyseri Taddei, Vizotto and Sazima, 1978	Morcego-beija-flor	Dekeyser's Nectar Bat	Gonçalves & Gregorin (2004)	EN C2a(ii)	EN C2a(i)
Lonchorhina aurita Tomes, 1863	Morcego	Tomes's Sword-nosed Bat	Louzada et al. (2015)	VU A3c	
Lonchorhina inusitata Handley and Ochoa, 1997	Morcego	Uncommon Sword-nosed Bat	Dalponte et al. (2016)	DD	DD
Lophostoma brasiliense Peters, 1866	Morcego	Pygmy Round-eared Bat	Gonçalves & Gregorin (2004)		
Lophostoma carrikeri (J.A. Allen, 1910)	Morcego	Carriker's Round-eared Bat	MZUSP 35889		
Lophostoma silvicola d'Orbigny, 1836	Morcego	White-Throated Round-eared Bat	MZUSP 4TPQ 35		
Mesophylla macconnelli Thomas, 1901	Morcego	Macconnell's Bat	MZUSP PEV 1286/1287		
Micronycteris (*Schizonycteris*) sp.	Morcego	Sanborn's Big-eared Bat	Louzada et al. (2015)	N/A	N/A
Micronycteris megalotis (Gray, 1842)	Morcego	Little Big-eared Bat	Andersen (1906)		
Micronycteris microtis Miller, 1898	Morcego	Common Big-eared Bat	Louzada et al. (2015)		
Micronycteris schmidtorum Sanborn, 1935	Morcego	Schmidts's Big-eared Bat	Louzada et al. (2015)		
Mimon bennettii (Gray, 1838)	Morcego	Bennett's Spear-nosed Bat	UFMT 4373		
Phylloderma stenops (Peters, 1865)	Morcego	Pale-faced Bat	Dalponte et al. (2016)		
Phyllostomus discolor (Wagner, 1843)	Morcego	Pale Spear-nosed Bat	MZUSP PEV 0717/718		
Phyllostomus elongatus (É. Geoffroy, 1810)	Morcego	Lesser Spear-nosed Bat	MZUSP 4TPQ 03		
Phyllostomus hastatus (Pallas, 1767)	Morcego	Greater Spear-nosed Bat	MZUSP 12756		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Phyllostomus latifolius (Thomas, 1901)	Morcego	Guianan Spear-nosed Bat	Miranda et al. (2015)		
Platyrrhinus angustirostris Velazco, Gardner and Patterson, 2010	Morcego	Slender Broad-nosed bat	Dalponte et al. (2016)		
Platyrrhinus brachycephalus (Rouk and Carter, 1972)	Morcego	Short-Headed Broad-nosed Bat	Louzada et al. (2015)		
Platyrrhinus fusciventris Velazco, Gardner and Patterson, 2010	Morcego	Brown-bellied Broad-nosed Bat	Miranda et al. (2015)		
Platyrrhinus incarum (Thomas, 1912)	Morcego	Incan Broad-nosed Bat	Velazco & Lim (2014)		
Platyrrhinus lineatus (É. Geoffroy, 1810)	Morcego	White-Lined Broad-nosed Bat	Gonçalves & Gregorin (2004)		
Platyrrhinus recifinus (Thomas, 1901)	Morcego	Recife Broad-nosed Bat	Louzada et al. (2015)		
Rhinophylla pumilio Peters, 1865	Morcego	Dwarf Little Fruit Bat	Pine et al. (1970)		
Sturnira lilium (É. Geoffroy, 1810)	Morcego	Little Yellow-shouldered Bat	DZSJRP 15373		
Sturnira tildae de la Torre, 1959	Morcego	Tilda's Yellow-shouldered Bat	Pine et al. (1970)		
Tonatia bidens (Spix, 1823)	Morcego	Spix's Round-eared Bat	UFMT 4463		
Tonatia saurophila Koopman and Williams, 1951	Morcego	Stripe-headed Round-eared Bat	MZUSP 4TPQ 122		
Trachops cirrhosus (Spix, 1823)	Morcego	Fringe-lipped Bat	Pelzeln (1883)		
Trinycteris nicefori Sanborn, 1949	Morcego	Niceforo's Bat	Miranda et al. (2015)		
Uroderma bilobatum Peters, 1866	Morcego	Tent-making Bat	MZUSP PEV 910/911		
Uroderma magnirostrum Davis, 1968	Morcego	Brown Tent-making Bat	MZUSP 29086		
Vampyressa thyone Thomas, 1909	Morcego	Northern Little Yellow-eared Bat	Dalponte et al. (2016)		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Vampyriscus bidens (Dobson, 1878)	Morcego	Bidentate Yellow-eared Bat	MZUSP M3Q 08		
Vampyrum spectrum (Linnaeus, 1758)	Morcego	Spectral Bat, Linnaeus's False Vampire Bat	UFMT 1116		NT
MORMOOPIDAE Saussure, 1860					
Pteronotus gymnonotus (Wagner, 1843)	Morcego	Big naked-backed Bat	Wagner (1843)		
Pteronotus rubiginosus (Wagner, 1843)	Morcego	Rusty Mustached Bat	Wagner (1843)		
Pteronotus personatus (Wagner, 1843)	Morcego	Wagner's Mustached Bat	Wagner (1843)		
NOCTILIONIDAE Gray, 1821					
Noctilio albiventris Desmarest, 1818	Morcego-pescador	Lesser Bulldog Bat	MZUSP 3544		
Noctilio leporinus (Linnaeus, 1758)	Morcego-pescador	Greater Bulldog Bat, Fisherman Bat	MZUSP 4281		
THYROPTERIDAE Miller, 1907					
Thyroptera discifera (Lichtenstein and Peters, 1855)	Morcego	Peter's Disk-winged Bat	Bezerra et al. (2005)	DD	
Thyroptera tricolor Spix, 1823	Morcego	Spix's Disk-winged Bat	CZAF MA 08		
MOLOSSIDAE Gervais, 1856					
Cynomops abrasus (Temminck, 1826)	Morcego	Cinnamon Dog-faced Bat	MZUSP 15655		DD
Cynomops planirostris (Peters, 1866)	Morcego	Southern Dog-faced Bat	USNM 393769		
Eumops auripendulus (G. Shaw, 1800)	Morcego	Black Bonneted Bat	Wagner (1843)		
Eumops glaucinus (Wagner, 1843)	Morcego	Wagner's Bonneted Bat, Wagner's Mastiff Bat	Wagner (1843)		
Molossops temminckii (Burmeister, 1854)	Morcego	Dwarf Dog-faced Bat	DZSJRP 15427		
Molossus coibensis J. A. Allen, 1904	Morcego	Coiban Mastiff Bat	Costa et al. (2013)	DD	
Molossus molossus (Pallas, 1766)	Morcego	Velvety Free-tailed Bat, Pallas's Mastiff Bat	MZUSP 28253		
Molossus rufus É. Geoffroy, 1805	Morcego	Black Mastiff Bat	MZUSP PEV 704/705		
Neoplatymops mattogrossensis (Vieira, 1942)	Morcego	Mato Grosso Dog-faced Bat	MN 3597		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Nyctinomops laticaudatus (É. Geoffroy, 1805)	Morcego	Broad-eared Bat, Broad-tailed Bat	ZUEC 816		
Nyctinomops macrotis (Gray, 1840)	Morcego	Big Free-tailed Bat	Wagner (1843)		
VESPERTILIONIDAE Gray, 1821					
Eptesicus brasiliensis (Desmarest, 1819)	Morcego	Brazilian Brown Bat	MZUSP 28243		
Eptesicus furinalis (d'Orbigny and Gervais, 1847)	Morcego	Argentine Brown Bat	Lima et al. (2016)		
Lasiurus blossevillii (Lesson, 1826)	Morcego-vermelho	Western Red Bat	MZUSP 28245		
Lasiurus ega (Gervais, 1856)	Morcego	Southern Yellow Bat	DZSJRP 15420		
Rhogeessa hussoni Genoways and Baker, 1996	Morcego	Husson's Yellow Bat	MZUSP 34661		DD
Histiotus diaphanopterus Feijó, Rocha and Althoff, 2015	Morcego-das-asas-transparentes	Transparent-winged Big-eared Bat	UFMT 2751	P/R	P/R
Histiotus velatus (I. Geoffroy, 1824)	Morcego	Tropical Big-eared Brown Bat	BMNH 3.7.7.17 (type of *miotis* Thomas, 1916)		DD
Myotis nigricans (Schinz, 1821)	Morcego-borboleta	Black Myotis	Dalponte et al. (2016)		
Myotis riparius Handley, 1960	Morcego	Riparian Myotis	Gonçalves & Gregorin (2004)		
Myotis simus Thomas, 1901	Morcego	Velvety Myotis	MZUSP 13815		DD
PRIMATES Linnaeus, 1758					
CEBIDAE Gray, 1831					
Cebus apella (Linnaeus, 1758)	Macaco-prego, mico	Tufted Capuchin	UFMT 4013		
Cebus cay (Illiger, 1815)	Macaco-prego, mico	Azaras's Capuchin, Hooded Capuchin	MZUSP 6319		
Cebus unicolor Spix, 1823	Caiarara	Spix's White-fronted Capuchin	Gusmão et al. (2017)	P/R	P/R

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Mico emiliae (Thomas, 1920)	Sagui, sauim branco	Emilia's Marmoset	MPEG 24596		DD
Mico intermedius (Hershkovitz, 1977)	Sagui, sauim	Hershkovitz's Marmoset	MN 2850		
Mico melanurus (É. Geoffroy in Humboldt, 1812)	Sagui-de-rabo-preto, sagui	Black-Tailed Marmoset	MN 2852		
Saguinus niger (É. Geoffroy, 1803)	Sagui, sauim preto	Black-handed Tamarin	Garbino et al. (2015)		VU A2c
Saimiri ustus (I. Geoffroy, 1843)	Macaco-de-cheiro	Bare-Eared Squirrel Monkey	UFMT 3604	NT	NT
Aotus azarae azarae (Humboldt, 1811)	Macaco-da-noite	Azara's Night Monkey	UFMT 4018	DD	
Aotus azarae infulatus (Kuhl, 1820)	Macaco-da-noite	Feline Night Monkey	UFMT 3611		NT
PITHECIIDAE Mivart, 1865					
Pithecia irrorata Gray, 1842	Parauacu	Gray's bald-faced Saki	UFMT 602	DD	P/R
Chiropotes albinasus (I. Geoffroy and Deville, 1848)	Cuxiú-de-nariz-branco, pirocolú	White-Nosed Saki	UFMT 3600	NT	EN A3cd
Chiropotes utahicki Hershkovitz, 1985	Cuxiú	Uta Hick's bearded Saki	Silva et al. (2013)	VU A4cd	EN A3cd
Callicebus grovesi (Boubli et al. 2019)	Zogue-zogue	Alta Floresta Titi	Boubli et al. (2019)	N/A	N/A
Callicebus bernhardi Roosmalen, Roosmalen and Mittermeier, 2002	Zogue-zogue	Prince Bernhard's Titi	UFMT 4015		
Callicebus cinerascens (Spix, 1823)	Zogue-zogue	Ashy Black Titi	UFMT 599		
Callicebus miltoni Dalponte, Ennes Silva and Silva-Junior, 2014	Zogue-zogue	Milton's Titi	MPEG 42654 (type of *miltoni* Dalponte et al. 2014)	P/R	P/R

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Callicebus moloch (Hoffmannsegg, 1807)	Zogue-zogue	Red-bellied Titi	MZUSP 11244		
Callicebus vieirai (Gualda-Barros et al. 2012)	Zogue-zogue	Vieira's Titi	MZUSP 34663 (type of *vieirai* Gualda-Barros et al. 2012)	DD	P/R
ATELIDAE Gray, 1825					
Ateles chamek (Humboldt, 1812)	Coatá-de-cara-preta, macaco-aranha	Peruvian Spider Monkey	UFMT 4016	VU A4cd	EN A2cd
Ateles marginatus É. Geoffroy, 1809	Coatá-de-testa-branca, macaco-aranha	White-cheeked Spider Monkey	MPEG 39492	EN A4cd	EN A2cd+3cd
Lagothrix cana (É. Geoffroy in Humboldt, 1812)	Macaco-barrigudo	Gray Wooly Monkey	MPEG 21624	VU A3cd	EN A2cd
Alouatta belzebul (Linnaeus, 1758)	Guariba-de-mãos-ruivas	Red-handed Howler Monkey	Dir. obs. (AP Carmignotto; GST Garbino)	VU	VU A2cd
Alouatta caraya (Humboldt, 1812)	Guariba, bugio-preto, barbado	Black Howler	MZUSP 5891	NT	
Alouatta discolor (Spix, 1823)	Guariba-vermelho	Spix's Red-handed Howler	Pinto & Setz (2000)	VU A4cd	VU A2c
Alouatta puruensis Lönnberg, 1941	Guariba-vermelho	Purús Red Howler	MPEG 19707	NT	P/R
CARNIVORA Bowdich, 1821					
CANIDAE Fischer, 1817					

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Atelocynus microtis (Sclater, 1883)	Cachorro-do-mato-de-orelhas-curtas	Short-eared Dog	MPEG 24586	VU A2c	NT
Cerdocyon thous (Linnaeus, 1766)	Cachorro-do-mato	Crab-eating Fox	MZUSP 6315		
Chrysocyon brachyurus (Illiger, 1815)	Lobo-guará	Maned Wolf	UFMT 485	VU A3c; E	NT
Lycalopex vetulus (Lund, 1842)	Raposa-do-campo, Raposinha	Hoary Fox	UFMT 054	VU A2 +3cd	
Speothos venaticus (Lund, 1842)	Cachorro-vinagre	Bush Dog	MZUSP 35732	VU C1	NT
PROCYONIDAE Gray, 1825					
Procyon cancrivorus (Cuvier, 1798)	Guaxinim, mão-pelada	Crab-eating Raccoon	MZUSP 19846		
Nasua nasua (Linnaeus, 1766)	Quati, quati-mundéu	South American Coati	MZUSP 6313		
Potos flavus (Schreber, 1774)	Jupará, jurupará	Kinkajou	UFMT 3845		
MEPHITIDAE Bonaparte, 1845					
Conepatus amazonicus (Lichtenstein, 1838)	Jaritataca, cangambá	Striped Hog-nosed Skunk	Dalponte et al. (2018)	P/R	P/R
MUSTELIDAE Fischer, 1817					
Eira barbara (Linnaeus, 1758)	Irara, papa-mel	Tayra	MZUSP 6316		
Galictis vittata (Schreber, 1776)	Furão-grande, furão-maior	Greater Grison	UFMT 362		
Lontra longicaudis (Olfers, 1818)	Lontra	Neotropical Otter	UFMT 3846	NT	NT
Pteronura brasiliensis (Gmelin, 1788)	Ariranha	Giant Otter	MZUSP 7021	VU A3cd	EN A3ce
FELIDAE Fischer, 1817					
Herpailurus yagouaroundi (E. Geoffroy, 1803)	Gato-mourisco, jaguarundi	Jaguarundi	MN 3153	VU C1	

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Leopardus braccatus (Cope, 1889)	Gato-palheiro	Pantanal Cat	AMNH 354 (type of *braccatus* Cope 1889)	VU C1[1]	NT[1]
Leopardus emiliae (Thomas, 1914)	Gato-do-mato-pequeno	Eastern Tigrina, Snethlage's Tigrina	MN 25722	P/R	P/R
Leopardus guttulus (Hensel, 1872)	Gato-do-mato-pequeno	Southern Tigrina	MPEG 22193	VU C1	VU C1
Leopardus pardalis (Linnaeus, 1758)	Jaguatirica	Ocelot	MZUSP 7027		
Leopardus wiedii (Schinz, 1821)	Maracajá	Margay	MZUSP 28311	VU C1	NT
Panthera onca (Linnaeus, 1758)	Onça-pintada	Jaguar	MZUSP 22452	VU A2bcd+3cd; C1	NT
Puma concolor (Linnaeus, 1771)	Suçuarana, Onça-parda, puma	Puma	MZUSP 35730	VU C1	
PERISSODACTYLA Owen, 1848					
TAPIRIDAE Gray, 1821					
Tapirus terrestris (Linnaeus, 1758)	Anta	Lowland Tapir, Brazilian Tapir	MZUSP 7006	VU A2bcd+3bcd	VU A2cde+3cde
ARTIODACTYLA Owen, 1848					
TAYASSUIDAE Palmer, 1897					
Pecari tajacu (Linnaeus, 1758)	Cateto, caititu, porco-do-mato	Collared Peccary	MZUSP 7017		
Tayassu pecari (Link, 1795)	Queixada, tajaçu	White-lipped Peccary	MZUSP 20027	VU A2abcde + A3abcde	VU A2bcde+3bcde
CERVIDAE Goldfuss, 1820					
Blastocerus dichotomus (Illiger, 1815)	Cervo-do-pantanal, veado-galheiro	Marsh Deer	MZUSP 6326	VU A4ade	VU A4cde

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Ozotoceros bezoarticus (Linnaeus, 1758)	Veado-campeiro	Pampas Deer	MZUSP 7003	VU A3ce	NT
Mazama americana (Erxleben, 1777)	Veado-mateiro	Red Brocket Deer	MN 60657	DD	DD
Mazama gouazoubira (Fischer, 1814)	Veado-catingueiro	Brown Brocket Deer	MN 5837		
Mazama nemorivaga (Cuvier, 1817)	Veado-roxo, fuboca	Amazonian Brown Brocket Deer	MN 60660	DD	
INIIDAE Gray, 1846					
Inia araguaiaensis Hrbek, Silva, Dutra, Grave, Martin and Farias, 2014	Boto-do-araguaia	Araguaian river Dolphin	MZUSP 7008	P/R	P/R
Inia boliviensis d'Orbigny, 1834	Boto-do-guaporé, iara, uiara	Bolivian river Dolphin	Dir. obs. (AP Carmignotto; MV Brandão)	P/R	P/R
RODENTIA Bowdich, 1821					
SCIURIDAE Fischer, 1817					
Guerlinguetus aestuans (Linnaeus, 1766)	Esquilo, quatipuru	Guianan Squirrel, Quatipuru	MPEG 15272	P/R	P/R
Guerlinguetus brasiliensis (Gmelin, 1788)	Esquilo, quatipuru	Brazilian Squirrel	Vivo & Carmignotto (2015)	P/R	P/R
Hadrosciurus spadiceus (Olfers, 1818)	Esquilo, quatipuru	Southern Amazon Red Squirrel	MZUSP 6338	P/R	P/R
Notosciurus pucheranii (Fitzinger, 1867)	Esquilo, quatipuru	Pucheran's Squirrel	Vivo & Carmignotto (2015)	P/R	P/R
Sciurillus pusillus (É. Geoffroy, 1803)	Esquilo, quatipuru	Neotropical Pygmy Squirrel	Miranda-Ribeiro (1941)	P/R	P/R
CRICETIDAE Fischer, 1817					
Akodon toba Thomas, 1921	Rato-do-chão	Toba Grass Mouse	Santos-Filho et al. (2012)		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Akodon sp. (2n=10)	Rato-do-chão	Mato Grosso Grass Mouse	MZUSP 29671	N/A	N/A
Calomys cf. *callidus* (Thomas, 1916)	Rato-do-chão	Reclusive Laucha	MZUSP APC 1113		
Calomys callosus (Rengger, 1830)	Rato-do-chão	Big Laucha	Almeida et al. (2007)		
Calomys tener (Winge, 1887)	Rato-do-chão	Delicate Laucha	MZUSP 34693		
Calomys tocantinsi Bonvicino, Lima and Almeida, 2003	Rato-do-chão	Tocantins Laucha	MZUSP APC 317		
Cerradomys maracajuensis (Langguth & Bonvicino, 2002)	Rato-do-chão	Maracaju Rice Rat	Percequillo et al. (2008)		
Cerradomys scotti (Langguth and Bonvicino, 2002)	Rato-do-chão	Lindbergh's Rice Rat	MZUSP 34704		
Euryoryzomys emmonsae (Musser, Carleton, Brothers, and Gardner, 1998)	Rato-do-mato	Emmons's Rice Rat	MZUSP APC 312		DD
Euryoryzomys macconnelli (Thomas, 1910)	Rato-do-mato	Macconnell's Rice Rat	MZUSP 29517		
Euryoryzomys nitidus (Thomas, 1884)	Rato-do-mato	Elegant Rice Rat	MZUSP 29518		
Gyldenstolpia planaltensis (Ávila-Pires, 1972)	Rato-do-mato	Fossorial Giant Rat	Bezerra (2011)	EN B2ab(iii,iv)	EN B1ab(iii)
Holochilus chacarius Thomas, 1906	Rato-d'água	Chacoan Marsh Rat	MZUSP 13463		
Hylaeamys megacephalus (Fischer, 1814)	Rato-do-mato	Azara's Broad-headed Rice Rat	MZUSP 29520		
Hylaeamys yunganus (Thomas, 1902)	Rato-do-mato	Amazonian Rice Rat	Musser et al. (1998)		
Kunsia tomentosus (Lichtenstein, 1830)	Rato-do-mato	Woolly Giant Rat	MZUSP 32463	DD	
Neacomys sp.	Rato-espinhoso	N/A	Di-Nizo et al. (2017)	N/A	N/A
Neacomys amoenus Thomas, 1904	Rato-espinhoso	Pleasant Spiny Mouse	UFMT 1666	P/R	P/R
Necromys lasiurus (Lund, 1841)	Rato-do-mato	Hairy-tailed Akodont	MZUSP 34698		
Necromys lenguarum (Thomas, 1898)	Rato-do-mato	Paraguayan Akodont	Pardiñas et al. (2015)	P/R	
Nectomys rattus (Pelzeln, 1883)	Rato-d'água	Amazonian Water Rat	MZUSP 21541		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Neusticomys ferreirai Percequillo, Carmignotto, and Silva, 2005	Rato-d'água	Ferreira's Fish-eating Rat	MZUSP 32092 (type of *ferreirai* Percequillo et al. 2005)		DD
Oecomys bicolor (Tomes, 1860)	Rato-da-árvore	White-Bellied Arboreal Rice Rat	MZUSP 29523		
Oecomys catherinae "northern clade"	Rato-da-árvore	N/A	Suarez-Villota et al. (2018)	N/A	N/A
Oecomys catherinae "western clade"	Rato-da-árvore	N/A	Suarez-Villota et al. (2018)	N/A	N/A
Oecomys catherinae "westernmost clade"	Rato-da-árvore	N/A	Suarez-Villota et al. (2018)	N/A	N/A
Oecomys cleberi Locks, 1981	Rato-da-árvore	Cleber's Arboreal Rice Rat	MZUSP 35534		DD
Oecomys fransciscorum Pardiñas, Teta, Salazar-Bravo, Myers, and Galliari, 2016	Rato-da-árvore	Francisco's Arboreal Rice Rat	MZUSP 35540	P/R	P/R
Oecomys mamorae (Thomas, 1906)	Rato-da-árvore	Mamoré Arboreal Rice Rat	Suarez-Villota et al. (2018)	P/R	P/R
Oecomys paricola (Thomas, 1904)	Rato-da-árvore	Brazilian Arboreal Rice Rat	MZUSP 29530		DD
Oecomys roberti (Thomas, 1904)	Rato-da-árvore	Robert's Arboreal Rice Rat	MZUSP 35547		
Oligoryzomys chacoensis (Myers and Carleton, 1981)	Rato-do-mato	Chacoan Colilargo	UFMT 219		
Oligoryzomys mattogrossae (J. A. Allen, 1916)	Rato-do-mato	Mato Grosso Colilargo	MZUSP 29535	P/R	P/R
Oligoryzomys microtis (J. A. Allen, 1916)	Rato-do-mato	Small-Eared Colilargo	MZUSP 29534		
Oligoryzomys utiaritensis (J. A. Allen, 1916)	Rato-do-mato	Utiariti Colilargo	Agrellos et al. (2012)		P/R
Oxymycterus amazonicus Hershkovitz, 1994	Rato-do-brejo	Amazonian Hocicudo	MZUSP 35162		
Oxymycterus delator Thomas, 1903	Rato-do-brejo	Paraguayan Hocicudo	UNB 794		
Pseudoryzomys simplex (Winge, 1887)	Rato-do-mato	Brazilian False Rice Rat	MZUSP 29536		
Rhagomys sp.	N/A	N/A	Percequillo et al. (2011)	N/A	N/A

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Rhipidomys emiliae (J. A. Allen, 1916)	Rato-da-árvore	Eastern Amazon Climbing Mouse	MZUSP 29522	DD	
Rhipidomys leucodactylus (Tschudi, 1845)	Rato-da-árvore	White-footed Climbing Mouse	Costa et al. (2011)		
Thalpomys cerradensis Hershkovitz, 1990	Rato-do-mato	Cerrado Mouse	Pine et al. (1970)	VU A2c+A3c	
CUNICULIDAE G. S. Miller and Gidley, 1918					
Cuniculus paca (Linnaeus, 1766)	Paca	Spotted Paca	UFMT 467		
DASYPROCTIDAE Bonaparte, 1838					
Dasyprocta azarae Lichtenstein, 1823	Cotia	Azara's Agouti	MZUSP 6336		DD
Dasyprocta fuliginosa Wagler, 1832	Cotia	Black Agouti	Patton & Emmons (2015)		
ERETHIZONTIDAE Bonaparte, 1845					
Coendou cf. *nycthemera* (Olfers, 1818)	Ouriço-cacheiro	Eastern Amazonian Dwarf Porcupine	CZAF MA 10		DD
Coendou prehensilis (Linnaeus, 1758)	Ouriço-cacheiro	Brazilian Porcupine	UFMT 116		
CTENOMYIDAE Lesson, 1842					
Ctenomys rondoni Miranda- Ribeiro, 1914	Tuco-tuco	Rondon's Tuco- tuco	Bidau (2015)	P/R	P/R
Ctenomys nattereri Wagner, 1848	Tuco-tuco	Natterer's Tuco-Tuco	Gardner et al. (2014)	DD	P/R
CAVIIDAE Fischer, 1817					
Cavia aperea Erxleben, 1777	Preá	Brazilian Guinea Pig	MZUSP 6344		
Galea cf. *spixii* (Wagler, 1831)	Preá	Spix's Yellow-toothed Cavy	MN 42699		
Hydrochoerus hydrochaeris (Linnaeus, 1766)	Capivara	Capybara	UFMT 12		
ECHIMYIDAE Gray, 1825					
Carterodon sulcidens (Lund, 1841)	Rato-do-mato	Owl's Spiny Rat	MZUSP 34767	DD	DD
Clyomys laticeps (Thomas, 1909)	Rato-de-espinho	Broad-headed Spiny-rat	MZUSP 34695		

(Table 1 cont.)

TAXON	COMMON NAME		RECORD	CONSERVATION STATUS	
	PORTUGUESE	ENGLISH		BRAZIL	IUCN
Dactylomys dactylinus (Desmarest, 1817)	Rato-do-Bambu	Amazon Bamboo Rat	Rocha et al. (2012)		
Isothrix bistriata Wagner, 1845	Rato-coró	Yellow-crowned Brush-tailed Rat	UFMT 3525		
Makalata didelphoides (Desmarest, 1817)	Rato-coró	Red-nosed Armored Tree-rat	MN 6152		
Mesomys hispidus (Desmarest, 1817)	Rato-de-espinho	Ferreira's Spiny Tree-rat	UFMT 3523		
Proechimys gr. *goeldii* Thomas, 1905	Rato-de-espinho	Goeldi's Spiny-rat	MZUSP 31924		
Proechimys roberti Thomas, 1901	Rato-de-espinho	Robert's Spiny-rat	MZUSP 31946		
Proechimys longicaudatus (Rengger, 1830)	Rato-de-espinho	Long-tailed Spiny-rat	MZUSP 31939		
Thrichomys pachyurus (Wagner, 1845)	Punaré, rabudo, rato-boiadeiro	Paraguayan Punaré	MZUSP 6353		
LAGOMORPHA Brandt, 1855					
LEPORIDAE Fischer, 1817					
Sylvilagus minensis Thomas, 1901	Tapiti, coelho-do-mato	Tapeti, Brazilian Cottontail	MZUSP 6716	P/R	P/R

[1]Classified as *Leopardus colocolo* (Molina, 1782).

on the provenance of several specimens was lost (Vanzolini 2004).

Another important but less known naturalist was Joseph Barbosa de Sáa (?–1775), who wrote a book entitled "*Dialogos geograficos, chronologicos, politicos, e naturaes*" in 1769, that never came to be entirely published. Among many animals, Sáa mentioned small mammals, such as the Brazilian guinea pig (*Cavia* sp.), the water opossum (*Chironectes minimus*), the tapeti (*Sylvilagus minensis*), and several medium and large-sized mammals: the tapir (*Tapirus terrestris*), brocket deer (*Mazama* sp.), the giant armadillo (*Priodontes maximus*), titi monkey (*Callicebus* sp.), and perhaps the first mention of the southern three-banded armadillo *Tolypeutes matacus* (Papavero et al. 2009).

The mammals recorded in this period were mostly represented by medium and large-sized species such as monkeys, sloths, armadillos, anteaters, cats, dogs, mustelids, procyonids, deers, peccaries, and large rodents (see table 2 in Hershkovitz 1987).

First half of XIX century (1809–1850)

Fearful of rebellious ideas, the Portuguese Empire maintained an isolationist policy that drove the country into a scientific obscurantism during the colonial period. Even renowned naturalists, such as Alexander von Humboldt, had their entry denied in the Brazilian territory (Papavero 1971). This situation changed in the early XIX century with the fleeing of the Portuguese court to Brazil, triggered by Napoleon's invasion of Portugal. Upon arriving, prince D. João VI signed a decree declaring the Brazilian ports open to the allied nations, allowing the arrival of many naturalists in Brazil.

In the context of this paper, the most relevant expeditions during this time were those led by Georg Heinrich von Langsdorff, Johann Natterer, and François Louis Nompar de Caumont La Force, comte de Castelnau. These undertakings contributed to the knowledge about the mammal fauna of Mato Grosso by providing scientific specimens, paintings and illustrations, and detailed descriptions on species habitats, natural history, morphology and behavior (Pelzeln 1883; Florence 1977; Vanzolini 1996).

Georg Heinrich von Langsdorff (1774–1852) was the consul of Russia in Brazil when he headed the fluvial expedition that passed through Cuiabá, Mato Grosso, where the group stayed for ten months. Among his select team, the illustrators Hercules Florence and Aimé-Adrien Taunay (who drowned in the Rio Mamoré) provided important contributions to the knowledge of Mato Grosso mammals (Florence 1977; Vanzolini 2004).

Johann Natterer (1787–1843) is commonly considered the most prolific collector in Brazil during the XIX century. In eighteen years (1817–1835) Natterer's expeditions collected an impressive number of 1 179 mammal specimens from practically every Brazilian ecosystem (Pelzeln 1883; Vanzolini 1996).

In Mato Grosso, Natterer explored Caiçara (4 km west of Cáceres), Villa Maria (near Cáceres), Cuiabá, Engenho do Capitão Gama (near Vila Bela da Santíssima Trindade, the first state capital), Jacobina (south of Cáceres), Campo do Marco (near Rio Jauru), and Mato Grosso (= Vila Bela da Santíssima Trindade). Natterer died shortly after returning to Vienna, and most of the mammals collected by him were described by Wagner (1842; 1843) and compiled in more detail by Pelzeln (1883). From the lists presented by Wagner (1842; 1843) and Pelzeln (1883) and considering the current usage of taxonomic nomenclature (see Wilson & Reeder 2005; Gardner 2008a; Patton et al. 2015), up to 69 mammal species were recorded in Mato Grosso (see **Table** S1). Nineteen nominal taxa of bats, three marsupials, three rodents, one primate and one armadillo have type localities in Mato Grosso. Among these, some represent valid species (see **Table** S1).

The French naturalist Francis de Castelnau (1810–1880) also traveled in the southwestern portion of Mato Grosso in Cuiabá, Cáceres and Vila Bela da Santíssima Trindade. The zoologist of the expedition, Émile Deville (1824–1853), together with Isidore Geoffroy Saint-Hilaire (1805–1861), described the new monkeys, rodents and cetaceans collected in this region (e.g.,Geoffroy Saint-Hilaire & Deville 1848).

Second half of the XIX century (1880–1900)

During the first half of the XIX century, most of the naturalists who collected mammals in Mato Grosso were of Germanic or French origin, but after this period, England and the USA were more influent in Brazil (Papavero 1971). In the end of 1881, the Museu Nacional (MN) in Rio de Janeiro hired the American naturalist Herbert Huntingdon Smith (1851–1919). The expedition led by Smith, known as the "Naturalist Exploring Expedition", began in the state of Rio Grande do Sul, southern Brazil, and reached Cuiabá, in Mato Grosso. Smith had to send three to four specimens per species to the MN, and could keep the additional specimens

elsewhere. The number of collected mammal specimens sent by Smith to the Philadelphia Academy of Sciences, and to the American Museum of Natural History (AMNH), New York, was around 450. Most of this material was collected in the state of Mato Grosso, where Smith lived for four years (1882–1886). However, there is no information left about the few specimens that stayed in Brazil, most likely due to the lack of proper conditions to preserve the material at the MN during that period (Kunzler et al. 2011). Fortunately, part of the specimens from Chapada dos Guimarães, Mato Grosso, were studied by Edward D. Cope (1889), who recorded 44 species of mammals in the area, and described four new species (**Table** S2). Although most named species are currently treated as synonyms with few valid taxa, such as the Pantanal cat *Leopardus braccatus*, several nominal taxa are based on this material, such as a subspecies of collared peccary, *Pecari tajacu angulatus* (Cope 1889), and kinkajou, *Potos flavus chapadensis* (Allen 1914). Other authors have also studied and published on mammals collected by Smith in Mato Grosso (e.g., Rehn 1901).

Subsequently, British mammalogist Michael Rogers Oldfield Thomas (1858–1929) also described the mammal fauna of Chapada dos Guimarães based on specimens collected by Alphonse Robert in the Percy Sladen Expedition to Central Brazil (1902). In Thomas' article about the mammals of Chapada dos Guimarães, a total of 35 species were recorded (Thomas 1904; list in **Table** S3). In the same study, Thomas described four new small mammals, from which three are valid today (*Marmosa constantiae*, *Neacomys amoenus* and *Oecomys roberti*) (see Gardner 2008a; Patton et al. 2015; Hurtado & Pacheco 2017; Lima-Silva et al. 2019); as well as a new porcupine, *Coendou centralis* (= *Coendou prehensilis*); a new canid, *Canis sladeni* (= *Lycalopex vetulus*), and a new rabbit, *Sylvilagus minensis chapadae* (= *Sylvilagus minensis*, considered a junior synonym of *S. brasiliensis* for a long time, but currently a valid species: see Lagomorpha section). Thomas also provided the first record of the bush dog, *Speothos venaticus*, for the state. Studying the same material, Dollman (1909) described a new night monkey, *Aotus roberti* (= *Aotus azarae infulatus*).

From 1910 to the present

During the previous periods, exploration of the state of Mato Grosso was mostly restricted to its southwestern portion, in areas of the Cerrado and Pantanal biomes. The difficulty to travel terrestrially through the Amazon region of Mato Grosso, or to the headwaters of the Aripuanã, Juruena, Teles Pires and Xingu rivers, among others, was due to the presence of unfriendly native tribes, tropical diseases, and the thick jungle present in that yet sparsely-populated area (Sick 1997). Rivers have been the main mean of transportation in the Amazon portion of Mato Grosso until the beginning of XX century. In 1891, the Building Committee of the Telegraph Line was created in Brazil to connect the states of Goiás and Mato Grosso. Between 1898 and 1906, this committee was led by the then Colonel Cândido Mariano da Silva Rondon (1865–1958), who was responsible for the construction of this telegraph line between Cuiabá, Mato Grosso, and Corumbá, currently in the state of Mato Grosso do Sul (Bigio 1996; Maciel 1998). Another expedition under the leadership of Rondon was later conducted from the state of Mato Grosso to the state of Amazonas. In 1913, Theodore Roosevelt, former president of the USA (1901–1908), joined the Rondon Commission in what became known as the Roosevelt-Rondon Expedition (Sá et al. 2008). One of the aims of this expedition was to map the northwestern region of Mato Grosso, especially the still uncharted path of the Rio da Dúvida (=River of Doubt), which was later renamed Rio Roosevelt.

Among the members of this expedition were two zoologists: George Cherrie and Leo E. Miller (1887–1952). Miller's field notes were essential for describing part of the mammal specimens from this expedition, most of which are now deposited in the AMNH and were studied by Joel Asaph Allen (1838–1921) (Allen 1914, Allen 1916a, 1916b). The Brazilian Alípio de Miranda-Ribeiro (1874–1939), from the MN, also published about the material collected in Mato Grosso by the Roosevelt-Rondon Expedition and during the telegraphic lines construction, in which Miranda-Ribeiro participated, from 1908 to 1909 (Miranda-Ribeiro 1914; Pombal Jr. 2002). Although many of the names given to new species described by Allen and Miranda-Ribeiro are now considered junior synonyms, these authors provided important contributions from the poorly known northwestern Mato Grosso. Moreover, some of the specimens collected in the Roosevelt-Rondon Expedition were recognized as new taxa more than 50 years after they were collected, such as *Mico marcai* (Alperin 1993), and others were recently revalidated, such as *Oligoryzomys utiaritensis* and *O. mattogrossae* (Agrellos et al. 2012; Weksler et al. 2017).

Frederic W. Miller described the mammals collected in two expeditions (1925–1926 and 1928) of

the Colorado Museum of Natural History to a region close to Descalvados, southern Mato Grosso, in a huge cattle farm of American and British ownership. Among other contributions on the mammalian fauna of Mato Grosso, Miller gave a new name to the jaguar, *Felis ramsayi* [= *Panthera onca palustris* (Ameghino, 1888)] and mentioned that *Ozotoceros bezoarticus* was "by far the most abundant and typical game mammal in the chapadão" (Miller 1930: 20).

In 1930, Carlos Octaviano da Cunha Vieira (1897–1958) became the curator of the mammal collection at the Departamento de Zoologia da Secretaria de Agricultura de São Paulo, which would become the Museu de Zoologia da Universidade de São Paulo (MZUSP). During his curatorial period (1930–1958), the number of specimens in the collection rose from about 2 000 to more than 15 000. Hired naturalists of the museum were responsible for obtaining specimens from Mato Grosso: Ernst Garbe collected in Cáceres in 1917, and José L. Lima and Walter Garbe collected in Cuiabá, Rio Cristalino, Rio das Mortes, Santo Antônio de Leverger and other localities in Mato Grosso in the same period (Pinto 1945). Vieira (1945) published on the mammals from the surroundings of Cuiabá and described a collection from Serra do Roncador (Vieira 1951). In his monograph on Brazilian bats, Vieira (1942) described a molossid from the banks of Rio Juruena, the currently valid species *Neoplatymops mattogrossensis*. From his checklist of Brazilian mammals, 141 species are listed for Mato Grosso, but these also refer to species from what is nowadays the state of Mato Grosso do Sul.

Aspects of hunting in the Pantanal of Mato Grosso were documented by Aguirre (1945), who listed the game species and discussed the impacts of the commercial exploitation of wildlife skins in the region: 300 862 animal skins, mostly mammals, were exported from Corumbá, Mato Grosso do Sul between 1937 and 1939. In this period, some information regarding game mammals from Mato Grosso were published in non-academic books about hunting (e.g., Vinhaes 1937; Barros-Junior 1947; Siemel 1953).

Decades later, the Royal Society and the Royal Geographical Society of London, in collaboration with the National Museum of Natural History (USNM) and Instituto Evandro Chagas of Brazil, conducted a multidisciplinary field study during the construction of a road connecting Xavantina (today Nova Xavantina), in eastern Mato Grosso, to the Fazenda Suiá Missú, located at Serra do Cachimbo (state of Pará). This became known as the Xavantina-Cachimbo expedition (1967–1969) (Ratter et al. 1973; Bishop 1974). The base camp of this expedition was situated 260 kilometers north of Xavantina, near Serra do Roncador in northeastern Mato Grosso. This is a relevant area from a botanical and zoological perspective, since it represents a transitional region between the Cerrado and the Amazon (Ratter et al. 1973; Bishop 1974; Ivanauskas et al. 2008). Members of this expedition published the main results concerning the mammal fauna (Pine et al. 1970; Bishop 1974), but other records based on the collected material were published later on (e.g., Bezerra 2011).

A less expressive period in terms of publication of inventories of mammalian fauna of Mato Grosso began in the 1980s. Most additional species records came from isolated publications, not contemplating the whole mammal community of a given area (e.g., Myers & Carleton 1981; Becker 1981; Carleton & Musser 1989; Hershkovitz 1992; Musser et al. 1998; Silva & Yonenaga-Yassuda 1998; Percequillo et al. 2005; 2008; 2011; Santos-Filho et al. 2007; Aragona & Marinho-Filho 2009; Rossi et al. 2010a; Miranda et al. 2011; 2012; Semedo et al. 2011; 2013; Silva & Rossi 2011; Brandão & Nascimento 2015; Garbino et al. 2015; Brandão et al. 2015a;b; 2016; Barbosa et al. 2016; Semedo & Feijó 2016; Suarez-Villota et al. 2018). Some of these new records, however, are based on material housed in scientific collections, especially from UFMT and MZUSP collections, which received precious material from poorly surveyed areas in Mato Grosso in 1983–1984 ("Projeto de Desenvolvimento Integrado do Noroeste do Brasil – Pólo Noroeste) and 1997–1998 ("Diagnóstico Sócio-Econômico Ecológico do Mato Grosso" – SEPLAN 2002).

Species List

We identified 268 mammal species from Mato Grosso (**Table** 1), classified in the following orders: Didelphimorphia (31), Pilosa (5), Cingulata (9), Chiroptera (99), Primates (25), Carnivora (21), Perissodactyla (1), Artiodactyla (9), Rodentia (68), and Lagomorpha (1) (**Fig.** S1). The most speciose families are those represented by small mammals, with Phyllostomidae bats presenting 63 species, followed by Cricetidae rodents (42 species) and Didelphidae marsupials (31 species), while most of the other families have less than 11 species recorded in the state (**Fig.** S2).

Didelphimorphia

A total of 13 genera and 31 species of marsupials occur in Mato Grosso (**Table** 1), which makes it by far the richest Brazilian state in didelphid species, surpassing São Paulo (22 species), Mato Grosso do

Sul (17), Amapá (15), and Rio de Janeiro (14), for example (Rocha et al. 2004; Cáceres et al. 2008; Vivo et al. 2011; Silva et al. 2013; Tomas et al. 2017). The state of Mato Grosso also presents a high number of didelphid species when compared to other countries, such as Argentina (26 species) and French Guiana (15 species), or to other biogeographic regions, such as the Guiana Shield (25 species) (Lim et al. 2005; Flores 2006; Pavan et al. 2012; Voss et al. 2013b; Catzeflis 2017; Rossi et al. 2017). The only South American countries with higher marsupial diversity are Peru, with 41 species (Pacheco et al. 2009; Solari et al. 2012), and Bolivia, with 36 species (Salazar-Bravo et al. 2003; Voss et al. 2004; 2012; Martínez-Lanfranco et al. 2014; Voss et al. 2018). Among the species recorded in Mato Grosso, *Cryptonanus agricolai*, *C. chacoensis, C. unduaviensis*, *Didelphis albiventris*, *Gracilinanus agilis*, *Monodelphis domestica, M. kunsi*, *Monodelphis* cf. *sanctarosae* and *Thylamys karimii* are strongly associated to open areas (Carmignotto et al. 2012; Voss et al. 2012), whereas species of *Caluromys*, *Caluromysiops, Chironectes*, *Glironia*, *Marmosa*, *Marmosops*, *Metachirus* and *Philander* are related to the presence of forested habitats, as well as the species *Didelphis marsupialis, Gracilinanus emiliae*, *G. peruanus*, *Monodelphis emiliae*, *M. glirina* and *M. saci*, which are strongly associated to the Amazon forest present in the state (Pavan et al. 2014; Pavan & Voss 2016; Brandão et al. 2014; 2015a; Semedo et al. 2015; Voss et al. 2018).

There are 16 genera and 64 species of marsupials in Brazil (Rossi et al. 2012; Voss et al. 2014b; Semedo et al. 2015; Pavan 2015; Pavan et al. 2017; Voss et al. 2018; Bezerra et al. 2019; Lima-Silva et al. 2019; Pavan 2019) and the number of species will probably increase as taxonomic revisions are carried out. The marsupial fauna of Mato Grosso possibly includes more than 31 species, as many genera are in need of revision (e.g., *Caluromys*, *Chironectes*, *Cryptonanus*, *Gracilinanus*, *Marmosa* (*Micoureus*) and *Metachirus* [Costa 2003; Voss & Jansa 2009; Fonseca & Astúa 2015; Semedo et al. 2015; Damasceno & Astúa 2016]). In fact, for *Cryptonanus agricolai* and *C. chacoensis*, studies of genetic variability have shown that these taxa may represent a complex of cryptic species (Fegies 2014).

Several didelphid species are herein recorded for the first time in the state (*Cryptonanus agricolai* and *C. unduaviensis*, *Gracilinanus emiliae*, *Marmosa lepida*, *Marmosa macrotarsus*, *Marmosops pinheiroi* and *Monodelphis* cf. *sanctarosae*), and others have been recently resurrected from synonyms (*Gracilinanus peruanus*, *Philander canus* and *Metachirus myosuros* [see Semedo et al. 2015; Voss et al. 2018; 2019]) or have been recently described (*Monodelphis saci*, see Pavan et al. 2017).

Finally, several records included in this report come from recently reported range extensions (*Caluromysiops irrupta, Chironectes minimus*, *Glironia venusta* and *Marmosops ocellatus* [Rossi et al. 2010a; Semedo et al. 2013; Brandão et al. 2015a;b; Barbosa et al. 2016]).

Pilosa

Pilosa diversity in Mato Grosso is represented by five species, including all extant genera and families in this order (**Table** 1). This represents 33% of the species of Vermilingua (anteaters) and 40% of Folivora (sloths) from Brazil. Despite the absence of a vouchered specimen of *Bradypus variegatus* from the state (see Moraes-Barros et al. 2010), this species was recorded based on a photographed animal crossing a road between two forest patches at Querência (12°11'S; 52°38'W) (**Fig.** S3). We also did not find any voucher specimen of *Cyclopes* from Mato Grosso in scientific collections or in literature, but we retrieved a picture of an individual from Paranaíta (9°39'S 56°28'W) (**Fig.** S4). We were unable to identify the species using this picture because the diagnostic traits (see Miranda et al. 2017) are not visible. The occurrence of *Cyclopes rufus* in Rondônia is very close to western Mato Grosso, but *Cyclopes didactylus*, *Cyclopes ida*, and *Cyclopes xinguensis* might also be expected given their presence to the north, in the states of Amazonas and Pará (Miranda et al. 2017).

Most of the Pilosa fauna of Mato Grosso is represented by arboreal forest dwellers, such as *Bradypus variegatus*, *Choloepus hoffmanni* and *Cyclopes* sp. While *C. hoffmanni* and most *Cyclopes* species are endemic to the Amazon, *B. variegatus* and *Cyclopes didactylus* presents a disjunct distribution in the Amazon and Atlantic Forest, which is an evidence of ancient connection between these two humid forests (Vivo 1997; Feijó & Langguth 2013). The other two anteater species, *Myrmecophaga tridactyla* and *Tamandua tetradactyla*, are widespread in Brazil, inhabiting both forested and open habitats (Gardner 2008b).

Similarly to other groups of medium and large mammals, the taxonomy of the order Pilosa remained largely stable in the last century. Most studies focused on ecological aspects, but even basic natural history data are still poorly known for most taxa. Recent unpublished dissertations and theses have unveiled a higher genetic and morphological diversity than previously known (e.g., Ohana 2011;

Silva 2013; Clozato 2014). For example, the recent taxonomic revision of the genus *Cyclopes* revealed an impressive diversity of seven species, previously masked in a widely distributed polytypic taxon (Miranda et al. 2017). Therefore, it is very likely that, in the next years, more changes in the taxonomy of this order will occur.

Cingulata

All genera of armadillos known from Brazil (Paglia et al. 2012) occur in the state of Mato Grosso, comprising nine species (**Table** 1). The armadillos of Mato Grosso can be divided into three distinct groups based on their habitat selectivity (Anacleto et al. 2006): forest dwellers (*Cabassous unicinctus* and *Dasypus beniensis*), open-area dwellers (*Tolypeutes matacus*), and habitat generalists (*C. squamicaudis*, *C. tatouay*, *D. novemcinctus*, *D. septemcinctus*, *Euphractus sexcinctus* and *Priodontes maximus*).

Cabassous unicinctus has been traditionally treated as a polytypic species represented by two subspecies, *C. unicinctus unicinctus* and *C. unicinctus squamicaudis* (Wetzel 1980; Wetzel et al. 2008). The former is considered a forest dweller, occurring mainly in the Amazon forest. Recently, Anacleto et al. (2013) published the first record of this subspecies in a Cerrado area (near the Amazon) in Mato Grosso, but the animal was recorded using a forest corridor along the Rio Verde, which may explain its occurrence in the Cerrado. On the other hand, *C. u. squamicaudis* has a wider distribution, with records in Amazon and Cerrado areas. These two taxa occur in closely contiguous areas south of the Amazonas river (Pará and Mato Grosso states) with no evidence of potentially interbreeding individuals, which suggests reproductive isolation. Feijó & Langguth (2013) recognized these two subspecies as morphologically distinct and treated them as full species. We provisionally follow their work here, but further studies using both morphological and molecular data are yet needed for the genus.

The occurrence of *Cabassous chacoensis* in Brazil is controversial. This species was described by Wetzel (1980) and the only putative specimen from Brazil (MACN 4.388) was obtained from the Buenos Aires Zoo in 1904. Despite its label containing just "Brasil", Yepes (1935) referred to it as from Mato Grosso, information followed by Wetzel in his description. Later, (Wetzel et al. 2008) did not recognize its occurrence in Brazil, with no further explanation. This species is poorly known, with just few records limited to the Gran Chaco of southeastern Bolivia, northern Argentina and western Paraguay (Wetzel 1980; Wetzel et al. 2008). The vegetation within the range of this species is predominantly xeric and similar to that covering the Chaco and Chiquitano Dry Forest in southwestern Brazil (Vasconcelos & Hoffmann 2006; Alves & Sartori 2009), with no evident geographic barriers between them. Therefore, whether this species has already occurred and was extirpated or simply never occurred in Brazil remains open. Thus, we did not include *C. chacoensis* in Mato Grosso checklist until reliable evidence becomes available.

Recently, Feijó & Cordeiro-Estrela (2016) revised the taxonomy of *Dasypus* and split *D. kappleri* into three species: *D. beniensis*, *D. pastasae* and *D. kappleri*, with the first occurring in Mato Grosso. *Dasypus beniensis* occurs on the right bank of the lower Amazonas and Madeira rivers in the states of Pará, Rondônia and Mato Grosso, in Brazil. The records of Mato Grosso are from Rio Teles Pires, Nova Canaã do Norte and Rio Manso, Chapada dos Guimarães (Feijó & Cordeiro-Estrela 2016; Feijó et al. 2018).

In Mato Grosso, *Tolypeutes matacus* is the least known armadillo (Feijó et al. 2015a). This species occurs primarily in the dry forests of South America, including Argentina, Paraguay, Bolivia, and western Brazil, where it is known from just five localities, three of them in the state of Mato Grosso (Feijó et al. 2015a; Attias et al. 2016). These few records from the last century suggest that this species could be locally extinct from many areas in its Brazilian original distribution. Alternatively, the scarcity of records could be partially related to the paucity of studies focusing on armadillos in the Pantanal area of Mato Grosso. Future research might uncover new populations in this state, as it occurred in Mato Grosso do Sul (Porfirio et al. 2014; Attias et al. 2016).

Chiroptera

Chiroptera is the most diverse mammal order in the state of Mato Grosso (**Fig.** S1), comprising 99 species arranged into 52 genera and eight families (**Table** 1). It represents 55% of species diversity and 75% of genera diversity of Chiroptera from Brazil (Nogueira et al. 2014). The most diverse family in Mato Grosso is Phyllostomidae (63 species), followed by Molossidae (11 species), Vespertilionidae (10 species), Emballonuridae (7 species), Mormoopidae (3 species), Noctilionidae (2 species), Thyropteridae (2 species), and Natalidae (1 species) (**Fig.** S2).

Seven species were cited for Mato Grosso by Bernard et al. (2011a) but are not included here: *Carollia castanea, Cormura brevirostris, Cynomops*

paranus, Micronycteris minuta, *Molossus pretiosus*, *Myotis albescens*, and *Pteronotus parnellii*. We did not include these species either because the records were not based on voucher specimens from Mato Grosso (few records are from Mato Grosso do Sul– see references in Bernard et al. 2011a), or the names have been recently synonymized (e.g. *Cynomops paranus* as a junior synonym of *C. planirostris* according to Moras et al. 2016).

We have also critically reviewed previous records of *Chiroderma salvini* (Rocha et al. 2016), *Eptesicus andinus* (Pine et al. 1970), *Micronycteris sanborni* (Louzada et al. 2015), *Peropteryx trinitatis* (Santos et al. 2016), and *Vampyressa pusilla* (Lima et al. 2016), and do not consider their presence in the state. One of the characters that Rocha et al. (2016) used to diagnose *C. salvini* is the convergence of the first pair of upper incisors. This character, however, is also present in some specimens of *C. villosum* (see Taddei & Reis 1980). Moreover, the specimen from Mato Grosso mentioned by Rocha et al. (2016) has a bifid noseleaf tip, exclusive to *C. villosum*. Ongoing taxonomic revision of the genus carried out by one of the authors (G. S. T. Garbino), including a large sample of both *C. villosum* and *C. salvini*, has shown that specimens of *C. salvini* from Mato Grosso and Rondônia fall within the variation of *C. villosum* for both qualitative and quantitative characters. We therefore contend that there are no reliable records of *C. salvini* in Brazil.

The only mention of *Eptesicus andinus* in Mato Grosso is from Pine et al. (1970), but these authors did not provide voucher numbers or any additional information to support their identification. Likewise, Lima et al. (2016) reported *Vampyressa pusilla* from the vicinities of Chapada dos Guimarães in Mato Grosso. However, a careful inspection of the cranium is needed to properly ascertain the specimen identity (see Gardner 2008a). As the record of *V. pusilla* was not vouchered (C.S. Lima pers. comm.), we cannot ascertain the taxonomic identity of the specimens cited in their report. The geographically closest record of *V. pusilla* is from the central region of Mato Grosso do Sul (Longo et al. 2007).

Louzada et al. (2015) reported the first record of *Micronycteris sanborni* from Mato Grosso based on two specimens collected at Sesc Serra Azul. However, the diagnostic traits used to identify these specimens are either shared by *Micronycteris yatesi* or exhibit intraspecific variation (see Siles et al. 2013; Feijó et al. 2015a;b). In fact, the ventral fur coloration of one specimen is pale buff (Louzada et al. 2015: fig. 7), a pattern similar to *M. yatesi* and distinct from the pure white of *M. sanborni* (Feijó et al. 2015b). In a similar way, *Peropteryx trinitatis* was recently reported for Mato Grosso (Santos et al. 2016), but its identification was based on few morphological characters that show intrapopulational variation and are shared with *Peropteryx macrotis*, as pointed out by Feijó & Rocha (2017). For these reasons, we do not include *M. sanborni* and *P. trinitatis* in our checklist. Instead, we list the record from Louzada et al. (2015) as *Micronycteris* (*Schizonycteris*) sp. because it refers to the only record of a pale-venter *Micronycteris* species (see Porter et al. 2007). The identity of the pale-venter specimens occurring in Mato Grosso awaits further studies.

The systematics, distribution, and ecology of *Choeroniscus* are still poorly known (Simmons & Voss 1998; Griffiths & Gardner 2008). The most recent checklist of Brazilian bats lists only *C. minor* for the country (Nogueira et al. 2014), although dubious records of *C. godmani* have been reported (Presley et al. 2008, see discussion in Nogueira et al. 2014). In Mato Grosso, we found two morphotypes of *Choeroniscus*, one assigned to *C. minor* (MZUSP 35006) and another with distinct external and cranial traits that do not match the diagnostic characters of *C. minor*, here identified as *Choeroniscus* cf. *godmani* (MZUSP PEV 0734/735). Therefore, at least two species of the genus are present in Mato Grosso, representing an additional species to Brazil (considering that there are no reliable records of *C. godmani* for the country). Further studies are needed to clarify the taxonomy of this genus, delimiting its species and their geographic distribution.

Despite the remarkable diversity of bats reported here, Mato Grosso still stands out as one of the Brazilian states with the fewest sampling localities for bats, with records concentrated mostly in the southern and eastern portions of the state (see Bernard et al. 2011b). This scenario, along with an increasing rate of new records for the state (e.g., Louzada et al. 2015; Brandão et al. 2016; Semedo & Feijó 2016; Pedroso et al. 2018), indicates an even higher diversity, especially in the central area, an ecotone between Cerrado and Amazon.

Primates

All families and subfamilies of Neotropical monkeys occur in the state of Mato Grosso, comprising 10 genera and 25 species (see **Table** 1): nine (36%) Cebidae, nine (36%) Pitheciidae, and seven (28%) Atelidae. This richness encompasses 53% of the genera and 21% of the Brazilian species (Paglia et al. 2012). The most speciose primate genus in Mato

Grosso is *Callicebus*, with six species, including the recently described *C. grovesi* (Boubli et al. 2019). *Callicebus pallescens*, which occurs in northwestern Mato Grosso do Sul and adjacent areas in Bolivia and Paraguay, may also occur in southwestern Mato Grosso, but the Rio Paraguai may be a geographic barrier to its dispersal northwards (Hershkovitz 1990).

We can find four genera in the Amazon basin of Mato Grosso that have recently colonized Central America, i.e. *Ateles, Cebus* (*Cebus*), *Saimiri* and *Saguinus* (Rosenberger et al. 2009); three genera endemic to the Amazon basin, i.e. *Lagothrix*, *Pithecia* and *Chiropotes*; and widespread genera that successfully colonized drier, more seasonal ecosystems in South America, i.e. *Alouatta, Aotus*, *Callicebus* and *Cebus* (*Sapajus*) (Lynch-Alfaro et al. 2015). The Amazonian genus *Mico* represents a special case, as only one of the 14 species, *Mico melanurus*, is widespread in drier, seasonal habitats (Vivo 1991).

The Cerrado and Pantanal areas of the state are within the range of *Alouatta caraya*, the most widespread species of this genus (Gregorin 2006). The same habitats are occupied by *Cebus cay*, *Mico melanurus* and *Aotus azarae azarae*. In Brazil, the southernmost record of *Mico melanurus* is in the Urucum range, a forested area in the Pantanal biome, in the northwestern portion of Mato Grosso do Sul. This species also occurs in south and southwestern Mato Grosso and in the headwaters of Amazonian rivers, such as the Sucunduri, in southern Amazonas, close to the border with Mato Grosso (Vivo 1991; Noronha et al. 2008). As mentioned before, the southwestern portion of the state was the most intensively sampled along the years, and for this reason, these four species of primates were recorded early on in the state (Geoffroy Saint-Hilaire 1812; Pelzeln 1883; Thomas 1904; Miranda-Ribeiro 1914).

The Amazonian component of Mato Grosso primate fauna has two distinct elements that are congruent with two of the centers of vertebrate endemism in the Amazon: the Rondônia and Xingu areas (Cracraft 1985; Ribas et al. 2012; Lynch-Alfaro et al. 2015). To the west, elements from the Rondônia endemism center, such as *Callicebus bernhardi*, *C. cinerascens* and *Saimiri ustus*, are evident. *Alouatta puruensis* (from the "*seniculus*" group) and *Ateles chamek* are restricted to the northern and northwestern portion of the state, although the former reaches as far south as the Rio Jaurú (Miranda-Ribeiro 1914; Gregorin 2006). By contrast, on the left bank of Rio Xingu to the northeast, we find *Alouatta discolor* (from the "*belzebul*" group) and *Ateles marginatus* (Gregorin 2006). On the right bank of Rio Xingu, we confirm the occurrence of *Alouatta belzebul* based on individuals observed at Santa Terezinha (9°51'S 50°25'W) and Vila Rica (10°00'S 51°06'W) by the authors (G. S. T. Garbino and A. P. Carmignotto).

Two species are endemic to the Aripuanã-Roosevelt interfluvium–*Mico intermedius* and the recently described *Callicebus miltoni* (Hershkovitz 1977; Dalponte et al. 2014). On the headwaters of the expansive Amazonian rivers running northwards from the Brazilian highlands, there are records of Amazonian species that would otherwise be absent from the drier regions in southern and southeastern Mato Grosso, such as *Callicebus vieirai* and *Mico emiliae* (Garbino 2011; Gualda-Barros et al. 2012). *Saguinus niger* has been recently recorded for the Amazon-Cerrado ecotone in the northeastern portion of Mato Grosso (Garbino et al. 2015).

Regarding the taxonomic status of species recorded in Mato Grosso, we question the validity of *Pithecia mittermeieri* Marsh, 2014. This author treated specimens of *Pithecia* from Mato Grosso as *P. mittermeieri*, a new taxon distinct from *P. irrorata* Gray, 1843–the taxon previously known to occur in Mato Grosso (see Hershkovitz 1987). Nonetheless, after examining *Pithecia* skins from Mato Grosso (MN 3313, MN 3316; UFMT 602; USNM 545891) and Madre de Dios, Peru (FMNH 93534, FMNH 98040), we concluded that these populations do not differ from what has been proposed by Marsh (2014) to represent *P. irrorata* (restricted by her to Peru and western Brazilian Amazon). Our analysis agree with Serrano-Villavicencio et al. (2019), who carried out a taxonomic revision of the *Pithecia irrorata* complex and concluded that *Pithecia mittermeieri*, *P. rylandsi*, and *P. pissinatti* are junior synonyms of *P. irrorata*.

The primate fauna of the Amazon region of Mato Grosso is still poorly known, as attested by recently described species (Gualda-Barros et al. 2012; Dalponte et al. 2014; Boubli et al. 2019), and new distributional notes (e.g., Sampaio et al. 2012; Garbino et al. 2015; Gusmão et al. 2017). It is likely that species that were recorded from adjacent areas in the states of Amazonas, Mato Grosso do Sul, Pará and Rondônia, i.e., *Callicebus pallescens*, *Mico humilis*, *Mico marcai* and *Mico mauesi* (Ferrari et al. 2000; Noronha et al. 2008; Gregorin & de Vivo 2013; Garbino 2014) will eventually be recorded in Mato Grosso.

Carnivora

The state of Mato Grosso harbors five of the seven families of Carnivora that occur in Brazil (Paglia et al.

2012) (**Table** 1). Altogether, 17 genera and 21 species are found in Mato Grosso, which represent 74% of genera and 60% of species diversity of the Carnivora from Brazil (Paglia et al. 2012; Nascimento & Feijó 2017).

All Carnivora species recorded in Mato Grosso have large areas of geographic distribution in Brazil, and most of them are also found in other parts of the Neotropics (Eisenberg 1989; Emmons & Feer 1997; Eisenberg & Redford 1999; Nowak 1999). Two species (10%) are essentially forest dwellers occurring within the Amazon biome: *Atelocynus microtis* and *Potos flavus*. Four species (19%) are typical inhabitants of open areas, occurring essentially in the Cerrado and the Pantanal: *Chrysocyon brachyurus*, *Lycalopex vetulus*, *Conepatus amazonicus* (listed as *C. semistriatus* in ICMBio and IUCN Red Lists), and *Leopardus braccatus* (listed as *L. colocolo* in ICMBio and IUCN Red Lists). Most species (71%) are habitat generalists, occurring in both forest and open habitats: *Cerdocyon thous*, *Speothos venaticus*, *Nasua nasua*, *Procyon cancrivorus*, *Eira barbara*, *Galictis vittata*, *Lontra longicaudis*, *Pteronura brasiliensis*, *Herpailurus yagouaroundi*, *Leopardus emiliae*, *L. guttulus*, *L. pardalis*, *L. wiedii*, *Puma concolor* and *Panthera onca* (Carmignotto et al. 2012; Paglia et al. 2012; Nascimento & Feijó 2017).

Furthermore, some species, such as *C. thous*, *N. nasua*, *P. cancrivorus*, *C. amazonicus* and *E. barbara*, tolerate human modified landscapes, such as agricultural and deforested areas, pastures, and habitats near human dwellings (Presley 2000; Courtenay & Maffei 2004; Beisiegel & Campos 2013; Cavalcanti et al. 2013). But other species, like *A. microtis*, *P. brasiliensis*, and *P. onca*, are more sensitive to human disturbance and have specific habitat requirements, thus prefering non-disturbed sites (Morato et al. 2013; Rodrigues et al. 2013). The Amazonian weasel (*Mustela africana*) may also be present in the state of Mato Grosso. Some studies (Eisenberg & Redford 1999; Rodrigues 2013; Ramírez-Chavez et al. 2014) indicate a geographic range for the species that includes Mato Grosso, but we are unaware of any photographic record or voucher specimen of the Amazonian weasel from Mato Grosso, and thus field studies are needed to confirm its presence in the state.

Perissodactyla

One species of Perissodactyla, *Tapirus terrestris*, occurs in Mato Grosso (**Table** 1), representing the only species of this order in Brazil (Paglia et al. 2012). *Tapirus terrestris* occurs in all biomes of Mato Grosso, both in open and forested areas. The lowland tapir has lost 14% of its original distribution in Brazil (Taber et al. 2007). Only 20% of the populations are likely to survive in a long term in the Cerrado, where the species lost about 67% of its territory and it is therefore regionally classified as Endangered (EN) (Médici et al. 2012). In the Pantanal, this species is classified as Near Threatened (NT), and its annual rate of habitat loss is 0.47% (Médici et al. 2012). Even in the Amazon, where it is considered as Least Concern (LC), Bodmer et al. (1997) estimate that the species can be extinct in 150 years. Although the species occupies a wide variety of habitats throughout its area of occurrence, Brooks et al. (1997) suggest that *T. terrestris* prefers rainforests with palm trees, wetlands and seasonally flooded areas.

It is important to mention that a new species of tapir, *Tapirus kabomani*, was recently described from Brazil, with records in the states of Amazonas, Rondônia and Mato Grosso (Cozzuol et al. 2013). Nevertheless, the validity of this species has been questioned (see Voss et al. 2014b) and remains in discussion (Cozzuol et al. 2014). We believe that additional compelling evidence is needed to attest the validity of this taxon since the data presented by Cozzuol et al. (2013; 2014), although based on different lines of evidence (genetics, morphometrics, discrete morphology, morphological phylogeny, and folk taxonomy), do not discard the possibility that *T. kabomani* specimens represent geographic variants of *T. terrestris*. Thus, we provisionally treat *T. terrestris* as the only tapir in Mato Grosso.

Artiodactyla

Mato Grosso harbors two of the three families of terrestrial Artiodactyla that occur in South America: Tayassuidae (with two genera and two species) and Cervidae (three genera and five species) (**Table** 1). These seven species represent 70% of the terrestrial Artiodactyla richness in Brazil (Paglia et al. 2012). There are also two species of cetaceans (Iniidae), the only fully aquatic mammals that occur in the state.

Most of the terrestrial taxa aforementioned are widely distributed in Brazil, such as *Pecari tajacu, Tayassu pecari, Mazama americana*, and *M. gouazoubira* (Duarte 1997; Eisenberg & Redford 1999; Wilson & Reeder 2005). The first three species occur in the Amazon, Atlantic Forest, Cerrado, Caatinga, and Pantanal. *Mazama gouazoubira* occurs in all Brazilian biomes, except the Amazon, where it is replaced by *Mazama nemorivaga*, which is probably endemic to this biome (Pinder & Leeuwenberg 1997; Rossi 2000).

Recent studies based on molecular data have pointed out that *Mazama* is a polyphyletic group (Duarte et al. 2008; Gutiérrez et al. 2017), with specimens treated as *M. americana*, *M. bororo*, *M. nana*, *M. pandora*, *M. rufina* and *M. temana* recovered in the same clade of specimens of *Odocoileus*. On the other hand, specimens of *M. gouazoubira* and *M. chunyi* grouped with *Blastocerus*, *Hippocamelus*, *Ozotoceros* and *Pudu*, while specimens of *M. nemorivaga* were recovered in a distinct clade. In addition, *M. americana* and *M. nemorivaga* may represent species complexes (Duarte et al. 2008; Gutiérrez et al. 2017). Thus, species richness whitin *Mazama* might change in the future, resulting in changes in species number in Mato Grosso.

Ozotoceros bezoarticus lost most of its original range and is currently concentrated in the Cerrado biome, mainly in Mato Grosso (Duarte et al. 2012). Similarly, the historical range of *Blastocerus dichotomus* covered most of the country and all biomes (Tomas et al. 1997), but its current distribution is fragmented, with most residual populations (approximately 36 000 individuals) concentrated in the Pantanal of Mato Grosso and Mato Grosso do Sul, with small populations in the wetlands of Rondônia, Tocantins, Paraná and São Paulo (Pinder & Seal 1995; Mauro et al. 1998; Duarte et al. 2012), with a recent record from Minas Gerais (Prist et al. 2014).

Among the species of Cervidae, *B. dichotomus* and *O. bezoarticus* prefer open areas (Mauro et al. 1998; Mourão et al. 2000; Andriolo et al. 2003), but the former occurs mainly in wetlands and feeds on aquatic and semi-aquatic plants while the latter can be also found in dry fields and agricultural properties (Tomas & Salis 2000; Tomas et al. 2013). On the other hand, species of *Mazama* are typical of forested habitats, but some (e.g., *M. gouazoubira*) can be recorded in open areas as well (Pinder & Leeuwenberg 1997; Gayot et al. 2004).

We also emphasize the presence of massive populations of the exotic invasive species *Sus scrofa* (Suidae) in Mato Grosso (Deberdt & Scherer 2007; Pedrosa et al. 2015), with four main morphotypes. The feral domestic pig or "porco-monteiro", has its origin in the first domestic pigs introduced into the wild throughout the Brazilian midwest, probably due to the release of animals in the wild during the Paraguayan War over 150 years ago (Desbiez et al. 2011). Today, its largest populations are concentrated in the Pantanal of Mato Grosso and Mato Grosso do Sul. The second is the wild boar or "javali", introduced in southern Brazil from Uruguay in the late 1980's (Deberdt & Scherer 2007). The manipulated breed of wild boar with domestic pigs resulted in a third morphotype, a feral pig known as "javaporco". In addition, typical domestic pig has also been recently introduced into native areas. In the Amazon portion of Mato Grosso, it is known as "porco-alongado" (Fernandes-Ferreira 2014). Currenlty, these non-native populations of *S. scrofa* have dominated the Pampas biome and expanded northwards into the Amazon, Atlantic Forest, Cerrado, and Caatinga (Deberdt & Scherer 2007; Pedrosa et al. 2015), and already occupies over 60% of Mato Grosso (Pedrosa et al. 2015).

Two confirmed species of cetaceans are present in Mato Grosso, *Inia boliviensis* and *I. araguaiaensis* (**Table** 1). The first is found in the Amazon basin, and two of us (A. P. Carmignotto and M. V. Brandão) observed individuals in the Rio Guaporé, near Vila Bela da Santíssima Trindade, western Mato Grosso. *Inia araguaiaensis*, formerly considered a population of *I. geoffrensis*, but recently recognized as a full species (Hrbek et al. 2014), occurs in the Araguaia-Tocantins basin. Two individuals of *I. araguaiaensis*, a female and its fetus, were collected in 1949 in the Rio das Mortes, and are housed in the MZUSP. A third species, *I. geoffrensis*, is probably present in Mato Grosso (Aripuanã-Roosevelt interfluvium), but we are unaware of any voucher specimens. Field observations or vouchers are needed to confirm its presence in Mato Grosso.

Rodentia

Three main groups of rodents occur in South America: the squirrels of the suborder Sciuromorpha; the caviomorphs, composed of spiny rats, New World porcupines, cavies, capybaras, among others of the suborder Hystricomorpha; and the mouse and rat-like rodents of the suborder Myomorpha, which are represented by the family Cricetidae, and mostly by the subfamily Sigmodontinae (Patton et al. 2015). The most recent compilations indicate 76 genera and 248 species of rodents in Brazil (Paglia et al. 2012; Percequillo & Gregorin 2018), a number already outdated due to the recent recognition of additional species (e.g., Pardiñas et al. 2016; Brandão et al. 2017; Percequillo et al. 2017; Rocha et al. 2018; Suarez-Villota et al. 2018). In Mato Grosso, Rodentia is the second largest order of mammals, following Chiroptera (**Fig.** S1). We compiled 38 genera and 67 species of rodents–five squirrels, 20 caviomorphs, and 42 sigmodontines–reaching about 27% of the species of rodents from Brazil.

Several small rodents from Mato Grosso present most of its geographic range whitin the Amazon Forest (see Voss & Emmons 1996; Patton et al. 2000; Voss et al. 2001; Patton et al. 2015; Abreu-Júnior et al. 2016), with new and undescribed species of *Akodon, Neacomys* and *Oecomys* (see **Table** 1) restricted to this biome in Mato Grosso. There are also many unrevised taxa that may represent species complexes, such as *Euryoryzomys macconnelli*, *Oecomys bicolor*, *O. catherinae*, *O. paricola*, *O. roberti*, and *Rhipidomys leucodactylus* (see Patton et al. 2000; Voss et al. 2001; Costa 2003; Costa et al. 2011; Patton et al. 2015; Suarez-Villota et al. 2018). Although most of these undescribed species are sigmodontine rodents, a few caviomorphs, especially spiny-rats (Echimyidae) are in need of thorough revision, such as *Dactylomys*, *Isothrix*, *Makalata*, *Mesomys* and *Proechimys* (see Patton et al. 2000; Voss et al. 2001; Emmons et al. 2015). Squirrels have been recently reviewed taxonomically (Vivo & Carmignotto 2015), but they are probably one of the least studied groups of rodents in South America, given that virtually nothing is known about the ecology, systematics and karyology of most species. Thus, additional species of squirrels might be present in Mato Grosso, especially in Amazonian areas, where this group reaches its maximum diversity in South America (see Vivo & Carmignotto 2015).

The diversity of open-area dwellers is also high among Mato Grosso rodent species. The fauna of the Cerrado and Pantanal includes *Calomys* spp., *Cerradomys* spp., *Gyldenstolpia planaltensis, Kunsia tomentosus, Oligoryzomys chacoensis*, *O. mattogrossae*, *Oxymycterus delator*, *Pseudoryzomys simplex, Thalpomys cerradensis, Cavia aperea, Galea* cf. *spixii, Ctenomys nattereri*, *C. rondoni*, *Carterodon sulcidens*, *Clyomys laticeps*, and *Thrichomys pachyurus.* Nonetheless, most of these species are also present in neighboring forested areas in transitional and borderline regions. There is an endemic component strongly associated with open areas, notably in the Cerrado (Carmignotto et al. 2012; Gutiérrez & Marinho-Filho 2017), represented by the genera *Carterodon*, *Gyldenstolpia, Kunsia*, and *Thalpomys.* The Pantanal has no endemics, and suffers stronger biogeographical influence from adjacent areas (see Werneck 2011), sharing several species with the Cerrado (Carmignotto et al. 2012).

Most of the medium to large rodents in Mato Grosso, such as *Hydrochoerus*, *Cuniculus*, *Dasyprocta*, and *Coendou*, represent widespread species that lack robust taxonomic studies. For instance, there are no published large-scale systematic studies involving *Cuniculus* and *Hydrochoerus.* Others, like *Coendou*, remain poorly sampled in Mato Grosso, despite recent taxonomic attention (e.g., Voss & da Silva 2001; Voss 2011; Voss et al. 2013a), or *"is clearly provisional"*, such as *Dasyprocta* taxonomy, as atested by the most recent published effort (Patton & Emmons 2015). We cannot therefore rule out the existence of new or unreported species of these larger rodents in Mato Grosso, especially in the Amazonian portion, as this large area still remains poorly investigated. This fact is reinforced by the record of *Coendou* cf. *nycthemera* in the Amazonian region of Mato Grosso (Paranaíta) in the present study, which is the first record of this species in the state, based on a study skin without skull (CZAF MA 10).

Lagomorpha

The lagomorphs are represented in South America by the genus *Sylvilagus*, which extend from eastern Mexico to northern Argentina (Nowak 1999). Only one species (*S. brasiliensis*) with 21 subspecies had traditionally been recognized (Hoffman & Smith 2005), until recent studies suggested that some of these taxa should be recognized as full species (Bonvicino et al. 2015; Ruedas 2017; Ruedas et al. 2017). At least three species of *Sylvilagus* occur in Brazil (Ruedas et al. 2017)–*S. brasiliensis*, *S. tapetillus* and *S. minensis*, and we provisionally treat the tapetis present in Mato Grosso as *Sylvilagus minensis* (**Table** 1). Ruedas et al. (2017) restricted *S. brasiliensis* and *S. tapetillus* to northeastern and southeastern Atlantic Forest, respectively, and considered *S. minensis* Thomas, 1901 as the name available for populations from other areas to the south of the Amazon.

Conservation

Mato Grosso has 33 species listed under some threat category (see **Table** 1) for CR, EN and VU categories) according to international (IUCN 2019) and Brazilian red lists (ICMBio 2018). These numbers represent 12% of the mammal richness of Mato Grosso and 30% of all threatened mammals of Brazil. Carnivora has the largest number of threatened species (11), followed by Primates (8). In Mato Grosso, species under threat pending (re)evalution represent about 10% (ICMBio) and 12% (IUCN), those data deficient 7% (ICMBio and IUCN), and the ones near threatened 2% (ICMBio) and 5% (IUCN). Thus only 66% of the species recorded are considered as least concern (**Fig.** S5).

Habitat loss and fragmentation represent the major threats to Brazilian mammals (Costa et al. 2005) and this is also true for the state of Mato Grosso. Historical and ongoing deforestation have led to the extirpation of important ecosystems (Ferraro & Figueirôa 2017). Areas in the state of Mato Grosso represented 35% of the 37 million hectares deforested in the Brazilian Amazon between 2001 and 2009 (MDIC 2012), and up to 30% of deforestation of the entire Brazilian Cerrado between 2002 and 2009 (Rocha et al. 2011). The increased investment in the production of soy and beef to be exported to China, associated with the relaxing of environmental laws, are the main reasons for the observed loss (Fearnside et al. 2013). Other causes include logging, mining, construction of dams, and the continuous use of fire by traditional communities for agricultural purposes (Klink & Machado 2005; Junk et al. 2006; Soares-Filho et al. 2006; Lees & Peres 2008; Ferreira et al. 2014).

Besides habitat loss, medium and large-sized mammals are also affected by hunting (Costa et al. 2005; Fernandes-Ferreira 2014). Peres & Nascimento (2006) reported 743 individuals of 21 species of mammals hunted for subsistence during 20 months by the Kayapó indigenous community located between the states of Pará and Mato Grosso. Mammals represented 86.3% of the roughly 13 700 kg of bushmeat consumed by the Kayapó, and the number of harvest-sensitive prey species showed clear evidence of local depletion (Peres & Nascimento 2006). Yet, carnivores, cervids and peccaries are persecuted by farmers because of the predation of crops, pastures, cattle herds, and domestic animals (Desbiez et al. 2012; Fernandes-Ferreira 2014; Tortato et al. 2015). The most representative species related to these conflicts are *Panthera onca* and *Puma concolor*, which frequently cause damage to local livestock (Marchini & MacDonald 2012). Nevertheless, the state of Mato Grosso has been an important place for the development of conservation strategies to reduce this problem. Losses of herds in the northern Pantanal are related to several factors such as seasonal water level, age of predators and preys, and proximity to forested areas (Tortato et al. 2015). Understanding these factors is crucial for establishing management strategies that may reduce conflicts. In addition, regional losses caused by jaguars on cattle herds could be rewarded by a system of voluntary payments from willing tourists in the same region. This suggestion is supported by the fact that the annual income generated by the jaguar ecotourism (US$ 6.8 million) are 56 times higher than the revenue caused by the predation of herds per year (Tortato et al. 2017).

Roadkill rates of mammals in Mato Grosso are still poorly studied, but the available evidence indicates a large environmental problem: for example, 41 species and 3.63 individuals were killed per kilometer along 63 km of a federal highway in Cáceres (Melo & Santos-Filho 2007). Although we are not aware of studies focusing on conservation of aquatic and semi-aquatic mammals in Mato Grosso, top predators such as *Lontra longicaudis*, *Pteronura brasiliensis*, and *Inia* spp. can be threatened due to water pollution, a problem that persists due to agricultural pesticides and mercury emissions from mining areas (**?**Dores et al. 2008; Moreira et al. 2012). Alien species are an old and constant threat in Brazil. Feral pigs (*Sus scrofa*) are causing significant negative impacts on agriculture, livestock, and environment, strongly affecting the local income in the past 200 years (Sicuro & Oliveira 2002; Alho et al. 2011; Pedrosa et al. 2015). Unsurprisingly, their impacts are not restricted to the economy: populations of *S. scrofa* in the Pantanal have similar habitat requirements and feeding strategies with the native peccaries, *Pecari tajacu* and *Tayassu pecari* (Sicuro & Oliveira 2002). Due to these facts, lethal control is allowed by the federal government (normative instruction 03/2013). On the other hand, traditional hunting of the "porco-monteiro" in the Pantanal led to a reduced hunting pressure on native species (Desbiez et al. 2011). It is still important to emphasize the presence of other introduced mammals in the state such as dogs, cats, domestic mice and rats (Alho et al. 2011), whose impacts to the local mammals have not yet been studied.

All these factors reported here are responsible for a severe scenario of defaunation, with effects that can be extended to impacts on evolutionary patterns, seed dispersal, agricultural pest control, human health, water quality, and decomposition and nutrient cycling (Barnosky et al 2011; Galetti & Dirzo 2013). This set of threats in Mato Grosso becomes more serious when we consider that the state shelters two–Cerrado and Mato Grosso Dry Forests–of the 13 ecoregions with highest conservation priority for mammals in Brazil (Alves & Brito 2013). Thus, social and political projects based on robust scientific studies, aiming to protect and conserve mammals and all wildlife are urgent to ensure a profound change in this scenario.

There are currently several studies combining ecological, management, economical, political and social backgrounds to point out effective conservation strategies to mitigate environmental impacts

(e.g., Junk et al. 2006; Marchini & MacDonald 2012; Tortato et al. 2015; 2017).

The Mato Grosso red list is a fundamental tool to map the local impact on threatened species. Promoting taxonomic and ecological studies, especially those focusing on "Data Deficient" species, is crucial, as they can bring new information, which might be useful in evaluating the risk of extinction, as well as defining appropriate conservation and management strategies for such a biologically diverse state.

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ONLINE SUPPLEMENTARY MATERIAL

Supplement 1: **Table** S1. Mammals collected by Johann Natterer during 1825–1829 in the district of "Cuyabá" (showing the present-day localities in the state of Mato Grosso), as listed by Wagner (1842, 1843) and Pelzeln (1883).

Supplement 2: **Table** S2. Mammals collected around "thirty miles to the north-eastward [from Cuyaba, in] the little village of Chapada" (= Chapada dos Guimarães) in the "Naturalist Exploring Expedition", as listed by Cope (1889).

Supplement 3: **Table** S3. Mammals collected in "Santa Anna de Chapada, a village situated at an altitude of about 800 m., on the Serra do Chapada, some thirty miles N.E. of Cuyabá" (= Chapada dos Guimarães) by Alphonse Robert in the Percy Sladen Expedition, as listed by Thomas (1904).

Supplement 4: **Figure** S1. Number of species per Order of mammals from Mato Grosso, Brazil.

Supplement 5: **Figure** S2. Number of species per Family of mammals from Mato Grosso, Brazil.

Supplement 6: **Figure** S3. *Bradypus variegatus* from Querência, Mato Grosso. Photo by Diego Queirolo and Graziela Dotta.

Supplement 7: **Figure** S4. *Cyclopes* sp. from Paranaíta, Mato Grosso. Photo by Rodrigo I. T. Branco.

Supplement 8: **Figure** S5. Percentage of mammal species from Mato Grosso, Brazil, according to ICMBio (2018) and IUCN (2019) classification of threatened species and other categories (Not applicable and Pending reevaluation) used in the present study. The two *Aotus* subspecies present different classification of threat (see **Table** 1), so they were treated separately here.