**APPENDICES**

**Species richness, geographic distribution, pressures, and threats to bats in the Caatinga drylands of Brazil**

Ulremberg Barbosa Teodoro da Silva1, Mariana Delgado-Jaramillo1,2, Ludmilla Moura de Souza Aguiar3 & Enrico Bernard1,\*

1 Laboratório de Ciência Aplicada à Conservação da Biodiversidade, Departamento de Zoologia, Centro de Biociências, Universidade Federal de Pernambuco, Brazil

2 Programa de Pós-Graduação em Biologia Animal, Universidade Federal de Pernambuco, Brazil

3 Departamento de Zoologia, Universidade de Brasília, Brazil

\* Corresponding author: enrico.bernard@ufpe.br

**APPENDIX A1 –** Spatial distribution of 8,849 records used for modelling bat species distribution in Brazil.See Methodology for the description of data sources and treatments. **C:\Users\lenovo\Documents\ALUNOS\Mariana Delgado - modelagem\Berg\Artigo\Submissão\Biological Conservation\Revisão\Final\FigAppendixA1.tif**

**APPENDIX A2 –** Bioclimatic variables used to generate bat species distribution models in Brazil´s Caatinga. Variables available at the WorldClim database (http://www.worldclim.org).

BIO1: Average annual temperature

BIO2: Average daytime temperature

BIO3: Isothermality

BIO4: Temperature seasonality

BIO5: Maximum temperature in the warmest month

BIO6: Minimum temperature in the month

BIO7: Annual temperature variation

BIO8: Average temperature in the rainiest quarter

BIO9: Average temperature in the dryest quarter

BIO10: Average temperature in the warmest quarter

BIO11: Average temperature in the coldest quarter

BIO12: Annual precipitation

BIO13: Monthly precipitation

BIO14: Precipitation in the driest month

BIO15: Seasonality of precipitation

BIO16: Precipitation in the rainiest quarter

BIO17: Precipitation in the driest quarter

BIO18: Falling in the warmest quarter

BIO19: Precipitation in the coldest quarter

ALTITUDE

**APPENDIX A3 –** Number of localities for which there were records of bat species in Brazil´s Caatinga and the respective number of environmental variables and replicates used to run the species distribution models in MaxEnt.

|  |  |  |
| --- | --- | --- |
| Localities | Variables | Replicates |
| 6 - 9 | 3 | jackknife (n-1) |
| 10 - 15 | 5 | 9 |
| 16 - 20 | 8 | 15 |
| ≥ 21 | 12 | 20 |

**APPENDIX A4 –** Human Footprint Index for the Caatinga region, in northeastern Brazil. See WCS & SCIESIN (2005) for details on how the index is calculated. Full protected areas (FPA) are in black.

C:\Users\lenovo\Documents\ALUNOS\Mariana Delgado - modelagem\Berg\Artigo\Submissão\Biological Conservation\Revisão\Final\FigAppendixA4.tif

**APPENDIX A5 –** List of bat species recorded in Brazil´s Caatinga.

|  |
| --- |
| **ORDER CHIROPTERA** |
| **FAMILY EMBALLONURIDAE** |
| *Diclidurus albus* Wied-Neuwied, 1820 |
| *Peropteryx kappleri* Peters, 1867 |
| *Peropteryx macrotis* (Wagner, 1843) |
| *Peropteryx trinitatis* Miller, 1899 |
| *Rhynchonycteris naso* (Wied-Neuwied, 1820) |
| *Saccopteryx bilineata* (Temminck, 1838) |
| *Saccopteryx canescens* Thomas, 1901  *Saccopteryx leptura* (Schreber, 1774)  **Total 08** |
| **FAMILY PHYLLOSTOMIDAE** |
| *Anoura caudifer* (É. Geoffroy, 1818) |
| *Anoura geoffroyi* Gray, 1838  *Artibeus cinereus* (Gervais 1855) |
| *Artibeus concolor* Peters, 1865 |
| *Artibeus fimbriatus* Gray, 1838 |
| *Artibeus lituratus* (Olfers, 1818) |
| *Artibeus obscurus* (Schinz, 1821) |
| *Artibeus planirostris* (Spix, 1823) |
| *Carollia brevicauda* (Schinz, 1821)  *Carollia perspicillata* (Linnaeus, 1758) |
| *Chiroderma doriae* Thomas, 1891 |
| *Chiroderma villosum* Peters, 1860 |
| *Chiroderma vizottoi* Taddei & Lim, 2010\*\*  *Choeroniscus minor* (Peters, 1868) |
| *Chrotopterus auritus* (Peters, 1856) |
| *Dermanura anderseni* (Osgood, 1916) |
| *Dermanura cinerea* Gervais, 1856 |
| *Desmodus rotundus* (É. Geoffroy, 1810) |
| *Diaemus youngi* (Jentink, 1893) |
| *Diphylla ecaudata* Spix, 1823 |
| *Dryadonycteris capixaba* Nogueira, Lima, Peracchi & Simmons, 2012\* |
| *Glossophaga soricina* (Pallas, 1766) |
| *Lionycteris spurrelli* Thomas, 1913 |
| *Lonchorhina aurita* Tomes, 1863 |
| *Lophostoma brasiliense* Peters, 1866 |
| *Lophostoma carrikeri* (J. A. Allen, 1910) |
| *Lophostoma silvicola* d’Orbigny, 1836  *Macrophyllum macrophyllum* (Schinz, 1821) |
| *Micronycteris megalotis* (Gray, 1842) |
| *Micronycteris minuta* (Gervais, 1856) |
| *Micronycteris sanborni* Simmons, 1996\* |
| *Micronycteris schmidtorum* Sanborn, 1935 |
| *Mimon bennettii* (Gray, 1838) |
| *Mimon crenulatum* (É. Geoffroy, 1803) |
| *Phylloderma stenops* (Peters, 1865) |
| *Phyllostomus discolor* (Wagner, 1843) |
| *Phyllostomus elongatus* (É. Geoffroy, 1810) |
| *Phyllostomus hastatus* (Pallas, 1767) |
| *Platyrrhinus incarum* (Thomas, 1912)  *Platyrrhinus lineatus* (É. Geoffroy, 1810) |
| *Platyrrhinus recifinus* (Thomas, 1901)\* |
| *Pygoderma bilabiatum* (Wagner, 1843)  *Rhinophylla pumilio* Peters, 1865 |
| *Sturnira lilium* (É. Geoffroy, 1810)  *Sturnira tildae* de la Torre, 1959 |
| *Tonatia bidens* (Spix, 1823) |
| *Tonatia saurophila* Koopman & Williams, 1951 |
| *Trachops cirrhosus* (Spix, 1823) |
| *Uroderma bilobatum* Peters, 1866 |
| *Uroderma magnirostrum* Davis, 1968 |
| *Vampyrum spectrum* (Linnaeus, 1758) |
| *Xeronycteris vieirai* Gregorin & Ditchfield, 2005\*\* |
| **Total 52**  **FAMILY MORMOOPIDAE** |
| *Pteronotus gymnonotus* (Wagner, 1843) |
| *Pteronotus parnellii* (Gray, 1843) |
| *Pteronotus personatus* (Wagner, 1843) |
| **Total 03**  **FAMILY NOCTILIONIDAE** |
| *Noctilio albiventris* Desmarest, 1818 |
| *Noctilio leporinus* (Linnaeus, 1758) |
| **Total 02**  **FAMILY FURIPTERIDAE** |
| *Furipterus horrens* (Cuvier, 1828) |
| **Total 01**  **FAMILY NATALIDAE** |
| *Natalus macrourus* (Gervais, 1856)\* |
| **Total 01**  **FAMILY MOLOSSIDAE** |
| *Cynomops abrasus* (Temminck, 1826) |
| *Cynomops planirostris* (Peters, 1866) |
| *Eumops auripendulus* (Shaw, 1800) |
| *Eumops bonariensis* (Peters, 1874) |
| *Eumops glaucinus* (Wagner, 1843)  *Eumops hansae* Sanborn, 1932 |
| *Eumops perotis* (Schinz, 1821) |
| *Molossops temminckii* (Burmeister, 1854) |
| *Molossus currentium* Thomas, 1901 |
| *Molossus molossus* (Pallas, 1766) |
| *Molossus pretiosus* Miller, 1902 |
| *Molossus rufus* É. Geoffroy, 1805 |
| *Neoplatymops mattogrossensis* (Vieira, 1942) |
| *Nyctinomops aurispinosus* (Peale, 1848) |
| *Nyctinomops laticaudatus* (É. Geoffroy, 1805) |
| *Promops nasutus* (Spix, 1823) |
| *Tadarida brasiliensis* (I. Geoffroy, 1824) |
| **Total 17**  **FAMILY VESPERTILIONIDAE** |
| *Eptesicus brasiliensis* (Desmarest, 1819) |
| *Eptesicus furinalis* (d’Orbigny & Gervais, 1847) |
| *Histiotus velatus* (I. Geoffroy, 1824) |
| *Lasiurus blossevillii* ([Lesson, 1826]) |
| *Lasiurus ega* (Gervais, 1856)  *Myotis albescens* (E. Geoffroy, 1806) |
| *Myotis lavali* Moratelli, Peracchi, Dias & Oliveira, 2011\* |
| *Myotis nigricans* (Schinz, 1821) |
| *Myotis riparius* Handley, 1960  *Myotis ruber* (É. Geoffroy, 1806) |
| *Rhogeessa hussoni* Genoways & Baker, 1996 |
| *Rhogeessa io* Thomas, 1903  **Total 12** |
| **Grand total 96** |

Endemic to Brazil (\*); Endemic to the Caatinga (\*\*).

**APPENDIX A6 –** Distribution modelling of threatened bat species in Brazil´s Caatinga. Seven bat species are officially threatened in Brazil (ICMBio, 2014) and four of them have known records in the Caatinga: *Furipterus horrens*, *Lonchorhina aurita, Natalus macrourus,* and *Xeronycteris vieirai*. Two others (*Glyphonycteris behnii* and *Lonchophylla dekeyseri*) are expected to occur based on environmental suitability models, but with no records so far. Full protected areas (FPA) are in black.

C:\Users\lenovo\Documents\ALUNOS\Mariana Delgado - modelagem\Berg\Artigo\Submissão\Biological Conservation\Revisão\Final\FigAppendixA6.tif