

# Anurans of Serra D'Água, Northwest of Cunhambebe State Park, Rio de Janeiro, Brazil

Mauro Sérgio Cruz Souza Lima<sup>1\*</sup>, Jonas Pederassi<sup>2</sup> and Carlos Alberto dos Santos Souza<sup>3</sup>

**Abstract.** Twenty-one species of anurans were recorded on a herpetological survey of the Cunhambebe State Park, including: three Brachycephalidae, two Bufonidae, one Craugastoridae, four Cycloramphidae, six Hylidae, two Hylodidae, one Leiuperidae, one Leptodactylidae, and one Microhylidae. Predominance of forest species strengthens the importance of this conservation unit of complex topography and great diversity of microhabitats.

**Keywords:** Atlantic Forest, conservation, inventory, Serra do Mar

## Introduction

The Cunhambebe State Park, created in 2008, is inserted in the Atlantic Forest morphoclimatic domain (Ab'Saber, 1977), forming a continuous forest area with the Serra da Bocaina National Park and Bracuhu Indigenous Land. Its 38 thousand hectares encloses part of the cities of Mangaratiba, Angra dos Reis, Rio Claro and Itaguaí in the Serra do Mar (INEA, 2012).

The forests' remains, even in preservation areas, are under intense anthropic pressure stressing the importance of faunistic surveys (Dixo and Verdade, 2006). Anurans present a high diversity in the tropics, with 913 species described to Brazil (SBH, 2012), of which more than four hundred occur in the Atlantic Forest (Haddad, Toledo and Prado, 2008); showing a high endemism level (Myers et al., 2000; Primack and Rodrigues, 2001; Haddad, Toledo and Prado, 2008).

The present study represents the first attempt of surveying the anuran fauna of the Cunhambebe State

Park in the district of Serra d'Água, Angra dos Reis, State of Rio de Janeiro, Brazil.

## Material and Methods

### Study Area

The survey was carried in the northwest portion of the Cunhambebe State Park, district of Serra d'Água (22°53' S, 44°14' W), northeast of the city of Angra dos Reis (Fig. 1), bounding with the district of Lídice (Rio Claro/RJ). Altitude varies from 600 to 890 m above sea level, being composed by the Tropical Rain Forest (IBGE, 2012).

### Data Collection

Sampling methods included visual encounter surveys and pitfall trapping without drift fences. Visual encounter surveys included the systemic inspection through all microhabitats of the studied area during day and night. Sixty pitfall traps were installed across 300 m<sup>2</sup> (30 x

<sup>1</sup> Universidade Federal do Piauí, Amílcar Ferreira Sobral *Campus*, BR 343 Highway, Km 3.5, Meladão – Zip Code: 64.800-000, Floriano-PI, Brazil.

<sup>2</sup> Universidade Federal do Rio de Janeiro, Museu Nacional, Departamento de Vertebrados, Quinta da Boa Vista, São Cristóvão, 20940-040 Rio de Janeiro, RJ, Brasil.

<sup>3</sup> Universidade Federal de Juiz de Fora, Martelos University Campus, Post-graduation Program on Biological Sciences Behaviour and Animal Biology. Martelos, Zip Code: 36.036-330, Juiz de Fora – MG, Brazil.

\* Corresponding author. E-mail: slmauro@ufpi.edu.br



**Figure 1.** Location of Serra d'Água in the city of Angra dos Reis, State of Rio de Janeiro, Brazil.

**Table 1.** Anurans sampled in the northwest portion of the Cunhambebe State Park, Serra d'Água, Angra dos Reis, RJ, Brazil.**Family Brachycephalidae***Brachycephalus didactylus* (Izecksohn, 1971)*Brachycephalus ephippium* (Spix, 1824)*Ischnocnema guentheri* (Steindachner, 1864)**Family Bufonidae***Dendrophryniscus brevipollicatus* Jiménez de la Espada, 1871*Rhinella ornata* (Spix, 1824)**Family Craugastoridae***Haddadus binotatus* (Spix, 1824)**Family Cycloramphidae***Proceratophrys cf. appendiculata* (Günther, 1873)*Proceratophrys boiei* (Wied-Neuwied, 1825)*Thoropa miliaris* (Spix, 1824)*Zachaenus parvulus* (Girard, 1853)**Family Hylidae***Bokermannohyla luctuosa* (Pombal & Haddad, 1993)*Dendropsophus elegans* (Wied-Neuwied, 1824)*Dendropsophus nanus* (Boulenger, 1889)*Hypsiboas faber* (Wied-Neuwied, 1821)*Hypsiboas semilineatus* (Spix, 1824)*Scinax* sp. (aff. *perpusillus*)**Family Hylodidae***Hylodes asper* (Müller, 1924)*Hylodes phyllodes* Heyer & Cocroft, 1986**Family Leiuperidae***Physalaemus* sp.**Family Leptodactylidae***Leptodactylus marmoratus* (Steindachner, 1867)**Family Microhylidae***Myersiella microps* (Duméril & Bibron, 1841)

10 m) inside the woods. Each trap was 15 cm of open diameter and two liters of volume capacity, buried in the soil equidistant in approximately two meters one from another, fulfilling all the sample part, with about 200 ml of preserving solution (alcohol 70% and formalin 4%, in the proportion of 1:1). Traps remained open in uninterrupted intervals of five days, protected by suspended covers above the containers, being weekly evaluated for the removal of the collected material and for exchanging the preserving solution (for maintenance purposes).

The sample corresponded to 82 hours of sample efforts on active search and 1440 hours on soil traps, totaling 1522 hours of sample efforts. The nomenclature and

the phylogenetic classification follow suggestions by the Brazilian Society of Herpetology (SBH, 2012). Collected anurans are deposited in the collection of the Universidade Federal do Piauí, Campus Amílcar Ferreira Sobral, Floriano/PI.

**Results and Discussion**

Twenty-one species of anurans of nine families were collected (Table 1). *Brachycephalus didactylus*, *Proceratophrys* sp. cf. *appendiculata*, *Zachaenus parvulus*, *Bokermannohyla luctuosa* and *Hylodes phyllodes* present tendency to population decrease (IUCN, 2012). All species recorded are common in

forest areas (Izecksohn and Carvalho-e-Silva, 2001; Haddad, Toledo and Prado, 2008).

Population status of the species *Brachycephalus ephippium*, *Ischnocnema guentheri*, *Dendrophryniscus brevipollicatus*, *Haddadus binotatus*, *Proceratophrys boiei*, *Hylodes asper* and *Myersiellamicrops* is considered steady (IUCN, 2012), these are species intrinsically related to morphoclimatic domain of the Atlantic Forest (Heyer et al., 1990; Izecksohn and Carvalho-e-Silva, 2001; Haddad and Prado, 2005; Moraes, Sawaya and Barrella, 2007; Haddad, Toledo and Prado, 2008), being the maintenance of the forest areas essential to the conservation of these populations (Moraes, Sawaya and Barrella, 2007), beyond the endemic species, there are whole groups which are restricted to these formations such as the family Brachycephalidae and the genus *Dendrophryniscus* (Haddad and Prado, 2005).

Some listed species were not collected. *Hypsiboas faber* had its presence confirmed by the characterized nesting. *Dendropsophus nanus* was identified by the calling in permanent heath. *Dendropsophus elegans* and *Hypsiboas semilineatus* were just photographed.

The forest-associated nature of most of the species presented stress the relevance of the Cunhambebe State Park as a refuge, enabling an integration with other conservation units and presenting a complex topography which favors a great microhabitat diversity.

**Acknowledgments.** Authorization for collection was emitted by SISBIO under the permission number 25114-1. The authors wish to tanks Oswaldo Luiz Peixoto that helps to identify some species and the SISBIO for sample authorization. Jonas Pederassi acknowledges the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for financial support.

## References

- Ab'Saber, A.N. (1977): Os domínios morfoclimáticos da América do Sul. São Paulo, Instituto de Geografia, USP.
- Dixo, M., Verdade, V.K. (2006): Herpetofauna de serrapilheira da Reserva Florestal de Morro Grande, Cotia (SP). *Biota Neotrópica* **2**: 1-20.
- Haddad, C.F.B., Prado, C.P.A. (2005): Reproductive modes in frogs and their unexpected diversity in the Atlantic Forest of Brazil. *BioScience* **3**: 207-217.
- Haddad, C.F.B., Toledo, L.F., Prado, C.P.A. (2008): Anfíbios da Mata Atlântica. São Paulo, Neotrópica.
- Heyer, W.R., Rand, A.S., Cruz, C.A.G., Peixoto, O.L., Nelson, C.E. (1990): Frogs of Boracéia. *Arquivos de Zoologia* **4**: 231-410.
- IBGE, (2012): Instituto Brasileiro de Geografia e Estatística. Available at: <http://mapas.ibge.gov.br/vegetacao/>. Last accessed on 26 November 2012.
- INEA, (2012): Instituto Estadual do Ambiente. Available at: <http://www.inea.rj.gov.br/unidades/pqcunhambebe.asp>. Last accessed on 27 November 2012.
- IUCN, (2012): IUCN Red List of Threatened Species. Version 2012.2 Eletronic Database. Available at: <http://www.iucnredlist.org>. Last accessed on 27 November 2012.
- Izecksohn, E., Carvalho-e-Silva, S.P. (2001): Anfíbios do Município do Rio de Janeiro. Rio de Janeiro, Editora UFRJ.
- Moraes, R.A., Sawaya, R.J., Barrella, W. (2007): Composição e diversidade de anfíbios anuros em dois ambientes de Mata Atlântica no Parque Estadual Carlos Botelho, São Paulo, sudeste do Brasil. *Biota Neotrópica* **2**: 27-36.
- Myers, N., Mittermeier, C.G., Fonseca, G.A.B., Kent, J. (2000): Biodiversity hotspots of conservations priorities. *Nature* **403**: 853-858.
- Primack, R.B., Rodrigues, E. (2001): *Biologia da Conservação*. Londrina, Editora Planta.
- SBH, (2012): Sociedade Brasileira de Herpetologia. Brazilian amphibians – List of species. Eletronic Database. Available at: <http://www.sberpetologia.org.br>. Last accessed on 27 November 2012.