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# Strings, Woodwinds, Brass, and Percussions: What are the divisions in the Brazilian Cerrado Symphony Orchestra?

Marina Scarpelli\*<sup>1,2</sup>, Marina Duarte<sup>2,1</sup>, Renata Sousa-Lima<sup>3</sup>, Lílian Costa<sup>1</sup>, Nadia Pieretti<sup>4,5</sup>, Robert Young<sup>6</sup>, Almo Farina<sup>5</sup>, and Marcos Rodrigues<sup>1</sup>

<sup>1</sup>Depto de Zoologia, Laboratório de Ornitologia, Universidade Federal de Minas Gerais (UFMG) – Av. Antonio Carlos, 6627 - Pampulha, Minas Gerais, CEP 31270901, Brazil

<sup>2</sup>Laboratório de Bioacústica, Museu de Ciências Naturais, PUC MINAS (PUC MINAS) – Av. Dom José Gaspar, 500 - Coração Eucarístico - Belo Horizonte - MG - CEP 30535-901, Brazil

<sup>3</sup>Laboratório de Bioacústica - Universidade Federal do Rio Grande do Norte (LaB - UFRN) – Universidade Federal do Rio Grande do Norte, Centro de Biociências, Departamento de Fisiologia. AC Universidade Federal do Rio Grande do Norte, Laboratório de Bioacústica Lagoa Nova 59078970 - Natal, RN - Brasil Telephone: (084) 32153409, Brazil

<sup>4</sup>Department of Basic Sciences and Foundations, The University of Urbino, Italy – The University of Urbino - Campus Scientifico - Sogesta , 61029 Urbino, Italy

<sup>5</sup>Department of Basic Sciences and Fundamentals, University of Urbino – Faculty of Environmental Sciences The University of Urbino Campus Scientifico - Sogesta 61029 Urbino, Italy

<sup>6</sup>University of Salford, Manchester, School of Environment and Life Sciences, Peel Building – The University of Salford, The Crescent, Salford, M5 4WT, UK - 0161 295 5000, United Kingdom

## Abstract

The Brazilian Cerrado biome is considered a biodiversity hotspot but how different animal groups contribute to its soundscape is yet to be explored. The Acoustic Niche Hypothesis (ANH) suggests that animals, along an evolutionary path, tend to adjust their acoustic signals to the ones of other animals, especially in areas with high animal density and diversity, by the partition of the acoustic space in temporal, spatial and spectral dimensions. This results in a metaphoric symphony orchestra where all players can hear and be heard, and thus avoiding masking from similar sounds. This study tested the ANH in a Cerrado area located at the National Park of Serra do Cipó, Minas Gerais, Brazil. The animal community of the study area is comprised by 226 bird species, 26 large and medium sized mammals, more than forty species of amphibians and hundreds of insect species. Four Song Meter Digital Field Recorders (SM2) (Wildlife Acoustics, Inc., Massachusetts) were installed approximately 200m from each other and programmed to record continuously at 44.1kHz during 2 non-consecutive days of birds breeding season (September 2012) from 00:00 to 23:59. Data were subsampled by analyzing 1 minute every hour of recording, totaling 192 minutes of sounds for the four SM2s. The acoustic niches were characterized using the software XBAT (xbat.org), by collecting several acoustic parameters (start time, end time, duration, maximum frequency, minimum frequency and bandwidth) for any animal vocalization or

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\*Speaker

stridulating encountered in the files. Birds, mammal and amphibian vocalizations were also identified to the species level by field specialists. Preliminary results showed a tendency of the organisms to distribute themselves in spectral and temporal patterns so that only a few partial overlaps were found, especially during the afternoon.

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