

## Using automatic sound recording to monitor avian diversity and guide conservation in an urban-natural landscape in a biodiversity hotspot

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Many tropical cities are situated in global biodiversity hotspots, and their growing human populations and land use are negatively impacting endemic and/or threatened native species and communities. The city of Brasília, Brazil is surrounded by Cerrado, the most species-rich tropical savanna on the planet, of which over 50% of its original extent has been converted to human use in recent decades. However, in the Federal District around Brasília there are significant protected areas covering a total area of approximately 70,000 ha, as well as numerous urban parks and reserves with fragments of native Cerrado. There is a significant community of environmentalists, nature and outdoors lovers, and several universities, governmental agencies, and scientific institutions with strong programs in conservation. The purpose of this project is to use automatic recording of bird sounds to generate biotic diversity indices for various urban and natural environments, and to use these indices to direct landscape restoration and management to increase diversity and representativeness of cerrado fragments in urban parks. Automatic recordings can be made by non-experts and the continuous sampling is helpful in confirming the presence of rare and hard to identify species. We placed cost-effective Audiomoth recorders from April 2019 to May 2021 in 12 points in 3 protected areas (572 hours), 4 points in 1 urban ecological park (592 hours), and 7 points in urban residential areas and gardens (886 hours). We are calculating acoustic indices using the soundecology package in R statistics 4.0 and will ordinate sites using NMDS as recommended by Bradfer-Lawrence et al 2019. Preliminary results show that the automatic recordings are extremely useful to measure biotic acoustic diversity as well as provide an index of sound disturbance from urban and human sources. The next steps will be to share results with park managers and local communities to demonstrate how non-invasive monitoring can generate data on ecosystem conditions and guide conservation plans.