
The soundmark of Amazonia: where and when does the loud tropical bird *Lipaugus vociferans* sing?

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Abstract

The soundscape of the Amazonian forest is a complex mixture of sounds produced by a high number of frog, mammal, bird and insect species. Among all these intricated sounds, highly diverse in rhythm and frequency, the loud and commonly heard song of the Screaming Piha (*Lipaugus vociferans*) is a remarkable soundmark known by anyone who visited the South American tropical forest. Males gather in leks of around 25 individuals where they highly compete vocally to mate with selecting females. *L. vociferans* is very common but the species is supposed to decline significantly due to habitat loss. The density and distribution in space and time has never been estimated, neither locally nor at a regional scale. Passive acoustic monitoring has proved to be a valuable tool to monitor populations but few attempts have been done on common species found in tropical habitats. Here, we take advantage of a large acoustic sample conducted in French Guiana in 2010 to try to estimate the spatial position and temporal pattern of a population of *L. vociferans*. To achieve this, we plan to develop a supervised algorithm to automatically detect the occurrence of *L. vociferans* song in the ~ 100,000 audio files collected with 24 microphones during 43 days in the understory and the canopy forest of the CNRS Nouragues research station. We then wish to estimate the night and day pattern of the acoustic activity of *L. vociferans* and to localise in the forest the different leks based on recorders GPS coordinates and on a model of sound propagation. These analyses, combining acoustics and machine learning at large scales, should produce for the first time dynamics temporal and spatial maps of one of the most famous sound on Earth.

Keywords: Tropical soundscape, bird song, population monitoring, French Guiana

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