



# PHD DISSERTATION DEFENSE

# New tools in Bioacoustics and Soundscape Ecology

## ABSTRACT

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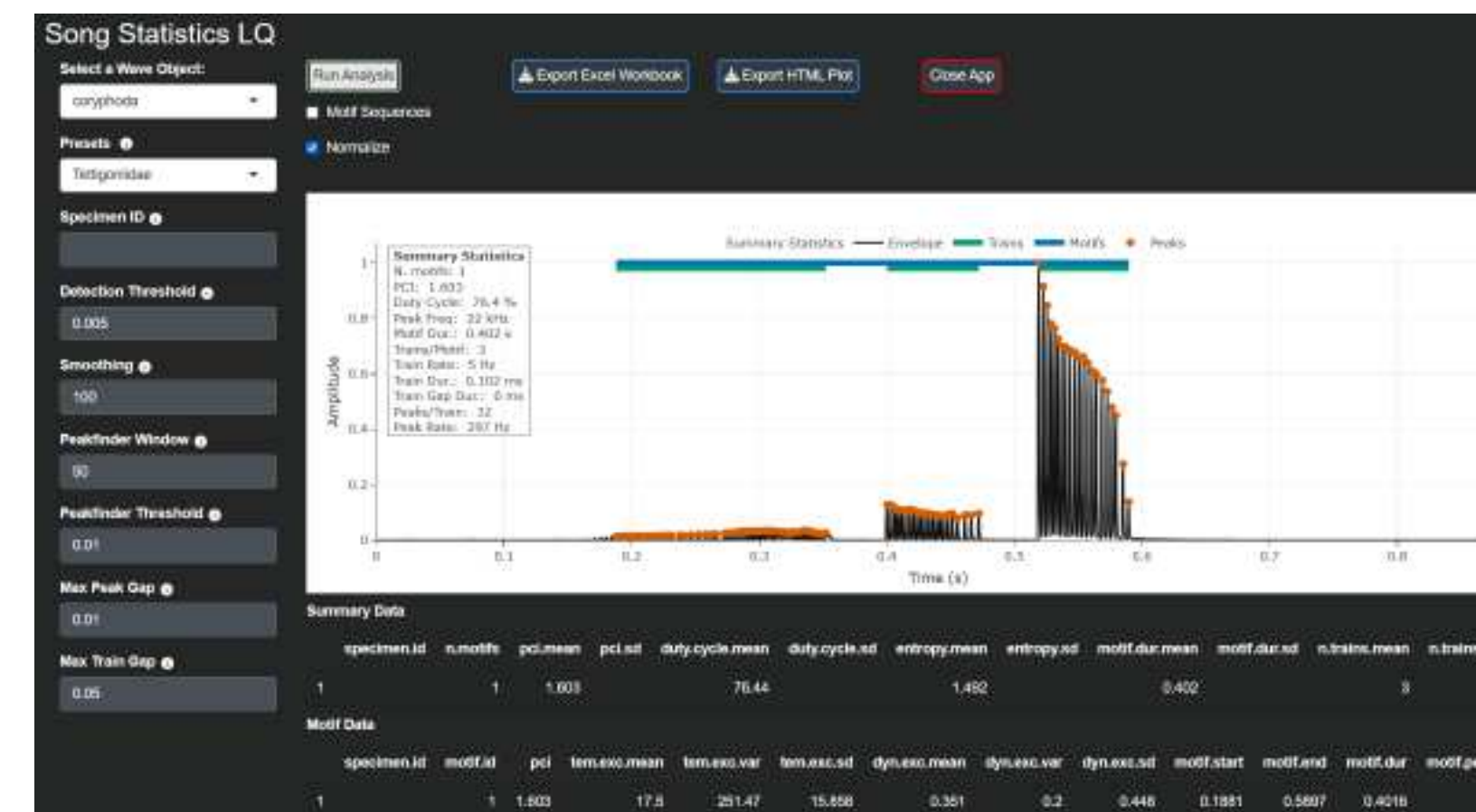
Nearly 100 years after the dawn of bioacoustics, open-access tools for the analysis of insect acoustic signals is still needed. The first chapter describes *Rthoptera*, a new Shiny-powered R package for intuitive bioacoustics plotting and analysis optimized for insect signals. Chapter two applies the tools introduced in *Rthoptera* to characterize the calls of 20 Orthoptera species from Chile, which calls were previously unknown.

Connectedness to nature (CN) is one of the most significant predictors of pro-environmental behavior. However, the role of wildlife sounds (WS) in CN remains underexplored. Using a mixed methods approach, the third chapter explores the upbringing factors influencing access to nature, CN, and perception of WS, as well as the links between these factors and place attachment.



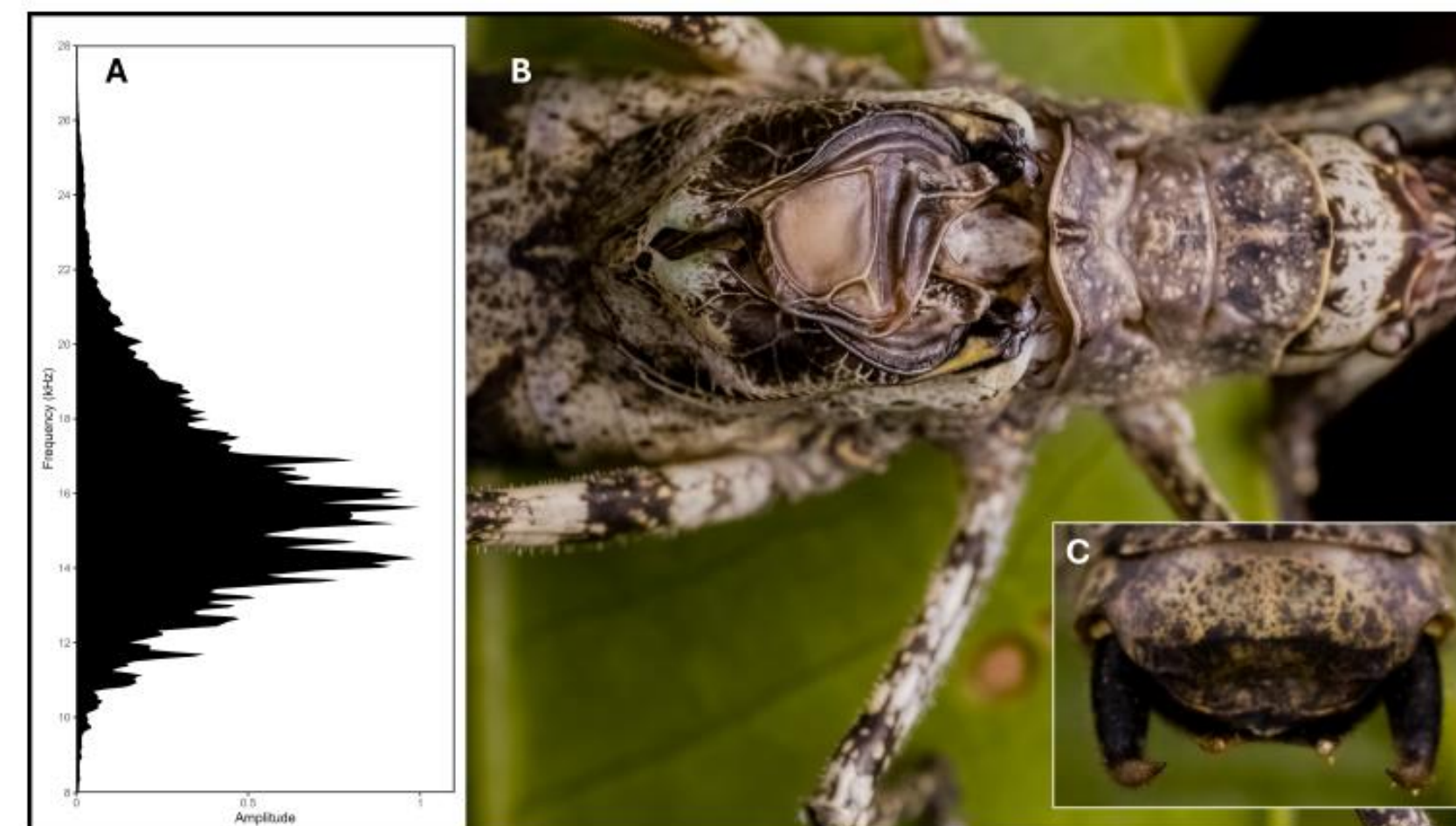
## Insect bioacoustics in R

Rthoptera is a user-friendly R package including 17 Shiny Apps to pre-process, plot, and analyze insect acoustic signals. The package introduces 5 new temporal metrics.



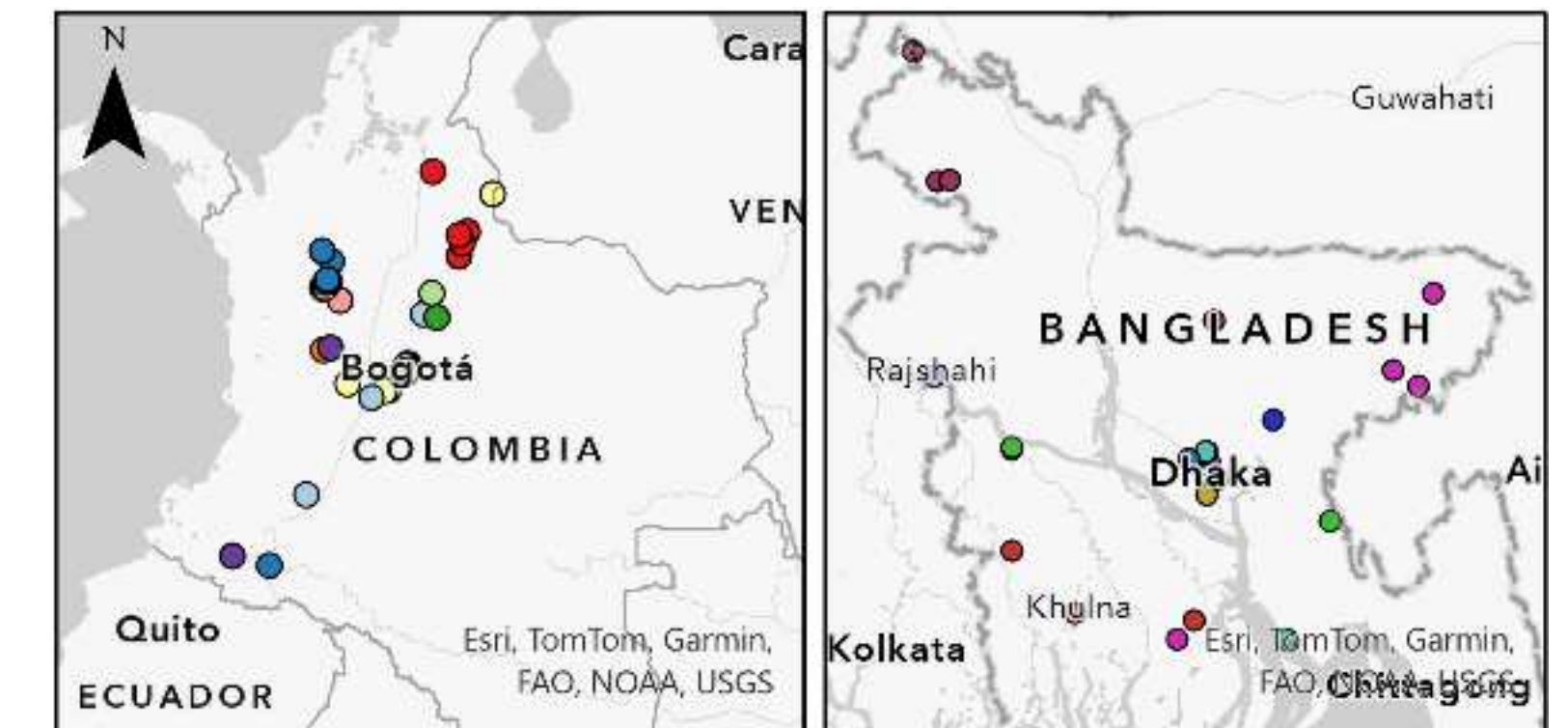
## Bioacoustics of Chilean Crickets

The calling songs of 20 Ensifera (Insecta: Orthoptera) species from Chile were analyzed and characterized, providing acoustic keys to problematic groups which species are difficult to identify by morphology.



*Polycleptis aff. inermis*. This short-winged katydid is part of a species complex which can be resolved through bioacoustics.

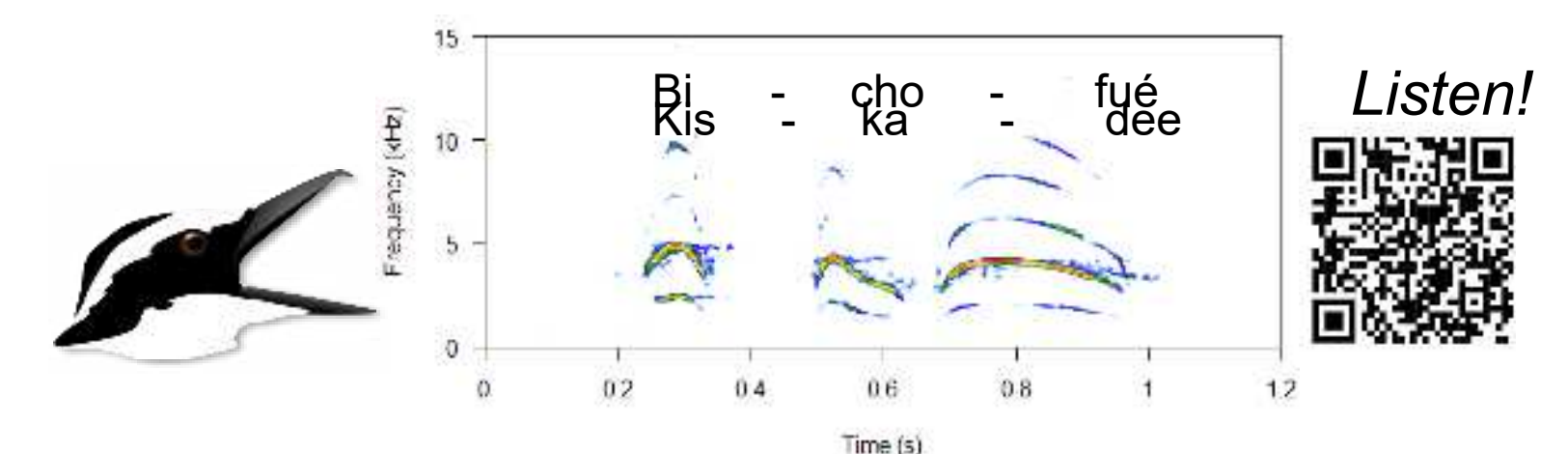
## Biophilia, place attachment, and wildlife sounds



Twenty-five Purdue graduate students from Colombia and Bangladesh were recruited for a semi-structured interview and a sound perception experiment.



The Doyel, or Oriental Magpie-Robin, is the national bird of Bangladesh and one of the most beloved songsters in the country.



The song of the Great Kiskadee is an icon of the Colombian countryside.

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