

Assessing the Performance of ARBIMON for Nocturnal Bird Monitoring: A Sensitivity and Specificity Approach.

Laura Hoyos-Cardona¹, Hector Fabio Rivera-Gutierrez², Bryan Daza¹, and Gabriel Jaime Colorado Zuluaga¹

¹Universidad Nacional de Colombia Sede Medellin

²Universidad de Antioquia

September 9, 2023

Abstract

1: Passive Acoustic Monitoring (PAM) revolutionises ecological research, utilizing sounds for species-specific inferences. However, PAM generates large volumes of data, posing challenges in annotation, classification, and review complexity, necessitating efficient data management strategies. 2: Given this particular need, this research aimed to improve the performance of a pattern-matching algorithm for detecting signals of interest in two nocturnal bird species. The study pursued two main objectives: first, to evaluate various similarity scores and determine the optimum one through a sensitivity-specificity analysis. Second, we investigate potential relationships between species-specific spectral features, such as high, low, and peak frequencies, and the algorithm's performance by reviewing and comparing their dispersion with a Levene test. 3: The outcomes demonstrated a generally favorable algorithm performance, achieving up to 80% sensitivity and specificity. This underscores its effectiveness in identifying target signals. Our investigation indicated that factors like individuality, which could be reflect on the spectral features, could potentially impact the algorithm's efficacy. 4: ARBIMON provides transformative collaborative solutions in the field of bioacoustics. However, additional research is imperative to fully grasp the performance and potential applications of such tools. This exploration extends beyond ARBIMON to encompass the burgeoning technologies within the discipline.

Hosted file

Assessing the Performance of ARBIMON V4_EE.docx available at <https://authorea.com/users/661020/articles/664286-assessing-the-performance-of-arbimon-for-nocturnal-bird-monitoring-a-sensitivity-and-specificity-approach>



