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TITLE: How do birds compose their music? Modelling ecological patterns in bird song data

ABSTRACT:

Biomusicology is the study of animal singing in biological populations. It is an increasingly growing interdisciplinary area of science, especially as a new branch of ecological studies. Sound traits such as frequency, amplitude, period (among many others) can be used to study evolutionary and ecological processes related to the emission and reception of acoustic signals. In this work, we model the mean and dispersion of the fundamental frequency of perching bird songs to study how their phylogeny and functional ecology influence their singing. We then propose a joint model for the duration, minimum and maximum frequencies of the bird songs, based on the multivariate covariance generalized linear modelling framework. Our results suggest that modelling the mean alone would not reveal the contribution of musical pitch variability to microevolutionary and ecological processes of Neotropical perching birds. We discuss model implementation problems and present ideas for further studies.