Vocal mimicry in *Euphonia violacea* (Passeriformes: Fringillidae) Northeast Brazil.

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Abstract
To analyze the vocal mimicry in *Euphonia violacea* we separated notes from recordings of the species and we searched for the number of different types of vocalizations and whether the imitation is a song or a calling. *E. violacea* mimicked from 4 to 25 vocalizations. In the same audio, many phonotypes were repeated dozens of times. Two phonotypes were repeated among different regions. The average of the dominant frequencies (4-6 kHz) didn’t allow the differentiation between songs and callings.

Key words: vocal behavior, bioacoustics, vocal communication.

Introduction

Intraspecific communication is an underlying element for the evolutionary success of a species. Birds mainly use vocal signs to communicate, which is essential in their search for sexual partners, in the territory defense and in other situations related with their sociobiology. *Euphonia violacea*’s males (Passeriformes: Fringillidae) have the ability of mimicking the vocalizations of other bird species which live in the same region\(^1\). Studies carried out with other species from the same genus show that this vocal mimicry may be related with the bird defense, once the majority of the imitated sounds tend to be alarm calls emitted by the model species in situations of imminent danger\(^2\). In this study we tried to comprehend how many different types of vocalizations *E. violacea* is able to mimicry in the Brazilian Northeast and whether these vocalizations can be recognized as songs or callings of other species.

Results and Discussion

Six sound files from the Fonoteca Neotropical Jacques Vielliard’s (FNJV) collection, recorded in Recife – PE (FNJV 6773), Igarassu – PE (6777 and 6778) and Itabuna – BA (6774, 6775, 6776), were analyzed. The phonotypes (sound units with the same frequency, amplitude and duration) that composed each audio were separated and distinguished according to the analysis of their spectrograms. *E. violacea* mimicked from 4 to 25 vocalizations, showing to be a species with great vocal plasticity. Within the same audio, many phonotypes were repeated dozens of times, characterizing vocalizations with great complexity, whereas there were few repeated phonotypes among recordings from different regions. Thus, the amount of notes emitted by each animal is highly specialized, which means that it will only be recognized by its conspecifics that inhabit the same area. We found two phonotypes repeated in more than one audio and, due to the fact that these recordings took place in Itabuna, both could be vocalizations emitted by the same individual or by two individuals from the same population. Two other phonotypes, from recordings in Recife and Igarassu, showed similar spectrograms, however, their dominant frequencies were different, which may represent individual and/or geographic variation of *E. violacea* in the vocalizations of the model species. The average of the dominant frequencies was between 4 and 6 kHz, which is very common in bird vocalizations, although it doesn’t allow the differentiation between songs and callings.

Conclusions

Despite the lack of identification of the nature of the vocalizations (songs or callings), this study contributes with information about the vocal behavior of *E. violacea* and underpins that the mimicry repertoire may vary according to the regional pool of model species.

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