

(213)

Structure and Diversity of Vocalisation of an Endemic Forest Bird (Brown-Capped Babbler *Pellorneum fuscicapillus*) Across the Climatic Gradient in Sri Lanka

Panduawala P.P.¹, Wickramasinghe S.^{1*}, Senevirathne S.S.²

¹*Department of Biological Sciences, Rajarata University, Sri Lanka*

²*Department of Zoology & Environment Sciences, University of Colombo, Sri Lanka*

**sriwick@gmail.com*

Abstract

Vocalizations can be used as indicators of animal ecology and evolution. Communication is an integral part of animal behavior and birds heavily rely on vocalization as their main mode of communication. The pitch and temporal structure are two such critical parameters to evaluate. Brown capped babbler (BCB, *Pellorneum fuscicapillus*) is a good model for studies of vocalization since it shows variety of complex vocalizations across its wide geographic range in Sri Lanka. Yet, it was hard to find any scientific studies directed towards the vocalization of this species. Therefore we focused on the structure and diversity of vocal repertoire of BCB across different climatic zones. Mihintale Sanctuary, Sinharaja MABR, Dombagaskanda Forest Reserve and Namunukula Mountain (Passara, Badulla) were used to observe vocalization. The ‘*Pretty dear*’ or ‘*Rideediyoo*’ vocal type of BCB was mainly used for comparisons. Recordings were done using Marantz PMD 661 recorder, microphone and sock, a head phone, and a pair of binoculars. Collected data were broken into smaller files using Audacity 2.1.2 and Raven Pro 1.5 was used for vocal analysis. Parameters such as highest frequency, lowest frequency, frequency modulation were used as frequency characters. Duration, duration between two types, duration of notes was used as temporal characters. Descriptive analysis was done to interpret frequency and temporal characters of BCB. Principle component analysis (PCA) was used to compare acoustic data among different locations. We recognized seven vocal types. Most common types were its ‘*Pretty dear*’ and the ‘*Long chirp*’. PCA revealed that the vocalization of Sinharaja (wet zone) and Mihintale (dry zone) cluster separately. PCA which results from the frequency attributes revealed that the vocalization of Sinharaja (mid elevation) and Dobagaskanda (low elevation) also cluster separately, hinting that there could be a climate-based divergence in this vocally complex songbird. This study revealed that this endemic species of bird further diverged across forest types in Sri Lanka probably as a response to climate.

Keywords: Climate, Divergence, Principle Component Analysis, Vocalization, Vocal repertoire