(148)

Avifaunal Richness and Composition Along the Land-Use Gradient of the Endane Biodiversity Corridor Landscape, Nivithigala, Sri Lanka

Kodithuwakku, K. A. I. A.[1*], Perera, A.[3], Geekiyanage, N.[2], Wickramasinghe, S.[1]
[1]*Department of Biological Sciences, Faculty of Applied Sciences,*
Rajarata University of Sri Lanka, Mihintale, Sri Lanka
[2]*Department of Plant Science, Faculty of Agriculture, Rajarata University of Sri Lanka,*
Mihintale, Sri Lanka
[3]*Dilmah Conservation, Dilmah Ceylon Tea (Pvt) Ltd, Peliyagoda, Sri Lanka*
[*]isuruanuradhakodi@gmail.com

Abstract

Biological corridors are ecologically significant as they reconnect fragmented forests and restore functional connectivity. However, limited studies have assessed avifaunal diversity across land-use gradients in Sri Lanka, particularly within the Endane Biodiversity Corridor (EBC). EBC is an ecological corridor that connects the Iharakanda proposed forest reserve with the Walankanda Forest Reserve (WFR) within Sinharaja Forest Landscape. This study examined whether avifaunal richness and composition significantly vary across four land-use types associated with the EBC: the restored area (RA), home gardens (HG), productive tea lands (PT) and a forested section of the WFR. Field surveys from July 2024 to February 2025 used 21 line transects of 100 m, with direct and indirect (auditory) observations done during peak avian activity. Margalef's richness index was used to assess the species richness, whereas the linear mixed-effects models were applied to compare the richness index. Community similarity was assessed using the Sørensen similarity index and permutational multivariate analysis of variance (PERMANOVA). A total of 111 avifaunal species belonging to 48 families were recorded, including 101 breeding residents, of which 21 were endemic and 10 migratory species. *Loriculus beryllinus* was the most abundant species across all land-use types. Highest avifaunal richness was recorded in RA (100 species), followed by HG (79), WFR (71) and PT (69). Forty species were common to all four land-use types, while seventeen species were confined to a single land-use type. Margalef's richness index varied significantly among land-use types ($p<0.05$), with PT showing the highest richness (5.74 ± 0.53), followed by HG (5.28 ± 0.44), RA (4.77 ± 0.24), and WFR (3.53 ± 0.49). Sørensen similarity analysis revealed that RA showed high similarity with both HG (0.82) and PT (0.81), and slightly lower similarity with WFR (0.78) suggesting that RA functions as an ecological intermediary, bridging natural and human-modified habitats. PERMANOVA confirmed that species composition differed significantly among the four land-use types ($R^2=0.50$, F=3.66, $p=0.004$), indicating that each supports a distinct avifaunal community. The high richness, endemism, and distinct community composition highlight the effectiveness of restoration and the importance of habitat connectivity for sustaining avian biodiversity in Sri Lanka. Despite the conservation efforts, threats such as illegal gem mining, encroachment, tree cutting, and poaching are identified as persisting risks for the EBC and WFR. Future studies should integrate seasonal variation and long-term monitoring to better understanding of temporal dynamics within avifaunal communities in the EBC.

Keywords: *Avifaunal diversity, Community composition, Ecological restoration, Habitat connectivity, Landscape gradient*

Proceedings of the 30th International Forestry and Environment Symposium 2026 of the Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka

143