

An assessment of the avifaunal diversity in Hapugastenne estate of Ratnapura District, Sri Lanka

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An avifaunal survey was conducted at Hapugastenne Tea Estate (1302ha), Ratnapura, Sri Lanka from November to December 2015 with objectives of assessing the bird diversity within different habitats and documenting threats to biodiversity. Bird populations were sampled in 39 line transects and 17 point counts for terrestrial and aquatic habitats respectively representing eight habitat strata (tea fields, home gardens, scrublands, secondary forests, natural forests, stream-side vegetation, riverine forests, and water-logged areas) within the estate, replicated in its nine divisions. Transects were conducted during the morning between 07:00 and 09:00 hrs.

A total of 91 species, including nine Sri Lankan endemics and nine winter visitors were recorded, which included one globally and six nationally near threatened species. Estimates of relative abundance indicated a high degree of rarity, with only few abundant species, the red-vented bulbul being the most abundant. Among the habitats, the highest species richness (39) was recorded in stream-side vegetation where Simpson's diversity index (0.947) was also the highest, while the Shannon-Wiener diversity index ($H' = 3.247$) is marginally second to tea fields ($H' = 3.382$), where the evenness was the highest ($J = 0.994$). Interestingly, the Shannon-Wiener diversity and the evenness of the secondary forest fragments were comparable to those of home gardens ($H' = 2.591$; $J = 0.795$ and $H' = 2.515$; $J = 0.791$ respectively). The results of the feeding guild analysis indicated a greater abundance of the insectivore guild was greater in tea field than in other habitats. In contrast, the relative abundance of frugivore guild was higher in the natural and secondary forests. Cluster analysis indicated a highly dissimilar species composition in scrublands compared to other habitats, while tea fields and home gardens were very similar in their avifauna.

The study revealed that this managed landscape provides a diversity of niches maintaining the natural biodiversity to a certain extent. Nevertheless, 14 alien invasive species (nine plants and five animals) were identified from the area among several other threats to the biodiversity. Increasing plant diversity, introduction of shade trees and connecting remnant natural habitat patches via stream reservations are recommended to conserve and enhance the avifaunal diversity in the study area.

Keywords: Birds, diversity, feeding guilds, habitat association, conservation