Dung Beetle Communities Change Across Different Land Uses in the Upper Walawe Basin Area

Perera P.R.M.[1*], Kudavidanage E.P.[2], Udayakumara E.P.N.[2], Wijesekara H.[2] and Lekamge D.[2]

[1]*Faculty of Graduate Studies, Sabaragamuwa University of Sri Lanka*
[2]*Department of Natural Resources, Sabaragamuwa University of Sri Lanka*
*rumeshikaperera00@gmail.com

Environmental quality varies across different land-use types. As a result, available species communities and their functions also change across different land-uses, even within a single climatic zone. Community responses to land-use variations are best reflected by indicator taxa. This specific study focuses on how the well-known indicator dung beetle communities respond to land-use changes. We identified dung beetle species compositions across five environmentally distinctive land-uses (large forests, forest fragments, Pinus plantation forests, home gardens, and tea plantations). Trapping was conducted from November 2021–July 2022 in the Upper Walawe basin area. A non-destructive live trapping method was used to collect dung beetles. The research design allowed a total of 90 pitfall traps were left in the field for 48 hours. A total of 723 beetles belonging to 29 morph-species and representing three genera of the subfamily Scarabaeinae were recorded. The highest and the lowest species richness were recorded in the large forest (22) and plantation forest (10) consecutively. The forest patch recorded the highest individual species count (189). Also, the highest Shannon-Wiener index was recorded in large forest areas, indicating the richest diversity. In large forests, the most dominant species is *Onthophagus favrei* (dominancy index - 12.9%). In-home gardens and tea plantations, the most dominant species is *Onthophagus unifasiatus* (dominancy index: 26.5% & 28.4%), because it mainly relies on human and domestic animal feces. It was noted that the different land-uses consist of different species diversity due to other conditions in that location; anthropogenic activities (chemical usage for agricultural and domestic animals entering the forest). The Upper Walawe basin consists of a mosaic of land-uses with different large mammal availability, resources, and anthropogenic activities. Dung beetle communities show a distinct variation across the different land-uses but with some degree of overlap due to mixed vegetation in adjacent land-uses.

Keywords: *Abundance, Community composition, Indicator species*