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Abundance, Diversity, and Distribution of Butterflies (Order Lepidoptera) in Selected Forest Patches and Home Gardens in the Mahagama Area of Kalutara District, Sri Lanka

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Abstract

Butterflies are one of the most conspicuous species of Earth's biodiversity. Being exceptionally reactive to any alterations in their environment (*i.e.*, temperature, humidity, light, and rainfall), these creatures are recognized as useful bioindicators. They have distinct requirements for different habitat types for mating, breeding, and nectaring and are, thus, in sync with the diversity and condition of their habitats. This study was carried out from August 2023 to October 2023 to examine the abundance, diversity, and distribution of butterflies in ten different fields representing two major habitats, *i.e.*, five selected home gardens (HG) and five selected patchy forests (PF), of the Mahagama, Kalutara District, Sri Lanka. The line transect method was used to conduct research sampling throughout the study by setting two line transects each per habitat (2 x 100 m). The time allocated for one line transect was 15 minutes to avoid the double counting. All the encountered butterfly species were identified using standard photographic field guides. Statistical analysis was done using the Minitab v. 21 statistical package. Shannon Wiener Index (H') and Magalef's Index (D_{Mg}) were used to compare the diversity and abundance of butterflies in selected habitats. A total of 686 individual butterflies (PF-414; HG-272) from 19 species (PF-18 species, and HG-7 species) representing five families (*i.e.*, Nymphalidae, Lycaenidae, Papilionidae, Pieridae, and Hespiridae) were identified. Among all the 19 butterfly species present in the Mahagama area, Grey Pansy, *Junonia atlites* (HG-15.04% and PF-18.30%) showed the highest abundance representing the family Nymphalidae. The lowest abundance was shown by *Euploea phaenareta* (0.84%) and *Orsotriena medus* (0.84%) from home gardens, and *Orsotraena medus* (0.01%) and *Elymnias hypemnestra* (0.01%) from the patchy forests which also represent the family Nymphalidae. The diversity and abundance of butterflies were higher in the home gardens (H'-2.3972; D_{Mg}-2.8471) than in the forest habitats (H'-2.0886; D_{Mg}-2.5048). The findings of this study highlight the fact that the home gardens of the Mahagama area support a lot for butterflies than forest patches.

Keywords: Butterfly diversity index, Species richness, Butterfly abundance