Abstract No: 83   *Life Sciences*

A PRELIMINARY STUDY OF NOCTURNAL BEETLE DIVERSITY AND THEIR FUNCTIONAL GROUPS ACROSS HABITAT TYPES IN DEENSTON, KNUCKLES, SRI LANKA

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Beetles represent a significant portion of Sri Lanka's biodiversity, with 115 families (ca. 3,033 species) documented, making them the largest faunal group on the island. However, little is known about their habitat preferences, related to their functional groups which determine the assemblage structure of these mega diverse nocturnal beetles (Coleoptera) in the tropics. Here, we examined the diversity of nocturnal beetle assemblages in Deenston, Southeastern Knuckles region, and investigated the influence of different habitat types on their diversity. Additionally, we explored how these habitat types affect their general feeding groups. Field surveys were conducted in Deenston area during 2019 and 2020 including dry and rainy seasons (total 72 trapping events). Specimens were sampled using six UV-light traps, encompassing habitat types including central forest (CF), forest edge (FE) and abandoned plantation (AP). Beetles were identified up to family level and grouped according to feeding type (Herbivore, Predator, Scavenger, Fungivore, Moss feeders, Xylophagous). Assemblages were assessed for compositional similarity, diversity, and abundance within habitats. Overall, 1183 beetles were examined across 39 families. Beetle abundance and family richness were highest in the CF (49.79% and 39 families), followed by the FE (31.70% and 38 families) and AP (18.51% and 31 families). Family Chrysomelidae was the most abundant in both CF and FE habitats, while abundance of Staphylinidae was higher in the AP habitat. The beetle assemblages in the CF and FE ecosystems exhibited less similarity to those found in the AP habitat. Shannon diversity value (H') and Evenness (E) resembled variation among different habitat; AP (H':2.60, E:0.75), FE (H':2.36, E:0.65), CF (H':2.43, E:0.66). Herbivorous and predators exhibited the highest diversity and abundance at 55.62% and 26.64%, respectively. The predominant composition of herbivorous beetles might be due to anthropogenic actions, with their occurrence higher in the less disturbed CF and decreases from the FE to the AP habitat. Predatory, fungivorous, and scavenger beetles were higher in the disturbed AP ecosystem. This indicates a loss of beetle abundance and richness and changes in beetle composition in disturbed environments.

Keywords: Beetles, Deenston, Diversity, Habitat, Herbivorous