

Preliminary study of beetle diversity (Order: Coleoptera) in UiTM Puncak Alam

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Structured Abstract

Background: The order Coleoptera, commonly known as beetles, represents the most species-rich group on Earth, accounting for 40% of all described arthropods species. Beetles play significant roles in ecosystems as pollinators, predators, detritivores, and pests. However, recent studies have shown a decline in global insect populations, including beetles. Despite this, the diversity of beetles in UiTM Puncak Alam remains poorly understood.

Methods: This thesis aims to investigate the beetle diversity and abundance in UiTM Puncak Alam and compare two commonly used sampling methods: Pitfall Traps and Sweep Nets. The study was conducted in three plots on the campus, each with different habitats.

Results: A total of 214 beetle individuals belonging to ten families and 23 species were collected. Chrysomelidae was the most abundant family, dominated by *Nodina malayana*. Chrysomelidae were mostly caught in Denai Cadamba Forest and Tasik Alam Bina which has blooming plants and flowers. Such dominance indicates a potential preference for certain vegetation types, as leaf beetles (Chrysomelidae) are primarily herbivorous insects that feed on plants. The other nine families of beetles collected were Buprestidae, Bostrichidae, Cantharidae, Chrysomelidae, Curculionidae, Dysticidae, Leiodidae, Phalacridae, Ptinidae, and Scarabaeidae. The Shannon-Wiener Diversity Index (H') and Margalef Index (R') were calculated to assess the diversity of beetles. An area behind Tun Abdul Razak's Library exhibited the highest diversity ($H' = 1.887$), while Denai Cadamba Forest had the highest species richness ($R' = 3.385$). The results indicate that diverse microhabitats support different beetle communities in UiTM Puncak Alam. In this study, sweep nets were more efficient in collecting beetles, yielding a higher number of individuals and species than pitfall traps. This active method proved effective for capturing flying beetles in the vegetation-rich habitats, especially Chrysomelidae.

Conclusion: In conclusion, this study provides valuable insights into the beetle diversity and abundance in UiTM Puncak Alam and the efficiency of different sampling methods. The results underscore the need for conservation efforts to preserve suitable habitats and protect the rich biodiversity of beetles in the campus.

Keywords: Beetles, diversity, abundance, pitfall traps, sweep net

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