

Taxonomic Diversity of the Fruit-feeding Butterflies (Lepidoptera: Nymphalidae) in Kubah National Park, Sarawak, Southwest Borneo

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Abstract.– The diversity of nymphalid assemblages in primary, secondary and heath forests and forest edges in Kubah National Park, Kuching, was assessed by employing both conventional and taxonomic biodiversity indices. The lower variation in the taxonomic distinctness index (Λ^+) in the primary forest indicated a distantly related array of nymphalids at a low taxonomic level, which is likely to be sustained by the numerous microhabitats. However, despite that the primary forest contained 74% of the total nymphalid species sampled in this study, the forest edge had the highest Λ^+ , specifying speciose genera that were abundantly sampled in this habitat. Closer values of Λ^+ between the secondary and heath forests and forest edges showed a resemblance in the taxonomic properties for these three assemblages, as having similar habitat requirements and ecological adaptations in their respective habitat. The utilization of taxonomic-based biodiversity indices inclusively leads to more meaningful findings and assists in diversity studies.

KEY WORDS: Taxonomic diversity, fruit-feeding butterflies, Nymphalidae, Kubah National Park

INTRODUCTION

Recording and understanding species abundance in natural communities and the processes that control their variation in space and time are fundamental to ecological studies of diversity and its application to environmental management, monitoring and conservation.

Although the highest biodiversity is known in the tropics, terrestrial tropical environments and especially rainforests are being destroyed at a rapid pace due to the expansion in the human global economies and population growth mediated changes in land use and resource exploitation patterns (Caughly and Gunn, 1996; Laurance and Peres, 2006; Nepstad et al., 2006). Therefore, studies of diversity patterns are urgently required.

Insects not only play a major role in many terrestrial ecosystem processes, including pollination, herbivory, decomposition and nutrient recycling, seed predation and predation / parasitism of other species (Janzen, 1987; Band, 1994), but form the major portion of the vast diversity of known (and estimated likely actual net) animal and plant species in tropical rainforests, and are greatly affected by the relentless habitat destruction (Lowman, 1997). Habitat complexity allows the diverse heterogeneous assemblages of insects, since two species of insects cannot coexist in the same habitat if their temporal and spatial niche requirements completely overlap (Speight et al., 2008; Wagner, 2001). The vast variety of flora in the tropical rainforests has created and served as a suitable and diverse range of habitats for the specific associations between insects and plants, which in terms of being a food source range