

EFFECTS OF VERTICAL GRADIENT ON THE DIVERSITY AND ABUNDANCE OF NYMPHALIDAE IN A BORNEAN RAINFOREST

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ABSTRACT

The forest canopy is known to harbour high insect diversity, yet descriptive studies that simultaneously measure species richness on both ground and canopy strata are not common. The Nymphalidae are abundant in the canopy and their distribution across the vertical dimension contributes to tropical diversity. A comprehensive study of the vertical distribution of nymphalids in four forest habitats in the Kubah lowland mixed-dipterocarp forest: primary, secondary, heath forest and forest edge were conducted. Forty baited traps were installed at both ground and canopy levels and sampled over a six-month period. The preference of the nymphalids for the lower stratum was significant for abundance, diversity, and common species such as *Bassarona dunya*. Observed pattern could be due to the distribution of available adult resources and larval hostplants. Being practically 'sun-lovers', highest diversity of nymphalids at the canopy level was recorded at the forest edge ($H' = 2.525$). Meanwhile, more microhabitats are offered at the lower level in secondary forest and thus supporting the most diverse nymphalids here ($H' = 3.020$). Vertical study of nymphalids provides knowledge and fluctuation patterns of its diversity and thus more similar study is suggested to be conducted in the future.

Keywords: Borneo, diversity, Nymphalidae, vertical distribution

ABSTRAK

Kanopi hutan dikenalpasti mempunyai kepelbagaian serangga yang tinggi, namun kajian deskriptif yang mengukur kekayaan spesies di aras tanah dan strata kanopi secara serentak adalah jarang dijalankan. Nymphalidae banyak terdapat di kanopi pokok dan taburannya yang melintasi dimensi menegak telah menyumbang kepada kepelbagaian tropika. Kajian komprehensif ke atas taburan menegak nymphalid di empat habitat hutan di hutan dipterokarp tanah rendah Kubah: primer, sekunder, hutan kerangas dan pinggir hutan telah dijalankan. Empat puluh perangkap umpan dipasang di aras tanah dan kanopi dalam tempoh tempoh enam bulan. Pemilihan nymphalid pada stratum bawah adalah signifikan bagi kelimpahan, kepelbagaian, dan spesies umum seperti *Bassarona dunya*. Corak penemuan ini mungkin disebabkan oleh ketersediaan sumber makanan kupu-kupu dewasa yang ada dan tanaman perumah bagi larva. Kepelbagaian kupu-kupu pemakan buah tertinggi direkodkan di strata kanopi pinggir hutan ($H' = 2.525$) yang berkemungkinan disebabkan oleh sifat kupu-kupu yang