

Diversity and ecology of carrion and fruit-feeding butterflies in Bornean rainforest

ABSTRACT

Tropical rain forests are well known as centres of insect diversity and much effort has focused on the role of larval host plant specificity in generating and maintaining this diversity, but fewer studies have examined the exploitation of different food resources by adults in this context. Tropical butterflies feed as adults on a wide range of resources and we examined the diversity and ecology of species feeding on rotting fruit and carrion in a tropical lowland rain forest in Sabah, Borneo. We found that species richness and diversity were significantly higher on carrion than on fruit, and that this pattern was repeated at genus and family level. There was little similarity in species assemblages on the two substrates and β -diversity between carrion and fruit comprised 33% of the total diversity of butterflies feeding on decaying matter. β -diversity between canopy gap and shade microhabitats comprised 21% of total species diversity on carrion but only 7% of the total on fruit, indicating greater functional diversity on carrion in terms of light preferences. Captures were strongly male-biased on carrion but not on fruit, and recapture rates were much lower on carrion than on fruit. Species from two subfamilies (Nymphalinae and Charaxinae) exploited both substrates and for Charaxinae, there was evidence from adult flight morphology that species on carrion were capable of faster more-powerful flight. These results support the notion of a distinctive carrion-feeding fauna comprising more mobile species, which may use carrion to meet additional nitrogen requirements resulting from greater musculature. However there was no relationship between flight morphology and substrate choice in the Nymphalinae, and carrion-feeding may not have a unitary explanation.