

Species diversity patterns in insular land snail communities of Borneo

Abstract

Island biogeography, the study of distribution, richness and dynamics of species on isolated patches of habitat, is central to our understanding of what determines species diversity on Earth. Land snails are organisms particularly suited for answering questions pertaining to the factors that determine island species–area relationships, because of their dependence on edaphic conditions, low migration rates and high speciation rates. In this study, we analyse the land snail fauna in 73 standard quadrats of 20m × 20m on 13 islands of diverse geological origin off the coast of Sabah, northern Borneo, as well as one mainland site. We find a strong species–area relationship with slope (z-value) of 0.17. We also find that species abundance distributions for each island are best explained by a niche-based model. Finally, contrary to expectations, island area has a strong positive effect on point diversity within a 20m × 20m-quadrat. We discuss these results in the light of the relationship of area to population dynamics, habitat availability and primary productivity.