

Bat species diversity trend along an elevation gradient: A study in Crocker Range Park, Sabah, Borneo

ABSTRACT

Bats (Order: Chiroptera) is a recognised group of bioindicators due to their sensitivity towards alterations in their immediate surroundings. With the threats of climate change becoming more severe on a daily basis, it is reasonable to collect data on how bat diversity is influenced by elevation. This will be useful to predict and monitor possible upslope shifting of bat species due to increase in surrounding temperature or anthropogenic pressure. Hence, this study aims to uncover the bat diversity trend at different elevations in Crocker Range Park (CRP), Sabah, Malaysia. Bat trappings were conducted in four substations within this park, covering an elevation spectrum from 450 to 1900 m a.s.l. The overall sampling managed to capture 133 individuals of bats, predominantly Pteropodidae, with the addition of two new species locality records for CRP, *Murina peninsularis* and *Hypsugo vondermanni*. Simple linear regression analyses revealed that both bat diversity and richness have an inverse linear relationship with elevation. Likewise, the Pearson's correlation value, associating bat diversity with elevation, also shows that they have a negative relationship at $r = -0.852$. Heterogeneity of habitats explain this trend, as in the lower counterpart of CRP, lowland forests, which are richer in fruit and insect resources persist. Besides, lower land forests have better niche assortment, due to the distinctive layers stratification, allowing bats utilising different guilds to thrive in the same vegetation profile. This study further emphasises the role of CRP to protect most of the bat species found in Borneo, as well as serving as the baseline data for the future studies that look into the impact of temperature increment towards the upslope shifting of the bat population in CRP.