Diversity, Encounter Rate and Detection of Non-Volant Nocturnal Mammals on Two Malaysian Islands

ABSTRACT

Nocturnal mammals constitute a crucial component of tropical faunal diversity, but not much is known about the effects of anthropogenic disturbance on the habitat use and detectability of these species. We investigated which habitat and environmental variables impact the detectability of non-volant nocturnal arboreal mammals across varying habitat types at two tropical islands with different levels of anthropogenic development in Malaysia. We conducted night transect line and point count surveys following pre-existing paths in Penang Island and Langkawi Island between 2019 and 2020. We used a head torch with red filter and a thermal imaging device (FLIR) to enhance animal detection success. We calculated the encounter rates (individual km^{-1}) for each species as a proxy for abundance. Overall, we detected 17 species, but did not find higher species diversity in intact forested environments compared to disturbed areas. Encounter rates of the most observed species were influenced by 'time after sunset' on the highly developed island of Penang, whereas on the rural island of Langkawi, detection was higher in sites with better canopy connectivity. Different species of non-volant nocturnal arboreal mammals use their respective habitats differently and thus, are differently impacted by varying levels of anthropogenic activities. Our results provided baseline data on the diversity, encounter rate, and detectability of these highly elusive species, which can also help to further improve methodologies for the detection of nocturnal wildlife.