Disturbance gradient and mosquito diversity pattern in areas surrounding Chini Lake - the second largest freshwater lake in Peninsular Malaysia

ABSTRACT

Malaysia is a tropical country that has consistently been facing a prevalent threat of mosquito-borne diseases. Amongst the plethora of diseases, the most common mosquitoborne disease in the country is dengue fever, transmitted by Aedes spp. mosquitoes. This study aims to examine the effects of human activity associated with different land use on mosquito population composition and diversity. Our study site is Chini Lake, a naturally occurring lake and the second-largest freshwater body in Malaysia. The areas surrounding the Lake have been subjected to various human activities, such as economic development and conversion into rubber plantations, while some areas remain pristine, making Chini Lake an ideal location to examine the gradient of human disturbances on mosquito composition and diversity. We sampled adult mosquitoes and larvae across a range of sites with different levels of human disturbance. As expected, in areas with high disturbance scores, the species richness of adult and larval mosquitoes were reduced while the abundance was higher. The results also revealed minimal overlap between species captured for adult and larval samplings, suggesting that land-use changes affect both life stages differently. Different resource requirements of adult and larval mosquitoes likely led to the observed diversity pattern in this small survey. We suggest future work to look into how habitat heterogeneity affects both life stages and sexes of mosquito diversity patterns and distribution.