

## Comparative limnology of natural and man-made tropical lakes

### ABSTRACT

This paper assessed and compared physicochemical profiles and biodiversity indices of two shallow lakes namely the natural Bera Lake and Bukit Merah reservoir in Peninsular Malaysia. Variations in relation to hydro-meteorological variables, including rainfall, wind speed and air temperature were also measured during the field sampling. The results showed clear distinctions between natural and man-made lakes in terms of physical and chemical properties of lake waters and their relationships to the hydro-meteorological dynamic. Persistent oxygen and temperature differences between the epilimnion and hypolimnion were clearly detected in Bukit Merah reservoir under low winds and strong heat. Oxycline also persist during flooding or high turbidity levels indicating their enriched bottom waters. On the other hand, the natural Bera lake showed temporary stratification during the dry season with low winds but the water columns were thoroughly mixed during the wet season when the water temperature was lower and wind speed was higher. Plankton diversity in Bera lake was significantly higher ( $p < 0.05$ ) than the Bukit Merah reservoir, probably due to the much longer history of the natural lake compared to the man-made one. Due to the longer residence time of the reservoir compared to the natural lake, the former tends to be more vulnerable to eutrophication if subjected to uncontrolled nutrient enrichment.