

Planktonic microcrustacean community structure varies with trophic status and environmental variables in tropical shallow lakes in Malaysia

ABSTRACT

A study was conducted to evaluate planktonic microcrustacean species composition, abundance, and diversity in lakes with different trophic status and to determine the relationship between microcrustacean community structure and lake environmental conditions. This study hypothesized that there are correlations between eutrophication levels and microcrustacean community structures in a lake. Three shallow lakes of different trophic status (Sembrong, Putrajaya and Subang lakes) were selected for this study. Two-Way Analysis of similarities (ANOSIM) revealed differences in microcrustacean diversity and density amongst lakes, where the hypereutrophic condition in Sembrong lake resulted in the lowest diversity but the highest density of microcrustaceans. Similarity percentage (SIMPER) analysis identified the discriminator species among lakes where the domination of small-sized microcrustaceans was observed in lakes with high levels of eutrophication; the hypereutrophic Sembrong lake (*Ceriodaphnia cornuta*, 74.0%); the meso-eutrophic Putrajaya lake (*Bosmina longirostris*, 46.9%; *C. cornuta*, 19.4%). Chlorophyll a, total phosphorus and water transparency showed significant roles in the distribution of microcrustaceans. The canonical correspondence analysis (CCA) scores indicated that small-sized *C. cornuta* and *B. longirostris* were related to the eutrophic conditions of lakes. This study elucidated that the lake trophic status could be one of the main factors contributing to the community restructuring of microcrustaceans in tropical lakes.

Keyword: Cladocerans; Copepods; Eutrophication; Indicator species; Water quality; Zooplankton