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Plankton as bio indicators of water quality in the Bolgoda lake

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The plankton community responds to the physicochemical and biological changes of the waters by means of their abundance, species composition, stability and productivity. Based on these responses the organisms could be classified into two types of indicators; namely the pollution indicators and diversity indicators, which could be, evaluated by means of pollution indices and the diversity indices respectively. Present study is focused on the diversity indices of plankton in Bolgoda Lake, at Madapatha and Kahapala, which was carried out from the August 2004 to January 2005. The objective of the study is to determine the species composition of plankton and to calculate the species diversity index values based on phytoplankton and zooplankton assemblages of the lake.

The water quality of the Bolgoda lake during the study period was D.O 5.53-7.36mg/l, Conductivity 120-5346µs/cm, pH 6.8-7.6, temperature 27.9^{0}C- 31.4^{0}C, BOD 0.97-2.05mg/l, Nitrate 0.05-0.39 mg/l, Orthophosphate 82.7-166.9µg/l, water transparency value 60-114cm, Salinity 0-7.2ppt, rainfall 136.6mm- 663.8mm. The phytoplankton of the study area was composed of more than 100 species, including five major taxonomic groups namely, Chlorophyceae, Euglenophyceae, Cyanophyceae, Bacillariophyceae, and Chrysophyceae. Chlorophyceae dominated the phytoplankton with the *Franceis ovalis*, *Staurastrum* sp. forming the major component. Highest density of phytoplankton was recorded from August to October. The zooplankton was composed of 15 species with major groups of Rotifera, Cladocerans and Copepods. The most abundant group was the Rotifera. Highest density of zooplankton was recorded from October to December.

The Shannon-Weiver's index, Margalef index, Simpson index and Evenness index of phytoplankton and zooplankton were calculated using mean of nine replicates in each station, throughout the study period. The Shannon-Weiver's index of phytoplankton was 1.1-2.6 indicating the moderate pollution level in the study area. The value for zooplankton was 0.07-1.5 indicating the heavy pollution level in the study area according to previous studies. Evenness index was always lower than 1 indicating that the species abundance is very dissimilar. Based on the physicochemical parameters and diversity index values, the study area is in the level of moderate to heavy pollution during the study period.