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Physico-chemical and microbiological status of Boralesgamuwa Lake

B A A Sajeewanie, Pl M Manage
Department of Zoology, University of Sri Jayewardenepura, Nugegoda

Boralesgamuwa Lake, a stagnant water body located in the Maharagama area is an important water resource. The present study was carried out to investigate its trophic status, pollution status and suitability of water for aquatic life and human utilities. Sampling was carried out at eight randomly selected sampling stations from April to October 2012. The results were compared with the proposed ambient water quality standards for inland waters prescribed by the CEA. In order to investigate the trophic status of the lake, the Organization for Economic Corporation and Development (OECD) Fixed Boundary system was used. The pollution status of the lake was evaluated with reference to the Shannon – Weiner diversity index of plankton species.

The mean temperature ranged between 25.2 ± 0.29 and 31.8 ± 0.29 ˚C during the study period. The mean conductivity and pH values were ranged between 200.6 ± 7.6 – 255.3 ± 9.0 µS cm^{-1} and 6.674 ± 0.122 – 8.540 ± 0.781, respectively. The ranges of mean DO, nitrate and orthophosphate concentrations were 4.59 ± 1.44 – 10.50 ± 1.31 mg L^{-1} , 0.04 ± 0.01 – 2.60 ± 0.70 mg L^{-1} and 0.03 ± 0.00 – 3.45 ± 1.03.3 mg L^{-1} respectively. Among the considered parameters, the mean BOD (2.14 ± 0.69 – 12.37 ± 2.59 mg L^{-1}), total and feacal coliform counts (15000 – 110000/100ml and 9300 – 110000/100ml) were beyond the permissible level showing the unsuitability of lake water for aquatic life, irrigation and recreation purposes. More than 99% of the phytoplankton composition (99.80%) of the lake was represented by blue green algae. *Microcystis wesenbergii* (1.78 x 10^6 – 4.35 x 10^6 cells/L) was the dominant species during the study period. The major zooplankton groups observed were cladocerans, copepods and rotifers. Rotifers were the dominant group. The Shannon – Weiner diversity index values for phytoplankton and zooplankton species were less than 2 (0.599 – 1.759) indicating that the lake is in a highly polluted state. With reference to mean Secchi depth (19.69 ± 1.76 – 55.98 ± 13.76 cm) and chlorophyll content (13.98 ± 3.89 – 566.85 ± 115.51 mg L^{-1}), the lake is eutrophic.

Keywords: Physico-chemical, trophic status, pollution status

Tel: 011 2804515