

PRELIMINARY STUDY OF THE WATER QUALITY AND PLANKTON ABUNDANCE IN BATTICALOA LAGOON, SRI LANKA

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The present study investigated the prevailing condition of water quality and the abundance of phytoplankton and zooplankton assemblages across the Batticaloa lagoon. Physicochemical parameters including Salinity, Dissolved Oxygen, Turbidity, Nitrate, Phosphate, Temperature and pH were determined using the samples collected at fortnight intervals for six months from July 2013 to December 2013 from seven selected sites: Katthankudy, Kallady, Mandur, Eravur, Thiruperumthurai, Paalameenmadu and Kaluthavalai of the Batticaloa Lagoon, Sri Lanka. A distinct variation of the physico-chemical characteristics of the different regions of the Batticaloa lagoon was observed during the study. In total, 58 species of phytoplankton and 18 species of zooplankton were recorded from all seven sites. Among the 58 species of phytoplankton recorded, a diatom (Bacillariophyceae) was the dominant group, which included 25 species comprising 43% of the total taxa. In addition 13 species of Cyanophyceae (22%), 10 species (17%) of Chlorophyceae, 8 species (14%) of Conjugatophyceae, and 2 species (4%) Fragillariophyceae were recorded during the study period. The zooplankton communities of the Batticaloa lagoon consisted of the members of the taxonomic groups of Rotifera, Cladocera, Copepoda, Decapoda, Podocopida, Ploima, Arcellinida and Sessilida. Members of the phylum Rotifera was the dominant group which consist 33% of the total zooplankton. The results of the multivariate statistical analysis show that pH, turbidity, dissolved oxygen and salinity were the most important measured environmental variables that explained the species variation of zooplankton, while pH, salinity and turbidity were the most important variables that helped to discriminate phytoplankton species in all sites during the study. Thus the variation of environmental conditions and the plankton communities in different regions of the lagoon demonstrate that both zooplankton and phytoplankton species respond to environmental conditions proving the use of plankton communities in environmental predictions.

Key words: Water quality, Phytoplankton, Zooplankton, Parameters