

**SPATIAL VARIATION OF WATER QUALITY AND  
PLANKTON DISTRIBUTION IN VALAICHCHENAI  
LAGOON, BATTICALOA DISTRICT**



By

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## ABSTRACT

Present study was aimed to assess the spatial variation of physico-chemical water quality parameters and plankton species distribution along twelve different sampling locations (L1 – L12) of Valaichchenai lagoon. Study was carried out from January 2018 to June 2018 and sampling were conducted fortnightly. All water quality parameters were measured *in-situ* by standard procedures. Species distribution and composition of phytoplankton and zooplankton along sampling locations also analyzed. Results revealed that, salinity, turbidity, electrical conductivity, total dissolved solid and nitrate showing the distinct spatial variation ( $P < 0.05$ ) along sampling locations. However, temperature, pH, dissolved oxygen and phosphate were changed within narrow range and lack the spatial variation ( $P > 0.05$ ). The mean salinity range between  $1 \pm 0.98$  ppt and  $22 \pm 8.04$  ppt, which predominantly determine the species distribution and other abiotic conditions of the lagoon. Highest mean nitrate level (3.8 mg/L) and highest mean phosphate level (0.61 mg/L) were recorded in L7 (Meeravodai). Different land usage pattern, domestic wastes, aquaculture and industrial discharges highly deteriorate the water quality especially at the region of L7. Findings elucidated that total of 142 phytoplankton species belongs to seven divisions were identified in which Bacillariophyceae is most diverse group (about 49%). Totally 62 species of zooplankton representing protozoans and multicellular Eukaryotes were recorded in which rotifers and ciliates owning highest species composition along the lagoon. The presence of bio indicators such as *Microcystis aeruginosa*, *Oscillatoria limosa*, *Euglena* sp, rotifers and ciliates in most locations as a piece of evidence that the lagoon subjected to organically polluted. The vulnerability of eutrophication in certain sites also proven by plankton species composition and water quality measures. Proper mitigation ways against pollution inputs and long term, seasonal monitoring studies are frequently needed to ensure the lagoon utilization in sustainable manner.

**Key words:** Bio indicators, Distribution, Lagoon, Plankton, Water quality

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