

**SPATIAL VARIATION OF SOME CATION
CONCENTRATIONS, TEXTURE AND ORGANIC
MATTER CONTENT OF THE BOTTOM SEDIMENTS
IN BATTICALOA LAGOON**



BY

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ABSTRACT

The Batticaloa Lagoon is a choked lagoon of primary concern for its biodiversity, its habitats and its resource supply, which have been severely impacted by human activities. Lagoon sediment has an important role in the nutrient cycle of aquatic environments. In some cases, sediment is responsible for the transport of essential nutrients as well as pollutants. Most surface sediments in water originate from surface erosion and contain mineral, bedrock erosion and organic components during the process of soil formation. Continuous discharge of industrial and residential waste water into the Batticaloa lagoon is a potential source of environmental pollution.

Therefore this study was aimed to investigate the preliminary study on spatial variation in some sediment quality parameters in Batticaloa lagoon. Sediment samples from the Batticaloa lagoon were collected from January 2015 to February 2015 to assess the characteristics of physical and chemical parameters in the lagoon bottom sediments. Samples of sediment were collected from the Batticaloa lagoon at twenty six (26) different locations to represent the Batticaloa lagoon.

All the samples were analyzed at the Eastern University, Sri Lanka. Cations such as Sodium (Na) and Potassium (K) concentrations were analyzed using the Flame photometer. Calcium and Magnesium concentrations were analyzed by Versenate Titrimetric method. Further, pH, EC, texture and Organic matter content were measured using standard methods.

Analysis on sediment samples revealed that the lagoon sediment is slightly acidic (pH 6.17) during the wet season. Mean EC value of Batticaloa lagoon sediment is 12.995 (dS/m). The texture analysis of sediments shows that sand was found to be the major

contributor to the sediment texture of the lagoon bed. The average percentage of sand, silt and clay in the sediment is 87%, 7% and 6% respectively in the Batticaloa lagoon. Average amount of organic matter in the Batticaloa lagoon sediment is 2.56%. This increased value indicates the accumulation of organic pollutants in the forms of agricultural waste, aquatic plant debris and animal excreta etc.

As far as the cation concentration is concerned, average Na and K concentration of the sediment is 164.17ppm and 14.02ppm respectively. Likewise, mean concentration of both Ca and Mg concentration is 95.09 meq/l in the Batticaloa lagoon sediment. Among the analyzed parameters the sediments are highly contaminated with the Na concentrations followed by Ca and Mg ions.

As it is a preliminary investigation it is recommended and proposed to analyze the heavy metals and trace elements of this Batticaloa lagoon sediments to make it as a comprehensive analysis.

However, the present study results of sediments will be a baseline information and useful tool for future researchers for actual assessment of environmental pollution of this lagoon in terms of cation concentrations, organic matter and total carbon concentrations.

Keywords: Batticaloa lagoon, Electrical conductivity, Pollution, sediment, total organic carbon,

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