

**ASSESSING THE VALAICHCHENAI LAGOON HEALTHINESS:
IMPLICATION FOR AQUACULTURE SUITABILITY**



By

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ABSTRACT

The present study was conducted to assess the healthiness of Valaichchenai lagoon for the aquaculture implication in terms of water quality in the Valaichchenai lagoon, Batticaloa, Sri Lanka. The specific objectives of the study were; to assess the spatial variation of physiochemical water quality parameters of the lagoon, to find out the existing threats of the lagoon and to survey the existing fish and shellfish diversity. Water samples were collected in replicate basis at predefined selected sites. Series of sampling conducted fortnightly at each sampling locations. Total of 07 sampling survey was recorded throughout the study period at each sampling points. All samplings were carried out within the daylight period. Temperature, pH, electrical conductivity, dissolved oxygen, Total dissolved solid, salinity, turbidity, density, heavy metals (cadmium, chromium and magnesium), nitrate and phosphate were measured and fish species were identified within the lagoon during study period. Results revealed that salinity (0.285 ± 0.184 to 12.571 ± 0.841 ppt), electrical conductivity (222 ± 28.005 to 28361.4 ± 2025.722 $\mu\text{S}/\text{cm}$), total dissolved solids (123.143 ± 12.820 to 13760.9 ± 950.562 mg/l), density (1.008 ± 0.0001 to 1.008 ± 0.0001 g/cm³), cadmium (0.0025 ± 0.0006 to 0.0412 ± 0.0116 mg/L), magnesium (10.523 ± 2.803 to 95.992 ± 18.374 mg/L), phosphate (0.047 ± 0.011 to 1.071 ± 0.068 mg/L) and nitrate (0.242 ± 0.064 to 2.1 ± 0.089 mg/L) showed significant spatial variation. Totally 28 species of fish were identified during study period. Phosphate and Cadmium level were exceeded the recommended level for the aquaculture implication in L2 and L4 regions due to the flood condition during the rainy season, high level of input of river water and high level of domestic wastes contamination. According to this study, Valaichchenai lagoon had different range of

salinity level. L1, L2, L3 and L4 regions salinity level is below 1ppt. These regions are very suitable for freshwater species culturing such as Tilapia and Carp in cages and pen along with fry rearing. L5, L6, L8 and L9 regions salinity range is between 1 to 10 ppt. These regions are suitable for sea bass and Mullet culture in cages. Finally the L10 region salinity level is above the 10ppt. This high saline region can be utilize for seaweed culture on raft and crab fattening.

Key words: Lagoon, Healthiness, Water quality, Aquaculture

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