

Assessment of macro-benthic community in the north region of Negombo estuary in relation to physico-chemical parameters

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Environmental changes caused by input of land based pollutants such as domestic and industrial sewage can have detrimental impacts and lead to marked variations in macro-benthic assemblages living in estuaries. With this view, the objectives of this study were to evaluate physico-chemical parameters in water and sediments to assess its suitability for benthic community and to identify key determinants that govern the species diversity in the north region of Negombo estuary. Physico-chemical parameters in overlying water and sediments in six locations in the north region of Negombo estuary were investigated between January and March 2019 and analyzed using appropriate standard techniques. Macro-benthic fauna were also collected from sampling locations and their species diversity and richness were determined. The underlying patterns of variation of sites based on physico-chemical parameters and macro-benthic community composition were examined using multivariate approach. Results of the study revealed that there is an environmental stress for aquatic benthos due to high average Chemical Oxygen Demand (1113 ± 115.09 mg/L), Oil & Grease (1.7 ± 0.52 mg/L), Cadmium (0.05 ± 0 ppm) and Lead (1.41 ± 0.09 ppm) in overlying water as well as high average sedimentary Cadmium (42.08 ± 12.79 mg/kg) and Lead (91.67 ± 54.01 mg/kg) which exceed the permissible levels proposed by CEA, 2017 and Marine/Estuarine Sediment Screening Guidelines, 1995 in respectively. In conclusion, temperature and oil & grease content significantly ($p < 0.05$) contributes to the assemblage differences of macro-benthos in the north region of Negombo estuary.

Keywords: macro-benthos, Negombo estuary, physico-chemical parameters, pollution and water quality

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