

Rapid assessment to determine seasonal variation of water quality in Negombo lagoon

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Water quality parameters are important factors which help to reveal the current environmental conditions of coastal marine waters. In addition temporal trends on the marine ecosystems also can be identified with the help of water quality measurements. Therefore, the main objective of this study was to understand the status of water quality of the Negombo Lagoon during the wet and dry seasons in 2015. The physico-chemical parameters were measured in 26 sampling locations in Negombo lagoon. In-situ analyses were carried out for pH, conductivity, salinity and total dissolved solids (TDS) measurements using a portable meter (ORION STAR A329, Thermo Scientific). There were slight variations of pH during dry (ranged 6.6 to 8.6) and wet (ranged 6.4 to 8.1) seasons. The electrical conductivity (EC) and salinity values were also high during dry season (13.6 to 55.4 mS/cm) and (7.2 to 32.1 ppt) respectively. Similarly, in the wet season sampling EC and salinity levels decreased (ranged 0.1 to 31.1 mS/cm) and (ranged 0.1 to 18.2 ppt) respectively. The average values of total dissolved solids were high in dry season (19.3 ppt) and relatively low in wet season (6.5 ppt). The EC, salinity and TDS values were relatively high in all the locations during dry season sampling, because the lagoon was undergoing drying and salts were accumulating through evaporation. According to the results of the Negombo Lagoon, pH and nutrient parameters are within the accepted limits for the fish and aquatic life according to the proposed inland water quality standards of the Central Environmental Authority (CEA), in 2001. In conclusion, the results from this study showed that physical water quality parameters such as salinity, EC and TDS showed strong seasonal variations amongst stations. The only identifiable source of water loss from the lagoon is by evaporation and freshwater inflow through several canals. The evaporation seems to be a major controlling force for these chemical parameters in the lagoon. The effects of season and runoff are the two major causes of variation in water quality but human activities have interfered with this cycle and have exacerbated both wet and dry period extremes. In this study, three main parameters were identified as being principle in influencing the observed water physicochemical parameter distribution in the study area. These are salinity, pH and conductivity.

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