A CASE STUDY ON HYDROGRAPHY & OCEANOGRAPHY PARAMETERS OF THREE SELECTED ESTUARIES (MAHA OYA, KELANI & PANADURA/BOLGODA) OF THE WESTERN COAST OF SRI LANKA

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The objective of the study was to determine the hydrography (tidal influence, bathy, siltation rates of suspended sediments) and to compare the three ecosystems in their behaviour in physical oceanographic parameters. The survey was carried out in three fixed stations in each estuary, the first being at the river mouth and the other two within 3 kilometers upstream. The second station was selected as the base for comparision. Detailed, salinity, temperature and current meter measurements were carried out.

Studies of 18 tide pole reading show that the tidal fluctuations that is the occurrence of high-low tide periods within the estuaries, did not correspond well with these times predicted for the west coast by the British Admiralty (except for the Kelaniya estuary). The highest variations were in the Maha Oya and Panadura estuaries. The analysis of results from week to week indicate that within the Panadura and Maha Oya estuaries the Physical-Oceanographic parameters ($T^{o}C$,S‰) and current behave differently in magnitude and have different changing patterns mainly during the low tide periods for example during the 3rd week at Panadura near the Station II the bottom salinity and temperature were 33‰ and 29^{o}C respectively, whereas at Maha Oya the values were 10‰ and 31^{o}C. The bathymetric maps of Maha Oya, Panadura indicate that the depths were shallow (1-2m) near the first station close to the river mouth. At a point one and half kilometers downstream of the Maha Oya where the river is seen meandering and narrowing, a very high depth reaching more than 7m was observed on the left bank and this area is covered by sand with a high content if organic matter. Bottom sediment maps of the two estuaries show the general distribution of river bed sediments and the content of organic matter in the estuarine sediments. The silting rate was fairly high at Maha Oya comparatively to Panadura according to the dry weight of silt collected per week using standard silt traps.

The results indicate that the natural estuarine conditions were observed mainly at Maha Oya and Panadura among the three estuaries. The physical ocranographic parameters of these two estuaries behave differently to each other with variations from week to week and were in a constant state of change. Vast variations in tidal behaviour, could be attributed to several factors.

(i) Influence of spring-neap tides, (ii) Narrowing and closing up of the river mouth (iii) Meteorological factors.