OBSERVATIONS ON TIDAL CURRENTS IN THE NEGOMBO LAGOON OUTLET

E.M.S. Wijeratne, W.S. Wickremeratne
National Aquatic Resources Agency, Colombo 15.

The Negombo Lagoon is a tide and river dominated coastal water body. Tidal currents vary with bottom morphology fresh water flow and tidal range. It has been reported that the outlet is dynamic in nature and gets silted up seasonally. The lagoon outlet plays a vital role in the productivity of the lagoon in which tidal currents are important.

A study of the behaviour of tidal currents in the outlet of the lagoon is necessary for the understanding of the lagoonal environment. Recent development activities in and around the lagoon are causing concern and have further aggrevated the degredation of the lagoonal ecosystem. The need for urgent management measures has activated a number of studies in the Negombo Lagoon. The results given below are from a study made on observations of diurnal and seasonal variations in tide and currents made during a period of one year.

The tides in the Negombo lagoon are semi-diurnal with a 12 hour and 25 minutes period. The tidal amplitudes in the inlet vary from 0.6 m during neap tides to 0.8 m during spring tides. Time-height curves are symmetrical in the inlet, but a marked assymetry develops upstream, prolongating the ebb and reducing the flood.

During the flood tide the duration of the tidal current in the direction of the lagoon was limited to 3-4 hours instead of 6 hours 12 1/2 minutes. It was observed that during the south west monsoon when fresh water outflow increased the duration of the tidal current into the lagoon decreased further.

The change in the tidal current direction occurred during every tidal cycle only after the tide reached a height of over 0.125m, above mean sea level (MSL). Generally the change in direction of the tidal current takes place at above 0.0m MSL. However, in the Negombo lagoon due to the constriction at the outlet caused by shoaling, the directional change in the tidal current takes place above MSL.

The decreasing resident time of the flood tide coupled with increasing fresh water discharge into the lagoon during the south west monsoon accounts for the reported very low salinity (<5 ppt). This has resulted in decreased productivity and the reported decline in fish and prawn catches in the lagoon. It is suggested that the period of the flood tide has been decreasing gradually with the increased siltation caused by human interference in the lagoon.