Anthropogenic Effects on the Dynamics of Coastal Ecosystems in Sri Lanka

K. Arulananthan

Oceanography Division
National Aquatic Resources Research and Development Agency (NARA)
Colombo 15, Sri Lanka

Abstract

The *bar-built* coastal water bodies of Sri Lanka are typically shallow and generally open into the ocean by elongated channel with narrow mouths, which effectively restrict tidal exchange through choking. Freshwater supply is seasonal, thus water exchange with the open ocean is poor and varies with season. Poor water exchange results in large daily temperature and strong seasonal salinity variation. Thus, the tropical and sub-tropical coastal water bodies are more sensitive than temperate coastal water bodies. In these sensitive ecosystems, nature exerts profound impacts, while unplanned developments further aggravate the social, economic, and environmental conditions. Thus, management of tropical and sub-tropical coastal water bodies for the protection of water quality, aquatic life and other uses must be approached somewhat differently in the tropics from how it is approached at temperate latitudes.

Human interference in the catchments area and the upper stream converted the seasonally hypersaline Malala Lagoon into almost a freshwater lake, while the typical Puttalum Estuary is converted into a seasonally hypersaline inverse estuary. In Batticaloa Lagoon discharge of wastewater without previous treatment, combined with nutrients loading from runoff and tributaries from widespread irrigated agriculture and urbanization resulted in hyper-eutrophication and seasonal fish kills. Thus, ad hoc regulation of rivers, and improper practices on the catchment area may result in larger variation in hydrography and water exchange of shallow tropical lagoons than in a normal estuary and could lead to deterioration of their utility, water quality, production of commercially useful species, and recreational value.