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Effect of water quality on shrimp larval catch in seagrass ecosystem of the Negambo lagoon

B R C Mendis* and U A D P Gunawardena
Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Gangodawila, Nugegoda

Negombo Lagoon is one of the most productive shallow brackish water estuaries in Sri Lanka. Sea grass beds cover 22% of the lagoon area and are highly productive, providing habitats and nursery grounds for a variety of brackish water organisms including many economically and ecologically important species. However, the lagoon environment is under threat due to increased human activities and the discharge of wastes into the lagoon.

The shrimp population depends on the environmental parameters (both physical and chemical) of the sea grass ecosystem. This study therefore mainly intends to build the relationship between the water quality parameters (physical, chemical) and the larval catch within the sea grass beds. The seagrass beds located in the Negombo lagoon namely, Kadolkele on the northern side Aluthkuruwa, Thalahena and Sethapaduwa on the western shore and Liyanagemulla Katunayake and Kurana on the eastern shore were selected for the study.

Water samples were collected twice a week for a period of one year. Environmental parameters such as temperature, salinity, pH, turbidity, dissolved oxygen Ammonical–Nitrogen, Nitrate–N, Nirtite-N and Phosphate –P were measured. Production function for the sea grass habitats (relationship between the larval catch and other chemical and physical parameters) indicate that salinity, ammonical nitrogen, nitrate, and phosphate contribute positively to the larval catch while nitrite and phosphate contribute negatively for the larval catch. The usefulness of this model in predicting productivity of the lagoon is also discussed.

*chani004@yahoo.com Tel: 011-2521009 Ext. 150