E2-48 Anthropogenic effects on the Rekawa lagoon with special reference to its water quality

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Lagoons are brackish coastal water bodies separated from the sea by a low sandbank with narrow permanent or seasonal outlets.

Rekawa lagoon with an area of 250 ha is an important lagoon in the southern coast of Sri Lanka situated 200 km to the south of Colombo in the Hambantota district. Its resources include its water supply and flow, the mangroves and other scrub forest, its wildlife and fisheries, the agricultural land, the beach environment and the human community engaged in fishing and agriculture.

The lagoon situated in the intermediate zone receives an average rainfall of about 200 cm/year receiving most of the rain during the NE monsoon. Kirama Oya is the main water source of the lagoon which drains a catchment of about 225 km^2 where agriculture is predominant. Agrochemicals are profusely used here. Kirama Oya therefore drains into the lagoon with agriculture runoff carrying some pesticides, nutrients and sediments. As a result of these activities plus reduced fresh water / sea water flow, fishing, coral mining, lime production etc. the Rekawa lagoon continues to be degraded.

The main objective of this study was to assess the contribution of the agriculture practices on the catchment to this degradation of the lagoon.

Water quality of the lagoon was monitored for a period of 13 months at monthly intervals at different sites in the lagoon by measuring 12 general physico-chemical properties.

Results indicate that values for the said parameters oscillate considerably depending mainly on the rainfall pattern at the catchment area. The monthly results correlate well with rainfall patterns, agrochemical usage and practices on the catchment. The values range from normal low to very high and the pattern of variation indicates that it is mainly the runoff to the lagoon that affect the water quality of the lagoon. For example the very high values obtained for SO_4^{2-} are indicative of high sedimentation in the lagoon. The reduced flow of water as a result of the construction of the Kapuhenwala causeway is one of the factors that contribute to the increase of sedimentation in the lagoon. Very high NH_4^+ concentrations and COD values are also indicative of this condition.