

6. Potential of mangrove ecosystems in Negombo estuary as carbon sinks

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Mangroves, as any other plant, are capable of removing carbon from atmosphere through photosynthesis. Rates of mangrove primary productivity are comparable with that of tropical rain forests. The processes that take place in the anaerobic soil environment in mangrove ecosystems are believed to contribute to sequestering carbon and serve as a sink. Carbon retention function of Sri Lankan mangroves is least known or not known at all. Present study is an attempt to characterize two mangrove stands, a natural and a man-made, in Negombo estuary with respect to carbon retention function.

A major process that contributes to carbon retention is primary production and this is being monitored through litterfall and growth increment studies. Temporal changes are discussed by comparing data with available above ground net primary productivity (NPP) values for Negombo estuary. Structure of the mangrove stands has been determined and biomass of constituent species and their carbon content were determined using allometric relationships and IPCC guidelines. According to the results obtained so far, the natural mangrove stand at Kadolkele is superior in structural diversity and the extent to which carbon is retained within plants. The above ground biomass values obtained for Kadolkele mangroves is 125 t ha^{-1} and the carbon content is 76 t ha^{-1} while mangroves at Wedikanda revealed to contain 71 t ha^{-1} of carbon. Below-ground carbon content is believed to be significantly high and it is yet to be measured. Data collection on soil carbon content is in progress and the study will be extended to mangrove areas in coastal areas of the dry zone to create a comprehensive picture of the potential of mangroves as carbon sinks.

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