Destruction of mangroves in Chilaw Lagoon

Extended Abstract

DDY Peiris[1], PSK Rajapakshe

Background

Mangroves are a group of plant communities that occur in the coastal intertidal zones of tropics and sub-tropics and hence of great ecological and environmental significance. They form one of the world's dominant coastal eco-systems uniquely adapted to marine and estuarine tidal conditions. In Sri Lanka, as in many other countries, conversion of mangrove forests to other uses has resulted in a considerable decline of these ecosystems. Mangrove ecosystems play a vital role in ecosystem functions and also extensive economic and non-economic contributions to mankind (Karunathilake, 2003).It is estimated that mangroves in Sri Lanka cover only 87 km^2, which amounts to around 0.2% of the total land area of the country. The reduction of mangrove ecosystems in Sri Lanka is largely caused by the increasing non-sustainable human activities in and around the mangrove habitats (Kaleel, 2013).

Objectives

The study focuses mainly on mangroves as a sensitive and important ecosystem. Consequently, the objective of this study is to identify the main causes for the destruction of mangroves in the Chilaw lagoon, an area where the devastation is extensively observed. Furthermore, this study intends to focus on identifying the effects on mangrove flora, and fauna species and the effects on aquatic life in the ecosystem.

Methodology

The study area was Pambala, also called the Pambala–Chilaw lagoon complex, the southern part of Chilaw lagoon on the west coast of Sri Lanka. The present study was based on primary and secondary data. A sampling method has been used to collect primary data and a sample of 30 families living near the mangrove areas has been selected and a questionnaire survey was conducted. This sample included different stakeholders. An understanding of the lagoon area of mangroves was obtained through field observation. Secondary data were collected from various sources such as books, magazines and newspapers, and records of the Small Fishery Federation of Sri Lanka and web sources. MS excel was used to analysis data and pie charts used for representing data.

Results

The extent of mangroves in Sri Lanka is small compared to most Asian countries. They are, however, significant, as a percentage of available land in the low-lying maritime regions. The extent of mangrove area in Chilaw lagoon was found to be 667 hectares where 16 and 13 mangrove-associated species were recorded. It was found that some reduction of mangroves has occurred due to shrimp farming, timber mining and expanding human settlements. The major factor that has led the destruction in Chilaw lagoon is shrimp farming. It rates about 80%. The conversion of mangroves to aquaculture ponds is responsible for about of the total mangrove loss (Wijesinghe, 2011). In addition to the direct destruction of mangroves, shrimp farming has also caused some degradation of water quality in lagoons and the loss of biodiversity in the mangrove ecosystem. Here shrimp farmers discharge used water to the lagoon than a man-made pond. It depicted that 67% of people discharge used water to the Chilaw lagoon and 33% of people discharge used water to the man- made a pond.

Conclusion and Recommendations

The destruction causes have serious negative impacts on the mangrove ecosystem and lagoon due to unplanned human activities. One of the greatest threats to mangrove survival comes from shrimp farming. This was evident through its impact on both biotic and abiotic components of the ecosystem. If the current trends continue, it may have serious implications for biodiversity conservation and ecosystem integrity as well for the aquaculture industry itself.

It is recommended that mangrove areas should be designated for educational and research purposes and should emphasize the ecological and economic value of mangrove ecosystems as a national resource.

Keywords: Mangroves, Destruction, Shrimp farming, Ecosystem change, Conservation strategies

[1] Department of Environmental Management, Rajarata University of Sri Lanka, Mihintale, Sri Lanka.