

Review

## STATUS OF MANGROVES IN SRI LANKA

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### ABSTRACT

*In Sri Lanka many estuaries and lagoons are fringed with vastly diverse mangrove forests. The total mangrove cover is very small as 0.1 to 0.2 percent of the total land area. The distribution of fauna and flora varies along with wet and dry zone in the country. Around 25 species of flora are exclusive to mangroves and more than 25 species can be identified as associated mangroves. Variety of invertebrates and vertebrates are conspicuous in the mangrove forests, but only a few species are confined to the ecosystem. Heavy utilization and reforestation for shrimp farms and building construction work severely affect on this ecosystem. When compare to decline rate of mangrove forests in Sri Lanka, current implemented conservation measures are inadequate.*

**Key words:** Sri Lanka, Flora, True mangroves, Invertebrates, Vertebrates.

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### INTRODUCTION

Sri Lanka described as the “pearl” of the Indian Ocean is an island, situated between latitudes 5.55' & 9.51' North and longitude 79.41' & 81.54' East in the Indian Ocean. Once it was called “Serendip” by the Greek because of its appealing beauty. The total land area is 65,620 km<sup>2</sup> and is surrounded by 1705 km of coastline. The total area of continental shelf is 44250 km<sup>2</sup>. The width of the shelf ranging from 8 km along the southeastern and eastern coasts to 45 km in North & North western coasts. The total estimated

brackish water area is about 158016 ha, coastal population occupies 34% (NRESA, 1991) of the population in the country.

### Distribution

Sri Lanka enjoys highly productive coastal ecosystems such as Coral reefs, Sea grasses, Mangrove forests, Lagoons, Estuaries, Salt marshes, Mudflats, Sand dunes & beaches. The mangrove cover is about 12 000 ha (CCD, 1986) which is as little as 0.1 – 0.2% of the total land area. However total mangrove cover cannot be estimated because of the inaccessibility of

northern and eastern coasts due to present security situation.

Since the tidal amplitude is very low in Sri Lanka, the distribution of mangrove forests are confined to narrow inter tidal belt. All these are associated with some of the lagoons and estuaries in the country, therefore patchy in distribution. The degree of extension is extensive in northwestern and northeastern coastlines. The largest forest patch is in Puttlam – Kalpitiya lagoon. Second largest is Jaffna peninsula followed by mangroves in Trincomalee and Batticaloa (CCD, 1986). Floral and faunal distribution of the mangrove forests vary according to major climatic zones namely Wet and Dry zone. The average air temperature is between 30-35 °C. Relative humidity is very high and lies between 80-90 %. Salinity fluctuates from almost zero to more than that of sea water (0- 35 ppt) and can be differed with fresh water discharge, tidal amplitude, topography and extent of the estuary or lagoon (De Silva & De Silva, 2002).

### Flora

In Sri Lanka flora is the most studied and well knowledgeable biodiversity category. Mangrove flora are of two types: true mangroves and associate mangroves, neither of these flora are endemic to Sri Lanka. More than twenty five species of true mangroves have been recorded and many of them are shrubs, shorter than 10 m. Nearly half the species show a wide distribution (Amarasinghe, 1997; De Silva & De Silva, 2002). *Rhizophora mucronata* (Rhizophoraceae) and *Avicennia marina* (Avicenniaceae) are the most predominant true mangrove species in Sri Lanka. They are very extensively grown in Kala Oya delta and Puttlam lagoon respectively. *Bruguiera gymnorrhiza* (Rhizophoraceae)

and *Lumnitzera racemosa* (Combretaceae) are also very abundant in the country. *Acanthus ilicifolius* (Acanthaceae) is the most predominant associate mangrove species in the island (De Silva, 1985; De Silva & De Silva, 2002; Pinto, 1986; Wetland site report, 1994).

More than 25 of mangrove associate species can be identified and those are divided into fore mangroves and back mangroves. Fore mangroves are mainly comprised of sea grasses. This type is very common in Kalpitiya – Batticaloa and Jaffna lagoons. In back mangroves several species of salt marsh, sea shore-marsh and freshwater marsh are found (De Silva & De Silva, 2002). Species of salt marshes comprise of annual herbaceous plants which can grow in inter tidal areas (Amarasinghe, 1997).

### Fauna

Sri Lankan mangrove ecosystems consist of a wide variety of fauna, but unfortunately there is no complete faunal list. Aquatic fauna in mangroves are not much different from that found in estuaries and lagoons. So only few species were confined to mangrove forests. A variety of invertebrates are found in the mudflats with in mangrove forests. Invertebrate diversity shows little variation in dry and wet zones. Most dominant ones are gastropods and grasped crabs. Among gastropods *Terebralia palustris* are very abundant and specific to mangroves. Also *Telescopium telescopium*, *Cerithidea cingulata* are very frequently seen in mangroves. Fiddler crabs (*Uca* species), Portunid crabs (*Scylla serrata*) and lobsters like *Thalassina anomala* are vastly observed in mangrove forests. *Thalassina anomala* appear to be specific

to the mangrove forests. Several species of shrimps, penaeid prawns and non-penaeid prawns are conspicuous in mangrove forests (De Silva, 1985; De Silva & De Silva, 2002; Pinto, 1986). All hierarchical levels of vertebrates could be identified in the mangrove forests (fishes, Amphibians, Tetrapods, Birds, and Mammalians).

Fish species found in mangroves, are the common estuaries species and can be found in every estuary and lagoon. They show little variation in the wet zone and dry zone. *Periophthalmus* species are the most predominant species in both wet and dry zones among 150 species of fishes in mangrove forests (De Silva, 1985). Species *Bufo melanostictus*, *Limnonectes limnocharis* are very common among amphibians. Snakes, which include python and cobra and young crocodiles, are very commonly seen tetrapods, in mangrove ecosystems. Over 100 species of birds have been observed, but none of them are confined to mangroves. Both resident and migratory species can be observed and their abundance is very high in the dry zone than that of wet zone. Many species of mammalians including *Elephas maximus maximus* and *Panthera pardus kotiya* visit the mangroves most often, especially the mangroves that continue with the evergreen forests (De Silva & De Silva, 2002).

### Types of Forests

Mangrove forests in Sri Lanka can be classified into low saline forests and high saline forests based on salinity. In low saline mangrove forests salinity is low often below 10 ppt. Communities of *Nypa fruticans* and *Rhizophora apiculata* are characteristics of such mangroves. In high saline mangrove forest salinity is in excess

of 25 ppt which prevails during most month of the year. They are usually characterized by the presence of *Rhizophora mucronata*, *Avicennia marina* and *Acanthus ilicifolius* (De Silva & De Silva, 2002).

Mangrove can also be classified according to flooding, topographical and floral characteristics namely Scrub mangrove forest, over washed mangrove forest, Basin mangrove forests, Riverine and Fringing mangroves. Scrub mangrove forests are degraded mangrove forests developed in areas of poor drainage facilities and this type is occasionally seen in the dry zone. Over washed mangrove forests are found on small islands, which get completely covered over at each high tide. So the organic content in the soil is very low. Mangroves in small islands of northwestern region are good examples of the above. Basin mangrove forests lie in a depression and the surrounding soil being washed into the basin. This type is very dominant in Jaffna peninsula. The riverine mangroves are found in the estuaries of major rivers along the south and southwest coasts. Fringing mangroves are found along shallow lagoons, especially in the south and east coasts. The floristic compositions of the latter two are similar to low saline and high saline mangrove forests (Amarasinghe & Balasubramaniam, 1992 ; Balasubramaniam, 1985 ; De Silva, 1985).

### Current Status

As all other natural ecosystems, mangrove forests too provide many extractive and non-extractive uses for the beneficiary of mankind. But many extractive uses such as shrimp culture, House construction work cause extensive damages on mangrove

forests at present. Also increasing utilization of its resources severely affects its stability. Mangroves in Sri Lanka are one of the most abused ecosystems in the country. At recent past there was an abrupt decline in the forest cover especially in Puttalam – Kalpitiya lagoon. Approximately 34 % of mangrove forests were converted to industrial shrimp farms in that area (Jayasinghe & De Silva, 1992). This caused the deterioration and destruction of the ecosystem and also creation of other issues such as lack of clean water and loss of jobs by the local fishermen. On the other hand heavy growths of mangrove associates are recently observed in southern region due to logging of riverine water as a result of irrigation channels.

At present activities towards mangrove forest conservations have been launched by different organizations in the country such as rural community, government agencies, international organizations like IUCN and non-governmental organizations. Mangrove forests are very important to rural community for their livelihood. So local communities of fishers in mangrove forest areas are very actively participating in mangrove conservation. The most recent example is formation of small fishers' federation in Puttalam where very extensive shrimp farms are located. However existing conservation measures are inadequate comparatively to the decline rate of mangrove forests.

## **CONCLUDING REMARKS**

Mangrove forests are one of the most productive and diverse areas in Sri Lanka.

But it is under a great threat of deforestation with less notice. So it is important to educate the public about its values and uses and to encourage conservation of mangroves. Unfortunately still many concerned authorities of the country do not identify its necessity.

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## **REFERENCES**

- Amarasinghe, M.D. 1997. Ecological functions of mangrove and related ecosystems and their contribution to economic sustainability. *Sri Lanka J. Aquat. Sci.* 2: 1-20.
- Amarasinghe, M.D. and S. Balasubramaniam. 1992. Structural properties of two types of mangrove stands on the Northwestern coast of Sri Lanka. *Hydrobiologia.* 247: 17-27.
- Balasubramaniam, S. 1985. Tree flora in Sri Lanka. In: *Proceedings of the International Conference on timber Technology.* Jayathilake, A. (eds): 58-67.
- CCD. 1986. *Master plan on Coastal erosion management*, Coastal conversion department and Danish Hydraulic Institute, Colombo.1: 142.
- De Silva, K.H.G.M. 1985. Studies on mangroves of Sri Lanka. In: *The regional training course on life history of selected species of flora*

- and fauna of the mangrove ecosystem*, Bangkok: 6-9.
- De Silva, M. and P.K. De Silva. 2002. Status, diversity and conservation of mangrove forests of Sri Lanka. *S. South Asian nat. hist* 3: 79-100.
- Jayasinghe, J.M.P.K. & J.S. De Silva. 1992. Prawn farm development and present land use pattern in coastal areas of Sri Lanka. In: *Proceedings of International Symposium on Ecology and Landscape Management in Sri Lanka*. Erdelen, W., C. Pereu, N. Ishwaran & C. M. Maduma Bandara (eds), Margraf Scientific Books Weikersheim: 341-350.
- Jeanes, K.W. and W. Benthem (eds), 1994. *Wetland site report: Puttalam, Dutch Bay and Portugal Bay* Wetland conservation project, Print shop, Colombo, Sri Lanka: 22-23, 53.
- NRESA. 1991. *Natural Resources of Sri Lanka*, Baldwin, M. F. (ed.) A report prepared for the Natural Resources, Energy and Science Authority of Sri Lanka, Keels Business systems Ltd., Colombo: 237-252.
- Pinto, L.. 1986. *Mangroves of Sri Lanka. Natural resources, Energy and Science authority of Sri Lanka*, Colombo.