

MANGROVES IN SRI LANKA

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Mangroves are among the most productive ecosystems in the world. In Sri Lanka mangroves occur along the sheltered inertial coastlines associated with estuaries and lagoons [1] (Figure 1). The largest tracts of mangrove habitats in Sri Lanka are found in Puttlam Lagoon, Kala Oya basin and Trincomalee. Mangroves are associated with woody, seed bearing and highly specialized plants. Mangroves exist in harsh environments with anaerobic soils, tidal currents, high salinity, high temperature and strong winds 30 to 35 °C). Therefore, to survive and grow under such environmental conditions mangrove plants have developed many morphological and physiological adaptations [1].

List of adaptations in mangrove plants

- Xerophytic leaves with thick cuticle to reduce transpiration under high light intensity
- Succulent leaves to store water
- Salt secreting glands on leaves to remove excess salts
- Prop roots to anchor the plants to the unconsolidated substrate
- Air breathing peg roots, knee-roots, prop roots with lenticels for gas exchange
- Vivipary to ensure the seedling establishment under harsh conditions

Mangrove flora can be categorized as true mangroves and mangrove associates. True mangrove species grow only in mangrove environment and do not extend into terrestrial plant community whereas mangrove associates are found within or in the peripheral areas of mangrove wetlands. *Avicennia officinalis*, *Avicennia marina* (Avicenniaceae), *Exoecaria agallocha*, *Exoecaria indica* (Euphorbiaceae), *Lumnitzera racemosa*, *Lumnitzera littorea* (Combretaceae), *Rhizophora mucronata*, *Rhizophora apiculata*, *Bruguiera cylindrica*, *Bruguiera gymnorhiza*, *Bruguiera sexangula* (Rhizophoraceae), *Xylocarpus granatum* (Meliaceae), *Sonneratia caseolaris*, *Sonneratia alba* (Sonneratiaceae), *Scyphiphora hydrophyllacea* (Rubiaceae), *Pemphis acidula* (Lythraceae), *Heritiera littoralis* (Sterculiaceae) and *Premna integrifolia* (Verbenaceae) are true mangroves [1, 2]. *Acrostichum aureum* (Fern), *Nypa fruticans* (Palm), *Acanthus ilicifolius* (Acanthaceae) and *Clerodendron inerme* (Verbenaceae) are common mangrove associates found in Sri Lanka [2].

Mangroves provide many ecosystem products and services. They provide habitats, feeding grounds, nursery and hunting grounds for animals, protect the lagoons and the estuaries from erosion, reduce pollution of near-shore coastal waters by trapping pollutants, provide recreational grounds and provide opportunities for bird watching, ecotourism, field laboratory for researchers [3]. Further they provide food and fodder for animals, medicines, pigments (Tannin), fuel wood, timber for constructions, furniture and as boat building materials [1, 2]. Even though there are many awareness programs on 'importance of mangrove conservation', in Sri Lanka they are destroyed at an alarming rate due to the construction of shrimp farms, agricultural expansion, urbanization, unregulated discharge of pollutants, waste disposal, illegal constructions and mass tourism [1-3]. Many actions

have been taken by the Department of Wildlife Conservation, Forest Department, Central Environmental Authority and Coast Conservation Department in Sri Lanka to conserve remaining mangrove patches in Sri Lanka [3]. These conservation activities involve the establishment of the Nature Resource Center at Pambala and Mangrove Education Center at Maduganga. Other activities involved are, the establishment of mangrove nurseries, restoration of mangrove forests in lagoons and estuaries, training community leaders, educating, developing and improving skills and attitudes of villagers who are residence of nearby mangroves on, ‘mangrove conservation’ [3].

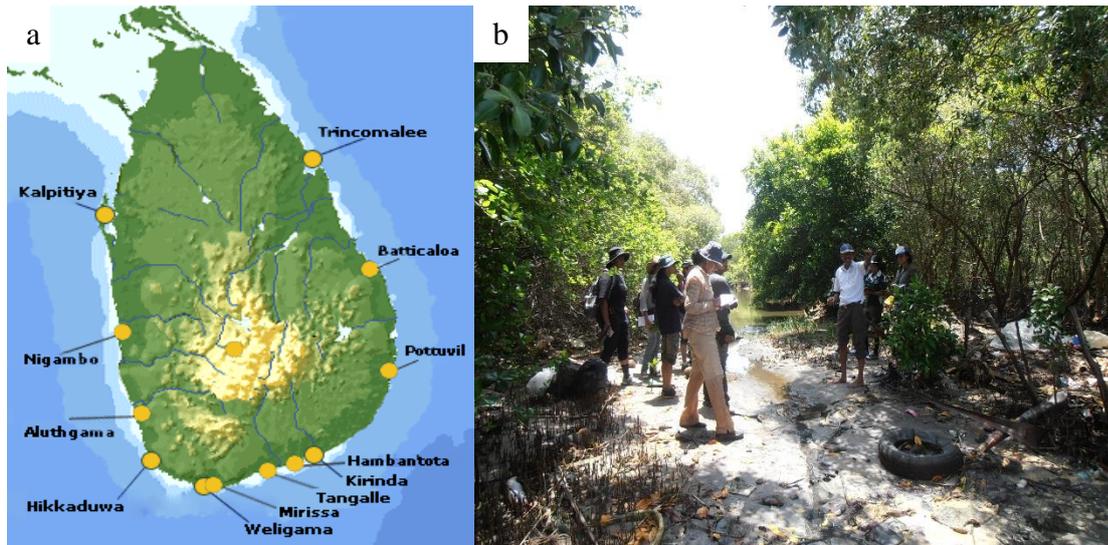
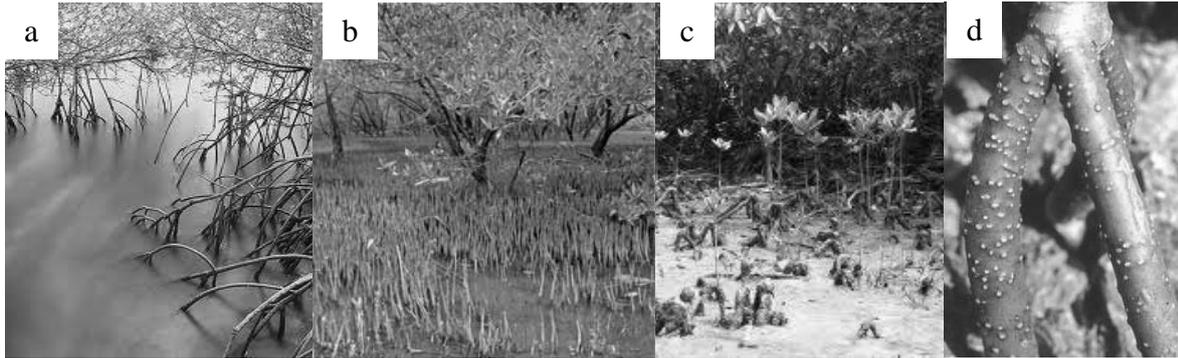


Figure 1: a) Distribution of mangroves in Sri Lanka and b) Learning about mangrove ecosystem at Kadol kale, Negombo Sri Lanka.

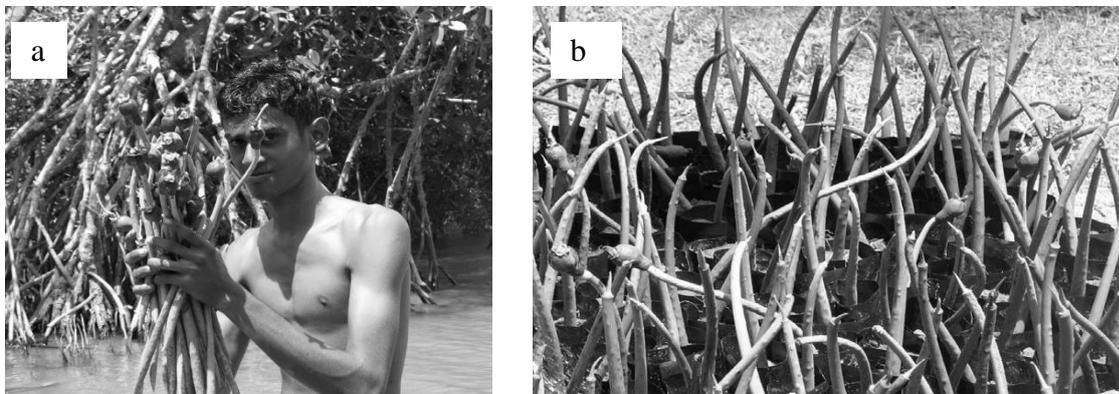


Figure 2: a) Salt secretion by mangrove leaf (*Avicennia* sp.), b) Thick leathery leaf (*Rhizophora* sp.), c) True vivipary (*Bruguiera* sp.) and d) Crypto vivipary (*Aegiceras* sp.).



<http://www.wetlandpark.gov.hk>

Figure 3: a) Prop roots (*Rhizophora* sp.), b) Peg roots (*Avicennia* sp.), c) Knee roots (*Bruguiera* sp.) and d) lenticels on prop root.



http://www.iucn.org/about/union/secretariat/offices/asia/asia_where_work/srilanka/

Figure 4: Restoration of mangroves a) Collection of hypocotyls for restoration purpose and b) established nurseries of mangroves.

References

1. Sri Lanka's Mangroves, Coast conservation Department in Sri Lanka, Sri Lanka
2. Information Brief on Mangroves of Sri Lanka, IUCN.
3. Mangrove restoration at Maduganga and Madampa lake Sri Lankas, Nature resource center at Pambala. Sri Lanka.