

# **Mangroves in India: A Unique Marine Ecosystem**

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## **ABSTRACT**

India has a long tradition of mangrove forest management. The Sundarbans mangroves, located in the Bay of Bengal (partly in India and partly in Bangladesh), were the first mangroves in the world to be put under scientific management. The area's first management plan was implemented in 1892. Recognizing the importance of mangroves, the Government of India set up the National Mangrove Committee in the Ministry of Environment and Forests in 1976 to advise the government about mangrove conservation and development. In its first meeting, the panel, which consists of scientists, research scholars and experts on the mangrove ecosystem, emphasized the need to conduct a survey of the extent of existing mangrove areas within the country.

## **1. INTRODUCTION**

Mangrove forests are one of the most productive and bio diverse wetlands on earth. They may be disappearing more quickly than inland tropical rainforests, and so far, with little public notice. Growing in the inter-tidal areas and estuary mouths between land and sea, mangroves provide critical habitat for a diverse marine and terrestrial flora and fauna. Healthy mangrove forests are key to a healthy marine ecology. They provide a rich natural habitat and safe breeding grounds for several fish species. Sea birds also find safe nesting and egg laying areas in the vast mangrove forests of the country. They prevent the coastline erosion caused by waves and ocean currents. In the past, mangrove wood was a major source of food and fuel, and was also used for building houses and ships because of its hardness and high resistance to rot and termites.

## **2. WORLD LEVEL DISTRIBUTION**

Mangroves occupy less than 1 % of the world's surface and are mainly found between the Tropic of Cancer and the Tropic of Capricorn on all continents covering an estimated 75 percent of the tropical coastline worldwide. There are more than 18 million ha of global mangroves inhabiting in 112 countries and territories in the tropical and subtropical region. Around 34 major and 20 minor mangrove species belonging to about 20 genera in over 11 families have been recorded globally.

## **3. Distribution of mangrove in India**

India with a long coastline of about 7516.6 km, including the island territories has a mangrove cover of about 6,749 km, the fourth largest mangrove area in the world. These mangrove habitats comprise three distinct zones: East coast habitats having a coast line of about 2700 km, facing Bay of Bengal, West coast habitats with a coast line of about 3000 km, facing Arabian sea, and Island Territories with about 1816.6 km coastline. In India, the states like West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Andaman and Nicobar Islands, Kerala, Goa, Maharashtra, and Gujarat occupy vast area of Mangroves. The area under mangroves in Gujarat is the second largest along the Indian coast, after Sunderbans. Mangroves in India account for about 3% of the global mangroves and 8% of Asian mangroves. About 60% of the mangroves occur on the east coast along the Bay of Bengal, 27% on the west coast bordering the Arabian Sea, and 13% on Andaman &

Nicobar Islands. Mangrove area is larger in the east coast of India around 80% as to 20% in the west coast owing to the terrain and slope and due to the river deltas of Ganges, Brahmaputra, Mahanadi, Godavari, Krishna and Cauvery which have nutrient rich alluvial soil. 60 species of mangroves are known to grow abundantly. The Sundarbans (east coast) covering about 9,600 sq. km of mangrove forest and water comprises essentially of numerous islands formed by the sediments deposited by three major rivers, the Ganga, Brahmaputra and the Meghna, and a dense network of smaller rivers, channels and creeks. The mangrove area in Orissa is nearly 200 km in extent and its degradation is placed at 20 km over ten years, as per recent estimates. Andhra Pradesh possesses about 582 km of mangrove area. Tamil Nadu is one of the nine maritime states of India endowed with the second longest coastline of 1,076 km.

The major mangrove wetlands in Tamil Nadu are Pichavaram mangroves and Muthupet mangroves, for which river Cauvery is the main supplier of freshwater. The area under mangrove ecosystem in Tamil Nadu is about 225 km. mangrove wetlands of Orissa have the highest number of species followed by Sunderbans of West Bengal and Andaman and Nicobar Islands. The Indian mangroves comprise approximately 59 species in 41 genera and 29 families. Of these, 34 species belonging to 25 genera and 21 families are present along west coast. Similarly, there are eight species of mangroves like *Sonneratia caseolaris*, *Suaeda fruticosa*, *Urochondra setulose* etc. which have been reported only from the west coast. There are approximately 16 mangrove species reported from the Gujarat coast, while Maharashtra has about 20 species, Goa 14 species and Karnataka 10. The associated mangrove flora is quite common in all the coasts, with minor variations in distribution. The floral diversity of mangroves of India is comprised of 38 core mangrove species. Analysis of the distribution of true mangrove species in different Indian mangrove wetlands indicates that *Acanthus ilicifolius*, *Aegiceras comiculatum*, *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops decandra*, *Excoecaria agallocha*, *Lumnitzera racemosa*, *Rhizophora apiculata*, *R. mucronata* are common to all the mangroves of India. On the other hand, species such as *Pemphis asidula* is endemic to islands of Gulf of Mannar of Tamil Nadu, *Scyphiphora hydrophyllacea* to Godavari mangroves of Andhra Pradesh. Similarly, *Nypa fruticans* has been reported to be present only in Sunderbans of West Bengal. The Tamil Nadu mangrove is also characterized by the presence of a natural hybrid of *Rhizophora* species.

#### 4. THREATS TO MANGROVE ECOSYSTEM

The threats to the mangrove ecosystem could be broadly grouped into two: Natural and Anthropogenic. These factors may affect the system as a whole or any one entity within the system, etc. The natural threats include Climatic changes, Cyclones and Physical processes. Diseases, deterioration, pollution, grazing, agriculture, aquaculture and human encroachment etc., are considered as the anthropogenic threats to the ecosystem.

#### 5. CONCLUSION

India has a long tradition of mangrove forest management. The Sundarbans mangroves, located in the Bay of Bengal (partly in India and partly in Bangladesh), were the first mangroves in the world to be put under scientific management. The area's first management plan was implemented in 1892. Recognizing the importance of mangroves, the Government of India set up the National Mangrove Committee in the Ministry of Environment and Forests in 1976 to advise the government about mangrove conservation and development. In its first meeting, the panel, which consists of scientists, research scholars and experts on the mangrove ecosystem, emphasized the need to conduct a survey of the extent of existing mangrove areas within the country. The government subsequently introduced a scheme for mangrove conservation and protection, consisting of selection of mangrove areas for conservation, Preparation of a management plan and Adoption of a multidisciplinary approach involving state governments, Universities, research institutions and local organizations.

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