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'Ernakulam has maximum number of mangrove species'

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KOCHI: A study done jointly by the national centre for sustainable coastal management (NCSCM) and Central Marine Fisheries Research Institute (CMFRI) shows that seven out of 10 coastal districts in the state have poor structural development of mangroves.

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WHAT ARE MANGROVES

➤ Mangroves are salt-tolerant trees, also called halophytes, and are adapted to life in harsh coastal conditions

➤ They grow in coastal saline or brackish water

➤ Mangroves occur worldwide in the tropics and subtropics

➤ They contain a complex salt filtration system and complex root system to cope with salt water immersion and wave action

➤ They are adapted to the low oxygen (anoxic) conditions of waterlogged mud

➤ The saline conditions tolerated by various mangrove species range from brackish water to water concentrated by evaporation

➤ Areas where mangroves occur include estuaries and marine shorelines

➤ High tide brings in salt water, and when the tide recedes, solar evaporation of the seawater in the soil leads to increase in



THREATENED HABITAT: Experts stress the need to carry out afforestation to compensate the loss of mangrove cover. Scenes from Mangalavanam and Valanthakadu in Kochi



salinity. The return of tide can flush out these soils, bringing them back to salinity levels comparable to that of seawater

➤ About 110 species are considered "mangroves", in the sense of being a tree that grows in such a saline swamp. However, a given mangrove swamp typically features only a

small number of tree species

➤ Mangrove plants require a number of physiological adaptations to overcome the problems of high salinity and frequent tidal inundation. Each species has its own solution to these problems; this may be the reason why, on some shorelines, mangrove tree species show distinct zonation

How do they benefit

➤ Mangroves are an important source of carbon

➤ Mangroves protect shorelines from damaging winds, waves and floods

➤ They also help prevent erosion by stabilizing sediments with their tangled root systems

➤ They maintain water quality and clarity, filtering pollutants and trapping sediments originating from land

➤ This helps to stabilize the coastline and prevents soil erosion from waves and storms

➤ In areas where mangroves have been cleared, coastal damage from storms is much more severe

Among the 10 districts with mangroves in Kerala, a maximum number of 10 species was observed in Ernakulam followed by Kasaragod, Kannur and Malappuram.

However, development projects and construction have affected the mangroves population in the district.

Satellite data has shown that there's been a drastic decrease in the vegetation, agriculture land in the coastal areas of Ernakulam district in the past 25 years from 1991 to 2016. An earlier study in Ernakulam using satellite data by researchers at the national centre for earth science studies, Thiruvananthapuram, had shown the major change is that there is a 15% decrease in vegetation, agriculture and barren land.

In the present study, a total of 15,656 plants were counted in all coastal districts, which comprised 31.31% saplings, 45.22% seedlings and 23.47% trees.

Of the mangrove species recorded, *Avicennia officinalis* was highest (41%) and the genus *Avicennia* alone constituted 56%. Of the eight coastal districts, mangroves of Thrissur and Thiruvananthapuram were represented by single species *Rhizophora mucronata* and *Sonneratia caseolaris* respectively. Tree density and basal area were the highest in Kozhikode followed by Kannur and Kasaragod. *Avicennia* species were dominant except in Thiruvananthapuram and Thrissur.

After comparing diversity indices, it was apparent that mangroves in Kannur were the most diverse, followed by Kasaragod, Malappuram, and Ernakulam. Mangroves in Kerala represent 0.19% of the total mangroves of India, with total areas of just nine square kilometre but they represent 41% of the true mangrove species in India.

In the present study, 13 mangrove species, belonging to 5 families and 8 genera were recorded from Kerala and it was found that mangroves in Kerala varied in diversity, density and structural development.

The structural characteristics of the mangrove forest revealed the presence of mixed mangrove forest. Considering the overall structural data, it could be concluded that the mangroves in Kasaragod, Kannur, Kozhikode and Malappuram have high species diversity and considerable structural development. Though the mangroves of Ernakulam had high single species dominance, low basal area indicated poor structural development and uneven species present in abundance.

"The mangrove ecosystems are threatened globally due to various human activities and climate change. The species diversity

of Indian mangroves is under constant flux due to natural like erosion, aggradations and human interventions leading to changes in composition and local extinction of some species," said CMFRI scientist K G Mini.