Mangrove : The Coastal Heritage of Orissa

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Introduction

The mangroves are the coastal tropical forest, grow in the inter tidal deltaic areas, having higher salt concentration. The term "Mangrove" is derived from two words i.e. "mangue" {Portuguese}, which means a mangrove tree and "grove" {English}, which means community of trees. Mac Nae (1968) referred the term "mangal" for mangrove forest community. It is estimated by researchers that 60-75% of all tropical shores are covered by mangroves.

Generally these plants form aerophores or air breathing roots. Thus they are called as pneumatophores, blind root suckers and plank roots etc. These plants have viviparous, crypto-viviparous or pseudo-viviparous germination mechanism, which helps them to get a favourable chance of germination in the inter-tidal saline soil. The osmotic pressure of mangrove plants is high due to higher salt concentration in soil and water. It has thick, succulent, evergreen, leathery, texture with wax coating foliages. Due to special salt tolerance mechanism like salt intrusion, salt exclusion and salt accumulation, the mangrove plants best adapt in saline habitat. These are very hardy plants and adapted over millennia to grow in inter-tidal zones. But they are self propagating and will grow, regenerate and spread easily, if the soil and location are favourable to their growth.

The mangroves are the plants which can survive in strong wind velocity, tidal extremes, high salinity, high temperature and muddy soil. These are successfully adapted in colonizing saline inter tidal zone at the interface between the land and sea along the deltas, shallow lagoons, mud flats, bays etc. in tropical and sub-tropical sheltered coastlines.

Indian Mangroves

The Indian mangroves are categorized into six different types on the basis of their habitat.

The Deltaic / Estuarine Mangrove :- Generally these mangroves exist in the east coast of India. These are abundant in the deltaic region of the river Ganga, Mahanadi, Krishna, Godavari etc. Maximum areas of mangroves come under this category.

The Island Mangroves :- These are considered the second dominant and best mangrove zone of the country. It is scatteredly distributed in the Andaman and Nicobar Islands.

Coastal Mangroves :- This category exists in the coastal areas of Karnataka, Goa, Maharastra and Gujrat states.

Mangroves of marshy back water :- The mangroves of Kerala coastal areas come under this category.
Mangrove on the Gulf: These mangroves are distributed in the Gulf of Cambay and Kutch.

The Mangroves of coral reef: The mangroves scattered in the Lakshdeep and Minicoy Islands of Arabian sea comes under this category.

Mangroves of Orissa

The mangroves of the Orissa coastal area are distributed in the following three zones:
1. Mangroves of Mahanadi Delta.
2. Mangroves of the Brahmani and Baitarani Delta i.e the Bhitarkanika Mangrove zone.
3. Mangroves of the Balasore coast.

Among these three mangrove zones, the Bhitarkanika zone is most important due to its largest stretch and unique biodiversity. It is also considered as the third largest mangrove zone of the country followed by Sundarban and Andaman & Nicobar island.

The mangroves of Orissa coast are situated within the latitude 19º N and 22º N and longitude 85º E and 87º E. The Government of India publication, Indian mangrove status report (1987) has mentioned that 120 km² mangrove area is present in the Mahanadi delta and 30 km² in other coastal zone of Orissa state. According to Jagtap et al. (1993), there are 36 number of mangrove species present in Orissa coast.

Due to the vast stretch, this mangrove forest provides a natural breeding place for crocodiles and several threatened species like sea turtle, king crab, dolphin etc. Besides, the varieties of mangroves genera like Rhizophora, Bruguiera, Ceriops, Avicennia, Sonneratia, Heritiera, Kandelia, Xylocarpus, Luminitzera, Delichandrone, Excoecaria, Phoenix, Tamarix, Brownlowia, Clerodendrum, Scirpus, Tylophora and Intsia etc. increase the aesthetic value of the area. Thus, the Bhitarkanika forest has been declared as a wildlife sanctuary, with several endangered species of flora and fauna and for having wide spectrum of genetic diversity (Table 1).

<table>
<thead>
<tr>
<th>Animal</th>
<th>Common name</th>
<th>Scientific name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals (aquatic)</td>
<td>Gangetic dolphin</td>
<td>Platinista gangetica</td>
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<tr>
<td></td>
<td>Little torpoise</td>
<td>Neophocaena phocaenoides</td>
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<tr>
<td></td>
<td>Plumbus dolphin</td>
<td>Sotalia Plumbia</td>
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<tr>
<td>Mammals (terrestrial)</td>
<td>Jungle cat</td>
<td>Fellis chaus</td>
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<tr>
<td></td>
<td>Jackel</td>
<td>Canis aureus</td>
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<tr>
<td></td>
<td>Fox</td>
<td>Vulpes bengalensis</td>
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<tr>
<td></td>
<td>Small Indian civet</td>
<td>Vivericula indica</td>
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<tr>
<td></td>
<td>Common grey mongoose</td>
<td>Herpestes edwardsir</td>
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<tr>
<td></td>
<td>Small Indian mongoose</td>
<td>Herpestes auropunctatus</td>
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<td></td>
<td>Wild boar</td>
<td>Suscrofa linn.</td>
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<td></td>
<td>Spotted dear</td>
<td>Cervus axis</td>
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<td></td>
<td>Field rat</td>
<td>Mus booduga</td>
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<tr>
<td>Reptiles</td>
<td>Garden lizard</td>
<td>Calotes versicolor</td>
</tr>
<tr>
<td></td>
<td>Monitor lizard</td>
<td>Varanus flavescens</td>
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<tr>
<td></td>
<td>Python</td>
<td>Python molurus</td>
</tr>
</tbody>
</table>
### Causes of Destruction

In the last few decades the survival of mangroves are being subjected to different threats, throughout the countries. These are mainly:

- **Cutting down mangroves for commercial use in leather and bakery industries.**
- **Destroyed for the purpose of aquaculture projects as these are very easy to set up in such areas.**
- **Interestingly some fishing communities prefer to cook on mangrove wood due to a special flavour.**
- **Exploitation for fuel wood, timber harvest, grazing by domestic animals, non wood forest products.**
- **Excavation and renovation of mangrove forest area to agricultural fields, fish farm, port, harbour development, human habitation and industrialization.**
- **The other main cause of destruction is the use of mangrove forest for discharge of sewage effluent, garbage, which pollutes the environment.**
Importance

- The mangrove plants play a vital role, by protecting the coastline zone from frequent cyclones, tidal thrust, tsunami etc. It also checks the soil erosion from the coastal deltaic lands.
- From the economic point of view, the mangrove provides a wide variety of goods and services such as fuel wood, timbers, fodder, edible fruits and vegetables, thatch leaves, non wood forest products and traditional medicine etc.
- The mangrove forest also serves as a habitat for large group of endemic and endangered species.
- The mangrove forest acts as a sink for different pollutants and help in pollution control.
- It is also very much potential for their renewable natural resources.
- Some Mangrove forests are considered as biosphere reserve and National park, which ultimately attracts tourists and increases aesthetic value.
- As the mangrove forest release a vast amount of litters and it converts to organic nutrients through mineralization process, it helps to grow the plankton and fish food organism. Hence it acts as a natural habitat for estuarine fish, shrimp, prawn and crabs etc.

Conservation through Proper Management Strategy

The Ministry of Environment and Forest of India has taken several measures for conservation and management of this unique forest land and its rich biodiversity. These measures include:

- Protection of migratory and local species prone to poaching for different purposes.
- Protection of salt water crocodiles and sea turtles.
- Building of data base.
- Pollution control.
- Promotion of Eco-tourism.
- Research and developmental activities.
- Community participation.
- Institutional strengthening.
- Creation of awareness about the value and functions of mangroves and wetland.

Therefore, conservation of this coastal heritage of Orissa is the responsibility of local people, administrators, different institutions and NGOs for sustaining biodiversity of the area as it has immense aesthetic and economic importance.

Reference: