

RESEARCH ARTICLE**Status, Biodiversity and distribution of Mangroves in South Konkan, Sindhudurg District, Maharashtra State India An overview**

Yeragi SS* and Yeragi SG

Department of Zoology, K. J. Somaiya College of Science, Vidyavihar, Mumbai-400 077.

*Corresponding author Email- dryeragi@gmail.com**Manuscript details:**

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**ABSTRACT**

Mangroves are one among the most productive ecosystems in south konkan. The estuarine habitat is densely supporting this ecosystem and serve as custodians of their juvenile stock and from most valuable biomass. Mangroves are known as the salt tolerant forest ecosystem. It provides a wide range of ecological and economic products hence considered as treasury for the coastal living people. As a highly productive zone, no one can destroy this ecosystems in konkan. It is know to be Government property. Mangroves occupy less than one percent of the world's surface. 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 and over 11 families have been recorded globally. Indian has a mangrove cover of about 6, 749 Km², The present investigation amongst the south konkan estuaries, about 12 genera and 20 species were recorded.

Key words- Mangrove, south Konkan, species.

INTRODUCTION

Mangroves in south konkan are one of the most valuable coastal habitats providing bread and butter to poor people. The mangrove ecosystem in south konkan is really the God gift which help to solve the daily problem of their economic. This system has more protection as well as conservation in estuarine region specially in Mithbav creek. The coastal native do plantation of *Rhizophora*, spp. *Sonneratia* spp. *Avicennia* spp. regularly. *Excoecaria agallocha* can grow naturally all over the coastal line. It is really helpful in various ways like making float of gill-nets, cork, to avoid the infection of *Salmonella* spp. Estuaries of south Konkan perform a crucial role in the life cycles of many fish species. The mangrove mud-flat of estuaries act as important nurseries for certain fish like *Mugil* spp. *Lates* spp. and shellfish like *Scylla* Spp. *Portunus* spp. oysters, Shrimps etc. by Providing rich main food sources and protection from predation (Yeragi 2006). It is reported that among the 200 or so estuaries on the east and west coasts of India, only few ones have been surveyed for biodiversity. Mithbav, Achara, Mumbri, and Deogad estuaries are rich for biodiversity. Their primary production, plankton biomass is always high. It is directly co-related lasted to fishery potentiality. These estuaries have high frequency of mangrove ecosystem. The mudflats of mangrove ecosystems are richly supporting fish, molluscan shrimp, and crab fisheries. These estuaries are connected by

several lagoons which serve as breeding, feeding and nursery grounds. The lagoons are densely lined by more than fourteen true mangrove species, amongst which *Excoecaria*, *Avicennia*, *Rhizophora*, *Sonneratia*, *Kandelia*, *Bruguiera* are dominant.

Last three decads because of aquacultural practices the mangrove forests are being gradually destroyed in other parts of the coastal areas. In Mithbav creek the coastal native cannot touch or destroy these valuable mangrove forests Under CRZ act 1991, no construction is allowed upto 500 meters, because of this in south konkan most of the wetland ecosystems are safe zone. Aquaculture plan of Government of Indian was for exploitation of blue revolution to solve the problem of foreign exchange. This makes heavy damage to the productive and biodiversity conservator landscape of mangrove forest. Estuaries and mangrove habitats are extremely productive because they receive inputs from several primary production sources and detritus food webs.

Indian coastal biodiversity is under threat by several factors. The coastal area faces many problems including poorly planned land use, pollution, overfishing and dumping of waste in mangrove habitat. Over exploitation occurs when a resource is consumed at an unsustainable rate. A number of coastal areas and mangrove ecosystems in India are under stress due to growing aquaculture and agriculture activities. The long coastlines and their mangrove vegetation have immense role in protecting coastal biodiversity as well as coastal natives from Tsunamic. Mangrove ecosystem has covered 47% world's mangrove area (Untawale, 1984). Mangrove ecosystem are rich in biodiversity and harbour a number of floral and faunal species. They also act as nurseries for shellfish, crustaceans, molluscs and finfish. The planktonic and benthic animal communities play a very important role in the mangrove ecosystem. There are diffident species of crustaceans like *Penaeus indicus*, *P. monodon* while the crabs are *Uca spp.* *Scylla serrata*, *Portunus spp.* The fish are represented by several species like the mud skippers, mullets, milkfish, *Lates*, and others. Mangroves forests can truly be considered as evolutionary hotspots where terrestrial organisms have re-adapted to marine life, and marine have undergone the transition to terrestrial species (Saenger, 2002; Tomlinson, 1986). These intertidal forests harvest a diverse and distinctive macro-faunal assemblage mainly consisting of marine taxa which developed evolutionary trends from marine to semi terrestrial and terrestrial life-styles, such as snails, crabs, and even fish. The changes in atmospheric CO₂ concentration, climate, and sea-level will lead to complex interactions affecting the structure and function of mangroves.

MATERIALS AND METHODS

The present study was carried out in south konkan estuaries in 2011-2012. A series of quadrates of 5 × 5m. were laid of an interval of one km. along the 10km. long canal. The number of trees in each quadrate was counted and the data were tabulated. The relative density was calculated. The main measures is computed as follows.

$$\text{Relative density} = \frac{\text{No. of individual species}}{\text{Total no. of individuals}} \times 100$$

RESULTS AND DISCUSSION

The relative mean density of mangrove species is given in Table. 1 along with qualitative status in south konkan estuaris like Mithbav, Mumbari and Deogad. The average vegetation in the mangrove swamp is consisted of 12 genera 20 species ranging from 1.1 to 20.6% of relative density Amongst, all the estuaries, *Excoecaria agallocha*(L) is highest in Mithbav estuary and lowest in Deogad estuary however *Lumnitzera racemosa* (wild) was lowest in all the regions. The Percentage contribution of *Avicennia* spp. was highest in Mumbari estuary while *sonneratia* was equally high compare to others in Mithbav wetland ecosystem. The distributions of these plants were varied in a distinct pattern from the mouth of the estuary toward the inland water. The percentage composition of all the sepses in all the estuaries were maximum in middle regions. The Mithbav estuary is associated with many lagoons. The lagoons are lined with all the species of true mangroves. The distribution of *Avicennia officinalis* was restricted towards inland water whereas *Excoecaria agallocha* and *Avicennia marina* were found along the entire regains of estuaries. The zone of mangrove can be divided into two areas. First, the *Avicennia area* that is located near the inland water and the second region was found more towards the sea in all the estuaries. *Avicennia officinalis* was not dense toward third zone of the estuaries because this species may prefer an inland habitat with lesser magnitude of salinity variation.

Almost all the species were present with variable number in all the quadrate except a few like *Acanthus ilicifolius*, *Derris* spp. and *Bruguiera*. Phonological characteristics of mangrove species were related to different environmental factors, especially, rainfall, temperature, soil, and water condition. In all the estuaries, the flowering was noticed during September to May. An extensive flowering during January to April due to higher temperature and larger duration of photoperiod and extensive fruiting during nearer the period of monsoon. Extensive fall of vivipary fruits was noticed in *Rhizophora* during pre-monsoon. Excess selts in soil delays t he fall of seedling. The Production of

number of seedling and size amplitude plays an important role in the zonation of the mangroves (Untawale 1984). The length of the propagule may determine the zoning of species, with *Rhizophora mucronata*, that has longer propagules growing where tidal amplitude is greater. The morphology of the propagules is also well adapted for setting the seedling in the correct upright position with the budding end up, because of the rooting end is heavier, therefore the propagule shoots down, well directed by gravity. *R. mucronata* can withstand upto 45-50ppm. but tolerance of surface water salinity is significantly lower (Yeragi, 2000). Under extreme unfavorable condition, when stress is at its maximum, specimens of ecologically prevalent species are able to survive under stress conditions spending most of their energy just to keep alive without much being left for growth. After two years interval the foliage in late monsoon suddenly dropdown and in September – October new foliage with maximum growth resume (Yeragi, 2000).

Tablet 1. Mean Percentage composition of relative density of Mangrove in south Konkan.

Sr. No.	Species Name	Relative density (%)
1.	<i>Rhizophora apiculata</i> (Blume)	6.8
2.	<i>R.muconata</i> (Lanite)	8.7
3.	<i>Avicennia alba</i> (Blume)	10.6
4.	<i>A.marina</i> (Forsk)	9.7
5.	<i>A.officinalis</i> (L)	7.12
6.	<i>Sonneratia alba</i> (smith)	8.8
7.	<i>S.casadaris</i> (L)	5.3
8.	<i>S.apetala</i> (L)	3.12
9.	<i>Exoecari agallocha</i> (L)	20.6
10.	<i>Acanthus ilicifolius</i> (L)	5.9
11.	<i>Derris trifoliata</i> (Lour)	2.5
12.	<i>D.scandens</i> (Benth)	1.2
13.	<i>Kandelia candel</i> (L)	2.4
14.	<i>Bruguiera parviflora</i> (raxb)	3.4
15.	<i>B. gymnorhiza</i> (L)	2.3
16.	<i>Criceps decandra</i> (Griff)	2.1
17.	<i>C.tugel</i> (perr)	2.5
18.	<i>Salvadora persica</i> (L)	2.1
19.	<i>Aegiceras corniculatum</i> (BI)	3.1
20.	<i>Lumnitzera racemosa</i> (wild)	1.1

The problems of south-Konkan wetlands

The problems of the south-konkan mangals are identified as.

- 1) Ecological problems.
- 2) Management problems
- 3) Regeneration problems
- 4) Afforestation problems

The steps, research and development have been undertaken in Konkan. The steps and research programmes are as follows :

- 1) Phonological studies of mangroves
- 2) Reproduction techniques should be developed for the mangroves
- 3) Nursery development techniques for important species like *sonneratia spp.*
- 4) Studies on the regeneration of dominant species of mangroves.
- 5) Studies on natural regeneration status.
- 6) Studies on the pest
- 7) Studies on tissue culture of species like *Sonneratia griffthii* which is not available.
- 8) Pathological investigation.
- 9) Mycological studies in relation to decomposition of waste dumped.

CONCLUSION

Though mangroves are salt tolerant species, their better growth observed in less saline zone with much height and more density. A little attention has been made for the conservation of the endangered species of mangroves. The wetlands are not waste lands. The mother nature has given this beautiful landscape to generate resources and protection of life from Tsunami. They maintain the hydrostatic pressure avoiding soil erosion of adjacent protective soil bandhara so that there is no flood or natural calamity. We don't want lip sympathy, but let us not destroy it if we want to preserve it. Mangroves play significant role for the protection of the coastal environment as they check the intensity of tropical cyclones, soil erosion, encroachment of sea towards land, etc. Besides these, mangrove forest provide congenial habitat for the fish, shrimps, and clams. Mangrove covering an area of 6740 sq.km. The characteristics of most of the mangrove flora with the Pneumatophores, viviparous germination, and physiological adaptations make them distinct from the rest (Yeragi, 2000).

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