STUDIES ON COASTAL ECOLOGY OF PALGHAR DISTRICT (WEST COAST OF INDIA) WITH REFERENCE TO MANGROVES

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Abstract: The present paper deals with the study change in coastal biodiversity of Palghar district over a period of time. Biodiversity is vital in maintenance of a healthy ecosystem. Intensive anthropogenic activities have a serious negative effect on coastal ecology.11 restoration sites selected periodical observations for three years from 2015 to 2017. During field visit observations of mangrove species, mangrove associates, macro flora and fauna recorded that compared with previous records. Out of previous recorded two species of mangroves at present only one species *Avicennia marina* found dominant in study area. About 28 mangrove associate plant species are found in study area. There is lower floral and faunal diversity in study area of Palghar district than other parts of country. Mangroves exist here in small fragmented patches. There is need to carry ecological restoration work and introduction other suitable mangrove species for plantation to improve floral and faunal biodiversity of Palghar coast to avoid future loss by single species. Palghar coast having huge potential for marine production and ecotourism. Ecological restoration work beneficial to economic upliftment and living standard of coastal society.

Keywords: Coastal Ecology, Mangroves, Biodiversity.

Introduction: Mangroves are distinctive tropical plant communities that occupy the intertidal zone between sea and land. They are of major ecological importance, have economic value as a source of food and raw materials, and serve as a buffer from flooding and climate change-induced sea level rise. Mangroves are under threat from pollution, clearance, and overexploitation, and increasing concern has driven demand for an improved understanding of mangrove species [1]. The word conservation strategy (IUCN, UNEP and WWF, 1980) defines conservation as "the management of human use of the biodiversity so that it may yield the greatest sustainable benefit to present generation while maintaining its potential to meet the needs and aspirations of future generations". Palghar district of Maharashtra is fast developing area, having about 112 Km. coastal length and about 20 km width, adjacent to Thane and Mumbai, now facing huge anthropogenic pressure. Today development is unavoidable but by loss of nature is not acceptable. Present study focus on biodiversity of mangroves, mangrove associates and coastal macro flora and fauna. Protecting, conserving and restoration of mangroves become beneficial to healthy coastal ecology.

Materials and Methods: The study conducted at Dahanu taluka coastal area in Palghar district (19°51′54′′-20°07′42.33′′N, 72°37′35.41′′-72°48′40.44′′E) located north shore of Thane, Mumbai, west coast of India during 2015 to 2017(fig.1). 11 restoration sites selected for periodical observations. Regular field visit was conducted along and across the coast to study biodiversity of mangrove species, mangrove associates and macro flora and fauna. During field visit plant sample have been collected and herbarium sheets of the same have been prepared. For macro fauna digital photographs have been taken. GPS reading of all species has also been recorded. For correct identification Mangroves and its associates Mangrove guidebook for Southeast Asia is used[2]. Collected observations compared with previous data for analyses change in biodiversity of study area.

Fig.1: General Map of Study Area

Results and Discussion: The Present study found 4 species of true mangrove given in table 1 and 28 mangrove associates plant species given in Table 2 in study area of Palghar district, Maharashtra. Out of previous recorded two species of mangroves [3] at present only one species *Avicennia marina* found dominant in study area. The vegetation is dominated by *Avicennia marina*, which has an ecologically successful Importance Value Index (IVI) of 157.29 and is most resistant to biotic and abiotic stresses, while others are susceptible to environmental stress and gradually shrink at Thane creek west coast of India [4]. About 21 mangrove associate species are recorded in Ratnagiri district of Maharashtra State [5]. There is still number of mangrove associates species yet to identify, its continuous process. Present data act as baseline for future research work. The mangrove ecosystem harbour 268 plant species,397 fishes,259 crabs, 256 molluscs, 450 insects and more than 250 other associated species. Mangrove ecosystem has the highest level of productivity among natural ecosystem, and performs several ecosystem services. The continued exploitation of mangroves worldwide has led to habitat loss, changes in species composition, loss of biodiversity and shift in dominance and survival ability. Worldwide, about half of the mangrove has been destroyed. The Indian mangrove biodiversity is rather high. The increase in biotic pressure on mangroves in India has been mainly due to land use changes and multiple uses such as for fodder, fuel wood, fiber, timber, alcohol, paper, charcoal, and medicine. Along the west coast alone, almost 40% of the mangrove area has been converted to agriculture and urban development[6]. Palghar district become rich in natural beauty having sandy beach, rocky island, rocky shore, ensuries, mud flats, Marshy land and mangroves. Population growth of Dahanu tahsil (study area) was about 400% in last century (census 2011). Due to overexploitation of coastal resources Palghar district shows (Table 3) lower floral and faunal diversity and density than south coast of Maharashtra and Gujarat coast. Therefore there is urgent need for better conservation and restoration works along the north coast of Maharashtra [7].

Table 1: Showing A List of True Mangrove Species Found In Study Area of Palghar District

No.	Botanical Name	Common Name	Family
1.	*Avicennia marina*	Tivar	Avicenniaceae
2.	*Avicennia alba*	Tivar	Avicenniaceae
3.	*Avicennia officinalis*	Tivar	Avicenniaceae
4.	*Acanthus ilicifolius*	Marandi	Acanthaceae

Table 2: Showing A List of Mangrove Associate Species Found In Study Area of Palghar District

No.	Botanical Name	Common Name	Family
1.	*Salvadora persica*	Miswak	Salvadoraceae
2.	*Casuarina equisetifolia*	Suru	Casuarinaceae
3.	*Eritrina indica*	Pangara	Leguminosae
4.	*Pongamia pinnata*	Karanj	Leguminosae
5.	*Thespesia populnea*	Bhendi	Malvaceae
6.	*Prosopis julifera*	Vedi babool	Fabaceae
7.	*Sesuvium portulacastrum*		Aizoaceae
8.	*Crinum spp.*	Lily	Amaryllidaceae
9.	*Colocasia esculenta*	Aloo	Araceae
10.	*Ipomoea maxima*		Convolvulaceae
11.	*Ipomoea pes-carpae*		Convolvulaceae
12.	*Suaeda nudiflora*	Morad	Chenopodiaceae
13.	*Suaeda fruticosa*	Moti morad	Chenopodiaceae
14.	*Caesalpinia bonduc*	Sagargota	Caesalpiniaceae
15.	*Phoenix paludosa*	Shindi	Arecaceae
16.	*Pandanus tectorius*	Kewda	Pandanaceae
17.	*Borassus flabellifera*	Tad	Arecaceae
18.	*Cocos nucifera*	Naral	Arecaceae
19.	*Clerodendrom inerme*	Kadu mendi	Verbenaceae
20.	*Aeluropus lagopoides*	Dola gavat	Poaceae
21	*Cyperus scariosus*	Lavala	Cyperaceae
22.	*Cynodon dactylon*	harali	Poaceae
23.	*Echinicholoa colonus*	Borad	Poaceae
24.	*Alteranthera triandra*	Reshimkata	Amaranthaceae
25.	*Xanthium strumarium*	Gokharu	Asteraceae
26.	*Calotropis gigantean*	Rui	Asclepiadaceae
27.	*Lantana camara*	Ghaneri	Verbenaceae
28	*Achyranthus aspera*	Aghada	Amaranthaceae

Table 3: Floral and Faunal Diversity In Mangrove Forests Of India [6] [8]

No	Species Name	Previous Recorded Species from			Present Recorded Species From Study Area (2015-2017)
		India	Maharashtra	study area	
1	Mangrove Species	39	20	2	4
2	Mangrove Associate plant Species	--	--	--	28
3	Marine algae	559	73	--	3
4	Coral	300	11	--	Not found
5	Mollusks	308	73	--	On progress
7	Fishes	546	74	6	--
8	Birds	433	121	37	On progress
9	Reptiles	80	3	--	--
10	Mammals	70	2	--	--

Conclusion: Present study concludes that there is lower floral and faunal diversity in study area of Palghar district than other parts of country. There is needs to carry protection, conservation and ecological restoration work and introduction of other suitable mangrove species for plantation to improve floral and faunal biodiversity of Palghar coast to avoid future loss by single species. Palghar coast having huge potential for marine production and ecotourism. Coastal ecological restoration work beneficial to economic upliftment and living standard of coastal society.

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