Ecosystem Study on Some Plants of Coastal Purba Medinipur

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Abstract- *Coastal Purba Medinipur comprised of Haldia part to Nandigram and extended up to New Digha which is nearer to Talsari part of Balsore district in Odisha. It has a low lying semi saline belt cultivated during monsoon when salinity tends to minimum for plant growth. It has a wide range of wild plants that grow luxuriantly near the ponds, canals and in wasteland. It is a source of income for local people and also provides food and feed to the men and quadrupeds. Encroachment of land use pattern and drought make the land saline that cannot tolerate the utmost production round the year if affected. In this communication a few plants and the ecology of the plants have been made to study more on the ecologically sound and viable plants in the area in near future to know the rate of fragility take place.*

Keywords- Coastal Purba Medinipur, Plants, Ecosystem and present scenario.

I. INTRODUCTION

Coastal belt in erstwhile Midnapore the historically famous site is now fall under Purba-Medinipur district in West Bengal State of India. The study area is situated aside eastern face of metallic road Mecheda-Digha bus road and nearly about 17 km away from nearest police station Nandigram up to the extended part of New Digha under Contai sub-division. Botanically, this low lying belt is a cradle of so many wild plant species that are ecologically significant. Once in these spots there is good abundance of species but now due to anthropogenic cause and natural calamities plants are facing a serious threat. Some are locally ruined. So, by and large it becomes a site for conserving plants as well as local fauna that might be under study. Literature revealed that the site is under eco-fragile zone which need conservation measures and proper planning.

II. AREA UNDER STUDY

In coastal belt of Purba-Medinipur, seven study spots have been taken in to consideration. These are Nandigram, Hijli, Petuaghat, Rasulpur, Mandarmoni, Sankarpur and Digha (Fig. 1)

Fig.1 Coastal Purba Medinipur (Source: www)

III. MATERIALS AND METHODS

The frequent tours were conducted during summer, monsoon, post-monsoon followed by winter to collect the medicinal plant specimens, their live photographs and ecological data following standard methods. Identification was done with the help of CNH, Cal Herbarium, and books, Journals, floras, monographs available time to time. Economic use and ecological significance have been made in field and cross checked with the help of different literature. In each spot ecological data i.e. frequency, density, abundance was calculated. Herbarium specimens were prepared using standard methods (Jain and Rao, 1977). Referred literature used for the study of Coastal Midnapore has been mention in the references part [1-28.] Standard ecological methodology was used to access the frequency, density and abundance of species which is available in any standard ecology hand book [29].

IV. RESULT AND DISCUSSION

Study sites revealed important plant species but distribution is discontinuous. It reflects five dominant families according to the ecological parameters. Stud site showed a good growth of herbs and under shrubs. Here frequency wise highest position ranked by the family Asteraceae while density wise highest position found in case of Verbenaceae. Family Fabaceae showed contagious distribution. Here relative abundance of species showed interesting result. Asteraceae showed relative abundance value i.e. 15.0 followed by Fabaceae i.e. 8.5 and lowest in case of family Solanaceae i.e. 5.0. Families like Scrophulariacea and Verbenaceae showed 4.9 and 8.0 abundance value respectively. *Spinifex littoreous* of the family Poaceae showed 6.0 RA which is highest for a single species of monocot among all the members of Poaceae found in the said area. It is found as good soil and sand binder though record revealed that population size decreasing with decreasing abundance of species in the said area[28]. Tree species and shrubs of the said area are also decreasing with the rise of population load in the said area. This means that within five years the thick population rise abruptly destructing the habitats and loss the vegetation. It would produce a dangerous situation if continued. So, proper planning and scientific manipulation for over load should be managed using rules and regulations in the said area. Hope that policy makers would develop strategies of new kind to manage the fragile ecosystem to pristine the environment soon.

Table 1. Some important species in Coastal Ecosystem in Purba Medinipur under special attention.

Sl. No.	Name	Family	Use	Ecology
1.	*Acacia auriculiformis*	Mimosaceae	Fuel wood species	Self regenerating
2.	*Acacia nilotica*	Mimosaceae	Used in burning ghat	Need protection
3.	*Albizia lebbeck*	Mimossceae	Commercial wood	Need protection
4.	*Alstonia scholaris*	Apocynaceae	Medicinal, ornamental	Protection
5.	*Anthocephalus cadamba*	Rubiaceae	Ornamental, wood as soft wood	Plantation
6.	*Avicennia officinalis*	Acanthaceae	Soil binder	Protection
7.	*Borassus flabellifer*	Arecaceae	Thatching, edible fruits	Protection
8.	*Caesaleinia bonduc*	Caesalpiniaceae	Seeds are anthelmintic	Protection
9.	*Calophyllum inophyllum*	Calophyllaceae	Boat building wood	Protection
10.	*Calotropis gigantean*	Asclepiadaceae	Flowers marketed	Protection.
11.	*Casuarina equisetifolia*	Casuarinaceae	Green belt	Protection
12.	*Cissus quadrangularis*	Vitaceae	Medicinal	Protection
13.	*Clerodendrum inerme*	Verbenaceae	Soil binder	Protection
14.	*Clerodendrum infortunatum*	Verbenaceae	Medicinal	Protection
15.	*Coccinia grandis*	Cucurbitaceae	Medicinal	Conservation
16.	*Cocos nucifera*	Arecaceae	Nutritious fruits	Plantation
17.	*Croton bonplandianum*	Euphorbiaceae	Medicinal	Habitat conservation
18.	*Cuscuta reflexa*	Cuscutaceae	Medicinal	Protection
19.	*Delonix regia*	Caesalpiniaceae	Ornamental	Rapid regeneration
20.	*Dolichandrone spathacea*	Bignoniaceae	Soil binder	Protection
21.	*Gloriosa superba*	Colchicaceae	Medicinal	Endangered
22.	*Glycosmis pentaphylla*	Rutaceae	Medicinal	Protection
23.	*Ichnocarpus frutescens*	Apocynaceae	Medicinal	Special attention
24.	*Ipomoea aquatica*	Convolvulaceae	Vegetable	Protection
25.	*Ipomoea biloba*	Convolvulaceae	Sand binder	Protection
26.	*Ipomoea fistulosa*	Convolvulaceae	Fuel wood	Management
27.	*Opuntia stricta*	Opuntiaceae	Soil stabilizes	Protection
28.	*Pandanus fascicularis*	Pandanaceae	Soil binder	Protection
29.	*Phoenix sylvestris*	Arecaceae	Economic	Population rise

30.	*Prosopis juliflora*	Mimosaceae	Ecological	Protection
31.	*Spinifex littoreous*	Poaceae	Sanbinder	Protection

V. CONCLUSION

Ecosystem process is always dynamic that change the ecosystem scenario of land pattern. Drastic use of land pattern directly changing the vegetation structure and causes degradation of land profile. It increasing the loss of species from ecosystem but obviously affects the species composition. Therefore, high percentage of *Spinifex, Ipomoea, Tribulus, Pedalium*, and *Pandanus* is undergoes threat which causing loss of species composition that increase the soil loss and similarly covered by san filling which tends to sand deposition. Storms and cyclonic forces repeatedly changing the microhabitat that loss the small and fragmented vegetation thereby which rudimentarily spoils the geophytes and hemi-cryptophytes. Repeated process and heavy land use pattern changing the natural vegetation and filled with plantation species. Lower the ground cover is due to minimum number of species of herbs in presence of planted tree species in the said area causing loss of micro biota. The ecosystem diversity is going under threat due to loss of species. So, proper planning and management should be incorporated to make the environment holistic.

VI. CONCLUSION

Fishing and tourism are important for local people to develop economy. But need to run eco-tourism rather than tourism. Need scientific manipulation of fishing and need special attention on fish markets (Fihg.1). Labour based preparation of dry fish and ice based packaging should be developed but in contrary, need regeneration of more and more vegetation near shoreline to develop environment eco-friendly. Limited use of land mass and dumping off of old nets and more planning to fishing should be introduced to manage the ecosystem more viable but ecologically sound of this area.

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VIII. PHOTO PLATES

Fig. 2 Dry fish in Market at Mohana, Digha, West Bengal

Fig. 3 *Prosopis juliflora* (Beng.-Gue Babla) is a small-medium sized tree along the road

Fig. 4 Sand Dune is a habitat for *Calotropis* and *Opuntia* sp.

Fig.5 *Calophyllum inophyllum* (Beng.-Sultanchampa) in home garden at New Digha

Fig. 6 *Pandanus* sp. at Coastal Medinipur is a good soil binder.

Fig. 7 Coastal canal with profuse growth of *Avicennia officinalis*

Fig. 8 Fuel wood used widely at Coastal Midnapore a product of social forestry

REFERENCES

[1] Anonymous. 1997. Flora of West Bengal, Flora of India, Series -2, Vol.-1,, BSI, Kolkata.

[2] Anonymous. 2005. Medicinal Plant resources of south West Bengal,Vol.-I, Research Wing, Directorate of forests, Govt. of West Bengal.

[3] Anonymous. 2010. Medicinal Plant Resources of South West Bengal,Vol.-II, Research Wing, Directorate of forests, Govt. of W.B.

[4] Anonymous. 2017. Medicinal Plant Resources of South West Bengal, Research Wing, Directorate of forests, Govt. of W.B.

[5] Anonymous. 1987. Mangrove in India: Status Report, Government of India, Ministry of Environment & Forests, New Delhi.

[6] Anonymous. 2012. Medicinal plant Resources of Kolkata, A Photo Guide, Research Circle, Forest Directorate, Govt. of West Bengal, pp.1-200.

[7] Banerjee, L.K. 1994. Conservation of coastal plant communities in India,*Bull.Bot.Suvr.India*,36 (1-4):160-165.

[8] Banerjee, L. K; Sastry, A. R. K. and Nayar, M. P. 1989. Mangroves of India-Identification Manual, BSI, Kolkata-1.

[9] Banerjee, L.K.,Rao,T.A.,Sastry, A.R.T. and Ghosh. 2002. Diversity of Coastal Plant Communities in India, *Bot.Surv.India*, Kolkata, pp. 233-237 & 319-320.

[10] Bennet, S. S. R. 1987. Name changes in Flowering Plants of India and Adjoining Regions, Triseas Publishers, Dehra Dun.

[11] Chakraborty, S.K. 2010. Coastal Environment of Midnapore, West Bengal : Potential Threat and Management, *Jour.Coast. Env.*, 1(1): 27-40.

[12] Chakraborty,T.,Mondal,A.K. and Parui, S. 2012. Studies on the Phytoresources of Coastal Dune Flora at West Bengal and adjacent Orissa, India, *Int., Jour. of Sc. and Nature* ,3(4) : 745-752.

[13] Das, D. 2013. *Pedalium murex* L. (Pedaliaceae) – A New Record of Purba Medinipur District to the state of West Bengal, *IOSR Journal of Business and Management*, 13(4) : 54-56.

[14] Das, D. and Ghosh, R.B. 1999. Mangroves and other phanerogams growing at Nayachar, Haldia, Midnapore, West Bengal, *Environment and Ecology*, 17(3): 725-727.

[15] Das, D and Das, M. 2014. Vegetation ecology of coastal belt of Khejuri area of Purba Medinipur District with special reference to Hijli coast, West Bengal, India, *IOSR Journal of Pharmacy*, 4(2):56-77.

[16] Das, D.C, Pati, M.,Mahato,G.and Das, M. 2015. Study of tidal vegetation of Purba Medinipur district of West Bengal, India, *International Journal Of Bioassays*, 4(5): 3915-3921.

[17] Das,D.C.,Mahato,G.,Das,M.and Pati,M.K.2015. Investigation of Ethnomedicinal plants for the treatment of Carbuncles from Purulia District of West Bengal, *International Journal of Bioassay*, 4(5) : 3896-3899.

[18] Dey,M.K.,Hazra,A,K. and Chakraborty, S.K. 2010. Functional Role of Microarthropods innutrient cycling ofMangrove- estuary ecosystem of Midnapore coast of West Bengal,India, *Int. Jour. of Environment Technology and Management*,12(1) 67-84.

[19] Duthie, J. F. 1960. Flora of Upper Gangetic plains, Vol. I , II, Botanical Survey of India, Calcutta.

[20] Haines, H. H. 1921-1925. The Botany of Bihar and Orissa, Vol. I-IV, BSI, Calcutta.

[21] Hooker, J. D. 1892-1897. Flora of British India, Vol. 1-7, BSI, Calcutta.

[22] Jain, S. K. and Rao, R. R. A. 1977. Hand book of Field Herbarium Methods, Oxford and IBH Publishing Company, New Delhi.

[23] Mukherjee, B.B. and Mukherjee, J. 1978. Mangroves of Sundarbans, India, Phytomorphology, 28(2) :217-229.

[24] Naskar, K and Guha Bakshi, D. N. 1987. Mangroves swamps of the Sunderbans, Naya Prakash, Calcutta.

[25] Prain, D. 1963. Bengal Plants, Bishen Singh and Mahendra Pal Singh, Dehradun. Revised Ed., (Vol-I , II), BSI, Kolkata

[26] Sanyal, P. Banerjee, L.K. and Chowdhury, M.K. 1984. Dancing Mangals of Indian Sunderbans , *Jour. Ind. Soc. Coastal Agri. Res*. 2(1): 10-16.

[27] Das, M; Das, D and Das, Debabrata. 2017. Some Potentially important Medicinal plants of Coastal Purba Medinipur with Special reference to Economic development, IJIRD, 5th Year (II): 26-34.

[28] Das, D. 2014. Community study of plant species in coastal areas of Mohana and Old Digha of Purba Medinipur District with special reference to Eco-sustenance of life in near future, *Indian J. Appl. & Pure Bio*., 29(2): 255-266.

[29] Bendre, A.M and Kumar, A. 2016-2017. A Text Book of Practical Botany, Vol. 2, Seventh Edition (14th Reprint), ISBN: 817133877-1, Rastogi Publications, Meerut-New Delhi.