



STUDY OF FOLK-CULTURE, BIODIVERSITY SOURCES AND CONSERVATION PRACTICES IN SUNDARBAN REGION (WB), INDIA

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ABSTRACT: The present study deals with the folk-culture and biodiversity sources and conservation practices in Sundarban Region (WB), India. Almost 19 police stations and community development blocks were taken for this case study. An intensive anthropological field work was carried out with the interview of senior people of study region where we have documented the data on ethnobotany, folk culture, rites, rituals and ceremonies. In light of these opportunities study finds potential interrelations and role in the sustainable development with bioresources such as biodiversity supporting indigenous cultural practices and livelihoods management in the study region for sustainable future.

Key words: - Sustainable approaches, traditional knowledge, food security, folk cultures.

INTRODUCTION :

Sustainable and adaptive livelihood is an approach and effort to go beyond conventional practices. An ecofriendly approach is needed to sustainable conservation of area specific ecological and bio-resources to recognize nature for services not for loss of future livelihoods securities in the name of development. Biodiversity and sensitive ecosystem are being lost at an extraordinary speed and scale in the history of human on this green planet earth, which leads potentially extensive consequences for livelihoods and sustainable future. As per Shin *et al.*, the biosphere interlinked topmost priority based environmental challenges before the humanity are climate change and biodiversity loss. We are entering a pivotal decade for both the international biodiversity

and climate change agendas with the sharpening of ambitious strategies and targets by the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change (Shin *et al.*, 2022). Agenda 2030 covers the thematic areas of people, planet, prosperity, peace and partnership. There is an agreement among policy-makers and researchers on participation of all levels, especially the indigenous people at local level (Eichhorn *et al.*, 2021). An integrated ecosystem-economy model prepared by the World Bank reveals that nature-smart policies in agriculture and forestry can promote long-term management of natural resources for unlocking sustainable development that generates economic gains in these sectors while conserving natural ecosystems (Johnson *et al.*, 2021).

Implementing nature-based solutions has strong linkages with the climate system, the oceans, the land, and nature within these realms. Crucially, this needs to be managed without compromising the many nature's contributions to people (Girardin *et al.*, 2021).

Potential indigenous approach on biodiversity conservation in the Sunderbans region (the largest mangrove forest on earth) have been studied and discussed in this paper. Traditional knowledge is at the core of indigenous people's identities, cultural heritage and livelihoods. The transmission of traditional knowledge across generations is fundamental to protecting and promoting indigenous peoples' cultures and identities and as well as the sustainability of livelihoods, resilience to human-made and natural disasters and sustaining culturally appropriate economic development. Traditional knowledge underlines indigenous people holistic approach of life, which is a central element of the world's cultural and biological diversity. Indigenous people of sundarbans mangrove ecological zone is grouped with various community such as Poundra, Bagdi, Kaibarta (Mahishya), Kaora, Hari, Sunri, Chanral, Munda, Orang, Saontal, Kurmi, Muchi, Napit and other communities. These peoples are individually merged with different cultures that refer to the variation of tradition, language, customs, rites and rituals. The major folk cultures are selected for studying, that are Ghatbari puja, Benaki puja, Kulimangalbar, Shasthipuja and Manasapuja. These folk cultures have been merged with main stream Hindu culture and these cultures are very important for study of conservation practices, traditional knowledge, medicinal plant, food securities with ensuring healthy lives.

METHODS:

Data collection: The study is conducted by standard methods of herbarium techniques. Ethnobotanical information are collected by

standard method. The villagers are asked to provide the local name, various parts, and their use of various plants. After note down the name of the plants, the hand-to-hand collection and identification of species by visiting the fields are done. The collected specimens are identified using flora and other standard literature. Other's plants are identified in the central national herbarium (Kolkata, Shibpur), West Bengal The data collection will be done by questionnaires and survey methods. The main primary data are collected through interview method .The secondary data i.e. official data are collected through Government records available in different Government Department like Block, Subdivision and Panchayet office records and data collect from West Bengal Biodiversity Board.

Study Area: Total area of Sundarban is 539 square mile (139,500 ha), coordinates are 21°57'N 89°11'E/21.950°N 89.183°E. Total study area including waterlogged jungle is 6526 square mile. Climate as per data, during summer is 35°–42°C (approximate), during winter is 10–17°C (approximate). The following Police Stations and community Development Blocks are included for case studies : 1) Sagar, 2) Namkhana, 3) Kakdwip, 4) PatharPratima, 5) Mathurapur-1, 6) Mathurapur-2, 7) Kultali, 8) Joynagar-1, 9) Joynagar-2, 10) Canning-1, 11) Canning-2, 12) Basanti, 13) Gosaba, 14) Haroa, 15) Minakhan, 16) Hasnabad, 17) Hingal gang, 18) Sandeshkhali-1, and 19) Sandeshkhali-2.

Case Study: Case Study have been conducted through an intensive anthropological field work in the Poundra, Bagdi, Kaibarta (Mahishya), Kaora, Hari, Sunri, Chanral, Munda, Orang, Santal, Kurmi, Muchi, Napit and local communities. Participant observation and in depth interview are the key source of qualitative data about their existing culture. In depth interview of the senior people (60-100 ages)

provide the data on ethnobotany, folk culture related to rites, rituals and ceremonies.

RESULT AND DISCUSSION:

Land, water, air and biodiversity are the most vital natural resources bestowed on earth. India is one of the twelve mega biodiversity country in the World and Sundarban are of the biosphere reserve center in the West Bengal where indigenous communities are very rich in traditional knowledge. The folk cultures are very important source of biodiversity information that gives ensuring healthy lives, sustainable agriculture, herbal medicinal information and food preservation. Medicinal plants also play an important role among in the traditional health care system from different persons of folk culture. The vast systematic information regarding the people of Sundarban, West Bengal and their traditional knowledge, folk, culture, biodiversity, storage, preservation of medicinal plants, crops, seeds and worship of God and Goddess, their social status and custom are the main features and attributes related to their daily life. There is a growing appreciation of the value of traditional knowledge. Traditional knowledge is valuable not only to those who depend on it in their daily lives, but to modern industry and agriculture. Traditional knowledge about land and species conservation and management and revitalization of biological resources conservation is grounded in the daily lives and practices of indigenous peoples and their close understanding of their environments cultivated over thousands of years. Folk culture is now one of the major information sources having special relevance not only for the biologist and ecologist but also entrepreneur and policy makers in the country. Biodiversity research and prospects take place today amid rapid technological change, increasing the globalization of scientific and economic activity. The vulnerable Sundarban and its communities are very poor and majorities are below the

poverty line and significant population belongs to Scheduled Cast (SC), Scheduled Tribe (ST) and Other Backward Class (OBC) community. Their life is troublesome as they have to always fight with natural calamities for their livelihoods and survival. The men are engaged in agriculture, animal husbandry and fishing but their folk culture related with their livelihoods with sustainable agriculture and green vegetation with their traditional practices.

CONCLUSION:

The present study may provide some potential traditional practices with the biodiversity resources towards a sustainable future to fulfill the needs of human but not the greed. In the study region, some plant species are used in the treatment of small injuries, stomachache and abdominal disorders, arthritis, etc., are treated with these medicinal plants. By this study, a new door of sustainable practices with nature will open. It is also helpful to pharmaceutical companies to discover some valuable new phytochemicals by this ethnobotanical medicinal plant study. It has the potential to play a crucial role in sustainable development and for addressing the most pressing global problems, such as climate change, land management, and to strengthen scientific and technological research. Furthermore, traditional knowledge and practices can offer promising avenues for achieving food security not only for indigenous peoples but also for inhabitants around the globe. Many indigenous land and environmental management practices have been proven to enhance and maintain biodiversity at the local level and aid in maintaining healthy ecosystems. Educational practices that combine indigenous traditional knowledge and languages are a significant way to maintain and preserve indigenous cultures, identities, reduce illiteracy and school dropout rates, enhance learning, protect the environment, and promote wellbeing.

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REFERENCES:

- Ahmed, M. (2010). Medicinal Plants.Chennai, India: MJP Publishers.p.240-255.
- Bajpai, A.; Verma, M. (1995). Panchayati Raj in India: A new trust. Delhi: Sahitya Prakasan.
- Bhaduria, B. (1989). Panchayati Raj and rural development. New Delhi: Common Wealth Publisher.
- Bhattacharya, S. (2004). Chabbis parganar anchalik itihash. Kolkata, W.B.: Dey's Publishing. P.23-28.
- Choudhuri, K. (1999). Chabbis parganar Uttar-Dakhin Sundarban. Kolkata, W.B.: Dey's Publishing.p.312-330
- Das, S. (2005). Paschim banger Sundarban Anchan: Tathya o sutrersamikhya o bislasan. Kolkata, W.B.: Jadavpur University.Ph.D. Thesis.
- Dey, B. (1994). West Bengal District Gazetteers 24 Parganas. Kolkata, W.B.: Government of West Bengal.
- Eichhorn, S., Hans, M., Schon-Chanishvili, M. (2021). A Participatory Multi-Stakeholder Approach to Implementing the Agenda 2030 for Sustainable Development: Theoretical Basis and Empirical Findings. In: Hülsmann, S., Jampani, M. (eds) A Nexus Approach for Sustainable Development .Springer, Cham. https://doi.org/10.1007/978-3-030-57530-4_15.
- Halder, B. (2001). Dakhin Bangla janasanskriti bhasa o itihash bichitra (Vol. Part-1). Kolkata, W.B.: Chaturthya Dunia.p.100-126
- Johnson J.A., Ruta G., Baldos U., Cervigni R., Chonabayashi S., Corong E., Gavryliuk O., Gerber J., Hertel T., Nootenboom C.; Polasky S. (2021). "The Economic Case for Nature: A Global Earth-Economy Model to Assess Development Policy Pathways." World Bank, Washington, DC.
- Kanjilal, T. (1993). Jal o jangalerkatha: TusarKanjilalerprobandhyasangalan. Kolkata, W.B.: Kayamp.p.34-51
- Kanjilal, T. (2000). Who killed the Sundarbans? Kolkata, W.B.: Tagor Society for Rural Development.p.25-45.
- Laird, S.A. (2006). Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice. London: Earthscan Publications.p. 155-176.
- Mandal, K. (2001). Dakhinchabbisparganarloukikdebdebi o murtibhabna. Kolkata, W.B.: Naba Chalantika.
- Mandal, K. (2003). Dakhin chabbis parganar pura katha. Baruipur, W.B.: Pratna Itihash Sanskriti Kendra.p.99-108.
- Mandal, N. (2012). Sundarban lokosanskriti vishesh sankhya (Vol.2). Kolkata, W.B.: Dey's Publishing.
- Sharma, B. (1994). Lower Sundarban: Role of fisheries in its sustainable development. Kolkata, W.B.: The Asiatic Society.p.44-64.
- Shin Y.J., Midgley G. F., Archer E. R. M., Arneth A., Barnes D. K. A., Chan L., Hashimoto S., Hoegh Guldberg O., Inzarov G., Leadley P., Levin L., Ngo H. T., Pandit R., Pires A. P. F., Pörtner H. O., Rogers A. D., Scholes R. J., Settele J.; Smith P. (2022). Actions to halt biodiversity loss generally benefit the climate. Global Change Biology, 28, 2846-2874. <https://doi.org/10.1111/gcb.16109>.
- Singh, B. K. (2004). Biodiversity Conservation and Management. Jaipur, India: Mangal Deep Publications. P.280-296.

Table 1.: Folk culture-Benaki Puja

Occurring time	Bengali name of Plants	Scientific name	Part/s used	Indigenous knowledge	Conservation value
Month of Kartik	Dhanershis	<i>Oriza sativa</i>	Mature inflorescence	Young (paddy spike) inflorescence of rice and sum symbolized structure made by mud soil like monitor lizard that's indicate the protection of rice field.	Indigenous People cultivates and conserve germplasm of some salinity and disease resistance varieties of rice.
End of Aghrayan	Dhan (orya)	<i>Oriza sativa</i>	Mature Inflorescence	Used for symbol of Mohalaxmi & that is all source of economy & food.	Plant uses in Ghatbari puja.
	Kulekhara	<i>Hygrophila spinosa</i>	Twig with flower	The stem with bask and leaf used as medicine for cure diarrhoea, leucorrhoea, blood disorder and fever.	It has cultural & medicinal value.
	Teto Himchey	<i>Alternanthera sessilis</i> .	Twig with flower.	The plant used as food and herbal medicine and poultry feed. The plant used as vegetables & medicine for treatment of dysuria.	It has cultural & medicinal value.
	Kalmishak	<i>Ipomoea aquatica</i>	Twig	The plant used as popular vegetables.	It has cultural value.
	Muloful	<i>Raphanusora phanistrun</i>	Inflorescence	Used as vegetables.	
	Bakful	<i>subspecies sativus</i>	Flower	Used as vegetables that is good source of protein.	
	Sarshey ful	<i>Brassica campestris</i>	Inflorescence	Used as vegetables and food grain are common source of lipid/oil in daily life.	
	Indurkatipana	<i>Salvinia vatans</i>	Leaf	This is used as a bio-fertilizer.	
	Kanthalpata	<i>Atrocanpus hetrophyllus</i>	Leaf	This is common fruit of sundarban region and leaf used as cow and goat feed i.e. very important source of protein.	
	GandaFul	<i>Tagetes sp.</i>	flowers	Used as decorations and its leaf juice used in wound and the juice is antibacterial and anti-fungal in nature.	

Table 2.: Folk culture-Sasthi Puja (After five days of new born baby).

Bengali name of Plants	Scientific name	Part/s used	Indigenous knowledge	Conservation value
Durba (Ghas)	<i>Cynodon dactylon</i>	Twig	Make pest by its twig and use to stop bleeding in external surface of skin injury.	It has cultural & medicinal value.
Panchyapallab (Bat gachh)	<i>Ficus benghalensis</i>	Leaf	The leaves are applied to make new born baby healthy & free from microorganism.	Cultural and religious way of conservation.
Sarisha	<i>Brassica campestris</i>	Inflorescence	Used as vegetables and food grain are common source of edible.	
Halud	<i>Curcuma longa</i>	Rhizome	It is antiseptic and also use for facial beautification. It is also use to cure the injury of the external parts of human body.	
Sukhna Lanka	<i>Capsicum annum</i>	Fruit	Used as spice.	

Table.3.: Folk culture-Kuli Mangal Bar

Occurring time	Bengali name of Plants	Scientific name	Part/s used	Indigenous knowledge	Conservation value
Month of Aughrahayan	Kul	<i>Ziphus jujuba</i>	Branch of tree, Pair of fruit	It is used as fruit and dry fruits are processing as jam, jelly etc.	Farmers cultivate it as a part of worship.
	Jora kola	<i>Musa paradisiaca</i>	Pair of fruit	Used as fruit and cure the constipation. Bananas are the major source of iron, potassium that helps cure the anemia.	They maintain plants for Kuli Mongal Bar as a traditional custom.
	Durba (Ghas)	<i>Cynodon dactylon</i>	Twig	Grass juice used to enhance immunity in the body.	Young inflorescence considered as indicator of prosperity of family security.
	Chall Gunro	<i>Oryza sativa</i>	Mature inflorescence	Used for symbol of Mohalaxmi and i.e. the source of health, wealth, finance and prosperity.	
	Gandaful	<i>Tagetes erecta</i>	Flowers	Used as decorations, worship & leaf for antifungal use.	

Fig. 1: The Map showing enlarged view of study site. A. India B. West Bengal C. Deltaic West Bengal (red button is study site).

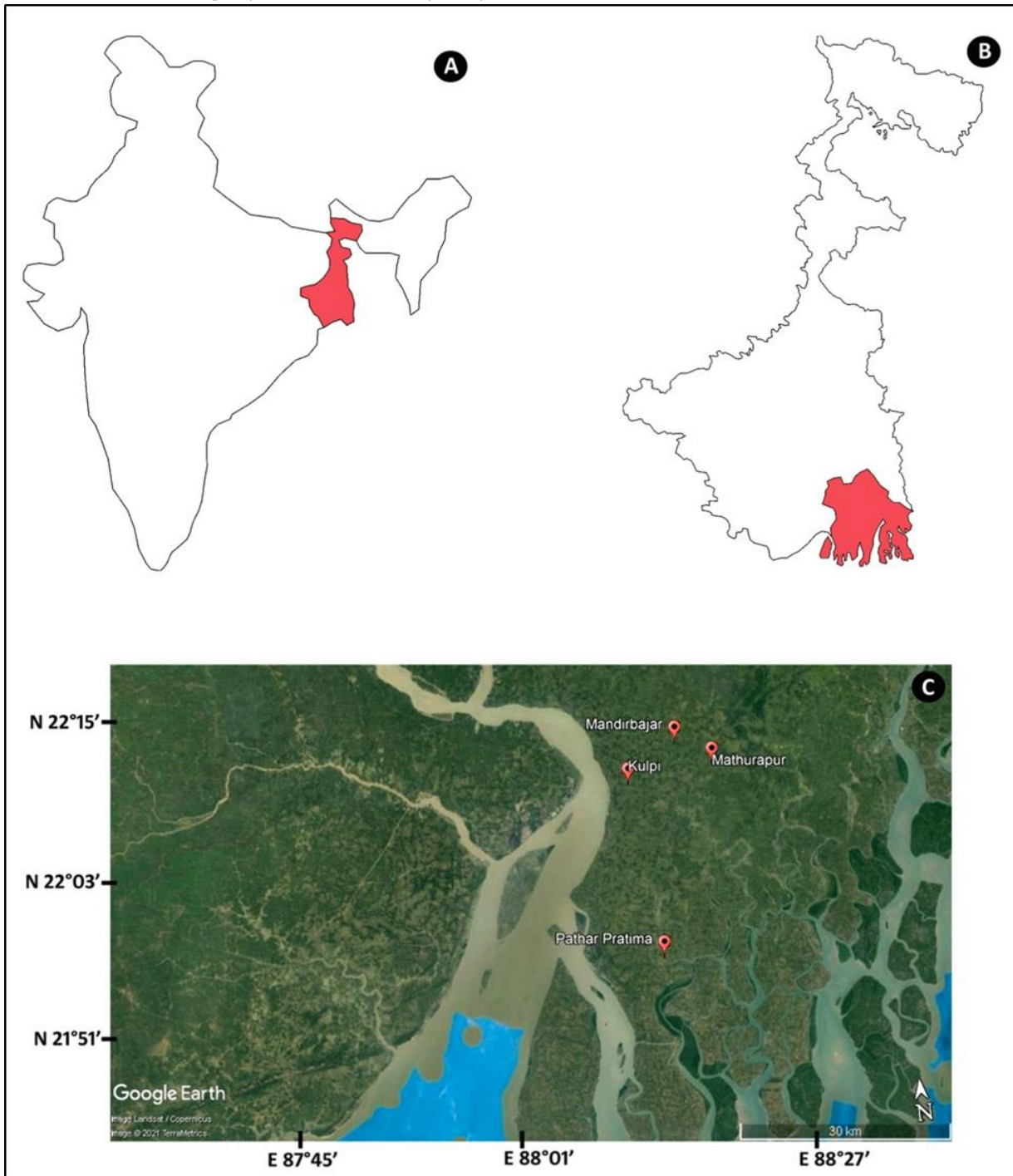


Fig 2.: Percentage of plant part used for folk-medicine in the study area.

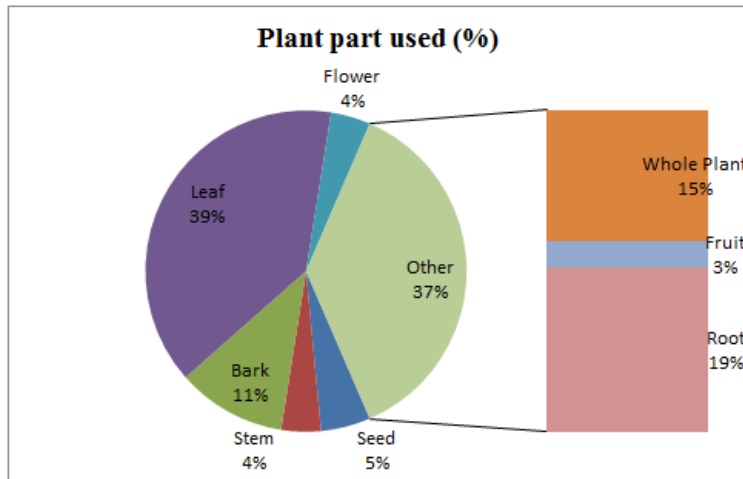


Fig: 3.: Worship to Nature and Ecosystem:

- i) Worship of Monosha plants (*Euphorbia nerifolia*)
- ii). Worship of Aswath plants (*Ficus religiosa*)
- iii) Worship of Srifol/Bel plants (*Aegle marmelos*)
- iv) Worship of Traditional oven with Monosha plants (Famous ritual of Bengal as Arandhan/Ranna puja).
- v) Ghat-Bauri Puja:Worship of paddy grain, *Cynodon* twig, *Brassica* leaf and inflorescence, Flower of radish etc.

