

The Attitude Of Local People Towards The Conservational Importance Of Mangrove Wetland And Development, Around Kavvayi Wetland Ecosystem, Kerala, India

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Abstract: Mangrove wetlands provide a variety of socioeconomic and ecological benefits in coastal areas across the globe. However the conversion destruction of mangrove forests, especially due to urbanization is occurring at a significant rate. Maintaining mangrove habitats is absolutely essential to protect the coastal region and livelihood of local populace, mainly the fishing community. Local population's involvement is a key factor for the success of all ventures on ecosystems conservation. Studies on mangrove ecosystem often concentrated on the ecological standpoint, and the interrelation between mangroves and local livelihood is usually ignored. Further the direct and tangible benefits provided by the mangrove ecosystem to the dependent community contribute to the necessity to conduct a detailed study of the aforementioned inter-relationship. Kerala, with a coastline of over 580 km; presents itself as a promising case to study the dynamics between mangroves and the local population. One of the major mangrove forests in Kerala situated along the Kavvayi wetland, Kasargod district. The present study, probes into the attitude and perception of local inhabitants towards conservation and ecosystem services provided by the mangrove wetland in Kavvayi through a semi-structured questionnaire surveys in ten hamlets in the Kavvayi river basin. These ten villages comprise of over thousand households, many of which earn their principle income from fishing and allied activities. A total of 332 respondents were surveyed. The study revealed that a large percent of the respondents had positive attitude towards conservation of the mangrove ecosystem and were admirably aware of their responsibility. It was also learned that their socio-economic and demographic surroundings influenced their attitude towards the mangrove ecosystem. Villages those were near to the wetland have primary forest dependency. Local communities were willing to be a part of community based management for mangrove conservation. This study shows that it is important to instill a mangrove friendly lifestyle among these communities for effective conservation of the mangrove wetland ecosystem.

Keywords: Mangrove wetland, Local communities, Perception, Attitude, Livelihood, conservation, Kerala

I. INTRODUCTION

Mangrove wetlands, one of the most important ecosystems along the coast occur mostly in the intertidal zones often called tidal forests, coastal forests, coastal woodlands, walking forests, oceanic forests etc. are one of the most productive ecosystems in the world (Bhatt et al., 2013). According to the India State of Forest Report, 2019, "by Forest Survey of India shows that mangrove cover in the country is 4975 sq.km which is 0.15% of the country's total geographical area". The mangrove wetland ecosystem widely

recognized for providing a variety of direct and indirect societal benefits, for example shoreline stabilization, prevent coastal erosion, pollution filtration, reservoir of nutrients and storm control (Hussain and Badola 2008). Mangrove wetlands play an important role to save the people and their livelihood from natural calamities such as storm, flood, tsunami and cyclones (Moberg and Ronnback, 2003). Fish, shellfish, oyster, tea substitutes, clam, mussels, honey and mollusks are some victuals derived out of mangrove wetlands (Gilbert and Jansen 1997). Miller et al. (1983) in his research identified mangrove wetlands as desirable breeding ground (nursery) for

ecologically and economically remarkable coastal fishes and other species. 87 percentage fish catches in the world come from coastal areas and 60 percentage of the people from tropical and subtropical developing countries count on fishes for their protein consumption demand. The sea portion which is closer to the shore, (less than 50m depth) yields the maximum fish production in India. According to the National Fisheries Development Board (2020) inland fisheries sector produced 67 percentage of total fish production (12.60 million metric tonnes) in the 2017-18 periods. The collectors consume the products themselves; hence it does not enter the market most of the times. "Therefore when evaluating mangroves for contribution to the food of coastal communities, these have to be considered as dynamic ecosystem with nonlinearities, threshold and discontinuities" (Costanza et al. 1993).

Since mangroves play a fundamental part in livelihood of coastal people, a study which extensively covers the local inhabitant's attitude towards protection and conservation of the particular ecosystem should be conducted before implementing policies and rules for its sustainability (Lakshmi and Ramamoorthy, 2013). Contreras-Hermosilla (2000) discussed local population's direct role in decrease in natural resources. Mbilea et al. (2005) stated that local people is the most important actors in restoration program. Increased awareness of importance of mangroves among people especially those who are live along the coastal region have contributed to the prevention of mangrove slaughter for recreational purposes. There are interventions of certain non-governmental organizations also in the creation of local bodies to conserve and restore mangrove ecosystems (Neethu and Harilal, 2018).

II. STUDY AREA

Kerala has 580 km coastline. The northernmost districts of Kerala exhibit exuberant mangrove forests which covers 80 percent of the state. The Kavvayi wetland is one of the fascinating backwaters in Kerala; a stretch of coastal water that has a basin of 10.9 sq. Km. It locates Kasargod and Kannur districts of North Malabar, Kerala. The third-largest backwater in the state is the largest in North Kerala; geographically it is between the co-ordinates 75°06'48"E to 75°15'40"E longitudes and 11°59'52"N to 12°14'36"N latitudes. The Kavvayi wetland area is plentiful in mangroves and mangrove associates. The wetland is a fertile ground for many migratory birds. Also, mangroves help to prevent erosion, floods, storm, tidal damage, and tsunami and control inundation. Also, it generates products such as fish and other forest resources.

III. METHODS

Household survey was carried out in the month of February and march 2020, through the questionnaire survey data on socioeconomic, resources use and attitude towards the conservation of mangrove wetlands were which targets ten percent of total houses in that area. For the household survey ten percent of the total households in each village were

randomly chosen. The criteria would be proximity to the backwater and geomorphic features of mangrove vegetation in that area. To gather huge amount of quantitative data in less time, as a faster method, a standard questionnaire used for survey. Research scholars, scientists, fishermen, old aged people, NGO activists, local government representatives, and school students also were interviewed for the data collection. To survey questionnaire which used to study the perception and attitude of local people was semi-structured in nature, which had certain predefined questions and quite a few open mode questions which were not planned before. A total of 100 households (332 individuals) were surveyed. The responses I received were mostly yes, or no.

IV. RESULTS AND DISCUSSION

The results showed that (table 1) most of the mangrove neighboring people, that is 90.96 percent of sample respondents (n=332) are aware that these mangrove forests are important to their respective villages. Attitude and perception survey results clearly shows that 97.80 percent of respondents have accepted that it is necessary to conserve mangroves in this village, even-though the remaining 2.2 percent have rejected the same. A staggeringly high percent (89.76) of total respondents accepted that they are aware of their responsibility in conservation, another 61.74 percent people are on favor of Eco-developmental programs, including Eco-tourism for the area, whereas 38.26 percent respondents rejected the same.

Out of 332 responses 93.98 percent people accepted that Government and NGOs engage in mangrove conservation in this area through many awareness drives and mangrove plantation drives. The reading room and library in Edayilekkad conducts Mangrove wetland awareness for school students regularly, one executive member of the library explained. 78.31 respondents observed, they get benefits from the services of the government and NGOs in this regard, whereas 21.69 percent of people did not accept it.

Only 12.05 percent of respondents felt that conservation activities restricted their rights, denial of grazing, collection of firewood, roads, bridges like basic infrastructural developments are the reasons behind this, and. 87.95 percent did not feel any issues due to the conservation programs of the Kavvayi wetland.

Question	Yes	No
Did you know that mangroves are important to this village?	90.96	9.04
Is it necessary to conserve mangroves in this village?	97.80	2.20
Do you feel responsible for protecting this mangrove wetland ecosystem?	89.76	10.24
Are you in favor of the implementation of any Eco-developmental projects, including ecotourism here?	61.74	38.26
Do you think the government, NGOs or any other organization engage in mangrove	93.98	6.02

conservation?		
Do you get any benefits from the service of the government and NGOs in conservation of mangroves?	78.31	21.69
Do you agree that because of the conservation practices your rights are violated	87.95	12.05

Table 1: Attitude of local people on mangrove wetland ecosystem and its conservational importance (n=332)

VIEW OF RESPONDENTS TOWARDS ECO-DEVELOPMENTAL ACTIVITIES IN MANGROVE WETLAND AREA

57.83% of total individuals suggested eco-developmental activities should be planned by community based, the main reason behind such a feeling was, and they could get chances to protect their rights if it is community lead activities. 25 percent suggested NGOs could perform well in eco-development activities, they thought many of the NGOs are already have done appreciable works in this regard in their area. And the rest 17.17 percent supported the developmental activities where government leads (Table 2).

Views	No. of individual	Percentage
Prefer Community based development	192	57.83
Prefer Government initiative	57	17.17
Prefer NGO based development	83	25.0

Table 2: Table showing respondents view towards Eco-development activities (n=332)

LOCAL PEOPLES VIEW ON ECO-DEVELOPMENT ALTERNATIVES

Majority of respondents were opposed the land use change for other purposes after cutting down mangrove forests; this indicates how important is mangroves for local peoples existence there. Table 27 projects 74.69 percent of total respondents opined that mangrove plantation should be increased and they endorse more plantation drives from NGOs and other organizations, who work for the conservation of Kavvayi backwater. While 24.09 percent people felt that the current plight of the mangrove forest is good and satisfying. Only 1.2 percent of respondents were in favor of the cutting mangroves; they did not oppose using the mangrove land for other activities such as roads, buildings and parks.

Another observation from the survey was, as compared to the population far away from the wetland, population living closer to the wetland, are more co-operative in conservation efforts with authorities.

Management alternatives	Frequency	Percentage
Land should be used for other purposes after cutting down mangrove forests	4	1.2
Current protection/conservation methods are good enough	80	24.09

Mangrove plantation should be increased	248	74.69
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Table 3: Local peoples view on eco-development alternatives (n=332)

Use values	Rank 1	Rank2	Rank3
Fishing	82	21	36
Agriculture	12	67	56
Tourism	6	12	8

Table 4: percentage of ranking of the use values (n=332)

Ecological function	Rank 1	Rank2	Rank3
Aesthetics	30	65	
Nutrient cycling	38	56	6
Flood control	36	56	8
Tsunami/Storm mitigation	75	22	3

Table 5: Ranking of the ecological functions (n=332)

ECOLOGICAL FUNCTIONS AND VALUES IDENTIFIED BY LOCAL COMMUNITY

Respondents (n=332) were given a list of ecological services to find out how much they were aware of the ecosystem services provided by mangrove wetland and its tangible and intangible importance in their livelihoods.

Their responses show ranking of use values, 82 percent gave highest ranking to contribution of mangrove wetland towards fishing, 67 percent gave agriculture as their second preference among direct services (table 4). In the survey, respondents were asked to assign ranks for ecological functions (intangible), 75 percent of the respondents gave first preference to Tsunami/Storm mitigation, whereas 65 percent of respondents favored aesthetics as second preference (table5).

V. CONCLUSION

Two important facts determined while observing the results are 1) generally local people possess a positive attitude towards conservational importance, and 2) demographic as well as socioeconomic factors influence the attitude of people. This positive attitude of local, their knowledge on conservation issues and their support for the environment development program, can use and implement sustainable mangrove management plans and policies for the Kavvayi wetland. Individuals having indifferent opinions may reap to positive response soon. Media and NGOs and other organizations should play an important role in mobilizing mass for protection and conservation activities. Local people approaches tourism in the backwater as their main utilization of mangroves, so there is a need for promotion of ecotourism which must be in a community participation manner to enhance local economy. Through being a part of organizations for management of Kavvayi mangrove wetlands local populace showed their desire to be a part of decision making.

To maintain inhabitant's attention for mangrove wetland conservation, attitude and perception of people from different walks of life should be studied; through innovative means people's support for different natural resource conservation should be improved. Sustainable conservation management

approach for an ecosystem depends on knowledge of conservation standards recognized by local communities, government, NGOs and other related parties. To get support from the local people for conservation, environment awareness is the most dynamic tool. Hence for the study area an effectual environment awareness program should be established. Developing skills at grass root level is necessary for NGOs to conduct environment awareness programs, for the mangrove wetland area aimed at various sections of the local community. These NGOs must work closely together with local people and forest department in knowledge development programs, so that they would use their valuable local knowledge and skill. Politicians, visitors to the area, bureaucrats, media, and local people should be a part of the awareness programs. Demonstrations, camps, plantation drives, field visits, panel discussions, video programs street plays and other awareness creating programs should be conducted consistently at least once in a month. This would lead to an understanding of the rights and duties to protect the wetland. Volunteers divided into several small teams and they should be trained to monitor growth of mangrove trees and to spread the significance of mangroves in society. The volunteers should be encouraged, to take up the responsibilities in protecting the ecosystem. Harmful issues be addressed and the stakeholders should be participate in corrective measures to minimize the negative effects.

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