

A Study on Problems of Fishing Communities in Sundarban Region of India

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Abstract: Sundarban is regarded to be the largest delta all over the world and is well renowned for the rich marine resources. Taking into consideration the occupation of the people in the Sundarban region, majority of the population is dependent on the fishery activities. The fishery activities in the delta region, is considered to be the backbone of the Sundarban economy. However, it is witnessed in the recent years that the fisher folks in the Indian Sundarban region faces some of the major problems pertaining to their occupation. Shrinking population of prawn population, indiscriminate collection of fish seed and the advent of vulnerabilities of the sort of the tropical storms and low pressure in the Bay of Bengal pose to be a serious problem to the Indian fisher folks in the Sundarban region. Although the fishing community undergoes a lot of problem there is still a good prospect in integrating the available inland and marine resources and transform the livelihood of the fishing community. The study primarily focuses on the issue that the fishermen folk residing in the Sundarban Tiger Reserves (STR) are facing. The report is categorized in the following six divisions. The first division gives a detailed parameters of the legal guidelines that closely defines the process of implementation of the regulations in fishing in the STR.. The second division provides a clear vision of the status of the fisheries and the fishing communities in the STR The third division discusses the issues pertaining to the living condition of the people that concerns the fishermen folk. The fourth division discusses the potentiality of the inland and marine resources that can help in alleviating the condition of the fishermen folk.

Keywords: Sundarbans, Fisheries, Coastal Vulnerability, Commercial Fishing, Commercial Estuarine Fishes, Boat License Certificate (BLC)

1. Introduction

The Sundarbans is regarded to be the biggest prograding deltaic region all over the world. The Indian Sundarban found at the estuarine phase of the Ganga Brahmaputra River system occupies nearly an area of 9630 square kilometers. The deltaic Indian Sundarban region is bounded by River Hooghly in the east, Dampier Hodges line in the north and river Raimangal in the west. The Bay of Bengal lies in the South. The Indian Sundarban delta comprises of 56 islands of different sizes and shapes. The islands in the Sundarban region are separated from each other by a network of tidal channels inlets and creeks. The Sundarban delta region is characterized by great variations in temperature, salinity depth of the rivers and the strength of the flow of water. These are the factors that are responsible for maintaining the diversity of the region. As regarding the fisheries, the coastal area of the Sundarbans is characterized by a gentle slope and a major portion of the islands like just 7-8 meters above the mean sea level. The Indian Sundarban region is characterized by three distinctive tidal seasons. The first season is predominant during the arrival of the southwest monsoon. The other season ranges from the month of November to February. This is the time when the flood tide's strength dominates over the ebb tide. The third season lasts during the summer months of May and June just before the arrival of the rainy season.

2. Literature Review

In the process of gaining information regarding the livelihood options and the hurdles faced by the fishing communities in the Sundarban region, literature has been consulted from the various journals pertaining to the fishing communities.

Dasgupta *et al.* in their journal has discussed widely regarding the wild tiger prawn seed collection from the rivers and creeks [1]. The authors are of the opinion that this is regarded to be a very important occupation for the women population in the Sundarban region. The authors in the journal discusses widely the problems and prospects of the women population who are involved in the fishing activity in the Sundarban region.

Singh, and Simlai, in their journal discusses widely the role of fisheries in the development of the economic infrastructure of the Sundarban area [2]. The journal also focuses on the growth as well as the problems faced by the fishermen in the Sundarban region.

Sengupta, A. and Samanta, in their journal discusses the Sundarban region to be the most vulnerable eco regions of the world [3]. The journal widely discuss the vulnerability of the Sundarban region, the man animal conflict and the challenges faced by the fishermen communities in the region. Further, the journal also discusses the reasons and consequences of the migration pattern.

Sengupta, A. and Samanta in the journal have aimed to assess and map the level of demographic and socio-economic backwardness at village level for Kakdwip coastal area under coastal West Bengal, India and have tried to find out the triggering factors at different geographical locations, female

and child population, land holdings and earning of household came as the dominant factors for such higher degree of backwardness [3]. These findings, when combined with micro level assessments, could help village administrators, planners and policymakers, and emergency managers design more effective and spatially tailored backwardness management plans.

Ghosh *et al.* in their journal has assessed the coastal vulnerability of Indian Sundarban was assessed based on multiple-coastal stressors. The block-wise vulnerability was delineated using Multi-Criteria Decision-Making Approaches. The southern part of the Indian Sundarban delta (ISD) is highly vulnerable due to low resilience capacity. The identification of priority blocks helps in decision making for policy framework and implementation. [4].

Ghosal *et al.* in the journal have performed a landscape analysis of four villages of the Sundarbans and Socio-Economic Vulnerability Index was used to analyze the villages of which Satjelia was found to be most vulnerable with a score of 0.518 [5].

3. Methodology

The method and technique that has been considered in this work is secondary research. The journals and research papers of other researchers pertaining to the fishing communities of the Sundarban region has been widely studied and based on the study, the research has been formulated.

Hypothesis

H0: The livelihood condition of the fishermen communities in the Sundarban region are dependent upon a lot of factors like government policies

H1: The government policies and frameworks are sufficient in addressing the livelihood condition of the fishing communities in the Sundarban region.

4. Discussion on the Problems Faced by the Fishing Communities

4.1. Fishing Activities in the Sundarban Region

The Sundarbans is regarded to be the nursery ground along the eastern coast for around 90% of the aquatic species. The diversity of the estuary is also witnessed to be increasing along the estuarine with an increasing gradient of salinity. Leaving aside the fish species, the Sundarban region has around 20 pair of recognized prawns and 44 species of crab. The Sundarban region functions as a nursery ground for the commercial fishing that are harvested in India as well as the other

neighboring countries. This is mainly because the Sundarban region acts as a perfect breeding ground for the fish species. The STR region provides an environment that is physiologically suitable in particular with respect to temperature conditions, water salinity and other physico-chemical parameters.

The Sundarban estuary receives sufficient amount of nutrients that results from the land drainage and a huge quantity of organic detritus that proves to be a very important energy providing ingredient for a wide range of animals residing in the estuary. Added to this, many of the estuarine fishes that are grown for commercial purpose grown over there till maturity. As per the opinion of Jamal, it is also seen that many of the commercial estuarine fishes grow there till maturity and this makes up a greater proportion of the shore line fishery in the Bay of Bengal estuarine region [9]. On the other hand there are many fish species that spend a majority of their life in freshwater and descended annually towards the estuary for spawning. That is the reason why most of the marine and freshwater prawn and fish favors this environment in order to complete the lifecycle.

As per the discussions made in the article of Singh Some of the fish species that are found over here are the "*Lates calcarifer* (Bloch), *Tenualosa ilisha* (Hamilton-Buchanan), *Liza parsia* (Hamilton), *Liza tade* (Forsskal), *Harpadon nehereus* (Hamilton-Buchanan), *Plotosus canius* (Hamilton-Buchanan), *Pampus argenteus* (Euphrasen), *Rhinobatos annandalei* Norman, *Pangasius pangasius* (Hamilton-Buchanan), *Polydactylus indicus* (Shaw), *Chanos chanos* (Forsskal), *Eleutheronema tetradactylum*, *Polynemous indicus*, *Polynemous paradiseus* (Linn.) and *Pama pama* (Hamilton)".

Some of the Prawn species found over here are *Panaeus monodon* (Fabricius), *Panaeus penicillatus* (Milne-Edw) and *Metapanaeus monoceros* (Fabricius) [2].

As regarding the occupation of the people, a large number of the people of the Sundarban are occupied in the fishing activities. As per the discussion of Roy *et al.* in their journal, collecting fish seeds and adults especially of *Panaeus monodon* is regarded to be one of the prime livelihoods earning source of earning for the fishing folks [8]. The Indian Sundarban region has at present fourteen fishing centres in order to capture fish in the South 24 parganas district. The fourteen fishing centres include *Raidighi*, *Kapdwip streemenr ghat*, *Kakdwip Akshaynagar*, *Kakdwip Number lot*, *Sultanpur fishing harbour*, *Diomond harbour*, *Namkhana*, *Frazerganj fishing harbour*, *Gangasagar*, *Beguakhali*, *Mayagoalini ghat for throughout the year* and *Kalasthan*, *Frazerganj baliara* and *Gangasagar west for seasonal fishing*.



(Source: as influenced by Dasgupta *et al.* 2020)

Figure 1. The major fishing grounds in the Sundarban region.

4.2. Regulations on Fishing

A very crucial provision pertaining to the fishing is the fishing regulation that pertains to the limitations on the number of fishing boats and vessels that can fish in a particular permit area. The permit is given by the *Boat license Certificate (BLC)* issued by the department of forest. BLC was first issued in the year 1980 separately or covering the area of Sundarban Tiger Reserves and the other areas of the reserve forest. As per the BLC, the fishermen were given permission to undertake fishing activity. The BLC provides the detailed name and address of the owner of the boat or the vessel as well as the description of the boat. The BLC is regarded to be non-transferrable and can only be muted in favor of a blood related member of a family. Regarding the rules and regulations for the transfer to the blood related members are regulated and set up by the Zila parishad member.

Added to the BLC, the fishermen folks are also required to have a permit issued by the Department of forest in order to have permission to fish. Fishing in the Sundarban region is also governed by the West Bengal inland Fisheries act, 1984 that was further amended in the year 1993 and 1997. The fishermen as an individual, are recognized by both the Fisheries and the Forest Departments through the identity cards that are issued to them. The fishermen holding identity cards are covered under the Accidental Life Insurance Scheme for Rs 100000 by the authorities of the STR.

4.3. Problem Faced by the Fishing Communities

The activity of fishing is recognized to be the livelihood

source for the communities living in the outskirts of the Sundarban region. De *et al.* is of the opinion that an area of around 2069 sq. kilometer inside the Reserve Forest is considered to be ideal for fishing in the river by the utilization of traditional methods [10]. Based on the estimation of the total number of fisher folk families in Sundarban region including both the South and North 24 parganas was 52917 and 50897 respectively. The district of 24 parganas south has a total of marine fisher folk population of 269565. As regarding the occupational pattern of the people residing in the Sundarban region, fishing is regarded to be the occupation for the fishing community residing in the region. Chattopadhyay is the opinion that majority of the fishing activities is undertaken by men while crab fishing and prawn seed collection is practiced by both men and women [14].

The fishing community reside and spend their life in very challenging condition. In majority of the cases, the villages are located in the remote areas and are devoid of the basic sanitation facilities as well as the health facilities. The Sundarban development authority that was constituted in the year 1973 that development activities in the Sundarban region. The area of 1500 square kilometer has the presence of around 50 kms of railroad and 300kilometers of drivable road. As per the opinion of Chowdhury *et al.* the area is totally divide of any public transport network and majority of the areas are only accessible by boat. There is also no proper electric supply and access to health service in most of the villages [13]. The main mode of transport between most of the villages located at the isolated Islands is by the medium of mechanized or non-mechanized boats. The dull remoteness and in accessibility is recognized to be the leading factor for the poor development

in the region. Fisherman in the Sundarban region are organized into two Unions the United fisherman association and the Sundarban Matsajibi Joutho Sangram Committee.

As per the CMFRI report of 2005 the south 24 district has a total of 6205 mechanized boats get includes 1028 motorized boats and 6046 non-motorized boats in Marine waters. The mechanized fishing vessels in the south 24 parganas district includes large gillnetters and dol netters.

The most common materials put intouse by the fishermen in the Sundarbans region are “*dragnets (sarengijal, berjaal), shore seines (jaqnga jal, kochal jal), stakenets (charpata and khalpatta), gillnets (galsha), and fixed bagnets (beoundi ja, bindi jal)*.. The fishing gears that are considered destructive include the small mesh-sized beoundi jal and other fine-meshed nets. Besides these, castnets and hooks-and-line are also used. The common fish caught in the inter-tidal waters are *bhetki (Lates calcalifer), shimur, gandu or medha mach, chingree (shrimp), selia, chadba, bavta and red shrimp.*”

The inland fishing centers in the Sundarban region comprises the places like canning, Herobhanga and Gosaba. The fishermen in most of the remote Islands who have very little access to preserve the daily catch are forced to travel to Canning or Gosaba in order to sell their catch on the same day. The depot owner of the fish markets also known as ‘aratdars’ also please the rule of money lenders who provides the fisherman with money to buy boats net as well as to covered the overall fishing expense. The ‘aratdars’ not only provides the fisherman with money but also provides arrangement towards the marketing activity of the fish catch from the villages.

4.4. Livelihood Issues in the Sundarban Tiger Reserves

Hello there is no settlement of human beings inside the core area. The comment is that living on the outskirts of the main forest area depends on the resources from the forest for livelihood. This livelihood is dependent on a number of factors that are related to the environment as well as social economic condition of the people. Communities residing in this particular area, mostly efficient, have a very few options of livelihood [11]. The poor access to the basic necessity of life as well as the lack of opportunity to develop the skill set does not enable the people to diversify their livelihood in a sustainable way.

Padhy *et al.* is of the opinion that since the 80's the fisherman folk in the Sundarban area had come across a lot of ever-increasing regulations [12]. Limitation has been put on the number of votes that are allowed to fish legal is within the areas permitted closed restriction and other restriction that has been introduced. Restrictions and regulations are meant for the people among the fishing fork who had to look for the other level options in order to carry on the survival. Taking an example of this a lot of people have shifted from fishing towards the collection of tiger prawn seed. The main issues that the fishing community faces in the Sundarban region are mainly the BLC, permits as well as the fines and penalties imposed on illegal fishing.

The fisherman for in the Sundarban region faces difficulty

in understanding the basic of rules and regulations applicable to various types of fishing activities. The fisherman folk are also not familiar with the category Asian of the offenses and the fines applicable to each kind of offence. This leads to the fisherman committing various valuations towards rules and regulations and as a result it leads to a lot of penalties. Under the circumstances the fishermen folk finds it very difficult to sustain in the environment.

Even in the fishing ground, only the non-motorized boats are allowed within the permit area that includes the Sundarban Tiger Reserves. Chatterjee views that this is the prime reason that the fishermen living in the fringe areas of the STR are forced to take long detours in order to reach the fishing grounds [15]. The detours are regarded to be time consuming as well as fuel intensive that tends to increase the operational cost of fishing.

Additionally, there are a lot of problems that arises mainly due to the lack of consultation with the women folk. Fishing is regarded to be a male dominant activity and the administration mainly interacts with the men. The fact that women are also involved in the fishing activity is totally ignored and overlooked. Added to this there are many women in the Sundarban region who are left with no work rather than fishing after their men were killed in tiger attack.

4.5. Initiatives Undertaken in Order to Cope up with the Livelihood Problems

A lot of organizations both governmental as well as non-governmental has taken up initiatives in order to provide alternate as well as alternative livelihood options in order to reduce the forest dependencies of the people within the STR. As per the opinion of Pitchaikani, under the initiatives taken up by the Forest department, the EDC and FPC can be regarded to be a good mechanism in order to involve the people in managing the forest resources and promoting alternative livelihood options Roy. While the activities taken up by the forest department are limited to only 25 villages, the other villages are also required to be included. The activities include the provision of drinking water and initiate the development of irrigational activities, building up of jetties as well as to create awareness among the people about the regulations of the place. The alternative livelihood options that are initiated by the FPCs includes *poultry farming, social forestry, digging ponds* as well as making roads.

5. Conclusion

On basis of discussions in the we can conclude that the future prospect of the fisheries can be bright only if proper and adequate infrastructural developmental activities are taken up. Such facilities would facilitate the fishermen folk in earning more income and export the potential for the fishermen in the area. The fisheries in the Sundarban region are based upon both the inland and marine fishing resources. Ensuring a adequate link between the two systems can tend to change the whole scenario of the fishing environment in the region. The development of inshore and brackish aquaculture in the areas

that are tide fed can help in reducing the drudgery of a large population of fishermen and their livelihood can be improved. The fishery extension program also requires to be strengthened through the involvement of the fisher folk who works in the inland, Brackish and fisheries department.

The Sundarban can be regarded to be a unique ecosystem having a very important ground of breeding for the fish and a habitat for the tigers. The Sundarban is also considered to be a home to a large number of population who resides in scattered and remotely located islands having very little or no facilities to the basic requirements of life. Livelihood options to these people are very limited and thus fishing is considered to be the most crucial source of livelihood.

The livelihood concern for the fishing communities in the Sundarban region is from long unaddressed. An improvement towards the livelihood conditions in the Sundarban region can prove to be very effective in addressing the socio economic problems and employment opportunities of the people.

Firstly, the BLCs are required to be reissued and the number of BLC that is issued to the fishermen is required to be increased. Special priority is required to be given to those fishermen who were not being able to apply for the BLC at the time of allocation.

Secondly, the guidelines made by the forest department in fishing activity needs to be made more transparent in a more consultative and participatory manner. Sufficient efforts are required to be taken in order to make the note to violation in the local language so that the fishermen comes to know about the real penalty for the offences and if required they can plead their innocence.

Thirdly, there should be provision for the allowance of innocent passage of the mechanized vessels through the buffer zone of the STR. The regulatory bodies need to regulate the passage by providing navigational channels and the coordinates can be marked on the map with the help of GPS readings. These maps can be provided to the fishermen and train them in it.

Fourthly, the government should include the fishermen communities in involving in the patrolling activities along with the forest department. This can help in taking up community enforcement measures that can effectively help in reducing the conflicts.

Lastly, the various fishing communities are required to be consulted in the formulation of mandates and in the formulation and implementation of plans of management.

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