

FISHERIES IN SUNDARBANS: PROBLEMS AND PROSPECTS

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Abstract

Sundarbans, the largest delta on the planet earth is famous for its marine and estuarine fish resources. A large population is dependent on fishery activity and capture fisheries is treated as the backbone of Sundarban economy. Sundarban boast around 172 species of fishes, 20 species of prawn and 44 species of crabs including two edible crabs. But fisheries in Sundarbans faces some difficult problems which have an impact on the biodiversity, sustainability and livelihood of fish resources and fisher folk viz. shrinking tiger prawn population, indiscriminate fish seed collection, lack of post harvest and other infrastructures, natural calamities such as cyclonic storms and low pressure in Bay of Bengal and seizure of fish trawlers by Bangladesh navy. Despite these problems, Sundarbans' fisheries have good prospects of developing as both marine and inland fisheries resources are available in abundance. Setting up of new integrated fish harbours complete with cold storage facilities, packaging centers and modern fish markets at six places in the area and creation of International fish processing zone at Kolkata will give a good boost to the fisheries of Sundarbans.

Introduction:

Sundarbans is the largest prograding delta on this planet formed at the estuaries phase of the Ganges- Brahmaputra river system. The Indian Sundarbans (Latitude 21° 32'-22° 40'N, Longitude 88° 22'- 89°0'E) in the north east coast of India occupy 9630 square kilometer and are bounded by River Hooghly in the West, River Raimangal in the East, Bay of Bengal in the South and Dampier Hodges line in the North. There are 56 islands of various sizes and shapes in Sundarbans and these are separated from each other by a network of tidal channels, inlets and creeks, some of which act as pathways for both freshwater discharge from upland and to and fro movement of flood and ebb.

Extreme daily variation in temperature, salinity, depth, direction, and strength of water flow give mangrove swamps a variability that, at first, might be equated with instability, which can decrease the diversity (R. M. May, 1974).

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The coastal area has a gentle slope and major portion of it lies 7-8 m above mean sea level. Three distinct seasons in the tidal regime of the estuary were first discussed by Oag (1939). One season occurs during the southwest monsoon, when the effect of the flood tides is countered and almost completely nullified by freshwater inflow, and the ebb tides predominate strongly. Another season lasts from November to February, when the strength of the flood tide over the ebb tide reaches minimum. The third season occurs during the hot and dry months (May and June, just prior to the southwest monsoon), when the effect of the flood tides is much stronger than the ebb tides, and the estuary reaches maximum salinity.

Fisheries in Sundarbans

Sundarbans being the nursery for nearly 90% of the aquatic species of eastern coast, the coastal fishery of eastern India is dependent upon Sundarban. Jhingran (1977) recorded a total of 172 species from a variety of sources and also mentioned that the diversity of the Hooghly-Matlah estuary increases along an increasing salinity gradient. Numerous species (estimated to be 400) are known to use mangrove swamps as nursery grounds (Gundermann and Popper, 1984; Lowe-McConnell, 1987). Apart from fish species, there are 20 identified species of Prawns and 44 species of crabs including two edible ones. For fishes, the Sundarbans function as nursery grounds for important commercial species of the continental shelf that are harvested in India and neighboring countries. The Sundarban delta provides physiologically suitable environment with respect to temperature, salinity and other physico-chemical parameters. Generally estuary receives abundant supply of nutrients from land drainage and large quantities of organic detritus which is an important source of energy for a wide variety of estuarine consumers. Further, many commercial estuarine fishes grow to maturity there and make up a large part of the near-shore fishery of the northern Bay of Bengal. Other fishes and prawns that spend most of their lives in freshwater descend annually to the estuary for spawning. Therefore, many marine and freshwater prawn and fish require this environment to complete their lifecycle. Most commercially important marine and estuarine fishes are;

Fish species

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).

Prawn species

Panaeus monodon (Fabricius), *Panaeus penicullatus* (Milne-Edw) and *Metapanaeus monoceros* (Fabricius).

Crustaceans

Edible crabs mainly *Scylla serrata* (Forsskal) and *Neptunus pelagiens*.

A large number of Sundarbans populations are engaged in fisheries and allied activities. Fisheries remain to be the sole livelihood of fisherman and their family residing in Sundarbans. Collection of fish seeds and adults especially of *Panaeus monodon*, from the nature is one of the main sources of earning of the coastal fisher folk. The fisher folk are using mechanized as well as non-mechanized crafts. Trawlers, gill-netters, purse seiners, etc. are among mechanized crafts and plank built boats, dug out canoes and catamarans are under non mechanized crafts. A number of fishing gears are being used in Sundarbans viz. trawl nets, purse seines, drift/gill nets, boat seines, fixed bag nets, hooks and lines, shore seines, traps, scoop nets, etc..

At present there are fourteen landing centers for capture fisheries in South 24 Parganas district, these are Raidighi, Kakdwip Steamer ghat, Kakdwip Akshaynagar, Kakdwip 8 Number lot, Sultanpur fishing harbour, Diomond harbour, Namkhana, Frazerganj fishing harbour, Gangasagar, Beguakhali, Mayagoalini ghat for through out the year and Kalisthan, Frazerganj baliara and Gangasagar west for seasonal fishing.

Problems

The problems of Marine and Estuarine Fisheries in Sundarbans can be categorized into two sections, first related with biodiversity and second with sustainability and livelihood.

Biodiversity

Shrinking tiger prawn population: The natural abundance of tiger shrimp seeds is fast reaching the threshold limit. It is fast dwindling away from the natural waters of Sundarbans. The reasons too much over fishing at various stages of its life cycle. As its post larval stage in estuaries, it is trapped by fine push and drag nets and fine meshed bag nets (meen jal); the juveniles are trapped by bag nets (behundi jal) in estuaries; the juveniles and pre adults are caught in marine waters by large bag nets; the pre adults and adults by trammel nets. Even the spawns are not spared and are caught from the open seas by trawl nets. (Mahapatra et.al. 1999)

Indiscriminate seed collection: Collection of seeds of *Panaeus monodon* is one of the main sources of earning for the small and landless fisher man and women of this area. De et. al. (1978) found that 7-99 mm post larvae and juveniles were available throughout the year with peaks in June, July and December. This is the preferred species for brackish water aquaculture and a brisk seed trade has developed in the Sundarbans for post larval and early juvenile stages. During collection of economic prawn seeds, the rural people segregate the *Panaeus monodon* seeds and destroy other 90 to 95 % of fish and prawn seeds, which is leading towards the destruction of large number of estuarine species.

A man-made catastrophe that destroys major parts of a fish community (species) will have importance relative to the fact that a large part of the human population of an area has had its protein source eliminated or reduced. These problems calls for immediate steps to bring back a balance between the quantities of seeds produced in the nature and the quantity harvested of *Panaeus monodon*. Proper precautions are taken up to save

ecological balance by keeping the prawn seed collectors informed about harm and danger created by their selective grading of prawn and fish seed collection.

Sustainability and Livelihood

Lack of post harvest and other Infrastructure: The spoilage of fish starts from the time it is caught. Inadequate proper storage, preservation and prompt disposal or transport service are causing a lot of hardship especially during Monsoon when up to 20 to 30% of the produce are lost. The nearest fish market is in Diamond Harbor and Canning.

According to Yadava (2003), the proper storage, preservation and prompt disposal or transport service are essential. This is a vital area to be addressed and may result in increased economic returns to those dependent on the fishery without any increase in fishing effort. Therefore, strengthening of post harvest infrastructure such as storage facilities, ice plants, cold chains, roads and transportations etc. and as well as effective marketing system in identified areas are the requirement for the development of this sector. This would ensure higher profit margins to the producers enabling faster fisheries development.

Natural Calamities: Natural calamities such as cyclone and low pressure are perennial climatic and weather aberrations which had taken lives of a large of fisherman in Sundarban. Lack of harbours in this area and banning of fisherman base camp at Jambudwip has increased the risk on life of the fisher folk because of non availability of any natural base for stay in continental shelf and island areas. Last year a large number of causalities have been recorded during cyclonic storm because of late broadcast of cyclone warning signal by the Meteorological department as well as AIR, Kolkata station.

An early warning and signaling system of cyclonic storm development and proper linkage between Regional Meteorological Station and AIR, Kolkata Station is urgently required to save the lives of fisherman. Government of West Bengal has already insured the fisherman against any natural calamity.

Apart from these, closeness of Indo- Bangladesh border and seizure of the Indian mechanized crafts and arresting of Fishermen by the Bangladesh rifles and navy are another area of concern for Sundarban fish farmers. The catches and earnings of fisher folk have been declining. Resource scarcity and the dearth of new income opportunities have combined to make life difficult for small scale fisher folk.

Prospects

Fisheries in Sundarban are based upon both inland and marine fisheries resources. A proper linkage between the two systems can change the whole outlook of fisheries in this area and any future development should keep this in mind. Development of inshore Brackishwater aquaculture in tide fed areas and bheries will reduce the drudgery of a large section of fish farmers and improve their livelihood. West Bengal is the highest fish producing state of India and in 2002-03, 11.20 lakhs Mt of fish were exported earning

533.134 Crores rupees. In this coastal terrain there is vast scope of shrimp based polyculture.

Fisheries extension programmes need to be strengthened through the active involvement of fisher folk working in inland, Brackishwater and marine sectors, industrialists, end users, fisheries department, universities, research institutes and NGO's.

Closeness of Kolkata metropolitan centre is one of the most rewarding geographical advantages to the fisherman of Sundarban. With the start of railway communication between Kakdwip and Kolkata, the fishermen can directly sell their produce without the bad practices of middleman.

The new infrastructural facilities such as 6 new fishing harbours are being set up by the fisheries department complete with cold storage facilities, packaging centers, and modern fish markets at Frazerganj, Sankarpur, Diomond Harbour, Kaldwip, Sagar and Patharpratima. Construction works has already been completed in Frazerganj, Sankarpur and Diomond Harbour. The other three will be completed by 2005-2006. Together these harbours will provide jobs for over 75000 fishermen and other people. This will also provide export opportunities to fish farmers and fish sellers. (Anon. 2003)

A new international fish processing zone is coming at Chakberia on the outskirts of Kolkata metropolitan town. This will be the first such centre of its kind in South Asia. Built on 14 acres of land, the Rs. 20 Crores rupees project will be partly funded by NCDC, is expected to host 10 private firms and complete by 2004. (Anon. 2003)

Conclusions

The future prospects of fisheries would be bright after the creation of these infrastructural facilities. These facilities would help in generating more income and export potential for the fishermen of this area. A growth rate of 2.5 percent for marine sector and 8 percent for inland sector has been proposed during the tenth plan. The state fisheries department, NGOs and research institutions require playing a more active role to achieve this goal.

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