



DIVERSITY OF ICHTHYOFAUNA IN VEDARANYAM MANGROVES OF SOUTH EAST COAST, NAGAPATTINAM DISTRICT, TAMIL NADU, INDIA

*¹S. Raveendran, ²M. Veerasamy, ²S. Ramu and ³R. Rajakumar

¹Department of Zoology, Khadir Mohideen College, Adirampattinam-614701, Tamil Nadu, India

²Department of Zoology M.R. Govt. College, Mannargudi, Tamil Nadu, India

³Department of Zoology and Biotechnology, AVVM Sri Pushpam College, Poondi-613 503, Tamil Nadu, India

Article History: Received 28th July 2016; Accepted 29th August 2016; Published 31st August 2016

ABSTRACT

Fishery resources are renewable. But overfishing has caused irreversible effects, so the fisheries can be conserved and maintained so as to provide optimum yield on a continuing basis. The present study was carried out to know the biodiversity of fishes in Vedaranyam mangroves, Nagapattinam district. The results showed that there are 35 species belongs to 26 families were identified. The present study establishes to conserve fish biodiversity.

Keywords: Ichthyofaunal diversity, Gastropods, Bivalves, Vedaranyam mangroves, Nagapattinam district.

INTRODUCTION

The coastal zone of India endowed with a very wide range of coastal ecosystem such as estuaries, lagoons, mangroves, backwaters, salt marshes, rocky coasts, sandy stretches and coral reefs is characterized by unique biotic and abiotic properties and processes. Indian mangroves areas are excellent nursery grounds for a variety of commercially important prawns, crabs and fin fishes, as they provide abundant food and shelter for these organisms. The ecosystem provides food, roosting and nesting site and shelter to a large variety of birds. Several insects, reptiles, birds and mammals inhabit the evergreen canopies of mangroves support many tropic levels of aquatic and terrestrial organisms, by enriching the fertility of estuarine waters for production of planktons.

The ecologically significant and biologically diverse mangrove forests, wedged between the land and sea, act as an effective buffer against destructive cyclones and violent tidal storms that lash the coastal stretch with unchecked fury. Indeed, the deadly Tsunami of December 2004, which left behind a trail of death and destruction in coastal settlements in India and parts of South-East Asia. It did not cause any much damage in Tamil Nadu's Point Calimere, Muthupettai and Pitchavaram thanks to the dense and luxuriant mangrove cover (Saravanan, 2005).

It is precisely for this reason that eminent agricultural scientist M.S. Swaminathan, has all along been vigorously advocating the need to conserve mangrove forests that

thrive well in the brackish wetlands between the land and the sea where other types of vegetation hardly grow Balaji (2003).

India has a vast coastline of 8118 km distributed in nine coastal states and four union territories with an estuarine area of 3.9 million ha and 3.5 million ha of back waters. Though India contributes about 40 % of the fish landings of the Indian ocean, when viewed against the world production of 130 million tons, India's contribution is only 5.65 million tons (2.83 million tons from marine fisheries and 2.82 million tons from Inland fisheries) representing about 4.37 % only (Source: Fisheries Development Mission Document).

Fishing is one of the oldest occupations of human kind, which provides a rich and easily available source of protein, and it plays a vital role in improving the dietary standards. Tamil Nadu is one of the important Maritime States with rich inland and marine resources. Tamil Nadu is gifted with rich fishery potential. It has 1076 km of coastline (15 per cent of the country's coastline), 0.19 million sq. km. of Exclusive Economic Zone (9.7 per cent of the India's EEZ), and a continental shelf of about 41,412 sq. km is a leading state in fish production. The state has a fishermen population of about 7.37 lakhs, of which 2.80 lakhs fishermen are actively engaged in fishing from 591 fishing villages. At present there are 12,000 mechanized fishing boats and 50,700 traditional crafts registered, of which 20,000 crafts have been motorized with outboard motors engaged in marine fishing. Indian fisheries have

*Corresponding author address: Associate Professor of Zoology, Khadir Mohideen College, Adirampattinam-614701, Tamil Nadu, India, Email: drsr_kmc@rediffmail.com, Mobile: +91 9524932720.

evolved from the stage of a domestic activity during the 1950s and 60s to a status of an industry by 1990s (Source: Fisheries Development Mission Document). A fishery is a sunrise sector of our economy. Its role in increasing food supply, generating job opportunities, raising nutritional level and earning foreign exchange has been important. Growing urbanization, globalization, and rapidly changing social structures had a major impact on the fisheries structure in the country. In spite of above mentioned large potential India still too much behind in fishery production as compared to other countries. Japan contributed about 43% of total fish, production of Asia followed by China (18%). India's contribution is hardly 9%. The present study was carried out to study the biodiversity of fishes from the coastal area of lagoons at Vedaranyam mangrove forest, Nagapattinam district.

Description of the study area

Point Calimere, also called Cape Calimere, is a low headland on the South east coast, in the Nagapattinam district, Tamil Nadu, India. It is the apex of the Cauvery River delta, and marks a nearly right-angle turn in the coastline. A historic landmark here was the Chola lighthouse, destroyed in the tsunami of 2004.

The forests of Point Calimere, also known the Vedaranyam forests, are one of the last remnants of the dry evergreen forests that were once typical of the East Deccan dry evergreen forests ecoregion. The Point Calimere Wildlife Sanctuary, with an area of 24.17 km², was created on June 13, 1967. The sanctuary includes the cape and its three natural habitat types: dry evergreen forests, mangrove forests, and wetlands. In 1988, the sanctuary was enlarged to include the Great Vedaranyam Swamp and the Talaignayar Reserve Forest, and renamed the Point Calimere Wildlife and Bird Sanctuary, with a total area of 377 km².

Point Calimere is also associated with the mythological Hindu epic, The Ramayana. The highest point of the cape, at an elevation of 4 m, is Ramarpatham, "Rama's feet" in Tamil. A stone slab bears the impressions of two feet and is understood to be the place where Rama stood and reconnoitered Ravana's kingdom in Sri Lanka, which lies 48 km. to the south.

METHODOLOGY

To study the biodiversity of fishes the samples were collected from coastal area of lagoons at Vedaranyam mangrove forest, Nagapattinam district, Tamil Nadu, South India. The fishes were collected with the help of the local fishermen who undertake regular fishing around the study area. Sampling the above mentioned fauna is made throughout the study period. Identification is made almost at the field itself and for confirmation the specimens were brought to the lab for thorough screening. The

identification manuals of FAO (1994) fish identification sheets were used for confirmation of collected specimens.

RESULTS AND DISCUSSION

In the present study, 35 species belongs to 26 families were identified (Table 1) in the landings. The number of species observed in following families were given in the brackets: Ariidae (2), Begridae (1), Carangidae (2), Centropomidae (1), Chanidae (1), Chirocentridae (1), Clupeidae (2), Cynoglossidae (1), Elopidae (1), Engraulidae (2), Hemiramphidae (2), Leiognathidae (2), Mugilidae (2), Mullidae (1), Platycephalidae (1), Polynemidae (1), Scatophagidae (1), Sciaenidae (2), Scombridae (1), Siganidae (1), Sparidae (1), Sillaginidae (1), Sphyrinaeidae (1), Synodontidae (1), Terapontidae (2), and Trichiuridae (1). The fish constitutes the most important part of the diet of many people. To meet the demands for the food security the effort for high catching has been increased. It is widely accepted that there is a severe problem with future global food security. The use of natural marine resources such as the coastal vegetation or mangroves or the harvesting of fish requires careful control to avoid over exploitation. There is also need for updating the information for the benefit of research workers, administrators and other stake holders, resource wise estimate of marine fish landings (Varadharajan *et al.*, 2012).

Table 1. List of fishes identified.

S. No.	Family	Species
1.	Ariidae	<i>Arius maculatus</i> , <i>Arius caelatus</i>
2.	Begrudge	<i>Mystus gulio</i>
3.	Carangidae	<i>Caranx para</i> , <i>Caranx ignobilis</i>
4.	Centropomidae	<i>Lates calcarifer</i>
5.	Chanidae	<i>Chanos chanos</i>
6.	Chirocentridae	<i>Chirocentrus dorab</i>
7.	Clupeidae	<i>Sardinella albella</i> , <i>Sardinella longiceps</i>
8.	Cynoglossidae	<i>Cynoglossus arel</i>
9.	Elopidae	<i>Elops machrata</i>
10.	Engraulidae	<i>Thryssa malabarica</i> , <i>Stolephorus commersonnii</i>
11.	Hemiramphidae	<i>Hyporhamphus dussumieri</i> , <i>Hemiramphus far</i>
12.	Leiognathidae	<i>Leiognathus daura</i> , <i>Leiognathus splendens</i>
13.	Mugilidae	<i>Liza parsia</i> , <i>Mugil cephalus</i>
14.	Mullidae	<i>Upeneus tragula</i>
15.	Platycephalidae	<i>Platycephalus indicus</i>
16.	Polynemidae	<i>Polynemus plebeius</i>
17.	Scatophagidae	<i>Scatophagus argus</i>
18.	Sciaenidae	<i>Dendrophysa russelii</i> , <i>Johnius dussumieri</i>

19.	Scombridae	<i>Rastrelliger kanagurta</i>
20.	Siganidae	<i>Siganus virgatus</i>
21.	Sparidae	<i>Argyrops spinifer</i>
22.	Sillaginidae	<i>Sillago sihama</i>
23.	Sphyraenidae	<i>Sphyraena barracuda</i>
24.	Synodontidae	<i>Saurida tumbil</i>
25.	Terapontidae	<i>Terapon puta, Terapon jarbua</i>
26.	Trichiuridae	<i>Trichiurus lepturus</i>

The fisheries sector has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries and is a source of cheap and nutritious food, at the same time it is an instrument of livelihood for a large section of economically backward population of the country. More than 6 million fishers in the country depend on fisheries and aquaculture for their livelihood (Kumar Anjani, 2004). Indian fisheries are an important component of the global fisheries, with India being the third largest producer of fish in the world and second in inland fish production (FAO 1998). Fish production in the country has been showing an increasing trend and has reached a record level of 5.65 million tonnes in 1999-2000. The estimated fish catch in the year 2000-01 will be about 5.95 million tonnes and the production is likely to reach a level of 6.26 million tons by the end of the Ninth Five Year plan (2001-02). However, the achievement of 6.26 million tonnes is much below the target of 7.04 million tonnes set for the Ninth plan at a growth rate of 5.64% per annum. This is because of the slow progress in the marine fish production during this period. In fact, the growth in marine fish production during 1990s has been slow (2.19% per annum) compared to Inland fisheries (6.55% per annum) (Sampath 1998). The progress in the inland sector during the last decade has been commendable.

CONCLUSIONS

The present study indicates that diversity of fishes seems to more and habitat type has a strong influence on the distribution, abundance and diversity of Ichthyofauna. The

main factor that threatens marine fish biodiversity globally is fishing. Over 40 local populations of fish species have gone extinct as a result of over exploitation. These local losses represent an erosion of global biodiversity. Moreover, stresses due to other factors such as climate change, habitat loss, invasive species, eutrophication and pollution can accentuate fishing-induced declines and inhibit or prevent recoveries.

REFERENCES

- Balaji, V., 2003. Inventorisation of flora and fauna of Muthupet mangrove ecosystem. M.Phil. Dissertation submitted to the Annamali University, Chidambaram.
- FAO (Food and Agriculture Organization), 1994. World Review of Highly Migratory Species and Straddling Stocks. FAO Fisheries Technical Paper No.337. FAO, Rome, Italy.
- FAO, 1998. Report of Bangkok FAO Technical consultation on Policies for Sustainable Shrimp Culture, 9-11.
- Kumar Anjani, 2004. Analysis of Policies, Institutional Environment and Support Services in Fisheries Sector in India. National Workshop on Strategies and Options for Increasing and Sustaining Fisheries and Aquaculture Production to Benefit Poor Households in India held at NCAP, New Delhi, January, 29-30.
- Sampath, V., 1998. Living Resources of India's Exclusive Economic Zone. In: Quasim S. Z, Roonwal G S. (Eds.).
- Saravanan, K.R., 2005. A study on the biodiversity and management of Pondicherry mangroves. Report submitted to the Department of Science, Technology and Environment, Government of Pondicherry, India. pp. 58.
- Varadharajan, N., Pushparajan, N. and Soundarapandian, P., 2012. Fish resources in Mallipattinam coast, South East Coast of India. *International Journal of Pharmaceutical & Biological Archives* 3(4), 871-876.