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**EMERGING CHALLENGES IN BIODIVERSITY CONSERVATION WITH  
SPECIAL REFERENCE TO RECENT TRENDS IN ECOTOXICOLOGY  
(ECBCRTET-2018)**

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## **A PRELIMINARY STUDY ON THE MARINE FISHERY SCENARIO OF POZHICKARA, PARAVUR (KOLLAM, KERALA) WITH SPECIAL REFERENCES TO FOOD FISHES**

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### **ABSTRACT**

Marine fishery sector is one of the powerful income and employment generators in Kerala. The sector also supports and enhances a good number of subsidiary industries. It is a livelihood for economically backward population of our country. The study was carried out at Pozhikkara beach, Paravur, Kollam for a period of three months. Pozhikkara is one of the important beaches of Kollam district with an active fishery zone. Socio-economic condition of fishermen and their different kinds of fishing crafts and gears were documented. 50 respondents were randomly selected among fish folk who are residing at Pozhikkara and operating their boats at the study site. The data regarding annual income, family size, age structure and educational status of fishermen were displayed. Fishery operations at Pozhikkara were totally male dominated. 16% of respondents were illiterate. Fishfolks who are actively participating in fishing belonged to an age group which ranged between 30 to 70 years. Annual income ranged between Rs. 70,000 to Rs.1, 20,000. They directly involve in fishing for about 2-6 hours daily. Survey method was followed for the socio-economic analysis. Fishes were sampled and the identification was done with the help of standard keys. Checklists of fishes were prepared and the systematic positions were found out.

**Keywords:** Pozhikkara, Marine fishery, Socio-economic status, Kollam, Gears, Crafts, Fishes

### **INTRODUCTION**

Kerala, the southern-most state of India facing the Arabian Sea, has a coastline of 590 km. length (Kurup and Radhika, 2001). It provides a livelihood to the state's fishing community numbering more than a million. Socio-economic parameters such as family size, age structure, ownership of crafts and gears, occupation pattern, employment potentials and education, income and expenditure and living standards of fishermen influence their response to technology and their participation in developmental schemes (Sharma and Kumar, 1982). After independence, the country paid considerable attention towards the development of co-operative movements through its five year plans (Kharbhari et al., 1989). The socio-economic improvement of fishermen is the ultimate objective of all fishery developmental schemes (Jose and Thomas, 1991). A number of

socio-economic surveys on fish-folk have been carried out along South coast of India, especially along the shores of Kerala.

Pozhikkara is well known for its marine and estuarine fishery resources. A number of crafts and gears are in use at the sea shore and almost all fishermen are actively involved in fishing. The numbers of fishermen who involved in fishing are diminishing. Decline in fishery resources, less availability of kerosene, destruction of fishing gears during fishing activities, are some of the stresses imparting on fishermen here. However, a considerable proportion of fishermen still depend on sea for their livelihood. The newer generations are not interested in fishery related activities, practices and traditional knowledge related with sea. Because of this challenging and dwindling scenarios experienced by fishermen at Pozhikkara, a detailed survey is needed to obtain the information about all the aspects of fishery. The main objectives of the study were to analyse the socio-economic status of fishermen, to record the regularly operating crafts and gears and to prepare a checklist of major food fishes landing from Pozhikkara beach.

#### MATERIALS AND METHODS

Pozhikkara is the Western border town of the Paravur municipality in the Kollam district of Kerala state in India (Co-ordinates 8°48'39"N 76°39'08"E). Pozhikkara is blessed with a diverse variety of fishery resources and avian fauna. The study has been carried out for a period of three months from January 2017- March 2017. Monthly visits were carried out to the study site. Morning hours (7.00am to 8.30 am) were selected for the field study. The data was collected from 50 fishermen with the help of a questionnaire. Interview method was followed for data collection (Gupta *et al.*, 1984). The questionnaire comprised of 19 parameters. Basic details, size of family, educational qualifications, details of job, involvement in fishing, ownership of crafts and gears, working hours at sea and marketing measures are some of the important parameters studied.

Commercially important fishes which were collected from the sampling site was transported to the laboratory were preserved in 40% formalin as soon as possible. Identification of the fishes was done with the help of standard reference books (Day, 1967 and Munro, 2000). The information obtained through taxonomical analysis was tabulated and systematic positions of the fishes were found out.

## RESULTS AND DISCUSSION

Paravur is a coastal town at Kollam district which is famous for beaches, tourism, and fishery resources. It is blessed with a number of water bodies like sea, estuary, lake and ponds. The study was concentrated on socio-economic status of fishermen at Pozhikkara, crafts and gears used for fishing and important food fishes landing here. The annual income of fishermen at Pozhikkara is shown in Table 1. 42% of fishermen are earning an income of 70,000-79,99 (Rs.) annually.

Sl. No.	Annual income (Rs.)	Percentage (%)
1	70,000-79,999	42
2	80,000-89,999	28
3	90,000-99,999	16
4	1,00000-1,99000	04
5	1,10000-1,19999	09
6	1,20000-1,29999	01

54% of fishermen at Pozhikkara have small family with one to four members and 46% hails from large families (5-8 members). 40% of fishermen belonged to an age group of 30-40. 10% of them are of old age (Table 2). Old men are engaged in less intensive fishing or other fishery related works like mending and repairing of nets. Illiteracy still prevails among fishfolk. 16% of them are illiterate. 26% of fishfolk got primary education, 34% studied upto upper primary, 22% reached upto high school. Only two percentage passed SSLC. 28.74% fishermen live in rented homes (Table 3). Most of the fishermen actively work here belong to a nearby place, Chillakkal.

Sl. No.	Age group	Percentage (%)
1	30-40	26
2	40-50	40
3	50-60	24
4	60-70	10

Sl. No.	Educational level	Percentage (%)
1	Illiterate	16
2	Primary education	26
3	Upper primary education	34
4	High school education	22
5	S.S.L.C	02

Type and design of fishing crafts and gears deployed by the fishermen varies according to the local conditions of fishing and the type of fishery engaged in. As per the study there are around 40-46 crafts regularly operate from Pozhikkara beach (Table 4). Fibre catamarans are the most popular crafts among fishermen at Pozhikkara. Mechanised and non-mechanised catamarans and boats are operating from here. They are classified into Non-motorised fibre catamarans, Motorized fibre catamarans. Motorised fibre catamarans and Motorised Plank-built canoes are the important crafts. In Kerala, the traditional fishing fleet comprises of crafts of which are planked canoes (Vallam and Thanguvallam) and log crafts (Catamaran).

Sl. No.	Crafts	Types
1	Catamaran	Non-motorised fibre catamaran
		Motorised fibre catamaran
2	Canoe	Motorised plank-built canoes
		Motorised fibre boats

The gears using at Pozhikkara can be broadly classified into Seines and Gill nets. Seins are operated from shores and boats (Table 5). Kamba vala is the only shore seine operating from shores. Chooda vala and Disco vala are operating from boats. Parava vala is an example of drift gill net and Ral vala is an example of bottom gill net using

here. Ayila chala vala, Ayila vala, Chala vala, Disco vala, Mathi chala vala. Mesh size range between 8 to 140mm.

Sl. No.	Gears	Type of gears	Local names	Mesh size (mm)
1	Seines	Shore seines	Kamba vala	8-10
		Boat seines	Chooda vala	18-20
			Disco vala	18-20
2	Gill Net	Drift gill net	Parava vala	100-110
		Bottom set gill net	Ral vala	140
		Other gill nets	Ayila Chala vala	55
			Ayila vala	50-55
			Chala vala	35-40
			Disco vala	55-140
			Mathi Chala vala	35
Netholi vala	5-8			

Fishing industry occupies an important role in the economy of Kerala. Small scale marketing system is mainly operating at Pozhikkara beach. Direct selling to local people and through mediators are the marketing methods. A minor portion of fishes are used for drying and selling at local market. Here at Pozhikkara, the fishermen are involved in fishing and other related activities such as repairing of gears throughout the day time.

Checklist of major food fishes landing at Pozhikkara coastal area is presented in Table 6. During the study, 17 species were identified as food fishes. The fishes consisted of 4 orders (Perciformes-11 species, Clupeiformes-4 species, Carcharhiniformes-1 species and Pleuronectiformes-1 species). They comprised of 11 families (Carangidae-2 species, Carcharhinidae-1 species, Cynoglossidae-1 species, Scombridae-3 species, Lactariidae-1 species, Leiognathidae-2 species, Menidae-1 species, Nemipteridae-1 species, Clupidae-2

species, Sphyrnidae-1 species, and Engraulidae-2 species). As told by the fishermen, crustaceans take a sizeable percent during monsoon season.

Sl.No	Scientific name	Common name	Local name at Pozhikkara	Order	Family
1	<i>Caranx melampygus</i>	Bluefin trevally	Vela para	<u>Perciformes</u>	<u>Carangidae</u>
2	<i>Carcharhinus limbatus</i>	Blacktip shark	Sravu	<u>Carcharhiniformes</u>	<u>Carcharhinidae</u>
3	<i>Cynoglossus macrostomus</i>	Sole fish	Manthal	<u>Pleuronectiformes</u>	<u>Cynoglossidae</u>
4	<i>Euthynnus affinis</i>	Mackerel Tuna	Urulan Choor	<u>Perciformes</u>	<u>Scombridae</u>
5	<i>Lactarius lactarius</i>	False Trevally	Parava	<u>Perciformes</u>	<u>Lactariidae</u>
6	<i>Leiognathus</i> spp.	Ponyfish	Mullan/ Karal	<u>Perciformes</u>	<u>Leiognathidae</u>
7	<i>Lutjanus</i> spp.	Red Snappar	Chempalli	<u>Perciformes</u>	<u>Leiognathidae</u>
8	<i>Megalaspis cordyla</i>	Finletted Mackerel	Vangada	<u>Perciformes</u>	<u>Carangidae</u>
9	<i>Mene maculata</i>	Moonfish	<u>Ambattan-parah</u>	<u>Perciformes</u>	<u>Menidae</u>
10	<i>Nemipterus japonicus</i>	Pink perch	Kilimeen/ Chenkalava	<u>Perciformes</u>	<u>Nemipteridae</u>
11	<i>Rastrelliger kanagurta</i>	Indian mackerel	Ayala	<u>Perciformes</u>	<u>Scombridae</u>
12	<i>Sardinella gibbosa</i>	Gold-striped sardine	Chala/Mathi/ Karichala	<u>Clupeiformes</u>	<u>Clupeidae</u>
13	<i>Sardinella longiceps</i>	Indian sardine oil	Chala/Nalla mathi/ Neichala	<u>Clupeiformes</u>	<u>Clupeidae</u>
14	<i>Scomberomorus commerson</i>	Seer fish, Kingfish	Naimeen	<u>Perciformes</u>	<u>Scombridae</u>



15	<i>Sphyraena jello</i>	Pickhandle barracuda	Cheelavu	<u>Perciformes</u>	<u>Sphyraenidae</u>
16	<i>Stolephorus indicus</i>	Indian anchovy	Kozhuva/ Natholi	<u>Clupeiformes</u>	<u>Engraulidae</u>
17	<i>Thryssa malabarica</i>	Malabar thryssa	Manangu	<u>Clupeiformes</u>	<u>Engraulidae</u>

Fishermen are economically sufficient only during the peak period of fishing (monsoon). The seasonality of the available fishery leads them an unstable income status. Even though the fish catches increase, different varieties of fishes are depleted due to improper fishery management. Most of the fishermen families depend in money lenders, fish traders or boat owners for loans to tide over the monsoon season. Since it happens every year they cannot escape from the clutches of these middlemen. The only way to save them from this situation is to formulate credit facilities through institutional financing with appropriate terms and conditions. In the present socio-economic framework of our coastal rural sector the most suitable organization for this purpose is the co-operative society of fishermen. Matsyafed also provides financial support to the fishermen for various purposes. However, old fishermen are getting pensions from state government, but they are still willing to do small fishery related jobs for their better survival. By analyzing the available data, it can be concluded that the socio-economic conditions of the fishermen in Pozhikkara coastal area is very poor. In addition to this, their educational qualification makes it impossible for them to gain employment in any other sectors.

Boat-fuel with reasonable rate is another issue in this sector. Most of them are traditional fishermen and they are selling fishes at reasonable rates and never adopt any unhealthy fish preservation methods. Many of the fishermen are involved in dry fish making and they are selling those on the roadside itself. Some fishermen raised complaints on the lack of awareness of funds from government schemes which are exclusively for fishermen community. Another issue raised by them is the stealing of fishing gears by trawlers at sea while fishing and breakage of fishnets when it is stuck with hard bottom. Fishermen have to spend a lot of time and money for the repairing activities. Any way more and more local people are attracted towards the fish landing area for direct purchase of fishes due to the high quality of fresh fish available at

Pozhikkara. But this study revealed that some fish vendors at roadside are doing fraudulence. They sell preserved fishes from Mangalapuram, and from other faraway places by misinterpreting the buyers that they are 'fresh' from Pozhikkara. There is an urgent need for an elaborate study to reveal the fishery resources landing at Pozhikkara and to implement more sustainable fishery methods. The quality of fishermen will definitely improve if they get more education and to go for more scientific fishing techniques. Long term investigations on the socio-economic status of fishfolk and species diversity of fishes are essential to get a clear and accurate picture on the exact scenario.

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