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Traditional fishing practices followed by fisher folks of Tamil Nadu

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India is the world's fourth largest fishing nation, accounting for over 4.39% of the global output. It is also a major contributor of foreign exchange earnings for several countries including India through export. The potential forward and backward linkages through boat building, construction of fishing harbours, fish processing etc., contribute further to diversification and strengthening of the regional and national economy. Modern fishing devices like motor boats are increasing the pollution and destroy the natural environment. But the ancient tradition of fishing by using the traditional devices like *Pari, Katcha, Ootha, Sorati, Catamaran,* and *Karaivalai* have become sustainable way of harvesting inland and marine life without damaging the environment of coral mangrove, wetland and sea-grass bed habitats. It has been practiced by the coastal fishing communities.

Keywords: *Pari*, *Katcha*, *Ootha*, *Sorati*, Catamaran, *Karaivalai*, Dried fish

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India is the world's fourth largest fishing nation, accounting for over 4.39% of the global output. The country with the long coastal line of 8,118 km has an Exclusive Economic Zone (EEZ) extending to 2.02 million sq km comprising of 0.86 million sq km on the West coast, 0.56 million sq km on the East coast and 0.60 million sq km around the Andaman and Nicobar Islands. Tamil Nadu with 1,076 km of coastal line, is a leading state both in culture and natural fisheries and has emerged as a major exporter of marine products. In Tamil Nadu, the marine catches remain a major source of employment, business and revenue. Between 1999 and 2004, about 3,80,000 tons of marine fish have been harvested from the coastal areas of Tamil Nadu. The inland fisheries sector has about 3.7 lakhs ha of water spread area comprising reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds, estuaries, backwaters etc. which are suitable for both capture and culture fisheries[1].

Technological inputs have changed the face of Indian marine fisheries, which is now characterized by plywood and fibre glass traditional fishing crafts fitted with out board motors, synthetic gear which has the adverse influence on marine life i.e fishes, coral reef and other living organisms[2]. Hence, the biodiversity of the marine ecosystem is being destroyed in a drastic manner. But traditional fishing devices will not give any ill effects to the ecosystem. Economically backward population of the fisher folk cannot afford with high cost fishing devices. So, the traditional fishing practices can give livelihood for a large section of fisher folk. Sustainability of these traditional fishing practices is more important in the issue of environmental pollution control and bio diversity conservation. These ecofriendly techniques are to be documented, preserved, protected and promoted for future use[3-5]. The Department of Agricultural Extension and Rural Sociology, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai has undertaken a research project on documentation and preservation agricultural traditional knowledge through Farmer Participatory Approach sponsored by Ministry of Science and Technology, Government of India. The project involves in documentation of indigenous technical knowledge on agriculture, horticulture, animal husbandry and fisheries from different ecosystem like wet, garden, dry, coastal and hilly region with the help of modern electronic gadgets. Rationality test will be employed for assessment of scientific reasons. Further, it gives an opportunity to prepare the documented ITK through Interactive database for easy accessibility.

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Methodology

Tamil Nadu has 13 coastal districts, 25 coastal blocks and 591 marine fishing villages. Nagapattinam is one of the coastal districts, which have more marine and inland fishing villages in the coastal blocks Sirkazhi and Keelaiyur. The study was conducted in Sirkazhi block and Keelaiyur block of Nagapattinam district (Fig.1) of Tamil Nadu, with special attention to document existing traditional fishing practices. It lies between 10.10° to 11.20° North latitude and 79.15° to 79. 50° East longitude. It is bounded by Bay of Bengal on the East and the Palk Strait on the South, Tiruvarur and Thanjavur districts on the West and Northwest and Cuddalore district on the North. Nagapattinam district with an area of 2715.83 sq km^2. Ramanathapuram district is located in the southern part of the state lying in the latitude between $9^0.05'$ and $9^0.50'$ in North and longitude between $78^0.10'$and $79^0.27'$ in East.

Three villages in the coastal area namely, Agara Perunthottam, Nayyakar kuppam and Vellapallam based on predominance of fisher folk were selected. Farmer Participatory approach: It is a systematic, semi structured approach that uses a combination of methods to assess and understand a community's situation or a particular problem with the participation of and through the eyes of local people. Focused group discussion is a research strategy, which involves intensive discussion and interviewing of small groups of people on a given issue. Normally, this technique is used to study a group in an intensive manner. Here, instead of collecting information from individual, a group was interacted which paves way for easy documentation and arriving meaningful triangulation. Semi structured interview has been conducted for the ITK documentation.

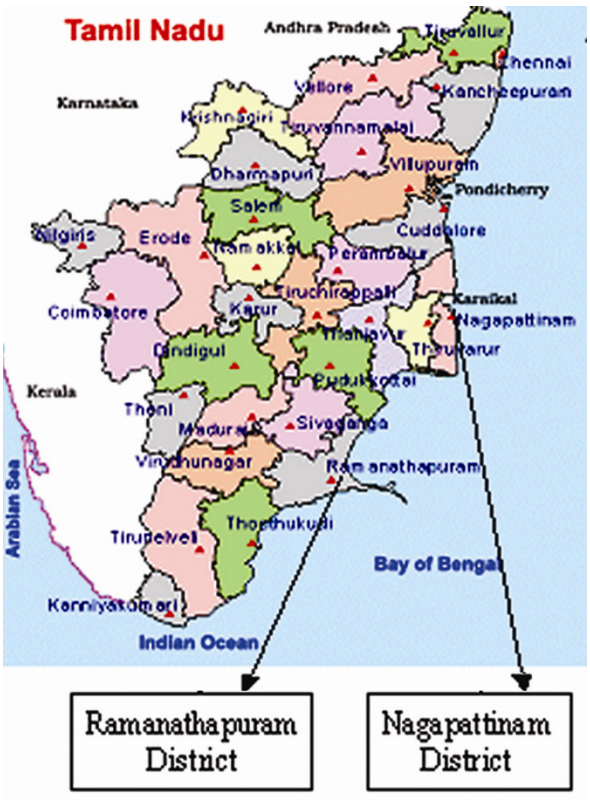

Fig. 1— Location map of the study area

Results and discussion

Six traditional fishing practices were documented in the three villages of Nagapattinam district. Among them *Pari, Katcha*, *Ootha* and *Sorati* are used for inland fishing where as catamaran is used for marine fishing. In Ramnad (Muthupet village) 2 traditional fishing practices, Catamaran and Karaivalai were documented.

Pari

Pari is an indigenous fishing basket, which is made out of bamboo splits (Fig.2). Fresh bamboo splits are cut into required length and width of 91 cm and 2 cm, respectively. *Pari* has two openings, one is wide spaced top opening, the diameter of which is 45 cm and another one is bottom opening, whose 3/4th portion is closed with a small hole. Width of the basket gradually decreases from top to bottom and looks like a conical shaped basket. In four places, bamboo splits are tied with rope around the basket to obtain the conical shape. 30 cm from the top, centre portion is blocked with small bamboo splits and two holes are provided with the diameter of 5 cm for fish entry, after that it is divided into two halves. Y shaped stick is tied on the *pari*, which is buried in the ground in order to arrest movement of the basket along with running water. Stick acts as an anchor for *pari*. Existence of *pari* in that is more than 100 yrs. It is used for fishing in the tail end of the running water like small canals. It is used for fishing during night time between 7.00 pm and 6.00 am. Small hole in the bottom portion is blocked with paddy straw to prevent the fish to escape from the basket. *Pari* is kept on the tail end of the canal and anchored it. After that bund is made with muddy soil around two sides of the *pari*. It can be placed along the water flowing or running direction; fish jumps into the basket and enters into the bottom portion through

two small holes. Trapped fishes are collected through the bottom opening. Quantity of fish catchments is 5-10 kg (approximately).

Katcha

Katcha is a traditional fishing basket used for fishing in the rice fields. It is also a conical shaped bamboo basket and looks like a *Pari* without any division in the inner side of the basket (Fig. 3). Fresh bamboo splits are cut into required length and width of 91 cm and 2 cm, respectively. *Katcha* has only one opening i.e. mouth for fish entry and there is no bottom side opening for fish collection. After completion of fish capturing, fishes are collected from the basket through broad top opening (mouth). Existence of *Katcha* in that area is for more than 100 yrs. Approximately, 5 kg fish can be captured by using *Katcha*.

Ootha

Ootha is also conical shaped basket made out of thin bamboo sticks (Fig.5). Length of the bamboo stick is 106 cm; 15 cm iron ring is taken and smooth bamboo sticks are closely tied around the ring with the help of nylon rope. To obtain conical shape bamboo sticks are tied in 3-4 places. For strengthening purpose, thick *notchi* (*Vitex negundo*) stick is attached in the *ootha* in a circular manner. *Ootha* has two openings such as broad opening and small round opening (iron ring). *Ootha* is used to capture the fishes in running water and stagnated water bodies. *Ootha* is placed randomly in the water bodies in a manner that broad opening faces downward and small iron ring opening faces upward. *Ootha* is hold tightly by left hand and captured fishes are collected by right hand through the small iron ring opening. Its advantages include low cost in making and maintenance, light weight and easy to handle. Requirement of skilled persons for basket making, low fishing capacity and capability of fishing only in the smaller areas are some of the disadvantages.

Sorati

Sorati is used to collect the crabs from nest in the rice field (Fig.4). Iron rod of 60 cm length is inserted in the waste unused cycle peddle, which is used as handle. Iron rod is inserted into the crab nest and crabs will come out due to disturbance. Then crabs are collected manually for human consumption. One person can collect 40-50 crabs / day

Kattu Maram

The coastal fishing communities in Sirkali Taluk, Nagapattinam district have survived by *Kattu Maram* (catamaran) fishing for centuries. Catamaran is a light watercraft, which was named from the Tamil language words *kattu* (tie) and *maram* (wood, tree) – meaning 'two trees tied together'. It was invented by the *Paravas*, an aristocratic fishing community in the southern coast of Tamil Nadu. Catamaran is about 3 m long boat made out of *Matha* tree timber (Fig.6). This timber is transported from Kerala where it is found abundantly. Generally, The rate varies depending upon the size of the catamaran. Normally, on an average one catamaran costs about Rs 3000/-. Nearly 3-4 slightly curved wooden planks are tied together with rope, so that the entire structure forms a curve shape. One end of the centre, timber is curved and lifted upwards to a height of nearly 30-40 cm. This facilitates the boat to adopt with wave movements, while roaring into the sea. This kind of catamaran can accommodate only one member, whereas by making an adjustment, even 3-4 persons can be accommodated In Ramnad, catamaran is made up of *kalyana murungai* (*Erythrina indica)* because it has good floating capacity in sea. The tree selected to make catamaran is cut down in 'crescent moon' period and kept for 15 days, thereafter, shown in fire to remove outer barks. *Kaatumaram* is kept for 4-5 yrs based on usage. The larger woods are kept in outside, in the middle slightly bigger woods are kept in orderly manner. Finally these arranged woods are tied horizontally with wood and rope.

Fishing by catamaran is a traditional way of harvesting marine life without damaging the marine environment and its biodiversity. It is being rowed manually by using oar. Apart from that, entire structure is made out of wood ensuring zero pollution of seawater. Since, the cost of construction is also cheaper, it is highly feasible and advantageous. Though it is cheaper and ecofriendly, it can be used only up to a distance of one km, which is comparatively very less and effects in low fish catchments. It is difficult to rove the boat near marshy places, when the fishermen himself should get down and pull/push the boat. It happens near to the seashore. Fish catchment is 7-10 kg. The use of catamaran for fishing is threatened by the mechanized boats. It is also threatening the survival of the poor fishing communities that use traditional catamaran. The number of boats in operation is estimated at about

Fig.2 Pari- Traditional fishing basket

Fig.3 Katcha- Traditional fishing basket

Fig.4 Sorati- Crab collection tool

Fig.5 Ootha - Traditional fishing basket

Fig.6 Kattumaram- Catamaran

Fig.7 Karaivalai- Traditional fishing net

70,000. The small country craft do not operate beyond a few km from the shore and spend much of their time in going to and from the fishing grounds. Consequently, production per unit of effort is low. It consumes more time in roving rather than fishing. During cyclonic wind period, it is not used for fishing because of heavy wind.

Excess unsold fresh fishes are used for making dried fish. Dried fish can be made out of all the species of fish. Fins and tail portion are cut by using knife and fish is split open. Inner portion is removed. Fish is washed without removing the scales (while drying the scales will fall off) and lined with knife, which facilitates better salt absorption. Salt is applied over the fleshy portion. It is dried in hot sunlight for a day; next day the fish is washed and again salt is applied. Duration of drying varies from 3-10 days, which depends upon the size of the fish. Women fisher folks are involved in this dried fish making. Dried fish is one of the major ingredients of the poultry feed.

Karaivalai

Karaivalai is the traditional fishing net made out of coir consisting of 3 particles, *boya, purai*, and stone (Fig.7). The *Boya* is on the top of the net while fishing and stone is fixed in lower of the net. The *karaivalai* can be used up to 1 km in sea and it can be kept up to 1 hr. The fisherman goes to sea in morning when they use *karaivalai*. There is separate boat or *thoni* made from *nava*, *vahai* trees for using *Karai valai* known as *karaivalaithoni*. In the large size *karaivalaithoni,* 10 members may fish in the sea and in the smaller size, only 5-6 members fish in the sea. *Karaivalai* has large size holes than nylon net (*marukku valai*). *Karaivalai* can be used only for 3 yrs as it is made out of coir. The bag used to keep fishes after catching in sea is known as *kacha*. The *karaivalai* is used to catch *nagarai, sundai, mura, sheela, vazhai* and *ora* fishes.

Conclusion

The sustainability of this traditional fishing practice is extremely important to protect the naturally occurring sand dunes and mangrove forests along the coastal areas. Therefore, local fishermen must be encouraged not to loose their centuries' old cultural heritage of fishing by catamaran, which is now rapidly vanishing due to the development of technology. Allocating specific fishing areas for the often ignored and poverty-ridden traditional fishing communities by banning mechanical boats from entering, could improve the quality of life of the poor fishing communities and save a lot of rare and endangered marine life. The Bay of Bengal is considered a biological hotspot of marine ecosystems in the world. The practice of catamaran fishing by rural fishermen along the coastal areas of Tamil Nadu is a unique and endangered way of harvesting marine life without damaging the environment. It represents a unique sub-set of Agricultural Biodiversity of Global Significance (ABGS), associated knowledge systems and cultural practices that should be recognized by the international community as a heritage for humankind. The ancient tradition of fishing by using these traditional devices is a sustainable way of harvesting inland and marine life without damaging the environment of coral mangrove, wetland and sea-grass bed habitats. Preserving and promoting the sustainable traditional fishing practice is crucial for the protection of the biological productive and environmentally unique coast of the Bay of Bengal.

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