

CHAPTER 6

TRADITIONS, CATAMARANS, AND SHOALS OF FISH

The fisher folk have a tradition of building catamarans and an intimate knowledge of the sea and where fish can be found. This chapter deals with their livelihood traditions in practice, with particular emphasis on boat building technologies and fishing practices.

Introduction

*Do thou whose countenance is turned to all side send off our
adversaries, as if in a ship to the opposite shore:
do thou convey us in a ship across the sea for our welfare.*

Rigveda, 1, 97, 7 and 8.

This chapter deals primarily with the fishing communities of the Coromandel coast, which stretches between the south of Tuticorin and north of Chennai. This stretch of the coast consists of areas in the Union Territory of Pondicherry, Tamil Nadu and some parts of Andhra Pradesh. Although administratively separated, the fisher folk of the Coromandel are not divided territorially, but only socially and linguistically. The coastal areas and fisher folks, by the over-arching anthropo-geographic classification of the Tamil landscapes, fall under the *neidhal thinai*.

One of the things that is interesting is the fact that over the centuries the traditional fisher folks had amassed a vast fund of knowledge about resources in their immediate vicinity, and have developed a variety of technologies tailored to the specific ecological niches along the coast. This in fact accounts for the lack of a single maritime fishing tradition in India and hence for the immense diversity of artisanal fishing techniques in the country, the hallmark of which has been their ecological sophistication, rather than techno-economic efficiency. This chapter briefly discusses the traditions, catamarans and shoals of fish, in that order. There is variety in the people, in their culture and craft, and in their livelihoods, even as most of them are engaged in fishing. The emphasis is on catamarans, the traditions of the building technology, their use in fishing and their ecological values as a traditional fishing craft. How the fishermen gather fish shoals and the techniques in use are discussed. There is discussion also on the modernisation of fishing activity on the eastcoast and the issues and initiatives the changing traditions and milieus create for the fisher folks. Conflicts and disputes arising out of the use of mechanised crafts and the disturbances they cause to the fishing grounds and fishermen are also highlighted.

Coastal people and their crafts

The coastal tracts of the Coromandel are inhabited by different maritime people of subcastes¹ speaking different dialects of Tamil. The *Mukkuvars* (maritime fisher folk) inhabit the coastal areas stretching from the Malabar coast of Kerala to the tip of Kanyakumari. They are Roman Catholics and were converted to Christianity by the Portuguese Jesuits, starting from 1535. The conversion of the Mukkuvars happened probably during 1544-49 (Aiyangar, 1921; Forrester, 1979; Roche, 1984; Ram, 1992; Bharathi, 1999). Mukkuvar settlements are interspersed with the settlements of the Paravas from Muttom, a fringe village of Tamil Nadu on the west coast, to the Cape Comorin. There is also an intermixing of fishing communities in this tract.

The *Paratavars* inhabit the coastal tracts between Kanyakumari and a little north of Tuticorin. They are Roman Catholics. This community of fisher folk are also referred to as *Paravas*, *Paratar* or *Bharatars*. There are some settlements on the Sri lankan coast and on the Travancore Seaboard occupied by a similar people (Roche, 1984: 2). It was in return for a favour from the Portuguese in 1535 that the *Paratavars* embraced Christianity. It is said that the conversion was then corporated by a person none other than Father Francis Xavier, who came to Tuticorin in 1542, and whose mortal remains is still venerated by the Catholics at Goa. In the fifteenth and the sixteenth centuries, the *Paratavars* proliferated as the seafaring *jatis* such as *Paravas Kadiyars*, *Nulliyars*, *Valayars* and *Kayalars*. The social composition and character of the Paratavars changed from time to time through historical events of varying magnitude. Along the way, enmities developed between these caste groups and the *Kayalars* accepted Islam in the process of social change. The traditional rivalries between the *Kayalars* and the *Paravas* are well known and had been kept alive for more than three centuries. Certain segments of the *Paravas* intermarried with the Arab settlers of Kayalpattinam, even as they were converted to Islam. The *Kayalars* have risen as the prime maritime caste of the region primarily as a results of their drawing on indigenous fishing know-how and the superior Arab navigational expertise (Roche, 1984: 40-41). However, during the post colonial period, the Roman Catholic missionaries were successful in attracting most of the sects to their fold. The Paratavars are still the dominant fishing people of the region.

The next largest maritime fishing community on the Tamil Nadu coast is the Hindu *Pattanavars*. This is the only Hindu community engaged in maritime fishing. There are other numerically smaller groups of people along the coast who are also engaged in maritime fishing. There is yet another group of people known as the *Sembatavars*, who subsist on inland fishing such as lake and river fishing. Throughout Tamil Nadu, the inland fisher folk are referred uniformly as the *Sembatavars* (Thurston, 1909; Francis, 1901). The *Paravas* refer to themselves as *Chettiyars* while the *Sembatavars* address themselves as *Nattars*. The fisher folk of the Tamil Nadu coast are considered the most backward castes of the state. In fact, they are constitutionally so classified that they reap the benefits from social welfare programmes of the state and the central governments.

The women play an active role in the fishing community, as they do in all subsistence Economies. They do play an important role both at the grassroots level and at the organisational level. There is no evidence to show that women participated at any time in actual marine fishing operations, although women are involved in fish harvesting in the inland waters and exhibit exemplary skills when engaged in shrimp picking. They also gather shellfish from rocky sea banks, and have always been involved in fish processing, distribution and marketing.

The fisher folk of the Coromandel coast live in their *kuppams* and are divided into several endogamous subcastes and the *Pattanavars*, for example, are divided into four castes, namely, the *Chinna Pattanavar*, *Periya Pattanavar*, *Karaiyar*, and *Padaiyachi*. The more common meaning of the term *Pattanavar* is that they are a people living in town, but precisely it should refer to a 'people of port town'. The *Karaiyars*, on the other hand, are people who live on the shore. These people are enumerated as living in a single village of the Karaikal region, namely, Karukkalachery. It is said that before the independence these people were engaged in the shipment of goods between the shore and the ships. They used a traditional craft for transporting the shipments known locally as the *vattal*, a round boat. They were in the early days engaged in transporting goods to far off lands, such as Singapore, Malaysia, Burma (Myanmar) and Sri Lanka with their sail craft, known locally as the *pai marak kappal*. Several families still keep their foreign contacts intact and some have returned from these lands with enormous sum of money to settle down in their native village. These people did, and do, engage in fishing, but in shallow waters and for home consumption. The intent was never for marketing fish.

The fishing villages are located along the seashore and they do not intrude into the inland area. The landscapes, settlement pattern and other aspects of village geography are the very characteristics of the seashore ecosystem. There is a high degree of conformity in the structural features of the village settlements. The people of the villages perceive their territory as being confined to a region contiguous to the sea in the east and their territory is defined by *karaiponku* (the coastline). Anything beyond and inland is considered as those belonging to the *merka* (west). The people refer to those who are in the inland areas as *merku makkal* (people of the western side) and their occupations as *merku tholil* (occupation of the west people). Their own occupation is termed *katal tholil* (work at the sea).

The fishing villages generally are multicasite. The *kuppam* (settlement) on the shore is structured such that fishermen occupy the seashore and its adjoining streets. In these villages, the fishermen are the numerically large people. Fishing villages in the Karaikal region, for example, are distinct in that they are physically well isolated from the inland Hindu settlements. Most of these inland villages are 3 to 4 km interior to the coastal, seashore villages. Their social life is characterised by a stratification, which accepts the services of washermen, barbers and brahmins and the menial workers of the scheduled castes. Thus, the fisher folk have a social life indicating caste features. In the last few decades, the fishermen have taken to other occupations and have moved into towns and cities. Such people have attained an exalted social position in some cases. The Vanniyars (agriculturists), Sanars

(toddy tappers) and people of other non-fishing communities residing in the fishing villages keep a cordial relationships with the fisher folk. But rivalries among the fishermen within the coastal villages, or across the villages, have resulted in caste and communal violence. Conflicts arising out of the fishing disputes are quite common and they often turn violent, causing heartaches and suffering for the people of the villages in conflict.

For the fishing communities on the east coast, *karaiponku* (the coastline) is not just a physical landscape but is an experience in livelihood. The elements of the *karaiponku* such as the river, lagoon, vegetation, rocks, port and other units make the local environment and these micro-environmental units shape their experience in the world. *Karaiponku* is also fringe space, oriented to the east (locally *kilakku*, which is a generic term meaning the sea, seaward, coastline and other similar features), especially to the waters of the Bay of Bengal (Bharathi, 1999). Correspondingly, however, the term *merku*, literally the west, means everything not related to fishing and waters. It also means the landscape stretching behind the coast or places where non-fishing communities reside. Thus, the cultural codification of east and west (*kilakku* and *merku*) is an eco-cultural semantics, referring to space, direction, population and occupation.

Kallaram, the sandy beach, stretching along the coast is a pavement for the fishing people. Some of the villages are on the sandy beaches that they are at the waters' edge of the Bay of Bengal. Such villages, growing in population, are proliferating along the beaches of the metropolitan Chennai. It is a common practice of the fisher folk to walk across the sand to a neighbouring village on the beach, where there are friends and relatives who could be relied upon for fishing expeditions on catamarans. For the fishing communities on the *kallaram*, the space between the sea and the settlement, is more intimate. It is a common space. The fishermen leave their logs, crafts, large meshes, anchors and weighty accessories on the *kallaram*, besides using it as the social space, place where occasional auctions could take place and even weddings. Each fishing household also has a stretch of the *kallaram* in front of its house and calls the space they use for leaving their possessions the *patra*. The *patra* is indeed a narrow strip, which the household takes control of, and nobody is permitted to use the space.

The settlements have a north-south orientation rather than an east-west, for the simple reason the north-south provides much broader *kallaram*. Typically, the *kuppams* are continuously arranged with clusters of houses. Most villages have a central cluster and a peripheral cluster, the latter being occupied by service castes. The peripheral clusters are generally contiguous to the central clusters. In multicaste villages, the clusters tend to reflect caste orientation: each cluster is dominated by a subcaste. The houses are a haphazard conglomeration, cut across by narrow and randomly curved lanes. The *vasal*, the front yard, is often barricaded with a *veli* (fence). There are one or two rooms, one for kitchen and the other for living and/or sleeping space. Rarely if ever the houses are big and have many rooms. The wealthy among the fishermen have even palatial houses, in town rather than on the beach.

The fisher folk practice artisanal fishing and other means of adaptation to marine ecosystem, which is characterised by traditional knowledge, handed down from generation to generation. Such knowledge has been obtained by the fisher folk through indigenous perception based on empirical observation and practical experience. The people of the fishing villages subsist on the sea and the sea and the shore are the backbone of every aspect of their socio-cultural life.

Catamarans and Fishing Nets

The sea ecology of the east coast is different that of the other Indian coasts, for there is socio-cultural variations besides the biophysical variations as well. The sea here is often rough and the surf breaks upon the coast with a force all through the year. As such the indigenous crafts such as catamarans (rafts) and masula boats (or *patavus*) are most preferred as the crafts for marine fishing in these areas.

Catamarans are the most common fishing crafts used over centuries along the coasts of India, including the west and northwest and northeast coasts. The fisher folks and their artisans developed this indigenous and simple traditional craft, as a water transport and fishing craft. There is more information and description of traditional crafts and their building, in the next section.

The fishing implements include the gears or tackles. Several varieties of gears are in use in the Coromandel coast region. Fishing includes gill and drift netting, shore seining, shrimp trawling and purse seining (Bharathi, 1999: 50; Murugan, 2002: 24). There are several different kinds of fishing nets in use on the eastcoast. Some of them are briefly described here.

Thuri or Vella Valai (White net). It is a primitive boat seine used as a trawl net, operated with the aid of two catamarans, especially in the waters of 4-6 *pavams* (fathoms) deep. It is a net woven from 10 and 40 cotton or hemp. The net has a closely-knit conical bag (*mati*) at the end. The bag is in fact attached to a wider mesh and it extends into the exterior wings. The wings are often tied with ropes. The mesh of the net is 1.27 cm near the cod and 6.35 cm at the wings. Each wing of the net is tied to a catamaran and the mouth of it kept wide open as the catamarans are driven in parallel. Cat fish, rays and soles are caught with this net. In the past, it was much in use over a wider area, but with the advent of the nylon mesh nets their use has declined.

Mata Valai (Bag net). It is a shallow bag net with a wide rectangular mouth. The mesh size is 6.35 cm near the mouth. This net requires four catamarans for operation, in 4 to 8 *pavams* of water. As the net is generally hauled from one catamaran, fishermen crews of all the four catamarans will hold their ropes, which are tied to each corner of the net. The net is allowed to drift deep in the water. The net is quickly raised to surround the fish shoal, when the gregarious mob is seen on the surface waters. This net is used mainly for fishing pelagic fishes such as the pomfrets, sardines and mackerels.

Periya Valai (Big net). It is the most traditional shore seine. Modern technology and synthetic nets have not replaced it as yet, as it is found useful and sturdy for fishing. This is the only net, which has not been altered or changed so far and so has remained unchanged over several centuries. It is because of its ability to cope with cyclic seasonality, its functional existence is a perfect adaptation. The *vayal* season or the calm sea is good for shallow fishing along the shore of 1-2 *pavams* deep. Deep sea fishing is not possible because the fishes dip themselves in the mud during the season (February-April). This season is characterised by the availability of mixed varieties of small fish along the shallow waters. The *periya valai* is used in *patavu* (masul boat) fishing. The fishes that enter the bag like cod end of the net are caught at this end. The catch is often large and hence the net is closely knitted with strong coconut ropes. The cod end is connected with two wings of 18 m in length and 9 m to 12 m in breadth. These wings are tied with hauling ropes of about 400 m to 450 m. Fishing, because of the size of the net, requires nearly 25 fishermen. They carry the net in a *patavu* and pave it in about 1-2 fathoms of water. The net is then dragged ashore. The fishes caught include common species such as anchovy, tunny, sardine, cat fish, mackerel, carany, pomfret and carangid.

Kavalai Valai (Gill net). It is a drift net and occupies a predominant position amidst them. All catamaran fishermen own this, as this is used throughout the year. In the earlier days, the drift nets were done of hemp or cotton, They are invariably made now with synthetic twines. Drift nets are wall like nets in which a head rope is woven on one end and the foot rope is woven on the other. Synthetic floats and stone sinkers are tied to the head and foot ropes, respectively. When a net of this variety is paved out into the sea, the sinkers pull the net on one end and the floats raise the net on the other. The net is thus spread like a wall. One end of the net is tied to the catamaran and the craft and the net are allowed to drift in the current and the tide. The fishes get gilled or entangled on the net as they are on the move. The net is hauled up when the fishermen are sure that the fishes are caught. The gill nets are characterised by comparatively smaller meshes when compared to the large meshes of the drift nets. The drift nets are for catching gregarious and shoaling varieties of fish. These nets are given fancy names by the fishing communities and they are: *disco valai*, *pentha valai*, *vaala valai*, *pasu valau* and *irukka valai*.

Nandu Kachchan (Crab net). Although the name of this net is distinct, the mesh used for this is of old nets, used for *kavala* or *penta valai*. Crab nets are unpopular among the fishermen because crab and whelk varieties are commercially viable. Besides, catching crabs cause damages to nets, which require mending for long hours. It is also rare to have a good catch of crabs. The crab net is generally anchored along the shore waters in the evening and the catch is hauled up in the morning, fresh for market. There are also other species such as the lobsters and whelks, varieties of crustaceans and molluscs collected by the net. The net is used both during the southwest and northeast monsoons.

Traditional knowledge in building Catamarans

The beginnings of boat building technology in India go back to the Third Millennium BC, to the Harappan times. The Harappans (or Indus Civilization) constructed the first tide dock of the world for berthing and servicing ships at the port town of Lothal (Leshnik, 1979; Rao, 1987; Behera, 1999). The historical text Yuktikalpataru (11th Century AD) deals with shipbuilding and gives details of various types of ships (see Box 6.1). The earliest reference to maritime activities in India occurs in Rigveda.

Box 6.1: Traditional Indian Boats and Other Sea Vessels in Use on the East and West Coast

There are several different types of boats and traditional crafts, made and used by the fisher folks and trading communities. Some of them are described here in brief, to give an idea of the variety there is.

1. **Andhra Type:** It is 5-7 metre in length and made of heavy wood. Planks used in fitting the sides often include strong median logs and are known as wash boards.
2. **Coromandel Type:** It is made up of 3-5 logs, with many variations in pattern. It is most commonly used around Tamil Nadu. A specialised type is the seven logged catamaran or *kolamaran* used in flying fish fishery off Nagapattinam.
3. **Boat Catamaran:** It consists of three logs fitted into a regular boat shape and is used on the coast around Mandapam and Mukkur areas. Wide variations of this type are found in Tuticorin, Cape Comorin and Colachel areas.
4. **Orissa and Ganjam Type:** It is made up of logs, which are not tied together by rope but are pegged with wood. It is boat shaped, and is often made up of 3 to 5 logs of 7 m to 8.5 m.
5. **Musula Boat:** It is a non-rigid boat constructed with planks sewn together with coir rope but without frames or ribs so as to withstand the severe knocking of the surfs. Masula boats are upto 9 m in length, although generally smaller. There are various patterns: for example, bar boat in Orissa and Padava on the Andhra Pradesh coast. A variant with ribs inside has been developed in the area between Kakinada and Maslipattinam.
6. **Dinghi and Nauka:** These are carved boats of Orissa and West Bengal Naukas, which are well designed and constructed up to a size of 13 m. x 3 m.x 2 m are quite spacious and are used for a variety of purposes including fishing operations.

7. **Tuticorin Boats:** These are also called the fishing luggers. They are carved boats (11.m x 2 m x 1 m), which are seaworthy in inshore waters. They are used more as mother ships and cargo boats rather than directly for fishing.
8. **Dugout Canoes:** These are made from large logs of wood by scooping out the inner part, the keel portion being thicker than the sides. These are mainly used on the Kerala and Kannada coasts and also between Colachel and Kathiawar. *Vanchi*, *Odams* are the large dugouts which form the main fishing crafts of Malabar Coast, operating a variety of nets. They are 10-12 m. long. The smaller dugouts known as *Thonies* are generally used for gill nets, drift fishing and for seining. These dugout canoes are operated in large numbers from the sandy beach along the southwest coast of India. Mango (*magnifera indica*) wood is mostly used for these canoes. The dug out canoes (*shoe dhoni*) of Andhra coast are made out of palm tree trunks. The dugout canoes are employed for day to day fishing operations and they are hauled on shore when not in use.
9. **Plank-Built Canoes:** There are dugouts, which are further enlarged with planks on the sides. They are largely used in Kerala for boat seine and other fishing. This type is also seen in Kathiwar and North Mumbai (Bombay).
10. **Out Trigger Canoes:** Canoes with single out trigger are in use on the Kannada and Konkan coasts and are called Rampani boats, as they are used for mackerel fishing with Rampani net. They are canoes with a narrow keel, but differ from the plank built canoes in that the planks are more spread out. These canoes are large up to 15 m x 3 m. Smaller out trigger canoes are also largely used in the area between Bhatkal and Majali on the west coast.
11. **Built up Boats:** These are the best type of constructed, indigenous boats seen on the west coast, north of Ratnagiri and along the Mumbai-Cambay coast. The Ratnagiri type has a pointed bow, straight but narrow keel and low gunwale. The Bassein type, locally called *machus* has a broad hull, pointed bow and straight keel. The Satpati type, popularly called *galhat* has a medium pointed bow broad beam, straight keel and high gunwale. The broach type is flat bottomed and used in inshore and estuarine waters.

Source: Murugan, 2002; Bharathi, 1999; Hornell, 1920.

Catamaran, the anglicised Tamil word *Kattumaram*, is a small keel-less raft built by lashing together three or more logs. The logs are tied together after they are shaped by cutting a square on one end, curved into a conical shape at the other and made into a sort of bowl in the middle. The central log (*thai irukka*) is longer than lateral logs (*pakka irukka*). The conical end forms the stern of the raft. Two thin sticks (spreader), which run through the logs starting near the bow and ending near the stern, are also tied over by lashings. The logs are assembled and spaced in such fashion, the catamaran is a self-draining raft. This last feature lessens the

force of the heavy surf and ensures the stability of the raft. For non-fishermen having a look at the raft, the catamaran may look like a primitive craft. But there are several technical features, especially those involved in lashing the logs together, that make it a technically viable raft which stand surf and storm (Gill, 1993a, 1993b; Bharathi, 1999).

The fishermen do not often make their own catamarans. Rather they employ a carpenter well versed in the making of the catamaran to shape the logs and other accessories. The carpenter and his assistants are however from the fishermen community and it is their traditional occupation. The art of catamaran building is a monopoly of a class of people known as *acharis* (carpenter). The type of wood used for shipbuilding is known as *kshatriya*, which is mentioned in *Yuktikalpataru*. The common wood used for catamaran building comes from *matthi*, *sagouy*, *teak*, *honne*, *undi* and *hebbals*. Teakwood is used rarely because of its high cost.

Along the northern coast, boats used for different purposes were called by different names such as *samanya*, *madhyama* and *visesha* for passenger service, cargo, fishing and ferrying over the river. The technology of boat building was a hereditary profession passing from father to son and was a monopoly of a particular caste of people. The local builders used the hand, fingers and feet as the units of measurements. In different places different kinds of boats were built for specific purposes. These boats may bear some similarity in material, techniques or in shape and size. For the construction of ship, the teak (*tectona grandis*) wood is generally employed in India, though the selection of wood depends upon the nature and type of craft.

The traditional construction of a boat starts with the laying of a keel (keel is foundation beam for the boat and ship), a massive piece of wood supported on a branching stern about a foot above the ground at both ends. This is stepped to take the stern-post (rearmost part of a ship or boat) and also the stem post (the pointed front part of a ship or boat), all made of massive pieces of timber. The keel is laid first and later the planks or ribs are attached. Usually for the keel and stern one single piece of wood is always preferred. The planks are then fastened horizontally on either side of the keel. The planks join is edge to edge. Rudder is a flat broad piece of wood, which is mainly used for getting a forwards lead to the expected direction and is not seen in all traditional crafts (Hornell, 1920).

In some crafts the rudder is replaced by a paddle or oars, which function as a rudder. Paddle is a short oar with a broad blade at one or both ends and oar is a pole with a flat blade used in rowing. These are necessary for a straight and swift movement of the vessels. Generally all the ships use the wind power. In the ship the mast is fixed on ribs above the keel. The mast is made out of a timber tree but the builders prefer a bamboo piece, because of its suitability to make a mast long, and strong. Sail is a sheet of canvas spread to catch the wind and move a boat or ship forwards. It is used in traditional vessels; the shape of sail is triangular to make it easy to catch the wind. Sails are fixed to the mast with ropes. The sails are used mainly when the vessels are going to the mid-sea, so that they can make use of the maximum wind energy.

South Indian catamaran and traditional boat builders could make ships, in the ancient times, which were fully seaworthy and could sell them to West Asia. But now the traditional boat building technology is in a declining state due to changes of technology and advancement in mechanised systems. This is best exemplified in South India by the use of catamarans, which are being manufactured from synthetic materials in small-scale industries. The synthetic catamarans are now preferred by traditional fisher folk because of their longevity, payload, cost, range and easy manoeuvrability. There are hardly a few places in India such as Cuddalore and Kakinada engaged in the construction of sea going vessels. It is satisfying to note that the traditional catamaran and boat building technology is being harmoniously combined with modern technology to produce more efficient vessels.

There are various other places that have the traditional boats and boat building technology. The northern Coromandel coast is known for four different types of traditional boats constructed for cargo transport, fishing and ferrying purposes, which are catamarans (*teppam*), dugout canoe, stitched-planks-built boats and nailed-planks-built boats. Generally the types of wood used for boat building in the northern coast are grannari karra (*egesa: acquicia canilotica*), arcini karra (*melia dubia*), cinntha karra (*albizzia sp.*), rai karra, teak, circini karra (*anogeissus sp.*), mamidi karra (*mango: magnifera indica*), sal (*shorea robusta*), Indian laural (*terminalia tormentosa*) and maddi (*aliantus malabarica*). *Teppams* are simple floating devices, but are the predominant traditional sea craft. Some keeled planked boats locally called *padavas* are also common vessels along the northern coastline. In Andhra Pradesh these traditional boats are constructed at Nellare, Prakaram, Godavari and Guntur districts.

The *Masula* boat of the east coast is the simplest form of built up boat, peculiar in its construction with entirely stitched wooden planks for the hull with or without transverse frame insides. The Tuticorin type of built up boat is a fast sailing lugger with a simple backbone assembly and hull planking firmly secured to the inside frames or natural crooks with iron or galvanised iron fastenings. The 'Navas' of Andhra coast are yet another type of built up boat popular on that coast.

In Lakeshadweep, coconut tree is locally available in abundance, thus coconut wood is still used in local boats, but it is difficult to say with authority, what made early boat builders to use coconut wood. Coconut wood is now used for bulwarks, masts, cross stays, and sides ribs, and also for cabin removable thatched roofs. Mango or breadfruit tree wood is also used. Boats of the west coast can broadly be divided into two categories based on their use: trading vessels and fishing vessels.

There are boats and traditional crafts, which are exclusively used for fishing in inland waters, which incidentally are also built by the same artisans who do the crafts for the marine fishing communities. Box 6.2 shows some of the traditional crafts built especially for inland fishing. The richness of the traditional marine crafts is again seen in the inland fishing vessels of traditional variety.

Box 6.2: Traditional Inland Fishing Boats and Crafts

The simplest and most primitive types of craft used for fishing in inland waters are the rafts and *songas*, operated in calm waters. In the larger rivers and estuaries subject to strong current and tidal movements, sturdier plank built boats are used. The rafts are made of various materials as:

- (a) inflated buffalo skins tied together in the upper reaches of the river Ganges;
- (b) banana stems or shoal bundles tied to form a floating platform as in ponds, and clam waters of West Bengal and Thanjavur district of Tamil Nadu;
- (c) earthen pots tied together to support a light platform of bamboo as in the river Ganges near Patna, Gaya and in the river Cauvery;
- (d) the coracle, a shallow framework of wicker covered with a well-stretched cowhide, commonly used in the rivers of Cauvery, Tungabhadra and Mettur Dam.

Dugout: A simple form of dug out, made by hollowing out the butt and stem of the palmyra palm is commonly used in West Bengal for angling and cast net fishing in inundated canal but calm waters. Similar but sturdier dugouts known as *Vallam* are used in fishing in the backwaters and estuaries of Kerala.

Plank built Boat: The plank built boats are of various types and are used for fishing in rivers with strong currents and tides, and in the larger backwaters and lakes for operation of large nets. Small riverine and estuarine crafts, known as '*dinghis*' are employed extensively in West Bengal for operation of purse nets and dip nets. These *dinghis* have narrow tapering bows and sterns and have no keels, larger boats of this type are used for operating larger nets. The boat, (*Chhandi nauka*) used for operating drift nets, may be as large as 18 m long and 3 m wide. In the Chilka Lake and the river Mahanadi, flat bottom plank built boats, known as *Nava* are in use. *Machua* type of boats are used for the operation of large nets in the estuaries of Gujarat.

Source: Murugan, 2002; Bharathi, 1999; Hornell, 1920.

TEK in gathering shoals of fish

The Coromandel fishermen believe that for each variety of current, of which we see later in the chapter, the fish shoals tend to make their own rhythm of moving for foraging. When the current is predominant on the surface, then the shoals move underneath it and often go further down to the bottom of the sea, depending on the force and depth of the current above. On the contrary, when the current moves rather in the middle region of the seawaters, the shoals move either on the surface or down below the current at the bottom of the sea. The velocity of current influences the gathering and availability of a fish shoal into the net. When the current is slow, the fishes move freely without any difficulty in their feeding locations. When the current velocity is high, there is difficulty in their movements and they often go into the mud of the seabed beneath the currents. Fishermen need therefore to know when the

current velocity is slow and when it is high so that they would know when to gather a shoal of fish for themselves. Changes in the velocity of currents do not last long; if at all, they may last for a day or two. When they last, occasionally, for several days, the fishermen find it difficult to gather a shoal. The availability of fish then becomes obscure, causing concern for their livelihood.

There are of course alternatives and the fishermen know about them. For instance, when the currents with high velocities occur, their foray into the sea in the early mornings is often futile. But as the sun heats the water and the water gets relatively hot, the fishes that went to the mud of the seabed come out to get their feed around 11 am to 12 noon. The fishermen may now hope to have moderate catches.

The fishermen have their traditional classification of the currents on the basis of their velocities. The term they use, for high velocity of the currents, is *poruppu*, and that for medium velocity is *etuppu*. Likewise, low velocity is termed *noippu* or *tarikka*. These terms are rather strange for the non-fishing locals or inlanders. In fact, the fishermen of the eastcoast have a whole lot of words that are part of their daily vocabulary.

There are several macro and micro environmental factors, which influence fishing. While velocity and direction are just two of them, there are others like the movement of moon and the change of season. The fishermen always study the characteristics of the current, its velocity, its direction and the potentiality of the fishing resources given the status of the moon and the season. Only when these factors are favourable, and they confirm with one another, they embark on a fishing trip by hopping on their catamarans with their paraphernalia.

During the Tamil month of *Aadi* (July-August), there is a west wind blowing at a very great velocity which makes the return journey from the sea for the fishermen very hard. Crew of the catamarans have often to paddle a long way to reach the shore when the wind happens to be blowing. This *mela kathu*, wind from the west, is sometimes referred to as the *pallik kathu*, which is literally 'the wind of the Vanniyar'. This is an attribution of the unfavourable wind to the dominant agricultural community.

Techniques in use

During summer, in the months of March to September (*Maasi to Purataasi*), fisher people are involved in the favourite game of creating a 'shadow structure' in their fishing grounds known locally as *kambi*. In creating the *kambi*, the fishermen cut fresh coconut fronds and split each frond into two halves and each half into two two halves. A strong rope of 32-36 *pavams* is taken to construct the *kambi*. At one end, two sand bags for weight are tied, while on the other end a buoy (*boyaa*) is tied. Between the sand bags and the buoy, 80 to 100 pieces of split coconut fronds are tied. This entire structure is a unit, known as the *kambi*. Technically, however, only 5 to 6 units make up a composite structure termed as *kambi*.

The fishermen set out on an auspicious day to the sea, with the *kambis* on their catamarans, towards their fishing ground. Once there, they are set up between 10-11 *pavams* and 13-14 *pavams*, with each of them at 0.25 to 0.5 km from each other. The interval between them would depend on the nature of the surface beneath the water. If it is flat, then the interval between them is 0.50 km but if it is sloping then the interval is 0.25 km. There is often a correlation between the catch and the distribution of the *kambi* stretching over the fishing ground. In the distribution of the *kambi* units, the factors such as the migration of the fish schools, nature of the currents, wind direction and the temperature of the water are also considered, as they relate to the quantum of catch possible. The function of the *kambi* is well understood: that it is placed to attract fish to the cool, shadowy areas created by the split coconut fronds tied to the *kambi* units. Each unit functions as a tree, providing shadow and coolness to the schools of fish that come to them to stay for a while.

As the life of each unit is not more than 40-50 days, the fishermen begin their fishing in the region of the *kambi*, taking advantage of the schools of fish resting in the shadows and coolness of the *kambi*. This technique of fishing is done for a period of 3 to 4 months and this is especially a good supply of fish. Of course, the fishermen replace the *kambis* at regular intervals so that they could get good catches until the start of the northeast monsoon. This fishing also goes by another name: *seppattu* fishing, which means resourceful fishing ground. The cost of six units of *kambi* could be as much as Rupees 900 approximately and hence fish catches have to be good to meet the cost of *seppattu* fishing as well as fetch profits for the fishermen engaged in such fishing. Each fishing household has its own spots where they spread out the *kambi* units and the limits of the *seppattu* fishing are identified by the landmarks on the shore.

There are other methods of fishing, catamaran fishermen adopt for different seasons. Big net or shore seine (*periya valai*) fishing and flying fish (*kola* fish and *kolamaram*) fishing are the two other methods commonly adopted by the fisher folk along the east coast. Statistics indicate that the least successful *seppattu* fishing may yield catches worth only Rs. 200, while the most successful may lead to Rs. 8,000 worth of fish. The success depends on the schools of fish that congregate around the *kambis*. There is yet another technique of fishing known as the *nedil* (long), which is often referred to as *longliner* fishing. It is an adaptive mechanism for fishing in the rocky zones. It is used also in nearshore and offshore fishing. Catamarans are used in these areas. The longliner ranges from 8 m to 40 m, and the longest of the longliners have more than 1,000 hooks. Whereas the nearshore fishing uses longliners with small number of hooks, offshore longliners have several hundreds of hooks. The larger the number of the hooks, the greater is the amount of catch. The longliners are used as an intermediate adoption for lean periods of fishing. Flying fish fishing is the most challenging and highly risky. It is ventured at deep sea and is done usually at 40 *pavams*.

Coastal / Marine ecosystem management and TEK

The fishermen's cognition and knowledge encompass direction, occupation, wind, current, locations of fish shoals and various other aspects vital to their living and survival.

Their cognition in regard to their physical and sea environments has a great range, including the knowledge of coastal landscapes, topography of the sea, wind direction, nature of currents, sequence of tide and ebb, fishing grounds, fish movements, fishing seasons and fishing methods, and techniques of fishing. Young children of the villages learn the existing knowledge and empirically pursue it, as an indispensable part of their growing up and socio-cultural life. They learn early on.

The fishermen study each and every aspect of sea before they embark on a fishing expedition. Before actually launching their catamarans (raft), they study the nature of the waves reaching the shore. In normal times, they expect mostly two types of waves, namely, *karaipadi* (shore wave) and *melapadi* (farthest wave). *Padi* of the two terms is literally a **step**, for the people consider waves as steps. When *karaipadi* and *melapadi* are seen in their full height, there is indeed a waveless space between them, known locally as *nattuthampu*, meaning a shallow middle space. During the rough sea, or in the cyclonic season, additional waves will be seen between the *karaipadi* and *melapadi*. These waves form a sequence of forceful waves, lashing the shore. The force and height of these waves are very high during the severe, rough season. This does not allow the fishermen to enter into the sea, for it is difficult to push the catamaran across the powerful waves. The fishermen have intricate knowledge about the waves that the greater the number of powerful *padis*, the higher is the risk at sea. Rarely fishermen go fishing during such periods, but courageous young men defy the nature and go fishing to show their courage and, sometimes, even use it as a show off. The cyclonic season (October-December) seriously affects their lives, causing almost no earnings for several days and weeks.

On the other hand, the season of *Thai-Pankuni* (January-March) is characterised by a flat sea with utmost calmness known as the *vayal* state. There will be no *karaipadi* and *melapadi* nor the additional waves that appear during the rough seasons. There is also an utmost clarity of the sea, which in local language termed as the *thelivu*. It is during the period of calmness that the *vayal* state occurs and it is during this period *thelivu* comes into effect as well. Despite the calmness and ease of fishing, this season is not always a profitable season. As waters are clear, the fishes are able to detect the presence of nets cast by the fishermen. However, it is also easy to track the movements of the fishes. Only smaller fishes, known as *nethili*, can be caught during this season and the fishermen use a traditional net known as the *periya valai* (the big net, shore seine). A shore seine operation calls for the use of a craft known as *patavu* (musula boat). Catamarans cannot be used in this type of fishing.

The fisher folk's knowledge also includes the knowledge of on-shore areas, during the non-vayal days, especially during the winds from the north (*vada katthu*). The beach / shore landscape undergoes drastic changes when the north winds lash the shore, lastingly, for several days. The surface becomes undulated, with raised surfaces (*mottu nilam*) interspersed with deep surfaces (*aripallam*, literally eroded deep surfaces). During these winds, the sea along the shore runs as a 'canal' (*voika*), posing several problems for fishermen. Canal is not safe for novice fishermen and escape to safety is difficult for those who are caught in the whirls of it. Only expert fishermen do fishing during these days, and catamaran is used mostly

as the craft for the rough seas. During the *voika* season, the fishermen take enormous care for the life and safety of the fellow fishermen and also the villages. *Mottu nilam* and *aripallam* are clearly seen during the low tides than high tides. Also, canal is at its most visible during the low tide as well. The canal's functional characteristic remains the same even during the high tide.

The Coromandel coastline is broken at several places by the rivers and their distributaries, draining into the Bay of Bengal. Where the rivers and distributaries enter into the sea, the surfaces are raised wide at the shore and gradually lowered as they stretch into the sea. This landscape feature is termed as *mona*. This is often right across the path of the fishing craft, following the shore. The fishermen of the Coromandel coast consider the *mona* region as a region of caution, for when sailing near the *mona*, the *mona* will ditch the craft and damage it. Hence, the fishermen divert their craft towards sea while nearing the *mona*. Catamaran users also take care of their craft while around the region. *Mona* is not good for safe launching and landing. The fishermen who go for fishing during the nights are also aware of the dangers of the region and they in fact have intimate knowledge of the region between the north of Chennai and the south of Cuddalore. A knowledge of the distribution of *mona* along the coast is essential for the fishermen, without which they will be in great danger, especially during night fishing.

Catamaran users have their own fishing grounds, which usually extend upto 20-25 *pavams* (fathoms). It is only for *kola* fishing that the catamaran fishermen go further afield. Except for certain fishing activities, the fishermen of each village confine their activities to the boundaries of the adjacent villages. They do not stray into others' territories, lest conflicts emerge from such straying. Within their traditional fishing area, therefore, the fishermen have a wide range of knowledge, especially of the morphology of the seabed.

The Coromandel region has several outgrowths of coral reefs, huge stones, rocks, hills and the like. The fishermen identify individual outgrowth as *karuppu* (literally, black) and only contiguous stretches of rocks as *parai* (literally, rock). Identifying the two is not an easy task, especially when they are on the seabed and under water. But the fishermen identified them over several generations, and now their locations are common knowledge. They were identified usually when their nets and fishing hooks got caught by the *karuppus*. They had to dive into the waters and release the nets or hooks. Some of the divers had confirmed the nature of the rocks underneath the surface of the water as being *karuppu* or *parai*. Divers had seen large size colour fishes at the *karuppu* sites. They had also seen rare fishes among the *karuppu* or *parai* sites. When fish movements in the open sea become rare or small, during certain seasons, the fishermen go for fishing in the *karuppu* sites. Bharathi (1999: 30) has documented these sites along the Veerapattinam sea of Pondicherry region. Twenty-seven of them are named and their occurrence at various depths are indicated.

The fishermen also have intimate knowledge of the currents that occur in the sea where they fish. Fish movements, they know, are also associated with certain types of waters

and currents. The fishermen on the east coast have identified eight types of currents and their direction.

Given a location on the sea, facing north, the fishermen name the currents to their right as the *oyini* and the currents to their left as the *memara*. The current that comes from the east is called *ner oyini*, from the northeast is *vata oyini*, and the southeast is *soni oyini*. The current that comes from direct west is *ner memara*, from the northwest is *vanni memara* and from the southwest is *soni memara*. The current that comes from the north and in front of you is termed *vanni vellam* and from the south and right behind you is termed *soni vellam*. It appears that the fishermen of long time ago had been very careful and named the currents with an order that is easily discernible.

Catamaran fishermen come across any one of the currents in their fishing territories, which usually runs between 4 and 25 *pavams*. Unusually, however, two or more currents may flow simultaneously in their territories. Such an event is termed *irukku vellam*, a situation when the current on the surface may flow from one direction while the one underneath in the opposite. It is even possible that while there is a middle current in one direction, there could be surface and bottom currents flowing from two other directions. *Irukka vellam* is not an ideal situation for fishing. There are different other names for currents that flow between the surf and the shore (*katachcha*). Any current flowing beyond the surf region is termed as the *vellam* (literally, current). *Vanni katachcha* stands for the current of the north wind, while the *soni katachcha* stands for the current of the south wind. Each of these is considered to last six months, the former between August and January (*Avani to Thai*) and the latter between February to July (*Masi to Avani*). The dichotomous categorisation of things that relate to sea and sea phenomena accommodates some micro level exceptions as well.

The aspect of *katachcha* has significance for the fishermen's knowledge about the marine ecosystems rather than to their economic pursuits. This has nothing to do with the fishing process, for it is confined between the surf and the shore and is therefore not seen in the territories where catamaran fishermen fish. It does affect the catamarans' exit and entry into the fishing process because the craft has to cross the *katachcha* on the way out and on the way in. The fishermen have a classification of eight currents that it is corollary to have eight winds (*katthu*). *Ner konta katthu* (from the east), *vata konta katthu* (from the northeast), and *kachchan konta katthu* (from the southeast) are the winds on the right of you when you stand facing north on your catamaran. Likewise, *ner kota katthu* (from the west), *kunnu vata katthu* (from the northwest), and *kachchan kota katthu* (from the southwest) are the winds from your left. *Vata katthu* is that which blows from the north in front of you and *kachchan katthu* blows from the south, behind you. These winds are prevalent in different seasons and they are taken advantage of to go fishing and to reach ashore. There are difficulties that the winds place before the fishermen and therefore they have devised means of overcoming their impacts and take advantage of their presence in their profession.

According to the traditions, the seawaters are not the same in all seasons. The native typology is based on colour, odour, clarity and fish availability. The fish shoals move about in

accordance with the availability of their feeding resources. The waters are therefore divided into different categories based on the criteria above. For the fisher folk, the type of fish available in each type of water is also different. The period July-August (*Aadi* of the Tamil months) is known for abundant catch. This month shares the north and the south winds. It is common knowledge that during this period, shoals of fish move from the deep sea to the on-shore region. The availability of a variety of fishes in the sea waters is attributed to the occurrence of *vandakarap thanni*, a kind of chill water. It is comparatively chill, morbid and unclear and contains algae, muddle and residues of the seabed. This gives the water a kind of odour, which is akin to the odour comes out of a mixed variety of animal flesh. In the conception of the fisher folk of the east coast, the *vandakarap thanni* originates in the deep sea and is drawn to the on-shore by the *soni vanni* currents. This water has a potential to yield good catch of fishes.

A brownish, on-shore water seen in the monsoon is referred to as the *kalavattu thanni*, which is apparently the rain water that enters the sea from the river mouths. The rivers that drain into the sea here are not perennial and as such they carry waters only during the monsoon. As the brownish waters of the rivers fall into the sea, the waters of the sea also turn brownish. The *kalavattu thanni* remains on-shore for 7 to 15 days, even after the rivers stop draining monsoon waters. Fishermen feel happy to see the *kalavattu thanni* as it enriches the fish resources in the sea. As the monsoon rainwaters are gathered at different points and carried downstream, they carry *vandal* (silt), *alukku* (trash, garbage and dirt), *saani* (cow dung), minerals, leaves and even small fishes. All these enrich the food resources of the sea, which directly influences the fish resources. When the monsoon is heavy in one season, the fish resources are high in the subsequent.

Modern versus Traditional

A wide range of innovations have occurred in marine fishing, especially in mechanical technology, of which preference for mechanised vessels and trawlers with finer varieties of synthetic gears and other equipments of various kinds have been on the increase in the last two decades. It was in the 1950s that the mechanised crafts were introduced along the east coast. There was an initial hesitation but then the innovation caught on. However, this has in recent years snowballed into a conflict between those poor fishermen using traditional crafts and those using mechanised crafts. Clashes and conflicts are numerous and on the increase all the time, resulting in sporadic but mindless violence. Inboard Motor (IBM) boat and Fibreglass Reinforced Plastic (FRP) boat are the most popular of the mechanised boats in fishing along the east coast, especially in the Pondicherry-Karaikal region. There are also catamarans, which now sport motors fixed on to them, in large number.

The IBM, also known as the Stern Trawler Boats (STB) are deep sea vessels, which can go deep into the sea and fish continuously for several days or weeks without reaching the shore. These require high capital investment that the fishing communities along the east coast are rarely able to invest such money. Corporate fishing companies have therefore field day with such crafts and sweep all the fish the traditional crafts could gather. This has therefore

ushered in a conflict of certain nature that the poor fishermen find themselves no equals to the Corporate bodies. The FRP boats are used as long liners. With the arrival of the mechanised boats, there have also been a number of other innovations, especially in gears and nets.

Issues and Initiatives

There are several issues that concern us here in regard to the fishermen of the Indian coasts in general and the east coast in particular. One of the main issues is that of the inter-village conflicts, which always arise among the fishing villages, primarily due to long enmities, boundary trespassing, and community conflicts. The disputes have often led to violent incidents such as bomb throwing, stabbing (Valliyur incident, on May 1, 2002 reported in Daily Thanthi, a regional newspaper), and even cold-blooded murders (clashes between Uvari and Manapadu fishermen on April 25, 2002). What is worse, the clashes and bombing occur in the mid sea, making it impossible for other people to intervene. Although the fishing communities realise that the only solution for such conflicts and disputes is through negotiation or sitting across the table and discussing disputes calmly, there is no initiative from any of the two sides involved. It is because the clashes, once begun, turn out to be either communal / religious or political. It is in the interest of the political bigwigs of the region to keep the dispute alive so that they may reap benefits from such conflicts. More often than not, there is a tendency on the part of the political parties to keep their 'vote banks' intact and to do so it helps them to keep the conflict never ending so that the fishing communities become dependent on the politicians. Whether they know or not, they most certainly play into the hands of the politicians and they do not know how to extricate themselves from the situation. It is not an exaggeration to say that many fishing communities had been in conflict for several generations (Murugan, 2002).

By ignoring the skills and potentialities of the large number of traditional fisher people, the government promoted Western technologies like bottom trawling and purse seining for the large scale harvesting of fish. Trawling, for instance, destroys seabed habitats, and the trawl owners often take only the valuable fish, throwing the rest back into the sea as dead 'by-catch'. These new mechanised boats often operate close to the shore, in competition with the traditional fisher folk for both space and resources. In many parts of India this has now led to a drastic fall in catches for the traditional fishermen and in some parts even to depletion of certain fish resources. The plight of fishing communities as a result of four decades of development is probably worse now than it was ever before.

The threats to their very livelihood has forced the fisher people to forge new linkages and organise themselves to face the threats. The growth of the Tamil Nadu Fishworkers Union, for example, is the result of such trends. Through a long chain of hunger strikes, sit-in rallies, picketing National Highways, railway lines, airports, government offices, blocking harbours, the fisher people were able to obtain marine fishing regulations in most of the coastal states in India—although not without personal cost. For example, in 1985 the fisher people were picketing the railway line at Kadakavoor, in support of the fast that was taking place in front of the government secretariat to demand a trawl ban during the monsoon

season. Instead of arresting the protestors, the police lathi (long Indian riot batons) charged and removed them by force, beating them up and then putting them into jail—and there have been many instances like this. However, through these ongoing struggles, the fisher people have forced the government to bring about zonal regulations for the mechanised boats, a night trawling ban, and a purse seine ban, but these are not strictly implemented so the struggle continues.

Women have played an important role in all the fish worker struggles. In addition to marching shoulder to shoulder with our men on the issues of trawling, fish depletion, and displacement from local markets, they have also conducted a number of separate struggles to safeguard their own livelihood. The struggles of the fisher women in Kanyakumari against their displacement from net-making as a result of imported Japanese net-making machines deserves special mention.

Coastal ecosystems represent an extremely valuable resource and yet one that is increasingly threatened by human interests. Destruction of marine and land habitats (mangroves, for example) is most serious in coastal zones. Little do we realise that salt marshes, estuaries, mangroves and coral reefs and all areas of great beauty and vital to our welfare are especially vulnerable to human disruption and degradation. Coastal cities such as Chennai often dump their rubbish, from industrial refuse to household garbage, into nearby wetlands. Estuaries are 'crossroads' between land ocean ecosystems and hence locations of much human activity. They are productive in terms of fish life. Many of these prime habitats are destroyed at a rate that often eliminates entire communities of fish. Another prime cause of habitat loss lies with eutrophication brought on by sewage sludge and fertiliser run-off. Pressures such as these - especially using up of oxygen by sewage and algae decay - are destroying both mangroves and coral reefs in the Coromandel coastal zone. Pressure on arable land has led to clearance of mangroves for agricultural land. Impoundment of mangroves for aquaculture is a more traditional activity. The natural and traditional values of mangroves are seldom respected and taken into account before converting these coastal ecosystems into agricultural lands or aquacultural ponds.

Deforestation due to industrialisation and other encroachments, the construction of huge dams (like Mettur, Periyar, Sardar Sarover and so on), pollution of water, siltation and land reclamation, all these have drastically reduced fish availability and harmed the livelihood of inland fisher people. Some recent trends in the fisheries development of the country include the great push being given to aquaculture and deep sea fishing through joint ventures with foreign companies.

The fishing communities are generally very poor, with low social status and very little political clout. They did have greater importance in ancient times, but they were slowly relegated to the status of lower castes during the medieval period. Still, the community always enjoyed a certain autonomy and dignity. Fisher people, though highly skilled in their profession, had no access to formal education and they hardly entered into other areas of

social life, until very recently. The education of fisher people and the consequent job-seeking is only a recent occurrence.

Finally, globalisation / liberalisation has opened up the seas to the factory fishing ships under the guise of Joint Venture and Lease. In this scheme, a foreign company has a 49 per cent share and an Indian company a 51 per cent share. The foreign company then brings huge factory fishing ships and 99.99 per cent of the investment. Thus, while in theory it is a joint venture, in practice it is a foreign venture. As many as 25,000 massive vessels world-wide have depleted all the oceans except the Indian Ocean. Already operating in the Indian waters are about 35,000 small mechanised boats and about 200,000 artisanal (traditional, non mechanised) crafts with a wide range of diversified gears suited to the tropical waters, catching varied species in small quantities. The annual Maximum Sustainable Yield is about 3.7 million tonnes of fish, 2.7 million tonnes of which is already caught. So the planners say that there is still 1.0 million tonnes to be caught. Hence, the new fishing policy of 1991. Unfortunately the government has forgotten the fact that the catch per vessel has gone down in all sectors, even before 1991, as a result of existing over-capacity, destructive gears and pollution. Further, the study of M. Gudicelli, the UN Food and Agriculture Organisation consultant, categorically said that there was only 164,000 tonnes of fish available in the deep sea that is commercially available, and this can be caught by the existing fleets if they are diversified.

The new policy allowed foreign fishing vessels into Indian waters beyond 12 nautical miles (18 km) of the coast. Apart from allowing the duty-free import of vessels, the government also decided to permit the sale of diesel at international prices, meaning that the joint ventures are actually paying much less for fuel than the ordinary Indian fisher people. Also the vessels are permitted to transfer the catch on the high seas, thereby avoiding the legal requirement to report their catch at the harbour, leaving the door wide open to over fishing and violation of zonal regulations.

The planners failed to take into account the traditional skills of the fisher people when they introduced mechanisation in fisheries. They wanted short-term gains rather than sustained growth. The planners followed a kind of development which has been export oriented, which led to the development of a few at the expense of the majority and a lack of fish for the internal market. Since the sea is a common property, it became anybody's property. The people with the sole motive of profit invested capital and used destructive and over-fishing gears. Production went up along with the increase of production costs. The sea became a place of bitter competition between the powerful on the one side, and the people who are fishing for their livelihood on the other.

The problems of fisher people all over the world are similar. The United Nations Food and Agricultural Organisation's reports of 1995 and 1996 have found unequivocally that the fisheries of the world are undergoing the most serious crisis ever recorded. At least seventy-five percent are in, or verging on, a state of collapse due to the ravages of over-fishing, destructive fishing gears, most particularly the factory trawlers, and the effects of coastal

industrial aquaculture, industrial and domestic pollution, and the myriad consequences of global warming.

So the fisher peoples' organisations from 35 countries came together in New Delhi from 17-21 November 1997 and formed the World Forum of Fish-harvesters and Fishworkers (WFF). The objectives of the Forum are to protect the fish resources and the fishing communities by promoting sustainable development of fisheries through eco-friendly gears and methods, and to work for a global ban against all destructive fishing, coastal industrial aquaculture and coastal industrial pollution.

Conclusions

There is a rich tradition of marine fishing exemplified the practices of the fisher people of the east coast, which has been the focus of this chapter. The discussion in the chapter has begun with the people and communities of the Coromandel coast, highlighting their culture, traditional knowledge, the understanding and use of it in their day-to-day lives. Catamarans, the nets, the currents and the winds, and the technology of building and the techniques in fishing are all examined in the context of the traditional ecological knowledge of the people. In the end, the impact of modernisation, the issues and initiatives of the fisher folk and the strategies they have adopted at the local, regional and national context vis-à-vis globalisation and liberalisation have all been covered to show that all is not well with the fishermen of the east coast and that they are making efforts to resolve their problems even as they are pitted against the multinationals, internal corporates and the governments. There is hope that the will of the poor will succeed and the fishermen will have better opportunities for their livelihoods and sustained development in the future.

True development, progress or success story should include the following factors: It should lead to fulfilling the basic needs of the poorest, as the priority, and not the greed of the rich. The prior rights of the local (fisher) people and their natural technological knowledge should be respected and built upon. The developmental activity should involve the people who are already traditionally engaged in and are dependent upon it for their livelihood, and should help them to improve on their methods. It should be sustainable, respecting the environment and eco-balance. There should be no socio-cultural or economic invasion by outsiders.

Mobilisation of the people who are affected by the globalisation / liberalisation in various so called "development" projects, which are actually downright destruction, is the need of the hour. At the same time, we appeal to the governments for protection. There is need to keep the states under check by constant pressure so that the existing laws that recognise the rights of the poor are not tampered with; that no law or policy which gives undue advantage to the rich at the cost of the poor may be passed; and to get the governments to implement their own laws and the verdicts of the judiciary that uphold the rights of the poor and so on. There is need for the art of collaboration and confrontation with the governments, states and elected persons. All this should lead to legislation, at the national and the

international levels, which is conducive to the socio-political change that the fisher folk aim at. For example, as regards overcapacity of fishing fleets, it is no longer an issue to be proved. We need to be vigilant, rather, to see how various governments address this issue and to see that the overcapacity is not imported or exported. When fish stocks get depleted, the governments often declare a “moratorium on fishing” which punishes the small fish-harvesters, who are already victimised by the licenses given to the big fleets. This should not happen again. The smallest and the least who is fishing for his or her livelihood should never be disturbed. The top most capacity, which has created the crisis, has to give way to the lesser ones and the process should continue until the level of sustainability is reached. This is not a matter of pity for the small fish-harvesters, but it is a question of restoring the social justice which has been blatantly outraged.

Notes and References

1. Evidence of caste and/or sect organisation was available even in the *Sangam* days. There were socially marked hierarchical divisions or economically secluded subsects among the coastal people. This distinction of the Sangam period had gradually developed into the more obvious contemporary divisions among the fisher folk of the coast (Bharathi, 1999: 4).

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