

Round-up...

Stock management and regulations in Kerala

or THE SMALL FISHERMAN AGAINST THE TRAWLERS

Ever since 1976, the small-scale fishworkers of Tamil Nadu (South East India) have staged spontaneous and violent demonstrations against the 32-foot trawlers which have, with impunity, been destroying coastal resources. Since that time, Southern India has witnessed a series of uprisings in its coastal regions. The Government has responded by setting up various committees to look into the problem—to no avail. In 1978, following the formation of the National Fishermen's Forum, the demand was made for Marine Fishing Regulations. As a result of this the Central Government directed the State Governments to enact legislation to control marine fishing.

In 1981, Kerala State enacted its "Marine Fishing Act", under which the state is authorized to conserve fish resources, protect the interests of fisherfolk and direct fishing initiatives. The Act imposes a ban on purse-seiners fishing within 22 kilometres of the coast and on trawlers and mechanized boats within 10 kilometres, and prohibits operations between sunset to sunrise. Violations are punishable by fines of up to 50,000 rupees and subsequent violations by the impounding of boats. To help enforce the Act, the police have been given three speed boats.

The enactment of the law can be seen as a direct result of the sustained action taken over a number of years by small-scale fishworkers. In Cochin, for example—a major fishing port where all the purse-seiners and some 500 trawlers operate—small-scale fishworkers adopted outboard engines in 1986, enabling them to put up a stronger fight which culminated in a blockade of the entire harbour on September 11, 1987.

This action was not pursued universally by the small-scale fishworkers: over the period 1978 to 1986, some fishworkers actually supported the purse-seiners as they derived some benefit from them. But collective action finally resulted in the Act being passed and a meeting being called by the District Collector to which all parties concerned—the owners of the purse-seiners and trawlers, the police and the small-scale fishworkers were invited to work out a way of implementing it.

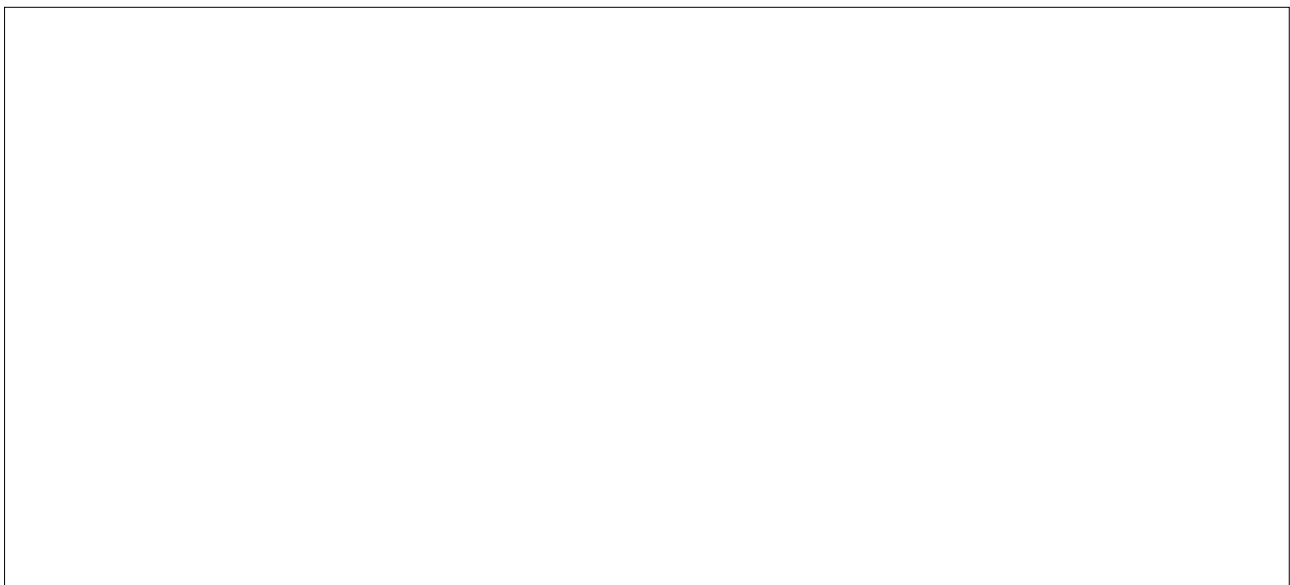
The District Collector decided that the three speed boats which had been allocated should monitor any possible violation of the law, and another—stationed at the mouth of the harbour—should monitor infringements of the Act relating to night-fishing (mechanized boats are not permitted to leave the harbour before 4am and must return by 9pm).

The entire process was not an easy one: many complaints were lodged by the mechanized boats against the small fishworkers, which were acted upon by the police; but at the same time, the police and fishery officials were obliged to enforce the law by catching vessels violating its regulations.

CONCLUSION

The lesson to be learned from this example is that unless the small-scale fishworkers put up a sustained fight, no law will be enacted or implemented.

Thomas Kocherry
President
National Fishermen Forum
Cochin - INDIA



WOMEN'S RIGHTS AND FISHERIES DEVELOPMENT

Nalini Nayak

Preparations go on all around the globe for the long awaited Earth Summit. Knowing that official positions may not strike any creative dimensions, the NGOs have done their best to lobby and influence policy makers. Some of these efforts are sure to pay dividends, but we from India, and I am sure, many other Asians, are more sceptical than ever. Our country, like many others, is now undergoing a process of radical structural adjustment to comply with demands of the International Monetary Fund in order to receive loans to service debts. It strikes me that this is not only a massive sell-out of our country but a sure choice against the millions in favour of a new privileged rich.

Gone are the dreams of independent India—"Swaraj" as Mahatma Gandhi called it. While people everywhere crave for independence and autonomy, here are we in India willing to surrender all under the garb of growing Hindutva⁽¹⁾. These processes may be difficult to understand for those who do not know much of Indian history, but these new trends are bound to take their toll on the development of fisheries too.

Thinking about women's rights and fisheries development in this context becomes all the more difficult. First of all fisheries development has for the most part paid no heed to the people whose livelihood depends on the fish resource. Even the data on fisheries relate more to the economics of production rather than to the socioeconomic conditions of the fisherfolk. Nevertheless, there are anthropological studies that document the way of life and the struggles of these communities which highlight the survival strategies these people have worked out for themselves against all odds. While this has been the case globally, in Asia and the third world at large, the situation of these communities is far more in jeopardy presently.

As it stands today, the development in technology and the demand for fish have led to the depletion of the fish resource. At the marketing level, further organizing of the market system is the only way to get a better price to the producer; therefore, many organizational and government efforts plan to develop an infrastructure for the same. Little do they realize that in the small sector it is the women who have been predominant; in this

domain; they are redundant only when there are larger bulk landings and when purchase is more on a cash than on a credit basis. So, organized marketing is one more way in which women get marginalized.

The other side of the coin is to see how the people within the sector themselves respond to the changing situation. Most of the reactions within the sector, be they in relation to organization of work, adoption of tools of production, mobilization, etc., have been survival strategies and it is logically so. Unlike in the organized sector, where the capitalist organizes production for greater profit, in this sector there is not much of the cake left to struggle for. Of course, in the long run, the struggle for a greater part of the profit even in the organized sector becomes a fallacy because of the limits to growth, depletion of raw materials, etc. Finance capital begins to play a greater role among the factors of production, leaving labour on the defensive. But, in the unorganized sector, where the dependence is directly on the natural resource for a livelihood, the demand on the State is for greater protectionism. This demand has to be accompanied by an attitude of conservation as well. This, in its very essence, demands a reorganization of society and a rethinking of social values.

The struggle for survival itself heralds the call for the limits to growth. Development in this sector does not mean having more, producing more, etc. but controlling the pollution of the waters, maintenance of ecological balance, respect for the rejuvenation of stocks and re-establishing communitarian controls. These may sound romantic measures even to progressive thinkers today. No question is actually raised about the kinds of technology used and the processes of production itself.

The rate and pace at which technology develops today is also a factor of concern. In fishing, we speak about over-efficient technologies like trawling and purse-seining - nets which have the capacity to take all that comes in their reach without being selective. Or machines that produce nets so fast that people do not have the time to test them out before they flood the market and cause disaster in the fishery. The pace at

(1) A movement, now also political, to establish Hindu nationalism.

which change takes place, therefore, is faster than the change in life processes itself, and before people have even learnt to master one innovation, they are flooded with others. This disregard for time, or the race against time, also throws out of gear the processes of maturing -both physical and psychological. So, while new technological innovations disrupt all natural processes, with their speed, they also create numerous imbalances and contradictions between traditional and modern systems of knowledge which in their turn destabilize people and lead to insecurity. The culture that new technology imposes on people is often only superimposed on old knowledge systems that are resilient and slow to evolve. Consciousness processes in people evolve on a very different concept of time and all change has to take this into consideration. On the other hand, despite the fact that survival strategies today have forced fishermen to adopt the technologies that are over-efficient and destructive, there may be a possibility to help them question this in their own favour.

The new ecological consciousness that I speak about, and which relates to production of life-time and not technological time, will find more fertile soil in aspects of traditional consciousness. To the extent that mobilization processes are geared to people's control over resources and sustained development alternatives, then such consciousness processes are crucial in determining the ethical frame of reference and value base for new forms of organization. While I do not advocate a turning back of the clock of history, I am categorically stating that the pace of development should and has to be determined by the broad mass of people and not technology, taking into account the natural life cycles as against 'mastering' nature. While planning will certainly play an important role in determining priority sectors and allocation of resources, active participation of local people's organizations will have to determine production strategies. In fact, this is what people's movements are demanding today. They have reached a level of maturity, being able to determine how development in their sectors should take place. The State will have to find a new role of coordination to facilitate mutuality and transference of surplus. It is certainly not an easy task, but gone are the days when the State can hope to meet either the employment or basic needs of the growing population with its centralized thrust.

It is necessary here to indicate areas in which a conceptual rethinking will have to take place if the process of transformation has to integrate an alternative development process. The crux of the matter will be the stress on the need-based rather than the want-based economy, meeting the subsistence needs of the people. This is not a romantic proposition of going back to the past because producing for need is indeed a challenge to modern science. It is a challenge to the knowledge system of modern western science as also to technology. An acceptance of a new conceptual understanding also raises many ethical questions which cannot

be ignored. They cannot be divorced from the ongoing social processes. Only genuinely participatory processes will be able to answer these ethical questions which cannot be ignored. They cannot be divorced from the ongoing social processes. Only genuinely participatory processes will be able to answer these ethical questions in the right manner. In fact, if we go back to fisheries themselves, the very concept of production is a question. If fishing is an act of capture, then this is not production but hunting. If culture fishery as envisioned today is capital intensive and leads to greater privatization, then alienation from need is a natural consequence. This kind of production will not be an alternative. These conceptualizations of production keep women totally out of it. All their unpaid household labour is relegated to the realm of reproduction and if ever they can be, 'gainfully' employed then they are the labour banks that can easily be exploited.

The re-conceptualization of production, therefore, has to incorporate the element of nurture, which has at its focus the sustenance of life, rather than profit. If we look at production from this point of view, where nurture and sustenance of life are the prime objectives, then one also sees why and how the whole patriarchal domination in society has to be upturned. In fact, it is no make-belief that 'mal-development, as explained by Vandana Siva and other feminists, has been a result also of gender discrimination and male appropriation of the rightful role of women and subsistence in society. The task of nurturing the human being and meeting the subsistence of the family has been thrust on women for no rewards. Patriarchy has been the domination of nature, and therefore life, as the acme of its development, but this is' what the growing numbers of the dispossessed, which include women, and therefore more than half of humankind, begin to question today.

Only by looking at fisheries development in the above context does speaking of women's rights makes sense. In fact fisheries development may be salvaged only if women's rights are taken seriously. When I speak here of women's rights I mean:

- a nurture approach to fisheries at large
- women's participation in the decision making process in the realm of primary production and in the development of the sector
- production of life and for life get basic priority and find first place in the hierarchy of values.

While this may be the large framework in which we speak about women's rights in the development of fisheries, there is no single charter of demands that is going to make achieving this possible. It will have to be a multi-pronged approach.

Firstly, the need for a wide consciousness within the fishworker movement itself. All fishermen's unions and associations should begin to have their women as members even if they are not engaged directly in fishing or post-harvest activities. This is where the division in so called "primary production" is perpetuated. Only if women and all the demands of the household become the concern of the unions, would production begin to be looked at differently. This would eventually encourage the nurture aspects of life too.

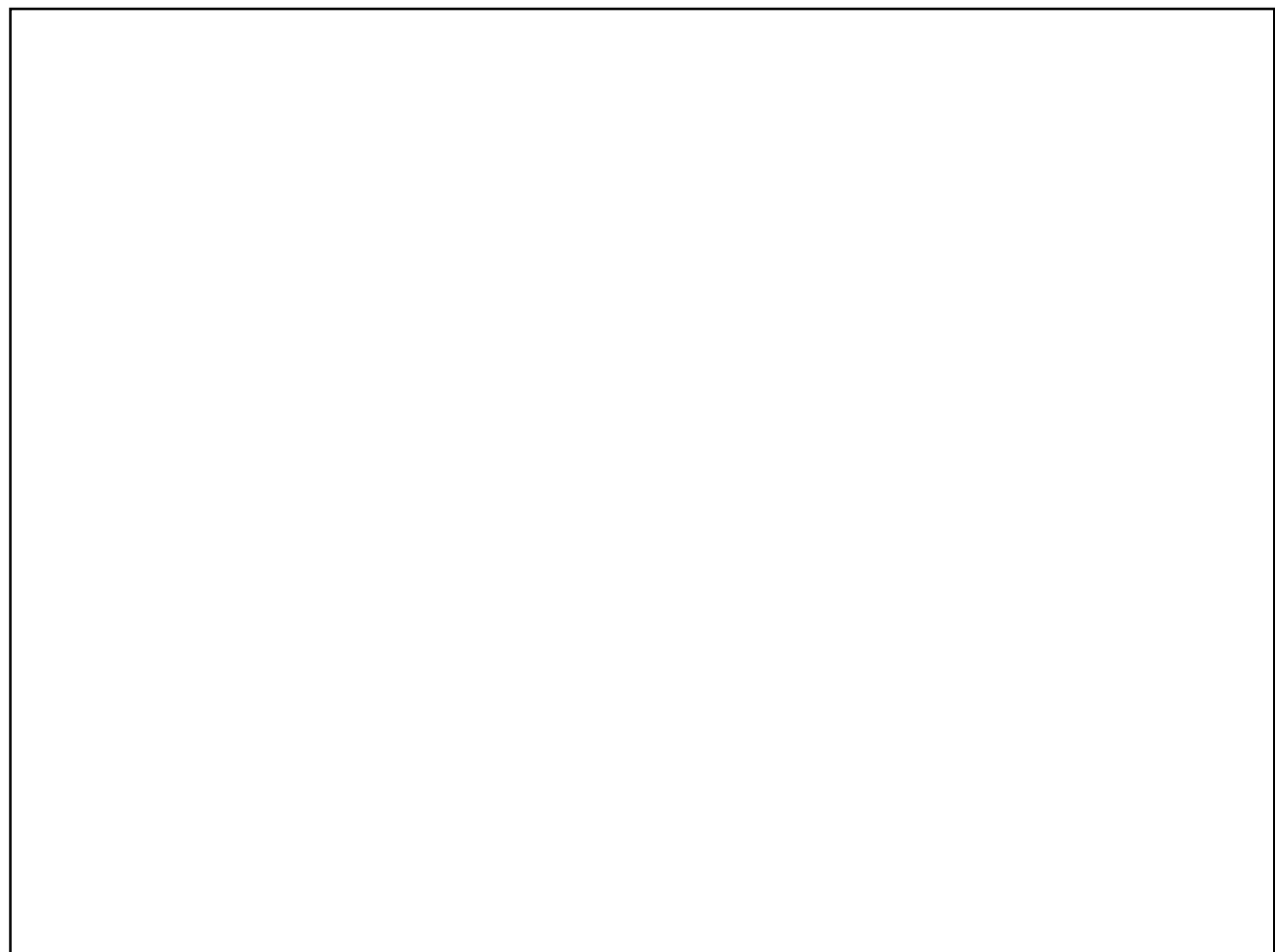
Secondly, those spaces which have all along been occupied by women in the production process should continue to be retained for them. These spaces vary from country to country—in some areas they are involved in capture but in most areas in post-harvest work. With the coming of modernisation they tend to be dislodged, and once ousted they will not be able to enter again. The planners have also to keep this in mind.

Thirdly, in areas where women have already become wage workers, their rights as workers have to be secured. Because of poor and desperate conditions women are used as contract labour and badly exploited. Efforts must be made to see that they are covered by

the Contract Labour Act and their life and work protected. They need legal protection.

Fourthly, there are all the problems of the women whose husbands work on the distant water fleets. These women are left alone to care for the family for long periods of time, not knowing where their husbands are and with no assurance of any remittances. The male workers themselves are badly exploited in this sector and while they have to be legally protected, other community efforts have to be organized to support the women who are left behind.

Returning to our point of departure, the tone of pessimism lies in the fact that the restructuring and globalization of our economy under pressure of international financial institutions will render all people's participatory processes and survival struggles futile. If the Earth Summit intends in some measure to set a new track record, then there may still be meaningful to speak of women's rights and fisheries development. The Women's Action Agenda 21, which was framed at the World Women's Congress for a healthy Planet in November 1991, includes many of these areas and should therefore receive support worldwide. □



Serious conflicts arose in Namibia over the presence of Spanish trolling fleets taking herring. That new country expelled those fleets from its jurisdictional waters, while a new treaty with the CEE has not yet been signed, given that Namibia is seeking to impose severe restrictions.

Europeans claim to be aware of those difficulties and, for that reason, have created so-called "second generation treaties", such as that signed with Argentina at the end of 1992.

The main points of that treaty should be considered by fishworkers throughout the world because it may affect them eventually:

- The treaty will be in effect for 5 years and grants Community access to new fishing opportunities, of great commercial value, and will reduce the idle capacity of the European fleet considerably.
- It allows for catches of up to 250 tons annually of species which are very valuable commercially (including 120 thousand tons of hubbsi herring), conger and other resources.
- Access is given to foreign ships, many of which will fly the flags of member countries, while others will operate in temporary associations, through which they will have access to a third of the total catch quotas for the species mentioned in the treaty.

INDIA: SIFFS ship yards

In India, a group of ship building workshops associated with the South Indian Federation of Fishworker Societies (SIFFS) has generated an interesting experience. That federation operates in the states of Kerala and Tamil Nadu, with 1070 Kms. of coastline, on which live around 100 thousand fishworkers. Of those, 6,500 are members of SIFFS, in 3 districts, 2 of which are in Kerala (Quilon, Trivandrum), while the other, Kanya Kumari, is in Tamil Nadu. 99% of the fishworkers are Christian, with the remaining 1%, Muslim, which implies great cultural homogeneity, specially in Kerala. The State-organized cooperatives are for owners only and do not function adequately. SIFFS grass-roots communities are registered as 'Village development societies', providing commercialization, savings and credit facilities.

Fish commercialization is carried out through auctions in each grass-roots community of between approximately 50 - 60 persons. One employee holds the auction, under the supervision of a committee. Fishworkers receive an advance on the sale and a receipt. During the day, they go to the office to receive the balance.

- The treaty allows for the permanent transfer of a significant number of Community ships through the creation of joint companies, in which Europeans may hold up to 100% of the capital. That part of the fleet, under the Argentinean flag, will have access to two thirds of total catch quotas.
- In exchange, the European Community will offer commercial concessions in favour of sales in the European market, by way of tariff reductions for fish product imports from Argentina.
- During the five year term of the treaty, the European Community will invest 162.5 million ECUs, European Monetary Units, of which 95.4 million will subsidize the joint ventures, 39.1 will be investments in those companies, and 28 million will go to a scientific programme and specific measures.
- The parties will seek to establish scientific and technological cooperation projects in order to promote the conservation and rational exploitation of resources and balanced development of the industry. Port facilities will be improved and professional and technical formation in the fishing sector will be promoted.

Only the future will demonstrate the impact of these treaties on the fishing economies of countries both in Asia and in Latin America. ■

To generate savings, between 5% and 10% of each member's daily catch is retained in a savings pass book. The money belongs to the fishworkers but is deposited in a bank and does not earn interest. Fishworkers may obtain loans. In each community, there is a 3% commission, a 2% compulsory savings rate and a 10% loan 'repayment rate.

They may apply for loans when fish are scarce, as occurs between January and April. Social security is limited, given that there is no illness insurance and pensions are paid by the Government. In case of accidents at sea, the Government pays 10,000 Rupees.

Each community pays interest to the district federation. SIFFS does not receive donations and is financed by boat construction activities and sales of motors. The SIFFS Boat Research and Production Center has undertaken research into new kinds of vessels constructed of marine plywood, protected by resin applications and fiber glass. 1,500 boats have been built since 1982. Some private concerns have copied the SIFFS model but have not been able to compete with



SIFFS prices. The communities have received the support of Intermediate Technology, of Oxford, Great Britain, under the direct supervision of Brian Riordan. One of the pioneers in applied research has been the Belgian engineer, Pierre Gillet. The original technology of the catamaran, built of coconut tree trunks has been studied and significant progress has been made toward the development of appropriate technology for sailing, with greater security, mobility and fishing capacity. The models produced are:

QUILON: 26 foot water line and Price: 31,800 Rupees.

ANJENGO: 26 foot water line beam. Price: 33,500 Rupees. 5 foot beam and 67 inch

POZHIYOOR: 28 foot water line and 71 inch beam.

All these boats have a tare weight between 500 and 600 Kilos. Fishworkers obtain bank loans to finance boat purchases.

This experience should be communicated to other fishworkers organizations throughout the world, in order to learn mechanisms for economic and productive association, based on internal savings and the appropriation of technologies according to their needs, possibilities and traditions. ■

CHILE: XIII CONAPACH Congress

Chilean fishworkers have made progress toward the consolidation of their organization and maturity in their growth strategies. The XIII National Congress, held in Costa Azul, Fifth Region (Chile), in November, 1992, was characterized by autonomy in the decisions taken and by the active participation of the representatives of each Commission.

Fishworker representatives now participate in the Fishing Councils and the Fund for the Development of Artisan Fishing, following close elections, in which short-lived "ad hoc" organizations made an appearance.

CONAPACH participates in an extensive network of national and international contacts, within which the

Fishing craft

Appropriate technology power

Intermediate technology has helped the South Indian Federation of Fishermen Societies build new types of craft for artisanal fishermen

If you were to visit the beaches along the southern districts of Quilon, Trivandrum or Kanyakumari in south India, you are almost certain to see fishermen on plywood boats landing their catches. More likely than not, you would have seen a 'stitch-and-glue' plywood boat built by one of the boatyards under the network of the South Indian Federation of Fishermen Societies (SIFFS).

SIFFS has four boat building centres at Muttom, Anjengo, Quilon and Veil. Together they account for over half of the plywood crafts ever built in this region. SIFFS with considerable assistance from the Intermediate Technology Development Group, UK has been involved with boat building for the last ten years. In fact, the first craft built by the Muttom yard in 1982 is still in operation.

Most of the fishermen who today use plywood boats were using the dugout or plank built canoes or the traditional 4-log *kattumarams*. (A *kattumaram* or catamaran is made up of logs of lightweight wood lashed together with rope. The most commonly used species of timber in south India is *Albizia falcataria*).

Plywood boats in this region are mainly of two types the decked boats and the canoes or open *vallams*. The decked boats are unsinkable crafts. They are generally preferred by the erstwhile *kattumaram* fishermen for their hook-and-line operations. The open *vallams*, on the other hand, are used by the fishermen who earlier used the dugouts or the plank-built canoes to fish with gill nets or drift nets.

In the 1980s, motorisation and an increasing difficulty in obtaining logs of the right size and quality to manufacture

new dugouts forced the fishermen to look for alternatives. They then took to plywood crafts in a big way. The fishermen found that these were safer, faster, sturdier, easier to beach, had a greater carrying capacity and were more suitable for fishing in deeper waters than their traditional crafts.

The needs of the fishermen have been constantly changing. SIFFS has consequently been modifying the plywood boats or making new models depending on the demands from the fishermen. Not all modifications or new models have been successful.

Some of the fishermen in the backwaters of Quilon wanted a substitute for their traditional plank-built crafts. For them SIFFS built the *thoni*.

The barrier of cost

While fishermen in general agreed that the *thoni* was a good craft, no one actually placed an order for the craft. This was because the *thoni* is a more expensive craft than the one they are currently using.

The increased investment in a *thoni* would not translate itself into increased returns because they would still be working in the same fishery.

When the fishermen of Pozhiyoor wanted a bigger craft that would enable them to carry large quantities of drift nets comfortably, SIFFS responded with the 28-foot long Pozhiyoor model. This has been a big success with the fishermen of this area and since now gets a large number of orders for this model.

Concerned with the increasing signs of overfishing in the inshore waters, SIFFS attempted to promote fishing in deeper waters by building 'offshore crafts' and

the 'PV series' of *ply-vallams*. These have not yet become popular with fishermen.

SIFFS is now promoting the use of ice boxes and awnings these can double as sails and a few fishermen are currently using them for motor sailing and indigenously built diesel engines. These, SIFFS hopes, will eventually lead the fishermen to 'stay fishing', where they fish for a longer duration and do not return the same day.

Changes in design have also been made depending on the availability of suitable raw materials for boat building. The plywood boats themselves were a response to the shortage of large logs of timber for building dugouts.

Today, good quality marine plywood has become scarce in India and is increasingly difficult to procure. A large quantity of marine-grade plywood is manufactured in India using timber imported from Africa and Southeast Asia.

The result is that the prices of plywood have increased by about 20 per cent in the last one year alone.

Last year, the Muttom boatyard (the largest under the SIFFS network) had to close down production of plywood boats for about three months, due to non-availability of marine-grade plywood.

SIFFS is currently experimenting with a different technique of boat building called 'strip plank construction'. This uses cheap, locally available timber which is cut into thin strips of 40mm x 10mm and tooled so that they have a concave and a convex surface along either edge.

These strips will then easily fit into one another and can be glued and nailed together. Strips of smaller width of, say, 20 mm, can be used while building around curves.

A sheathing of fibre glass is then given to the craft to protect the timber from marine borers and deterioration from prolonged direct contact with sea water. This is especially necessary when the crafts are not beached daily but are left anchored in harbours until the next trip.

Strip plank construction results in crafts that are quite strong. Moreover, the building method is itself easy to learn. ■

This article is written by Philip Cherian, Programme Executive of the South Indian Federation of Fishermen Societies, Trivandrum

Bad custodian of the sea

The rush by the government of India to grant licences for joint ventures to fish in the country's deep seas is laden with danger

As strikes go, this one was particularly memorable. On 23 and 24 November 1994, the marine fishing industry of India, spread across nine maritime states and covering a coastline of over 7,500 km. came to a virtual standstill.

During these two days, nearly one million persons struck work. They stayed away from their work at sea, in processing plants and markets. This was a symbolic act of protest against government policies permitting joint ventures almost free access to the fish in the Indian Exclusive Economic Zone (EEZ).

In India, this is an industry dominated largely by motivations of livelihood and subsistence. What happened on these two days, therefore, was no mean achievement. Importantly, a great many fish consumers—estimated at nearly 300 million—also consciously chose a fish-free diet on those days.

The credit for the success of the strike goes to the National Fisheries Action Committee Against Joint Ventures (NFACAJV), spearheaded by the National Fishworkers' Forum (NFF), which is the federation of small-scale, artisanal fishworkers' unions of the various maritime states in India.

Ironically enough, the NFACAJV was actually a consortium of strange bedfellows—traditional enemies, so to speak. Owners of the small mechanized trawlers, along with operators of export processing facilities, joined the artisanal fishermen in this protest.

The first two groups have traditionally been at loggerheads with the artisanal fishermen, especially during the monsoon months, over the question of regulating

the operations of shrimp trawlers. All along the coastline, their clashes have led to grave law-and-order problems.

But, on this occasion, they drowned their differences and stood side by side to confront a bigger, common foe—the newly arriving, larger fishing vessels from foreign waters, who have been given a 'blank cheque' to the fishery resources of India.

As part of the post-1992 liberal economic policies of the government of India, monitored by the IMF-World Bank, the country's EEZ has been opened up to joint ventures between foreign and Indian companies. The economic rationale is that since these ventures are 100 per cent export-oriented, they will augment the foreign exchange earnings on the current account.

To date, about 170 licences, involving around 800 vessels, are said to have been issued. It is not known how many have actually begun operations. After the strike call by the NFACAJV, the authorities became very tight-lipped on this matter. However, considering that the move to allow such joint ventures was taken at the country's highest political decision-making level, there seems to be little chance of an easy reversal of commitments.

However, in such a hostile environment, a few of the foreign enterprises who have received licences may fight shy of actual investments on joint ventures.

Political compulsions

At the political level, joint ventures are made out to be a *fait accompli*. But, given the state of the resources in the waters of India and its brief history of deep-sea fishing using large fishing vessels, it is

worth pondering over the impact of these new joint ventures on the country's fish economy. Estimating the living marine wealth of the country has not been a major preoccupation of its fishery scientists.

The estimates being officially quoted with biblical authority today are based on an article by three scientists, which appeared in 1977 in a nonprofessional publication. According to this, the maximum sustainable yield (MSY) of the 2.02 million sq. km. Indian EEZ was placed at 4.47 million tonnes.

Of this, 2.26 million tonnes (50 per cent) was located in the inshore zone, between the coast and the 50 m. isobath.

New estimates of 1988, however, placed the MSY at only 3.921 million tonnes but indicate the potential in the inshore zone to be 2.28 million tonnes (58 per cent) and in the offshore zone (50 to over 500 in.) at 1.641 million tonnes.

Such estimates of relative abundance are, however, no substitute for knowledge about their spatial and seasonal concentrations. On the whole, the resources have a rather low density. This makes them mostly unsuited to large-scale commercial exploitation. Considering the area of these zones and their MSYs, the density of the fishery

resource per sq. km. is about 70 per cent higher in the inshore zone (11 tonnes) than the offshore (6.5 tonnes). Based on these official resource estimates and informed industry sources, the market value of the unexploited resources in the offshore zone—theoretically, the realm of operations of joint ventures—were also recently calculated.

As much as 48 per cent of the resource (0.54 million tonnes) is valued as 'low' (i.e. between US \$500-1000 per tonne) and 38 per cent (0.43 million tonnes) as 'very low' (i.e. below US \$500 per tonne). The real commercial resources—those assessed at over US \$1,000 per tonne—account for 0.164 million tonnes. Of this, 60 per cent are on the west coast.

Big business' involvement in Indian fishing is not really new. There was a phase when the Indian subsidiaries of well-known multinational corporations like Unilever and Union Carbide made forays into the sea. This phase did not last very long.

Too many regulations

One reason was the labyrinth of regulations in the country's erstwhile industrial licensing policies. The other was the organized opposition to 'big, bad, MNC' capital by 'small, nationalist' capital. This played an important role in curbing and finally phasing out the involvement of big business in Indian fishing.

Having achieved this, ventures by national capital, encouraged by the liberalization of the early 1980s, and with the backing of specialized credit agencies, began to dominate the scene. Post-1985, there was a rush into 'deep-sea fishing', with chartered vessels and newly purchased boats. The number of deep-sea fishing vessels in India rose from 68 in 1984 to 180 in 1991, taking the accumulated horsepower rating up from 28,700 HP to 81,200 HP.

All efforts were concentrated in the Bay of Bengal to harvest shrimp. In five years, most of the 180 vessels were toting up heavy losses. The credit institutions found themselves saddled with large white elephants at sea.

An FAO study for the Association of Indian Fishery Industries and the government of India examined what was needed to salvage and rehabilitate the fishery, and redeploy and upgrade the fleet. This study extensively analyzed the resources from biological and economic perspectives. It also comprehensively reviewed the history and problems faced by the existing deep-sea fishing fleet.

The study asserted that the critical situation did "not reside in the technologies applied, which are appropriate, nor in the shrimp market, which is still strong", but rather on six other reasons:

- competition from small-scale mechanized fishing boats
- over-capacity of the deep-sea fleet in the main shrimp fishery
- lack of attractive markets for the by-catch
- absence of commercially valuable alternative fish resources (other than shrimp)
- dearth of professional managers for the fleet
- poor stamina of the sea-going and shore personnel

What was needed, the report concluded, was to redeploy the existing fleet by

diversifying its activities and equipping it with better on-board technologies like winches, hydraulic long-line drums, etc. For this, managers, skippers and crew should be trained and motivated. The study foresaw some problems in adopting this approach, particularly "recent policies of the development of industrial fisheries in India, which rely excessively on foreign input and interference".

Given this status of offshore fishery resources and the history of deep-sea fishing in India after 1985, why should new foreign investors and their Indian counterparts vie for joint venture licences? Part of the answer lies in the present situation in global fisheries.

Global marine fish catch has stagnated around 85 million tonnes since 1989. According to FAO statistics, between 1970 and 1990, in nine of the areas for monitoring global marine catch, there has been a visible downward trend.

FAO estimates that the annual operating costs of the entire global fishing fleet in 1989 came to US \$22 billion—greater than total revenue, with no account being taken of capital costs.

Distant-water fishing vessels the world over are in particularly bad shape. Their capacities were built up with massive state subsidies which promoted easy entry. Unfortunately, once built, a fishing vessel has a fairly long economic life but precious little other use, except as scrap metal. For the owners, therefore, redeployment to other less exploited fishing areas is the only solution to remain in business.

Russian vessels

Moreover, much of the large distant-water fleet of the erstwhile Soviet Union is up for sale for a song. These vessels are, on average, very large. Many of them were basically constructed for the total onboard processing of any living sea resource. Consequently, second-hand vessels for new joint ventures—which is what the foreign partner brings in as contribution—are available much cheaper than ever before.

These vessels are ecologically inappropriate for multi-species tropical

waters. Further, more often than not, they are far beyond the required specifications. These issues, however, do not bother the investor.

Given that the Indian Ocean is one of the least exploited oceans (though the least productive too), there is a general movement towards this region by distant-water fishing vessels in search of a fresh lease of life.

Thus, the liberal Indian offer seems to have come at the right time. All the tabs have been taken out of earlier norms for joint ventures.

The state has made the Indian EEZ one huge 'open-access regime' and the resource is up for grabs. In such a regime, there are no 'property rights'—it is 'possession' that is proof of property.

Hence, the scramble to get in quickly before too many join the fray. The rush is really not for any particular variety of commercially valuable fish.

It is for any fish resource which can be harvested quickly in order to grab a profit on the investment made in the joint ventures. The Indian government, on its part, has dangled every bait to attract foreign investment:

- subsidized fuel (cheaper than what the traditional fisherman

pays for his kerosene to run his outboard motor)

- 100 per cent export, with permission to trans-ship at sea, ensuring no check on the nature or quantum of the resource taken or the level of discards
- no compulsions to dock in an Indian port during operations (no forward linkages into the economy)
- permission to use any foreign port as base of operation for fishing in Indian EEZ (encouragement to involve in activities other than fishing, which may jeopardize national security)

Implications

What is likely to happen if those who have been awarded licences actually come to fish? The majority of these have been given for operations along the west coast of India. In quality and value terms, the potential resources in the offshore (beyond 50 m. isobath) of this region are the greatest in the Indian EEZ. Over 75 per cent of the resources considered commercially valuable and over half the resources regarded as 'low' and 'very low' are found here. The inshore sea of the west coast, particularly off the states of Goa, Karnataka and Kerala, are the most productive in the Indian EEZ.

However, this is also the region with the highest density of fishermen. They are also among the most skilled, fishing in small-scale vessels in waters far beyond the 50 m. isobath. Today, these fishermen are also the most militant and well-organized. They have provided the NFACAJV the main impetus to oppose the joint ventures. Thus, we have here the right recipe for bitter conflict.

A day before the national fish strike, the government proudly announced that the conflict potential would be reduced by a 'corridor' at sea, to be enforced by the coast guard. This plan only further reveals the total lack of understanding of policy-makers of socio-economic and ecological realities.

The compulsion for quick profits, along with the unchangeable nature of the resource distribution at sea, will combine to ruin the fishery resource. In a tropical sea ecosystem, the species interactions are highly complex and little studied. Even if the joint-venture vessels fish in the real 'deep sea', their impact on the rest of the ecosystem and the resource is bound to be damaging.

Many of the species are 'straddling stocks', which move in and out of the inshore, offshore and the deep sea at different points in their life-cycle. Consequently, just because resources are harvested in the offshore waters there is no guarantee that the valuable resource base in the inshore zone will be safe. Scientific knowledge and understanding of this subject is still limited. This lacuna warrants a more precautionary approach to the management of the fishery. Adding more investment into these waters—and indiscriminately at that—is far from desirable.

During the week of the strike, one joint-venture vessel (originally from the erstwhile USSR) called at the port of Cochin in Kerala. Its catch was composed 2,000 tonnes of large perches and snappers—the mainstay of the hook-and-line fishermen in the southern parts of Kerala and among the most relished varieties in local markets.

If joint ventures take hold, the prospects of less fish for local consumption are a

foregone conclusion. But urban consumers need not be dismayed. An advertisement appearing in a national newspaper at about the same time as the strike assures urban Indian fish eaters, who buy their fish from cold storages, that "Norwegian fish will be flying into India", as though to compensate for the loss of domestic perches to the joint ventures!

This honour of being able to eat Norwegian fish is also the flip side of the new liberalization policy which permits easy imports into India. The ruin of resources and the exploitation of workers on board the fishing vessels go hand in hand, particularly if the enterprise's aim is to get away with quick profits.

The majority of the crew and the deck hands on these new joint ventures are not likely to be Indian fishworkers. They will most likely be composed of the 'traditional' crew of such deep-sea vessels—Filipinos, Thais, Taiwanese, Mauritians and a few Indians.

Evidence suggests that the recruitment practices, employment terms and working conditions of these workers leave much to be desired. The implementation of relevant ILO conventions pertaining to fishermen is often flouted by asserting that the type of fishing vessels used takes them out of the purview of these conventions.

Redeployment

Such an open-door policy for joint ventures has globally proven to benefit only a handful of financiers and merchants. It promotes global redeployment at the cost of national redeployment. It thus fails to create independent and genuine national fisheries enterprises. Available evidence points to the fact that very few of the Indian counterparts in the newly licensed joint ventures have any demonstrated history of involvement in the fishing industry. Very few of them reportedly even belong to the Association of Indian Fishery Industries.

India is a country with a rich maritime fishing tradition. It has a highly skilled and enterprising fishing community along the whole coastline and a demonstrated national technological

capacity to make its own hardware for every sector of the fishing industry.

Allowing joint ventures free play is the surest way of sounding the death-knell of the national industry. A careful and selective choice of joint-venture collaborations, where the nature of investment made is based on national priorities and needs, by investors with a good track record, is what is needed. To achieve this, there should be an 'umbrella' body which represents the interests of all the stakeholders in the fishery, including the consumers. Such a body must guide and monitor joint-venture operations towards the larger social good, without depriving the genuine investors adequate and sustainable returns.

In a natural resource, when no explicit property right is defined within a country's territory, we regard the state to be its 'custodian', on behalf of present and future generations. In the context of the living resources of the Indian EEZ, at stake is more than just the 'benefit' of earning foreign exchange or the 'cost' of ruin of the resource. Today, in India, we are confronted with a situation where the artisanal fishworkers, the small mechanized boat operators and a section of the deep-sea fishing operators with some past involvement in fishing, are all up in arms against the present joint-venture policy of the government.

It is, therefore, reasonable to conclude that this new policy is led and fuelled by motivations and considerations obviously designed to favour a few but wrapped in the packaging of liberalization and free-market ideology, today being touted as the only path left to solve our problems.

Inter-generational heritage

To permit this new policy on joint ventures in fisheries to proceed is tantamount to allowing a handful of bureaucrats and politicians to usurp the custodianship role of the state and trade this inter-generational heritage of our marine resources to parties who are openly interested only in short-run profits. This is an affront on civil society at large. It must be opposed. ❧

A slightly different version of this article by John Kurien, a social scientist and Associate Fellow at the Centre for Development Studies, Trivandrum, appeared earlier in the Economic and Political Weekly, Bombay

Displaced fishermen

A damn fine effort

A unique bottom-up attempt to rehabilitate reservoir fishermen of the Burgi dam area in India promises to succeed in the face of problems

Close to Jabalpur in the central Indian state of Madhya Pradesh is the Burgi Dam, the first dam to come up in the massive—and, by now, internationally known—Narmada project which envisages the construction of 30 dams or so. The Burgi Dam is very large, about 5km. long, with a massive reservoir stretching to around 75 km. and cutting through three districts of the state.

As one of the early dams, it pre-dates the movement against the Narmada project led by the Narmada Bachao Andolan (NBA), which first took roots in the western part of the state. The Burgi Dam thus came up without much fanfare or protest.

The construction work on the dam began in 1974. By 1986, 40 per cent capacity was achieved and by around 1990, the dam was completed. According to a survey done then, 162 villages would be submerged by the waters of the reservoir.

The people to be affected—in the early 1980s the population around the reservoir area was basically tribal—were given some cash compensation by the government. This was assessed at very low rates of around Es 300 to 500 per acre since, at that time there was hardly a market for land, which could, therefore, be bought dirt cheap.

As a result, many of the Gond tribals of the area who owned large tracts of land and were living comfortably as peasants and farmers, were suddenly deprived of their land. They could no longer do any agriculture.

The little money they got as compensation was quickly spent and these displaced people—approximately 100,000, mostly from the backward

castes—continued to stay nearby, as the dam had not yet come up. Many had migrated to the city to live in slums, doing menial jobs like pulling rickshaws. Most of those who remained lived on the fringes of the reservoir—technically, illegal occupation of forest land.

When the dam did finally come up and submerged all the 162 villages in the area, these people were suddenly left high and dry. They had no one to help them. Only around 1992 did the NBA become really active and organize those ousted and take up the initiative to seek genuine rehabilitation, as opposed to earlier half-hearted and misplaced government efforts. Large groups of people were mobilized to fight for rehabilitation through direct action like rallies and pickets.

All the money officially spent until then on rehabilitation had only gone into infrastructure which the people never asked for, like a school building in an area where nobody lives. There are even buildings set up in the name of rehabilitation which are now under the dam. With the 'Save Narmada' campaign gaining prominence, the government was totally exposed on the question of rehabilitation, having done virtually nothing.

Genuine interest

At that time, the state of Madhya Pradesh was ruled by the Bharatiya Janata Party. In 1994, when the Congress (I) party came back to power, the new chief minister, Digvijay Singh, seemed to be more open on these issues and genuinely interested in solving problems, even though his proclamations appeared a bit too populist. He actually spent a day in the affected area, listening to the grievances of the distressed people. He now seems willing

to go out of the way to ensure some kind of rehabilitation measure. Therefore, on paper, at least, the government of Madhya Pradesh appears really committed to these displaced people.

The challenge now is to get the various government departments involved to come together and coordinate their activities towards this end. Though there are not many traditional fishermen in the area, some fishing was being done in the river before the reservoir came up. Once it was built, the rights to fish in the reservoir were auctioned off annually to contractors, as in many other Indian states.

These contractors procure the fish—mainly *rohu*, *catla* and *mrigal*, the three principal Indian carps—from whoever fishes in the reservoir and market them mainly in the fresh-water fish market of Howrah in Calcutta.

A few years back, the NBA organized around 54 co-operatives of tribal fishermen who have been fishing for the last two to three years in the Burgi Dam reservoir and selling their catch to the contractors. These contractors also provided some inputs, the price for which would be deducted from the value of the catch of the fishermen.

When the new government took over in Madhya Pradesh, it announced that if a

federation for all the co-operatives was formed, it would give the entire reservoir on lease to the federation for fishing. This was the first concrete rehabilitation measure. In that sense, it was a great success for the NBA.

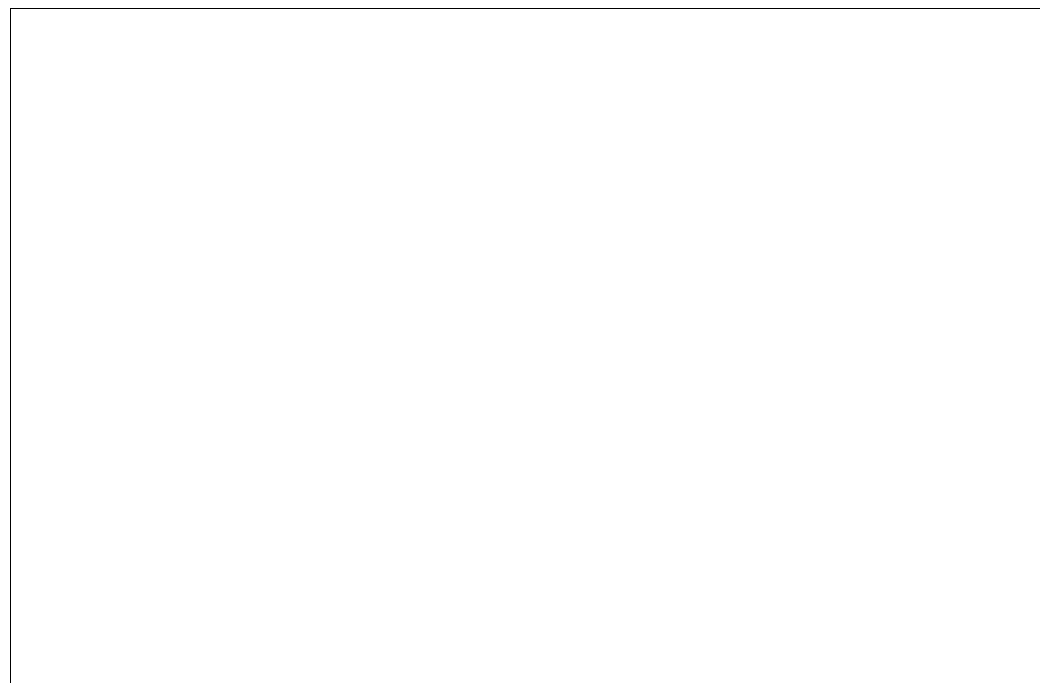
The NBA was given the mandate to form the federation. Called the Burgi Dam Oustees' Fisheries Co-operative Federation, it was registered under the Co-operative Act last year, with its office at Jabalpur. It actually commenced operation in October 1994.

As a venture by a co-operative organization of reservoir fishermen marketing their catch in a distant market, the effort of the Burgi Dam federation may be a first and unique exercise.

Great challenge

Nonetheless, the NBA faces a huge challenge because now it has to take over the entire organization of production and marketing. The members of the co-operatives of the federation are those oustees who were fishing in the reservoir.

Though carps are the main species caught, one group of fishermen of the area used to catch much smaller quantities of another traditional species not stocked. (The reservoir is stocked by the Madhya Pradesh Fisheries Corporation, which gets a royalty from the contractors for each kilogramme of fish caught). When the



federation was formed, the status of this group was unclear at first. But the federation has since incorporated them.

The 54 co-operatives now have around 600 boats—each capable of taking two persons for fishing—and also another 200 dugouts. Today, around 2,000 families of the area are in fishing. This represents not more than 20 per cent of the total population needing rehabilitation.

If more equipment and inputs are provided, a larger section could be rehabilitated.

There seems to be adequate fish resources in the reservoir and, if stocking is done well, the reservoir can support more fishermen.

On the question of rehabilitating the remaining population, the government appointed a committee and put it in the charge of a key person involved in the struggle of those ousted from their land by the Narmada project. The government's thinking appears to be to force the NBA activists to come up with solutions by throwing the issues back at them and handing over the responsibility to them.

Yet the government does not see it fit to provide adequate administrative back-up.

Despite being initially unclear about the marketing aspects of this new venture and burdened by a host of limitations, the people who organized the Burgi Dam federation have done a remarkable job.

They have taken over the system earlier run by the contractors, retaining the same landing centres and labour (for loading, unloading and cutting fish).

Further, they have set up a small central depot near Jabalpur, which receives the

vehicles hired to procure fish. They purchase large quantities of ice daily and then dispatch the catch to the Howrah market in three insulated vehicles, hired from Andhra Pradesh at a monthly rate of Rs 30,000. Each vehicle makes about four trips to Howrah each month.

The organizers faced several problems, as they had to formulate the entire logistics from scratch. Ice plants, for instance, would demand higher prices, refusing to supply at the rates given to the contractors.

The merchants who lost the contract to market the fish from the reservoir were keen that the federation should not succeed. They hoped that whatever trouble they could initially create would ensure the collapse of the federation.

But clearly, they had not bargained for the federation members' fortitude and perseverance. This ultimately whittled down the organized opposition from the merchants. At present, only a certain amount of illegal sale of fish seems to be taking place.

Small local market

There is a small local market—around 15 to 20 per cent of the total catch from the reservoir—for which most of the fish probably comes illegally from the members of the federation themselves.

The total catch reported by the federation for the six-month period from October 1994 to March 1995 was 405 tonnes. The peak season seems to be from October to January, with *rohu* being the most productive species.

The main problem that remains for these co-operatives is a lack of infrastructure. They now depend entirely on hired vehicles and ice supplies from outside sources.

During the lean season, for instance, the quantities of fish caught were so low that it was not economical to retain all the

The government's thinking appears to be to force the NBA activists to come up with solutions by throwing the issues back at them and handing over the responsibility to them. Yet the government does not see it fit to provide adequate administrative back-up.

hired vehicles. So the insulated vans were sent back and the federation hoped to survive by supplying only the local market.

However, they had not really developed a marketing system. Though they were able to offer a lower price of Rs 26 per kg., as against Rs 40 prevailing in the local market, the offtake was limited. To overcome the demand problem, the federation is now thinking of venturing to nearby markets like Nagpur.

Had it owned the vehicles, the situation would have been different. The federation now plans to build its own infrastructure on commercial terms as it now feels confident of raising and repaying loans.

Apart from the lack of infrastructure, there are organizational difficulties in managing the substantial workforce. In handling the fish, for example, around 100 persons work directly from nine landing centres in the only nine villages accessible by rudimentary roads (many of the other villages can be reached only by boat).

The federation is also hamstrung by the absence of professional management. It now depends on the committed cadre of the NBA to run the system.

But business decisions, as well as key organizational decisions, are taken by

Jayant Varma, a journalist, the editor of a local paper, who took leave from his job to organize the people on behalf of the NBA. He works closely with the board of elected representatives of the federation.

The entire system also revolves around a couple of competent retired officials from the government co-operative and fisheries departments. They look after some of the routine aspects of administration. Further, there are fishermen leaders among these oustees who take care of the procurement activities.

In fact, the president of the federation, Rajesh Tiwari, camps in Howrah to ensure that the entire catch is sold and the price reported is actually recovered. All these key persons work in an honorary capacity.

No political interference

Although there is currently no interference from political parties—especially since the government at the highest level has handed over the rehabilitation work to the NBA local bodies like the corporation are lukewarm about the efforts of the federation. Fortunately, they do not interfere blatantly or create outright trouble.

Technically, since the federation—received working capital loans and subsidies from the government, the state can, if it really wants to, impose its own management on the federation via

the co-operative department. It can thus take over the whole system at any time and kill the initiative of the NBA.

Faced with such a possibility, one wonders how the NBA and the persons involved will manage to strengthen the organization, bring in professional managers and still retain its autonomy, now that it is actually working, geared up, and has already posted profits of about Rs 60 million in the last six months.

Another problem is likely to crop up soon. From next year onwards, the federation, not the government fisheries corporation, is supposed to do the stocking of fish in the reservoir. In that case, the question of payment of royalty will have to be reviewed.

The members of the federation have yet to apply their minds to these issues, busy as they are in running the difficult marketing operations.

At present, they are, in a way, trapped in the system. The government has thrown them a challenge and so, success is now also a matter of prestige.

It would also be worthwhile to get a development NGO involved to pay for the services of a professional who could be seconded to the federation to streamline systems and implement projects. That would make the federation reasonably viable in the long term. ❧

This report is by V. Vivekanandan, Chief Executive of the South Indian Fishermen Federation (SIFFS), Trivandrum, who recently visited the Burgi Dam area

Shrimp culture

Up in arms

**The women of the Indian state of Andhra Pradesh
decide to oppose the newfound craze for shrimp culture**

Reports are mixed on the prospects for shrimp culture in India. On the one hand, government agencies describe in glorious terms the lucrative earnings from shrimp culture. On the other, there are reports by concerned environmentalists and village folk on the detrimental effects of the recently introduced shrimp culture in the southern Indian states of Andhra Pradesh and Tamil Nadu.

In September 1994, a few Gandhians and many village folk in Thanjavur district were arrested in the quiet of the night, because the small farmers were on the warpath, resisting the conversion of rich paddy lands into prawn farms. They were protesting because prawn culture would lead to the salination of food lands, fresh water would be overused and eventually contaminated, and because prawn culture would not result in any food or work for agricultural labourers.

Protests have been numerous in Andhra Pradesh. According to a newspaper report, over 5,000 acres of *perumboku* (revenue land) have been given to big landlords for shrimp farms. In a state where the power of the landlords is still strong and where the elected representatives of the people, including government ministers, do not bat an eyelid in flouting laws, the people have been so intimidated in the past that they are often afraid to react.

Yet, in Kanapathipalam in Nagaluppalopadu Mandal in Prakasam district, where the local Member of the Legislative Assembly (MLA) is constructing a pipeline and jetty to pump seawater to the shrimp farms at a price, the local people violently opposed him and damaged the initial stonework for the project. Before the fishermen could

get the support of their new federation, the MLA had convinced the local village leaders—the *kapposto* allow him to proceed with the construction of the jetty. The MLA could also overcome the objections of the forest authorities who opposed the jetty that illegally intruded into the coastal forest.

There are several such cases where other elected representatives are in the process of not only constructing a massively expensive distillery—in a state where women have vehemently agitated against the distilling of *arrack*, the local brew—but also converting over 300 acres of low-lying land into shrimp farms.

In early October 1994, there was an outbreak of cholera in a village of Andhra Pradesh called Gundayapalam. This arose from the water in the wells getting contaminated by excessive pumping of ground water for the shrimp farms, and also because of the indiscriminate release of polluted water from the shrimp farms into open streams.

Although some fisher people have opposed the selling of village lands to the shrimp farmers, in Rajupalam Chinnapattupalam, for instance, other fishing communities have been lured by the lucrative prices that investors are willing to pay for the land. This is backed by the fact that coastal fishermen have been facing decreasing returns from fishing due to the encroachment of trawlers.

Seed collection

With the construction of shrimp farms but no hatcheries in operation as yet, natural seed collection has become the main occupation of the fishing community, all the way from Machilipatnam to Nellore in Andhra Pradesh. Fine-mesh nets are fixed



in the sea and the collection from the net sorted out on the shore. Large quantities migrating inland in search of manual work, as they could no longer survive on only the shrimp fry are retained, the coast.

Interestingly, the price for fry also varies. It has dropped from Rs 2 to half a rupee per fry of monodon and to a tenth of a rupee for indicus fry. With the recent fall in exports due to the plague scare in India, there is no market for the fry. Fishermen and women have to just sit back and await better days, having sold their outboard motors or finding that their catches do not help them break even in their daily sustenance.

Realizing they have to take things into their own hands, large groups of women from the fishing community have recently come together to decide they will neither collect the shrimp fry nor work on the shrimp farms. At the village level, these women have organized themselves into Mahila Samajams (Women's Societies), supported by a voluntary organization called SNIRD based in Ongole. At a recent local meeting, many women leaders spoke articulately on the problems caused by the shrimp farms and their own shortsightedness in collecting fry. They said they need to protect the sea resources for their children, that it would increase their burden if their well-water got polluted and they were forced to go

farther to collect water. They mourned the fact that some coastal people are migrating inland in search of manual work, as they could no longer survive on the coast.

These women plan to take the issue up with the authorities at the district level. But, unfortunately, the officials have their hands tied. Many months have passed since the Department of Fisheries drew up an 'Environmental Bill' on a code for aquaculture. This bill is wilfully not being tabled in the state legislature because the local politicians are buying time to first establish their infrastructure to build up an open case. If and when the bill gets passed, the damage would have already been done.

No movement

Unfortunately, there is no fishworkers' movement in Andhra Pradesh. Though there are numerous NGOs working in the coastal parts of the state, in the absence of a fishworkers' movement, no real resistance can be built up. 3

This report is by Nailni Nayak
co-ordinator of the Women in
Fisheries programme of ICSF

The jury's verdict

A unique public hearing in India on women in fisheries organized by the National Fishworkers' Forum came up with a judgement. Excerpts:

We, the four members of the Jury on the Public Hearing on Women's Struggle for Survival in Fisheries organized by the National Fishworkers' Forum and the Women in Fisheries programme, have heard the testimonies of women who are working in seafood processing factories in Goa, Tamil Nadu, Bombay, Calcutta and Kerala and also read detailed reports presented by the following people/groups:

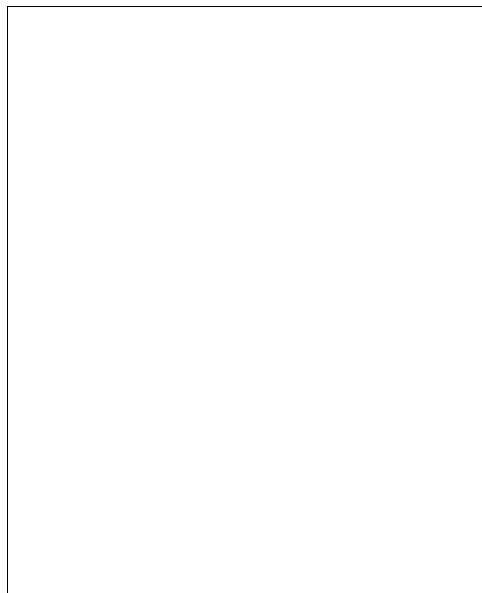
- Report entitled "The Seafood Processing Industry and the Conditions of Women Migrant Workers" by Aleyamma Vijayan of NFF/WIF, Trivandrum
- Report entitled "Girls and Women Employed in Prawn Processing" by R. V. Mathias, Executive Secretary, CBCI Commission of Labour, New Delhi
- Report on conditions of women in fisheries by Albertina Almeida of Bailancho Saad, Goa
- A study of problems and prospects of migrant women workers in seafood industries at Veraval, Junagadh, Gujarat by the Department of Social Work, Diocese of Rajkot
- Report on the condition of women in fisheries in Calcutta by Minnie Joseph, freelance journalist and school teacher and Y. De Steen Hault, St. Lawrence High School, Calcutta

We also heard the testimony of representatives of the Government of Kerala's Labour Department.

Testimony after testimony by women between the ages of 17 and 60 gave us a vivid picture of the inhuman working and living conditions of women in fisheries. It is shocking to record that as the prices of shrimps and prawns go up, the price of human life is next to nothing.

The life of these mostly young women, capable of hard work, bearing great hardships, but who can still laugh and dream, is worth but a few rupees a month. If they challenge the system, they are thrown out of their jobs, far from home, vulnerable to exploitation. We heard at least one account of how a young woman died under suspicious circumstances.

Women and girls told us how they are hired to jobs in shrimp factories by false promises by contractors, denied minimum wages, made to work for 10 to 12 hours in badly ventilated factories, inadequately protected from cold and ice, threatened by ammonia leaks, denied their rights to even drinking water and health insurance.



The living conditions of these women are shocking. These young workers live in crowded rooms, often 30 to 35 in a room, with just one or two bathrooms or toilets, and no privacy. The women are often not allowed to have even a day off or any holiday. The women suffer from numb, blistered fingers, back and leg pain, and are subjected to unhygienic conditions.

In fact, most of these women are used as forced labour and are in servitude. From the testimonies of the women and the written reports presented, we see that it is not only their young fingers that are frozen and numb but their souls are also benumbed. After hearing the testimonies of those who deposed at this public hearing, we are of the unanimous opinion that the provisions of the relevant labour laws are being totally violated. In particular, these have been totally violated:

- Contract Labour (Regulation and Abolition) Act, 1970
- Inter-state Migrant Workmen (Regulation and Employment) Act, 1979
- Bonded Labour (Abolition) Act, 1976
- Minimum Wages Act, 1948
- Factories Act

- Employee's State Insurance Act

We are satisfied that the violations of these laws have resulted in the denial of fundamental rights guaranteed in the Constitution of India, in particular:

- Article 14 (the right to equality)
- Article 19(1), Article 21 (right to life)
- Article 23 (prohibition of trafficking in labour and forced labour)
- Article 24 (prohibition of employment of children in factories) read with Article 42 (provision of just and human conditions of work)
- Article 47 (duty of the state to raise the level of nutrition and public health)

In addition to violating the Constitution of India and statutory laws, there is also a violation of international human rights and international labour standards specifically contained in the following articles of the Universal Declaration of Human Rights:

- Article 22: The right member of society security and the right of every to social to realize through national effort and international co-operation, in accordance with

the organization and resources of each state, the economic, social and cultural rights indispensable for the dignity and free development of personality

- Article 23: The right of free choice of employment and just and fair conditions of work
- Article 24: The right to leisure and holidays

The conditions of the women also violate Convention 122 of the International Labour Organization concerning employment policy of the ILO (1969) read with the Declaration on the Right to Development, 1986.

...We record that not even a single contractor has been registered in Kerala as required under the Inter-state Migrant Workmen (Regulation of Employment) Act, 1979. If labour laws were implemented, the sufferings and pain of these young women would be alleviated to a large extent. Whenever there has been pressure on factory owners by activists, governments or the local church leaders, the working and living conditions of women have improved.

...In the above-mentioned circumstances, we have the following suggestions to make:

- a. Strengthen international solidarity among workers in all countries to ensure a non-selective enforcement of labour standards and indivisibility of human rights. We note that the National Fishworkers' Forum has taken steps in that direction and ensured the presence of delegates from Senegal and Canada at this hearing.
- b. We call upon the Government of India to restructure its policies to ensure that the natural resources of the country are preserved for the people of the country and to ensure just and human-centred development based on principles of self-reliance.
- c. We call upon all State governments to ensure that labour laws are im-

plemented through the active intervention and action of the labour and law enforcement machinery.

While these recommendations can help to improve the working and living conditions of women in fisheries, the problem will not be solved...

We have to commit ourselves to a long struggle so that world production systems based on production for life, not production for profits, are evolved. We have to evolve a jurisprudence, which is based on the belief that each human being is a priceless asset.

We need to develop a resurgent jurisprudence to protect workers from exploitation so that we never have to hear such painful testimonies again. The new jurisprudence will help to convert the pain of these women to powerpower to fight this unjust system. 3

This verdict was proclaimed by Justices V.R.Krishna Iyer and Janaki Amma and advocated Indira Jaisingh and Nandita Haksar at Ernakulam, India on 23 June 1995

Artificial reefs

Re-greening the seas

Experiments in some fishing villages of south India reveal the economic, social and environmental advantages of artificial reefs

Deep down in the south of India, in the coastal State of Kerala, live about one million people who depend, either directly or indirectly, on small-scale fishing and related activities. In all, there are about 130,000 active fishermen working from the beaches of Kerala.

In recent years, the Trivandrum district of this State has seen attempts to regenerate the capacity of the seas. The work has focused mainly on three communities of about 500 fishing families and, to a lesser extent, on another eight communities.

Over the last three decades, the communities' fishing grounds have been severely depleted and the natural reefs, essential habitats for fish, destroyed. One reason for this is that in the early 1970s, with traditional distant-water fishing grounds being closed to them, the Japanese fishing industry began seeking supplies of fish and prawns. This increased demand encouraged investors in India to purchase shrimp trawlers, and develop export markets in Japan.

There are now plenty of these trawlers fishing in India's coastal waters, doing untold damage to fish stocks and the habitat, which supports them. More recently, as a result of liberalization policies, the Government of India has opened up the country's Exclusive Economic Zone to joint ventures between foreign and Indian companies.

It is said to have issued 170 licences, involving around 800 vessels, but it is not known how many have actually begun operations. While there seems little chance of an easy reversal of these decisions, no further licences are being issued, thanks to protests from the National Fishworkers' Forum (NFF).

Fishing communities in the south-west of India have witnessed this industrial revolution at first hand. The incursions of trawlers into the inshore waters have caused severe depletion of fish stocks and, more importantly for long-term sustainability, led to widespread destruction of the marine environment needed to replenish stocks through providing habitats, shelter, protection, food and breeding sites.

Local studies have shown that many natural reefs have been destroyed. Around 150 species of once common varieties, including 135 fin-fish species, are no longer caught by the artisanal fishermen, because they have been severely depleted by uncontrolled trawl fishing for highly priced prawns for export. During the 1970s, overall fish catches declined and the artisanal sectors catch fell to between 40 and 60 per cent of per-1970 levels.

Artisanal fishworkers in the region have responded to this threat in various ways, including organizing themselves into unions and campaigning for more equitable fisheries development policies, through, for example, the NFF.

Many have also adopted new technology, such as imported outboard motors (OBMs), to compete more effectively with the trawlers for both resource and space on the fishing grounds.

Modern technology

Artisanal fishworkers, however, are handicapped in areas such as access to capital, credit, technology, markets and so on. While the use of modern technology like OBMs may help increase productivity, they also incur significant costs. Often the use of such technologies cause fishermen to change from traditional, selective

techniques to more modern, industrial 'catch-all' methods.

There is also increasing competition from outside investors who see fisheries as a short-term investment opportunity, rather than as a long-term source of livelihood. Such competition can pressure traditional fishermen to adopt more intensive and less selective techniques. The challenge for small-scale and artisanal fisheries, therefore, is to become more productive, without undermining traditional nurturing management systems and depleting the resource base.

As a response to this, fishworkers from several villages in the two most south-westerly districts of India - Trivandrum in Kerala and Kanyakumari in Tamil Nadu - have been engaged in experimenting with ways of rejuvenating the seabed and providing for the *in situ* conservation of fish stocks. These experiments have their origins in the age-old practices of placing coconut fronds and rocks in near-shore waters to attract fish into areas fished by gear worked from the beach. They are also influenced by the traditional belief in the Goddess of the Ocean, who must be treated with respect to ensure she continues to bestow her favours. Local NGOs and external development agencies have been working with local fishing communities, and adding to their

traditional knowledge with concepts and knowledge borrowed from other countries.

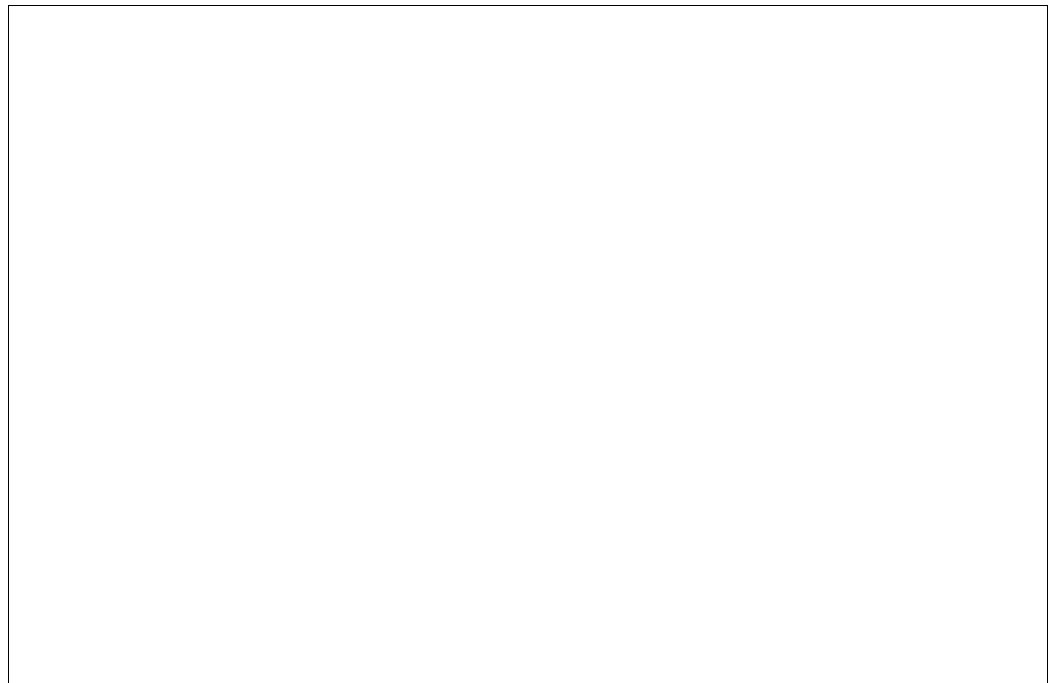
A recent experiment has been the construction of artificial fish habitats (AFHS). Such artisanal experimentation has a long history. For instance, fishermen operating shore seine nets traditionally used to dump rocks fastened with coconut fronds on the seabed to attract fish close to the shore.

More recently, fishermen using hooks-and-lines came to associate wrecks on the seabed with rich fishing. AFHS, especially Artificial Reefs (ARS), represent a "people's" technology. They form a social and technological response to a fishery crisis, and are based on the fishers' traditional knowledge and understanding of their marine environment.

Local materials

Over the 1980s, the fishermen of the area constructed 19 AFHS, using locally available materials such as concrete well rings, coconut fronds and tree stumps. The site selection and choice of materials were based on the customary and experiential knowledge of the fishworkers.

The early experiments demonstrated the vulnerability of AFHS to damage by the monsoon, and to burying in sand and silt. On the positive side, they also





demonstrated that the vegetation used in the construction decays and provides important nutrients.

In 1989, the Programme for Community Organization (PCO), a local Trivandrum-based NGO, initiated a joint project with representatives from three fishing communities, based on the lessons learned from the early experiments. While the economic costs of the earlier experiments had been nominal, levels of investment required for this joint project were substantially higher. The new experiments involved the construction of purpose-built AFH modules in bamboo and concrete, followed by their aggregation into artificial reefs. The objectives of the project were to establish three ARS around the villages of Puthiathura, Thumba and Adimalathura. The local NGO raised half the costs and fishworkers, the balance.

The ARS were established at sites selected by the fishers and lowered into position from aboard local *kattumaram* craft. Systematic studies of their effectiveness were undertaken by PCO in collaboration with the Intermediate Technology Development Group (ITDG). In each case, the reefs were found to act as fish aggregating devices, significantly enhancing catches. It was also found that there was rapid colonization of the ARS by resident fish varieties.

However, there is also a danger that when ARS are used as fishing grounds, increased pressure can be applied to already overexploited fish stocks. Indeed, for this reason, the International Centre for Living Aquatic Resources Management (ICLARM) has warned against using ARS as fishing grounds. A longer-term strategy, therefore, needs to be worked out on how ARS should be used in the future.

The studies also showed that the AFH modules were susceptible to 'gliding' in different directions as they were put in position. If ARS were to become anything more than mere aggregating devices, their concentration had to be increased. Thus a technique for lowering and accurately placing reef modules on to the seabed was devised, using a rope-and-pulley system.

In January 1995, a team of oceanographers from Southampton University visited south India at the invitation of the NGOs and the Government of Kerala. On filming and analyzing the ARS, they observed that these are stable and the modules' surfaces are well colonized by marine life, providing protection and food for reef-dwelling fish.

The variety of life forms is not as complex as that found on natural reefs, but, with time, as the surfaces of the ARS mature, a greater diversity is expected to develop.

Fishers, on seeing the video of the ARS carefully positioned on the seabed and surrounded by fish, have reinforced their impressions of the value of this technology. This experimentation will not, by itself, solve the problems of artisanal fishers in south India.

Marine reserves

If large enough and they would need to be about 10 to 50 times bigger ARS can serve as underwater barriers to prevent the encroachment into near-shore waters of destructive fishing gear such as bottom-trawls. They can also provide refuge for fish. Dispersed over wide areas, ARS may serve as marine reserves and important breeding and conservation areas.

ARS a stand-alone technology, ARS are unlikely to form the basis of a viable artisanal fishery in the future. In a

liberalized market, fishers have to cope with rising costs of fuel, motors and other equipment, all of which are now in common use as artisanal fishers struggle to compete with larger-scale operations. Consequently, ARS in themselves have a relatively low priority in fishing communities.

Nonetheless, the enthusiastic feedback from the fishers, and the interest shown by other communities, spurred other local NGOs to participate in further experiments. The South Indian Federation of Fishermen Societies (SIFFS), representing around 6,000 fishermen, also became interested.

The news of the success has spread and ARS have now been taken up by the Government of Kerala as instruments to involve fishing communities in rebuilding their depleted fishery. The scale of this work is now at least ten times greater than what was initially begun. Further, interest in these experiments has also been aroused internationally.

The challenge for the future is to enable more local communities of artisanal fishers, who are the true guardians of marine resources, to develop such technologies, using participatory approaches that are environmentally efficient in sustaining fish stocks. However, this alone will not do.

Also needed are economic tools to analyze social and environmental costs, and the development of management systems, which fully include community institutions as crucial stakeholders in the preservation of marine resources for the food security of all.

Such tools need to evaluate the economic costs and benefits of investing in certain fishing practices, while at the same time assessing the costs of degrading the ecosystem, the costs of lost opportunities for food production and livelihoods, and the costs of reduced amenities.

Evidently, artificial reefs can play a role at the community and government levels in fostering awareness of how to maintain the diversity of fish stocks and the need for sustainable fisheries management. ARS also provide a focus for the debate on

issues of ownership and control of the coastal commons and on matters of ecosystem rehabilitation.

Furthermore, they have a potentially important role to play in demarcating exclusive community-controlled fishing zones, and thereby facilitating sustainable community-based management of fish stocks on the basis of 'harvesting' rather than 'hunting'.

This article is written by Brian O'Riordan of the Intermediate Technology Development Group, Rugby, UK

Victory for fishworkers

Indian fisher people have rallied round to reverse the government's policy on deep-sea joint ventures

India has a sea coast of 7,000 km. Indian waters are tropical and therefore contain multiple species of fish, but each species occurs only in small quantities. According to one assessment, 3.7 million tonnes of fish are available annually. Of this, 2.7 million tonnes are caught by traditional crafts and around 40,000 small, mechanized crafts.

There are about two million full-time active fishermen, while the number of fisher people totals almost eight million. There are about three million part-time fishermen, whose total population is close to 12 million.

Most of them live below the poverty line in a subsistence economy. They live on the sea coast, with poor housing conditions. Illiteracy among them is about 70 per cent.

The first attempts to develop India's fisheries introduced bottom trawling in the 1960s which resulted in greater pauperization of the traditional sector. This created tensions between the small mechanized and traditional sectors.

The second stage of fisheries development introduced chartering of foreign vessels in order to exploit the deep seas. This too created havoc.

Bull trawling, which was part of the charter operations, depleted resources heavily. All these vessels were fishing in the territorial waters.

This led to open clashes between the traditional and the small, mechanized sector. Not even a single Indian entrepreneur was able to own a vessel in five years, the period stipulated by the charter policy. Thus the Government of India scrapped the policy. However, some of these vessels are still in operation.

The third stage of development was the introduction of 180 foreign trawlers owned by Indian entrepreneurs. This project was a total failure and only 20 remain in operation. Several of the companies ran up huge debts to the Shipping Credit and Investment Corporation of India.

This led to the appointment of an FAO committee to study Indian deep-sea fishing. M. Gudicelli, who conducted the study, said that only 164,000 tonnes of fish are commercially viable in the deep seas. The other varieties are of low value, and catching them would not be profitable. In 1991, the Government of India introduced the joint venture scheme. This led to more open clashes between the traditional and mechanized sectors.

Since 1976, the fisher people of India have been agitating against these destructive policies. However, their campaign took a new turn when they went on a fisheries 'bundh' (work stoppage) on 4 February 1994. Then they organized an all-India strike on 23 and 24 November 1994.

As a result, the Government of India froze the issue of licences to foreign fishing vessels and appointed a committee to review the joint venture scheme. Since there was no representation for fisher people in the committee, they went on a nationwide agitation, which included an indefinite hunger strike in Porbunder, Gujarat, the birth place of Gandhi.

Fishers included

Subsequently, representatives of the fisher people and Members of Parliament representing coastal areas were included in the review committee. On 8 February 1996, this 41-member High Power Committee submitted its report to the Food Processing and Industries Minister.



It contained 21 recommendations, which included a call for the total cancellation of licences. Six months have been given to the Government of India to implement all the recommendations.

If the government fails to do so, it was decided that Thomas Kocherry, co-chairperson of the National Fishworkers' Forum (NFF), would go on an indefinite hunger strike at Sassoon Dock, Mumbai (Bombay) from 7 August 1996 onwards.

The NFF requests everyone to support and collaborate with India's fisher people to keep all foreign vessels and industrial fleets out of Indian waters. ॐ

This appeal has been issued by Thomas Kochery, R. K. Patil and Harekrishna Debnath of the National Fishworkers' Forum (41-1771, Veekshanam Road, Kochi 682018, India. Tel: 91-484-370617. Fax: 91-484-370914 or F10/12 Malaviya Nagar, New Delhi 110017, India. Tel: 91-11- 6426783, Fax: 91-11—6426914)

South Asian Workshop on Fisheries and CAM

Learning, sharing, struggling

The South Asian Workshop on Fisheries and Coastal Area Management concluded with the following report

At the South Asian Workshop on Fisheries and Coastal Area Management, social activists, researchers, representatives of fishworkers' organisations and their supporters from Sri Lanka, Maldives, Bangladesh and India in the South Asian Region, as well as from several other countries, shared their concerns and views on fisheries and aquaculture, the livelihood struggles of the communities in the coastal regions, and on coastal area management.

Coastal regions of South Asia are extraordinarily rich in ecological diversity. This richness has been historically maintained and cared for by the women and men living by the coast. Fishing communities, through generations of interactions with the sea, rivers, lagoons and other elements in nature, have played a particularly important role in this process.

The women of these communities have always played a vital part in sustaining and nurturing fisheries and fishing communities. Unique modes of human-environment interactions have evolved in this region. These have been based on people's knowledge of the terrestrial and aquatic milieus, as well as of the highly complex and sensitive interactions between them.

People in the Asian subcontinent share common rivers and seas. Caring for fragile and interdependent coastal ecosystems is a crucial strategic concern of the people of this region. Due to this common concern, the workshop participants met to explore ways of working together, sharing experiences and providing mutual support for their particular struggles. It was felt that people's solidarity is extremely

important to resolve issues of major importance in the region. Noting the increasing struggles of coastal communities for their livelihood rights, participants came together to express their solidarity and pledge their support to this struggle. Participants also reiterated the importance of understanding mutual needs, and, where appropriate, sharing their resources equitably.

Coastal areas are not simply geographic locations proximate to the world's oceans. They are arrangements of complex, diverse and fragile ecosystems, unique in nature. These very features require special attention. Coastal ecosystems, such as mangroves, coral reefs, backwaters, estuaries, lagoons and seagrass beds, besides performing crucial coastal protection functions, provide rich spawning and breeding grounds for fish and other aquatic organisms.

Another important dimension is the vital contribution that coastal ecosystems make to sustaining livelihoods, particularly of fishing communities. From both an economic and livelihood perspective, fisheries are one of the most important of the resources available in coastal areas.

Living aquatic resources make a crucial contribution to food security, particularly in the coastal zone, as a source of high-value protein, providing the sustenance that supports livelihoods, social structures and economic development.

Protein intake

In South Asia, fish contributes more than half of the animal protein intake in the diets of coastal communities. In the Maldives and Bangladesh, for instance, fish contributes as much as 80 per cent of the animal protein intake. This has direct

nutritional implications for the fishery-dependent, poor marginalized coastal communities.

Governments in the South Asian region have, however, not sufficiently recognized the ecological, human and economic significance of coastal areas, and of the resources within them. These dimensions have not been sufficiently incorporated in environmental laws and regulations and in the macroeconomic policies pursued by governments in the region.

While the workshop specifically focused on the coastal zone, attention was drawn to the fragmented and compartmentalized view which often dominates mainstream thinking. Coastal zones are part of broader ecological horizons that include inland areas and waters. Activities in these have direct implications for the coast.

The inter-relationships between agricultural and marine activities were recognized and discussed. In Bangladesh, although agriculture is predominantly a floodplain activity, it is directly connected to the coastal ecosystem through major rivers and tributaries leading to the sea. Thus, rice and fish are produced from the same Agricultural land when flood waters enter the fields. Interconnections of a similar nature among rivers, canals, lagoons and seas are vital components in

and the fishery production cycle in parts of Sri Lanka and India. It is such relationships, within the totality of water bodies, which accounts for the high diversity of fish species in the South Asian region. Thus, Bangladesh, with around 400 fish species, has one of the richest inland fisheries in the world.

Despite the enormous significance of inland fisheries in Bangladesh and the importance of the floodplain ecology to the wider agricultural system, international donors are spending millions of dollars implementing the Flood Action Plan. This project plans to turn the floodplain ecology into dry land to promote a 'green revolution' in the rice fields, and a 'blue revolution' in the water. As a result, one-third of Bangladesh's floodplain areas, along with the complex floodplain ecosystems, will vanish in only two decades.

Coastal area issues

A major challenge for coastal area management is the maintenance and enhancement of the ecological diversity of the region. Achieving this will contribute to the general economic prosperity of the region and the livelihoods of the coastal communities, in particular. However, if this is to happen, economic activities and government policies must recognize the customary rights, especially of women, to land and other resources, as well as the vitality of traditional practices and the

indigenous knowledge of communities. The rapid development of coastal areas, fuelled largely by macroeconomic policies supporting industrialization as well as by the pressure to generate foreign currency through the mass production of goods for global export markets, is, therefore, a matter of concern. Such unplanned and unsustainable development generates huge profits for a relatively few people, at the expense of the many who are left with a degraded and polluted environment. The communities' rights to livelihoods are being overridden by the commercial rights of developers.

Thus, in Sri Lanka and India, fishing communities are under threat from their own governments which are trying to sell off their deep-sea fishery resources to joint ventures with foreign companies. In Bangladesh, national mangrove forest reserves in the Chokoria-Sunderban (a total of 8,500 hectares) have been handed over from the Ministry of Forestry to the Ministry of Fisheries (2,834 ha.) and the Ministry of Land (5,666 ha.) for leasing for shrimp aquaculture. As a consequence, large tracts of mangrove forests have already been completely destroyed.

Fishing communities have to increasingly compete with other resource users in the coastal area. Coastal shipping, construction of harbours, seabed mining, the development of industry and tourism, and urban development, are all impacting on coastal communities. Tourism in coastal areas, for instance, is displacing traditional fishing communities and disrupting their access to fishery resources and to beach space.

The effects of land-and sea-based sources of pollution on marine life and habitat, while severe, are not fully understood. The livelihoods of fisher people and women fish processors are consequently under threat. Fishing grounds and the habitats of fishing communities are being encroached upon. Displaced from their traditional activities in fish processing and marketing, women are increasingly exploited as factory workers in processing plants. They are forced to migrate in search of work. For instance, women workers from Sri Lanka form the bulk of the labour force in the fish

processing plants of Maldives. In the face of such threats, it is crucial that the rights to livelihoods be afforded a higher priority than the rights to profit from commercial activities.

Moreover, it is necessary to encourage collective and democratic initiatives at the level of the local communities. This will encourage using, caring for and managing the coastal environment and resources in ways which incorporate principles and responsibilities of common property, understood as community ownership.

Coastal area management must include in equal measure human, ecological and economic elements. The participation of the coastal communities must be ensured from the beginning in the formulation and implementation of policies regarding coastal area management. Institutions of the local government must be given proper authority and a clear role in community development as well as in conserving, maintaining and enhancing biodiversity. Local-level institutions need to be supported by, and should work in co-operation with, appropriate decision-making bodies at the state/provincial and national levels.

The workshop, therefore, highlighted the importance of participation in and decentralization of, decision-making processes and management as desirable objectives in their own right. Management needs to be oriented towards actually controlling and guiding the development process in a manner which benefits coastal communities. There is a need to recognize the advantages of allocating responsibilities at different levels.

Initiatives in CAM

Coastal area degradation particularly in Sri Lanka, Bangladesh and India, is acute. In Maldives, the problem is evident only near populated islands, such as Male. In most other atolls, the only concern is on the issue of global warming and associated climatic changes and rises in sea level.

Several initiatives in coastal area management have been taken by the governments in the South Asian region. In the context of Maldives, however, the concept of coastal area management is not

considered appropriate. The emphasis is on the integrated management of reef resources, since the country depends on these for its survival. In Sri Lanka, coastal area management has a history of 15 years.

A second-generation programme for the comprehensive management and development of coastal resources is being finalized. However, numerous loopholes in the legislation and in its implementation have provided scope for violations and for possible misuse of the coastal zone.

India has recently issued a notification for the management of coastal areas. However, the dynamic nature of the interface between land and sea is not recognized. Arbitrary boundaries drawn around the coast are inappropriate in areas where the tidal patterns vary, where the shape and structure of the beach areas are constantly changing, and where the paths and profiles of inland waters flood and recede seasonally.

A flexible approach to defining boundaries and planning development, based on unique geographical features, as well as the specific resource management issues prevalent, is required. Moreover, the impact of activities in inland and marine areas on coastal waters needs to be taken into consideration. With respect to the Indian Coastal Regulation Zone notification, the National Fishworkers'

Forum (NFF) pointed to some lacunae in the notification. The NFF will, nevertheless, press for its implementation in its present form, because it recognizes the traditional and customary rights of fishing communities to their habitations, and places checks on the anarchic expansion of large-scale coastal tourism and industrial developments.

Alert interventions by public interest groups and the positive attitude of the judiciary can play a crucial role in curbing violations. What is required in India is instilling an awareness among coastal fishing communities to utilize the notification to their advantage.

It was recognized that apart from actively campaigning to stop harmful activities in the coastal areas, fishworker and producer groups need to actively research and promote viable alternatives.

Human values

Such alternatives need to be based on human and ecological values, rather than purely motivated by the profit potential of the international global market. Polluters must be penalized for the damage.

The burden of proof should be on the developers (including government agencies) to show that their activities will not harm the coastal environment or the coastal communities. Environmental as well as social impact assessments should

be a compulsory part of the procedures in the approval process for potential development activity. Provisions for a public review process should be made mandatory.

Further, environmental impact assessments (EIAs) of *new* developments must be prepared in the context of existing activity in the area and their burden on the ecosystem. EIAs need to take traditional as well as 'modern' scientific knowledge into consideration. Where the information base is poor, or the likely adverse impact can not be predicted with any certainty, the 'precautionary approach' must be adopted, and development activities should not be undertaken.

All EIAs should account for the social and economic costs which environmental degradation causes to local communities. There must also be ways and means for accounting for the costs to be borne by future generations whose rights may be jeopardized by current developments. Once such costs are internalized, the economic rationale to pursue many 'development' policies or projects may cease to exist.

Many formal Acts pertaining to natural resource access and use in the coastal zone have been introduced in most of the countries of the region, over different periods of time. In the context of integrated coastal area management, there is a need to examine and harmonize these different Acts to ensure that there is coherence among them.

It is also necessary that national and state/provincial governments ensure that different departments are unambiguous on the allocation of responsibility and accountability.

While many characteristics and needs of fisheries are unique, there are several aspects which need to be integrated into a broader approach to coastal area management. In particular, there is a need to harmonize policy objectives between different natural resource users, and to establish mechanisms for conflict resolution. Wherever possible, different stakeholders need to be brought together, to plan and prioritize the uses to which

coastal areas are put. There are clearly many areas where harmonious development is possible, and these areas need to be identified and prioritized.

The debate on industrial shrimp aquaculture highlighted the history of its development in the region. South Asian governments have yielded to the pressures of international funding agencies, multinational companies and local industrialists. They have turned a deaf ear to the problems which this industry has already created in other Asian countries.

As a result of this, extensive land alienation, especially of agricultural land, has taken place in Bangladesh, both for intensive and extensive forms of shrimp aquaculture. In Sri Lanka, the government is implementing plans to develop shrimp aquaculture in the south of the country, despite evidence of the harmful effects of aquaculture in the north-west.

In both Bangladesh and India, there has been substantial loss of biodiversity and destruction of coastal habitats, such as mangroves. Aquaculture growth has also led to groundwater depletion and land salination. This has threatened both local food security and the livelihoods of many coastal communities, in particular of small-scale fishers, farmers and landless labourers.

The impacts of the 'predatory expansion' of aquaculture in Bangladesh and India have resulted in immense human costs in the form of physical harm and violence, especially against the women of coastal communities.

People's movements

In Bangladesh and India, people's movements opposing this type of aquaculture have sprung up. They have been met with strong resistance from the investors. Public interest litigations in India and appeals to international forums have helped focus attention on the issue. Despite this, new areas continue to be brought under aquaculture.

Aquaculture is being promoted as a major earner of foreign exchange. However, environmental assessment studies conducted in India have revealed that the

social and environmental costs associated with aquaculture far outweigh these benefits. The profits from intensive aquaculture as compared to the use values of unspoilt mangroves have also been grossly exaggerated. In this context, it is important to note the findings of a recent South-east Asian Fisheries Development Co-operation (SEAFDEC) study, which has shown that the market value of the harvested resources from a well-managed hectare of mangroves (valued in the range of around US\$ 10,000) is only a little less than the net profits from a hectare of intensive shrimp aquaculture.

In the context of falling marine fish production, aquaculture has been advocated as a viable, alternative source of fish supply. However, the feed for intensive shrimp aquaculture is primarily from the harvest of industrial fisheries converted into fishmeal. It is estimated that by the year 2000, about 570,000 tonnes of cultured shrimp will be produced in Asia. The fish feed requirement for this will be of the order of one million tonnes (dry weight). This represents a staggering three million tonnes of fish, in wet weight, more than the total marine fish harvested in India today. This is clearly unsustainable, with an unknown impact on marine biodiversity and the food chain. It also has negative implications for the livelihoods of small-scale fishers. Additionally, the diversion of fish to fishmeal manufacture not only deprives

the local population of inexpensive fish protein, it also displaces women whose livelihood was earlier derived from fish processing using traditional methods, as recently witnessed in West Bengal, India.

All this points to the link between industrial aquaculture and industrial fisheries, both of which are detrimental to the interests of artisanal fishing communities. The demands, therefore, to ban shrimp monoculture and industrial fisheries, and to strictly regulate trawl fisheries should be seen as intrinsically inter-related, if coastal management is to be oriented towards sustaining coastal communities and fishery resources.

Fisheries management

Many of the fishery resources of the countries of the region are heavily exploited, particularly in the coastal waters. As a consequence, these resources are more susceptible to adverse environmental impacts caused by degradation of fishery habitats and pollution. Further, the economic and social benefits derived from marine resources are significantly lower than could be obtained if more effective fisheries management measures were implemented.

These require stricter limits, reductions in the fishing capacities of industrial fishing vessels, expansion and effective enforcement of zoning arrangements to

International Labour Conference

84th (Maritime) Session, Geneva, October 1996
Committee on Convention No. 9

Draft Resolution on the Application of Revised Convention No. 9 to the Fisheries Sector Submitted by the Workers' Group

The General Conference of the International Labour Organization,

Having met in Geneva in its 84th Session, from 8-22 October 1996.

Recognizing the current crisis in the fishing industry, which has serious repercussions on the labour and social standards of fishermen and which has resulted in the abandonment of many crews of fishing vessels in ports worldwide without any recourse to compensation for lost earnings and assistance with repatriation, except from charitable organizations,

Recognizing also the increasing globalization of the industry which has led to the recruitment and placement of fishermen on board foreign flag vessels and the important initiatives undertaken by other international for a, with regard to the management and conservation of fish stocks,

Noting the urgent need to revise international labour standards for fishermen and to expressly extend a number of the maritime standards to the fishing sector,

Noting also the adoption of the Recruitment and Placement of Seafarers Convention (Revised), 1996,

Invites the Governing Body of the International Labour Office to:

1. Promote the application to fishermen of the Recruitment and Placement of Seafarers Convention (Revised), 1996, by Members following discussions between representative organizations of fishermen and fishing vessel owners and the competent authority,

2. Convene an early tripartite meeting for the fishing sector to assess which of the other ILO maritime instruments should be applied to the fishing sector through the adoption of appropriate protocols, and/or the adoption of new labour standards for the sector and in this regard to place the issue of new labour standards on the agenda of an early session of the International Labour Conference.

The above resolution was adopted in Geneva at ILC's 84th (Maritime) Session where ICSF was also a participant.

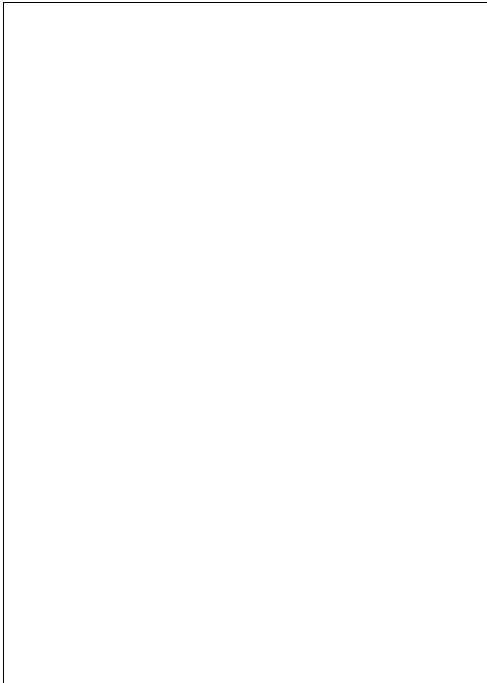
protect the fishing activities of small-scale fishers, as well as the establishment of community-based fishery management regimes for the small-scale sector. There is a need to recognize customary and cultural rights to fish resources and to revive and strengthen traditional systems of fisheries management. These are essential functions of fisheries administration.

In Maldives, for instance, the government strictly regulates the type of gear used within its waters, both by domestic and foreign fishing vessels. Only the use of pole-and-line for tuna fishery is permitted. Similarly, state legislation in India provides for zoning regulations and sometimes imposes seasonal bans on non-selective fishing activities in coastal waters.

The workshop had the opportunity to discuss the relevance of important international instruments related to fisheries, in particular the United Nations Convention on the Law of the Sea (UNCLOS) and the related UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, the Rio Declaration and Agenda 21, the instruments of the International Maritime Organization (IMO) regarding pollution and 'safety at sea, as well as the FAO's Code of Conduct for Responsible Fisheries. The relevance of these instruments to artisanal fisheries and to coastal fishing communities was examined. All these documents take into consideration the importance of coastal communities. The FAO's Code of Conduct, for instance, recognizes the importance of coastal communities in the planning, management and development of coastal resources.

It was also indicated that there has been a misinterpretation of Articles 61 and 62 of the Law of the Sea on the possible claims by another State with regard to the use of marine resources considered as not fully utilized by the Coastal State. Under UNCLOS, Coastal States have the sovereign right and obligation for the utilization, conservation and management of the living marine resources of the EEZ for use by its present and future generations.

In conclusion, this report is the result of a conscious pedagogy of learning. It has



fused together the life experiences and struggles of coastal people with a distilled analysis of issues pertaining to natural resource use, management and related property regimes.

It has enabled participants to locate their own personal perspectives in the context of the newly emerging regimes of coastal area management. It has also provided some firm foundations to construct future partnerships and regional linkages for sustainable use of coastal zones and for promoting the livelihood rights of coastal communities. Noting all of the above, the Workshop concluded by endorsing a commitment to continue the process of learning, campaigning, struggling, sharing and mutually supporting, all processes initiated and fostered by this Workshop.

This report was presented at the concluding session of the South Asian Workshop and Symposium on Fisheries and CAM, Madras, 26 September - 1 October 1996, organized by ICSF.



Cut adrift

The MSC initiative can be criticised from the perspective of fishery-dependent women of the North

Women should come together as one and not leave the decision-making and planning to the men... If women made some of the decisions, there would be more employment and better programmes in place for women in rural communities.

—a Newfoundland fisherwoman

Throughout the world, the relationships of men and women to fisheries resources, work and wealth differ. Although important cultural and class differences exist, women depend on those resources for food, work, income and identity. Yet they tend to have less control than men over these resources and the associated wealth.

Despite these realities, initiatives in fisheries management and fisheries conservation are rarely scrutinized for their potential impacts on women. The proposal for a Marine Stewardship Council (MSC) developed by the environmental transnational, the World Wide Fund for Nature, and the giant corporate transnational, Unilever, shares this weakness.

The assumptions upon which it is based are flawed, and there are ways in which it might negatively impact women of the North (and South) and, indeed, the fish stocks themselves.

The proposed MSC will consist of an appointed team of 'experts' who will certify fisheries as sustainable and then encourage seafood companies to join groups of sustainable buyers, purchase fish only from these sources, and market such fish with an ecolabel. Consumer demand will presumably provide the major incentive for corporations and, ultimately, governments to participate in

the process of developing sustainable fisheries.

At first glance, the MSC proposal might be interpreted as a feminist initiative. Due to their continued responsibility for shopping, food production and service in the home, the MSC proposal appears to position women so that they could have an unprecedented impact on the fate of the world's fishery resources. Guided by expert advice and progressive corporate initiatives, women's choices could restructure the world's fisheries in the direction of sustainability.

However, there are some things wrong with this picture. There is definitely a need for greater public scrutiny of fisheries management and corporate behaviour within the fisheries sector. One way to achieve such scrutiny is through consumer education. However, education is only one factor that influences consumption.

The MSC picture ignores the complex realities of women's consumption work, its diversity and the differing places they occupy in fish product markets. For example, women in different parts of the world consume different fish products, in different contexts, and they acquire these resources in different ways.

Rich women and poor women, urban women and women in fishery-dependent communities do not all consume fish in the same manner. One way to scrutinize the implications of the proposed MSC, then, is to examine its potential impacts on access to fish for consumption among these different groups of women.

Ecolabelling

It seems probable that women of the North (and in South-east Asia) will be

more likely to consume fish that is ecolabelled than women of the South. I say this because ecolabelling will do nothing to reduce the cost of fish and might actually increase its cost—already a barrier for women of the South and poor women of the North.

This will happen also because women of the North, particularly urban, wealthy women, are more likely to consume processed fish purchased in large supermarkets, where packaging and labelling exist.

If, as John Kurien has suggested (*Samudra* 15), ecolabelling actually promotes the export of fish products by fuelling consumer demand in a context of resource scarcity, women consumers in the North could unknowingly contribute to reduced food self-sufficiency and reduced economic power among women in the South as well as among women in fishery-dependent regions in the North.

In his article promoting the MSC (*Samudra* 15), Michael Sutton argues that the MSC will put the market in the lead and “where the market leads, governments will likely follow.” In the North, the emphasis on fish exports is being combined with the introduction of management initiatives like Individual Transferable Quotas. These moves are drastically limiting the access of men, and particularly women, in fishery-

dependent communities to those fish resources that remain. The combined impact of these initiatives and the increase in exports of fish seems to arise from the growing political commitment to the export markets and those who depend upon them, and the declining commitment to those in fishery regions who experience the cumulative effects of displacement from the industry and loss of access to fish for subsistence.

Women and men need to carefully scrutinize Sutton’s endorsement of the claim that “markets are replacing our democratic institutions as the key determinant in our society.” While this may be happening, it is not something that we should necessarily support.

As argued by Czerny, Swift and Clarke, in *Getting Started on Social Analysis in Canada*, if the market is a democracy, it is a democracy in which some have more votes than others, and in which, although consumers can vote, they have little control over who or what they vote for. Poor women are particularly powerless, partly because they have few votes in the marketplace.

Food conglomerates

Vertically integrated food conglomerates are increasingly the primary consumers of fish products. These conglomerates actually have the most votes in the marketplace for fish products. When we

recognize that the producers are often also the consumers, what does this tell us about the MSC initiative?

Particularly in the North, *fish* is often consumed in restaurants and fast food outlets or in the form of products whose growth has been enhanced by the use of fishmeal and fish oils. A company might commit itself to use only fish from certified harvesting sectors, but will the ecolabelling process follow this fish from the vessel through processing, manufacturing, preparation and service to the consumer?

For example, will restaurants be certified? Will meat products grown using fish oil from sustainable fisheries be labelled at the counter or at the restaurant table? If they are, how will the validity of this certification be ensured? Who will police the corporations and how will they do this? At what cost? Are there other ways to spend this money that might be more effective at promoting sustainable fisheries? Why not ask some women what they think?

If, in our proposals for sustainable fisheries, we do not include differences in voting power within the market and differences in control over products available for purchase, we could end up blaming stock collapses on consumers. The most probable target would be those increasing numbers of poor consumers, primarily women, whose purchases are dictated by low incomes and who, therefore, can not always afford to distinguish between fish products on the basis of ecolabelling.

This blame would be misplaced because it overstates the power of these women and also because it ignores the reality that the poor (both in the North and the South) consume relatively little protein compared to the rich, and the protein they consume is more likely to be a by-product of protein production for the wealthy than the primary source of demand. In a world where wild fish resources (like other natural resources) are limited, the problem is not just what fish we eat, but also how much we eat and in what form.

A full discussion of the implications of the proposed MSC for women of the North

needs to look not only at women as consumers of fish products, but also at women who depend on fishery resources for employment, culture and community. The household basis of fisheries in Atlantic Canada, Norway and many other parts of the North is well documented. Women contribute directly to these fisheries as workers, organizers and managers, in fishery households, industries and communities. They have fishery knowledge and skills, and depend on fish resources and industries for their livelihoods and, to some extent, for self-sufficiency in food,

The moratoriums on groundfish in Atlantic Canada have demonstrated the profoundly negative impacts resource degradation can have on these women. In Newfoundland and Labrador, the area of Atlantic Canada hardest hit by the collapse of the cod stocks, about 12,000 women lost jobs in the industry. The crisis also affected women doing unpaid work in their husbands' fishing enterprises, such as bookkeeping, supplying and cooking for crews.

Other women lost work in child care and the retail sector in fishery-dependent communities. In addition, out migration and government cutbacks are reducing the number of women employed in education, health and social services. As workers, wives and mothers who are rooted in their local communities, these women have a vested interest in sustainable fisheries.

When looked at from the perspective of these and other fishery-dependent women of the North, the underlying assumptions of Sutton's arguments for an MSC are extremely problematic. Sutton is correct in his argument that global fish stocks are in trouble.

Indefensible

However, his explanation for these problems is more difficult to defend. He implies that the cause of these problems, particularly in the North, is too much democracy: governments have been unwilling to take the decisions necessary to prevent overfishing, due to political pressure from a fishing industry driven to use up resources and destroy itself. Women in fishery communities do not

seem to share this perception that the roots of resource degradation lie in *too much* democracy.

In the case of Atlantic Canada and Norway, for example, they feel that decisions about the fishery, past and present, have been made by people who are not familiar with the strengths and needs of rural communities and, more specifically, with the needs of women. They also feel that without the knowledge and the support of local people, development efforts as well as initiatives to create sustainable fisheries will not succeed.

If Sutton's diagnosis of the causes of global overfishing is incorrect, so is his solution. There is no guarantee that the proposed MSC will remove politics from fisheries management. The process of defining 'expertise' has political dimensions, as does the process of defining sustainable fishing. In his book *Fishing for Truth*, for example, Finlayson has shown that data from small-scale fishers were underutilized by fisheries scientists in Newfoundland, Canada because of dissimilarities in the rules, norms and language of these fishers and those of scientists.

Elsewhere, I have shown how latent biases towards the offshore trawler fishery in the science of stock assessment in Newfoundland became evident when

this science was examined from the perspective of small-scale, inshore fishers. I have also argued that small-scale fishers' knowledge poses problems for fisheries science and management that are similar to those posed by the ecosystem itself. This is, perhaps, even more true of the knowledge of fishery-dependent women.

If the expertise of male fishers is marginalized within fisheries science and management enterprises in the countries of the North, that of female fishers and fishworkers is excluded.

Women in fishery households must bridge the growing gap between the costs of fishing and the value of landings that occur when resources are mismanaged. Women processing workers get less work.

However, when these women attempt to draw upon their knowledge and experience to influence fisheries policy, as happened in Norway during the cod moratorium, the integrative nature of that knowledge (rooted in links between ecology, household, work, markets and communities) makes it difficult for managers to grasp.

Objective knowledge?

As argued by Siri Gerrard, the perception that such knowledge represents particular interests, whereas scientific knowledge is objective, contributes to this marginalization by according science a

greater power. In Sutton's account, fisheries-dependent women are not explicitly identified among the stakeholders whom the MSC could consult in formulating its standards and principles for sustainable fishing. Shifting decisions on fisheries management from elected governments to an MSC with no clear accountability to fishery communities will augment existing limits on democracy located in the political sphere and in the market, and further erode women's power. In so doing, it will undermine the potential for sustainable fisheries.

The marginalization of women's knowledge and experience will persist despite women's continued responsibility for child care, which may enhance their commitment to ensuring that resources are managed in such a way as to protect future generations—one requirement for sustainable development.

A second requirement for sustainability that is not explicitly identified in the MSC proposal is the need to reduce inequities, including gender-related ones, within the current generation. James Boyce has outlined the "intimate ties between environmental degradation and the distribution of wealth and power. Economic inequities and not too much democracy are primarily responsible for overfishing in countries of the North and the South. The wealthy tend to benefit more than the poor from overfishing and the willingness to pay the costs associated with sustainable fishing is constrained by the ability to pay.

In politics and in the market, wealth speaks louder than poverty. In Canada, cuts to social and other programmes designed to redistribute wealth from wealthy to poorer, fishery-dependent areas of the country, and from men to women, are exacerbating economic inequities at the same time as those vulnerable to these cuts are reeling from the effects of resource degradation.

An initiative like the MSC that proposes to create sustainable fisheries without addressing these deepening economic inequities will not be effective. As women tend to be poorer than men, and exercise less control over natural resources and

within politics, it is probable that they will suffer most from this failure.

Unfortunately, there is no guarantee that the potential negative impacts of the MSC will be offset by gains in fishery sustainability. Ecolabelling could, ironically, undermine the sustainability of precisely those fisheries it identifies as adequately managed.

There are a number of reasons for believing this might be the case. The collapse of the groundfish stocks of Atlantic Canada has shown that there is enormous scientific uncertainty regarding the dynamics and status of wild fish stocks.

In addition, most commercial stocks are already overexploited; there is an arsenal of underutilized fishing vessels available to target those stocks for which there is a strong demand; and the national and international mechanisms for preventing the diversion of fishing effort from one fishery to another are extremely weak.

Defining some fisheries as sustainable and promoting the market for them will prompt increased pressure on those stocks. Not only will this be difficult to control but the effects of it will also be difficult to monitor.

Prize or death sentence?

In short, winning the ecolabel prize could be the equivalent of a death sentence for those fisheries and for the communities that depend upon them. **3**

This article is written by Barbara L. Neis of the Department of Sociology, Memorial University, St. John's, Newfoundland, Canada

Polluters must pay

The recent order of the Supreme Court of India banning shrimp farms in coastal areas is a landmark judgement. Excerpts:

...This petition under Article 32 of the Constitution of India—in public interest—has been filed by S. Jagannathan, Chairman, Gram Swaraj Movement, a voluntary organization working for the upliftment of the weaker sections of society. The petitioner has sought the enforcement of Coastal Zone Regulation Notification dated February 19, 1991 issued by the Government of India, stoppage of intensive and semi-intensive type of prawn farming in the ecologically fragile coastal areas, prohibition from using the wastelands/wetlands for prawn farming, and the constitution of a National Coastal Management Authority to safeguard the marine life and coastal areas.

Keeping with the international commitments and in the greater national interest, the Government of India and the Governments of the coastal States are under a legal obligation to control marine pollution and protect the coastal environments.

While the production increases and export earnings of the industry are well publicised, the socioeconomic losses and environmental degradation affecting the well-being of the coastal population are hardly noticed.

In fact, shrimp farms are developing at the expense of other agriculture, aquaculture, forest uses and fisheries that are better suited, in many places, for meeting local food and employment requirements. Intensive and semi-intensive types of shrimp production hardly seem to meet these requirements.

...We may refer to constitutional and statutory provisions which mandate the State to protect and improve the environment. Article 48-A of the

Constitution of India states that “the State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country”. Article 51-A of the Constitution imposes as one of the fundamental duties on every citizen, the duty to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures. The Environment (Protection) Act 1986 (the Act) was enacted as a result of the decisions taken at the United Nations Conference on the Human Environment, held at Stockholm in June 1992, in which India participated.

...This Court in Vellore, Citizens Welfare Forum vs. Union of India and others has dealt with the concept of ‘sustainable development’ and has specifically accepted ‘the precautionary principle’ and ‘the polluter pays’ principle is part of the environmental laws of the land.

...We, therefore, order and direct as under:

- 1 .The Central Government shall constitute an authority under Section 3 (3) of the Environment (Protection) Act, 1986 and shall confer on the said authority all the powers necessary to protect the ecologically fragile coastal areas, seashore, water front and other coastal areas, and specially to deal with the situation created by the shrimp culture industry in the coastal States and Union Territories. The authority shall be headed by a retired judge of a High Court. Other members, preferably with expertise in aquaculture, pollution control and environmental protection, shall be appointed by the Central Government. The Central Govern-

ment shall confer on the said authority the powers to issue directions under the Act and for taking measures with respect to the matters referred to in clauses (v), (vi), (vii), (viii), (ix), (x) and (xi) of subsection (2) of Section 3. The Central Government shall constitute the authority before January 15, 1997.

2. The authority so constituted by the Central Government shall implement the 'Precautionary Principle' and the 'Polluter Pays' principles.
3. The shrimp culture industry / shrimp ponds are covered by the prohibition contained in para 2 (1) of the CRZ Notification. No shrimp culture pond can be constructed or set up within the coastal regulation zone as defined in the CRZ notification. This shall be applicable to all seas, bays, estuaries, creeks, rivers and backwaters. This direction shall not apply to traditional and improved traditional types of technologies, as defined in Alagarsamy's report, which are practised in the coastal low-lying areas.
4. All aquaculture industries/shrimp culture industries/shrimp culture ponds operating/ set up in the coastal regulation zone, as defined under the CRZ Notification, shall be

demolished and removed from the said area before March 31, 1997.

We direct the Superintendent of Police/Deputy Commissioner of Police and the District Magistrate/Collector of the area to enforce this direction and close/demolish all aquaculture industries/shrimp culture industries, shrimp culture ponds on or before March 31, 1997. A compliance report in this respect shall be filed in this court by these authorities before April 15, 1997.

5. The farmers who are operating traditional and improved traditional systems of aquaculture may adopt improved technology for increased production, productivity and return, with prior approval of the 'authority' constituted by this order.
6. The agricultural lands, salt pan lands, mangroves, wetlands, forest lands, land for village common purpose and the land meant for public purposes shall not be used / converted for construction of shrimp culture ponds.
7. Noaquaculture industries/shrimp culture industries/shrimp culture ponds shall be constructed/set-up within 1000 m of Chilka lake and

- Pulicat lake, including bird sanctuaries namely Yadurapattu and Nelapattu.
8. Aquaculture industry/shrimp culture industry /shrimp culture ponds already operating and functioning in the said area of 1000 m shall be closed and demolished before March 31, 1997. We direct the Superintendent of Police/Deputy Commissioner of Police and the District Magistrate/Collector of the area to enforce this direction and close/demolish all aquaculture industries/shrimp culture industries, shrimp culture ponds on or before March 31, 1997. A compliance report in this respect shall be filed in this court by these authorities before April 15, 1997.
 9. Aquaculture industry/shrimp culture industry/shrimp culture ponds other than traditional and improved traditional may be set up/constructed outside the coastal regulation zone as defined by the CRZ notification and outside 1000 m of Chilka and Pulicat lakes, with the prior approval of the 'authority' as constituted by this Court. Such industries which are already operating in the said areas shall obtain authorization from the 'authority' before April 30, 1997, failing which the industry concerned shall stop functioning with effect from the said date. We further direct that any aquaculture activity, including intensive and semi-intensive, which has the effect of causing salinity of soil, or the drinking water or wells and/or by the use of chemical feeds increases shrimp or prawn production with consequent increase in sedimentation which on putrefaction is a potential health hazard, apart from causing siltation, turbidity of water courses and estuaries with detrimental implication on local fauna and flora, shall not be allowed by the aforesaid Authority.
 10. Aquaculture industry/shrimp culture industry/shrimp culture ponds which have been functioning/operating within the coastal regulation zone as defined by the CRZ Notification and within 1000 m from Chilka and Pulicat lakes shall be liable to compensate the affected persons on the basis of the 'polluter pays' principle.
 11. The authority shall, with the help of expert opinion and after giving opportunity to the concerned polluters, assess the loss to the ecology/ environment of the affected areas and shall be liable to compensate individuals/families who have suffered because of the pollution and shall assess the compensation to be paid to the said individual/families. The authority shall further determine the compensation to be recovered from the polluters as cost of reversing the damaged environment. The authority shall lay down just and fair procedure for completing the exercise.
 12. The authority shall compute the compensation under two heads, namely for reversing the ecology and for payment to the individuals. A statement showing the total amount to be recovered, the names of the polluters from whom the amount is to be recovered, the amount to be recovered from each polluter, the persons to whom the compensation is to be paid and the amount payable to each of them shall be forwarded to the Collector/District Magistrate of the area concerned. The Collector/District Magistrate shall recover the amount from the polluters, if necessary, as arrears of land revenue. He shall disburse the compensation awarded by the authority to the affected persons / families.
 13. We further direct that any violation or non-compliance of the directions of this Court shall attract the provisions of the Contempt of Courts Act in addition.
 14. The compensation amount recovered from the polluters shall be deposited under a separate head called "Environment Protection

Fund” and shall be utilized for compensating the affected persons as identified by the authority and also for restoring the damaged environment.

15. The authority, in consultation with expert bodies like NEERI, Central Pollution Control Board, respective State Pollution Control Boards, shall frame a scheme/schemes for reversing the damage caused to the ecology and environment by pollution in the coastal States/Union Territories. The scheme/schemes so framed shall be executed by the respective Governments! Union Territory Governments under the supervision of the Central Government. The expenditure shall be met from the “Environment Protection Fund” and from other sources provided by the respective State Governments/Union Territory Governments and the Central Government.
16. The workmen employed in the shrimp culture industries which are to be closed in terms of this order shall be deemed to have been retrenched with effect from April 30, 1997, provided they have been in continuous service as defined in Section 258 of the Industrial Disputes Act, 1947, for not less than one year in the industry concerned before the said date. They shall be paid compensation in terms of Section 258 of the Industrial Disputes Act, 1947. These workmen shall be paid, in addition, six years wages as additional compensation. The compensation shall be, paid to the workmen before May 31, 1997. The gratuity amount payable to the workmen shall be paid in addition.

The writ petition is allowed with costs. We quantify the cost at Rs 1,40,000 (Rupees one lakh and forty thousand) to be paid by the States of Gujarat, Maharashtra, Orissa, Kerala, Tamil Nadu, Andhra Pradesh and West Bengal, in equal shares of Rs 20,000 each. The amount of Rs 1,40,000 realized from the seven coastal states shall be paid to Mr. M. C. Mehta, Advocate who has appeared in this case throughout. We

place on record our appreciation for the assistance rendered by Mr. Mehta. ३

Document

This judgement was delivered by Justice Kuldip Singh and S. Sagir Ahmad of the Supreme Court of India at New Delhi on 11 December 1996

Aquaculture

A welcome noose

The recent radical ruling of the Supreme Court of India on regulating shrimp farms should be welcomed

On the 11 December 1996, the Supreme Court of India handed out one of the most radical decisions in recent times—radical in terms of the principles it has articulated and its approach to the special interests which are constantly being raised in the post-liberalization era of economic reforms in India.

The shrimp industry is touted as a major foreign exchange earner and an economic liberator of the agrarian economy. Behind the razzmatazz, with active support from government and financial institutions, millions of rupees have been pumped into this industry. Heady and flush with funds, the industry has been riding roughshod over environmental concerns for more than a decade now.

The way aquafarms were established without any sanction from any regulatory authority, one would think that the industry thought itself to be above the law. Public sector financial institutions, notorious for their tightfistedness and attention to detail when dealing with villagers asking for loans to build houses or buy cows, bent over backwards to fuel the 'pink gold' rush.

The nouveau pisci-prospectors converted large tracts of land all over the coast into prawn industry sites, blockading the coast, stuffing prawns with steroids and antibiotics, blinding mother prawns caught in the wild to raise reproduction rates and densely stocking the ponds with shrimps.

In addition, they increased the salinity of coastal aquifers, destroyed mangroves and wetlands and degraded the environment—cocking a snook, in fact, at all and sundry, including the interim

orders of the Supreme Court. All this was done in the name of a half-baked theory that the foreign exchange earned would at one stroke cure every single default and crime committed along the way.

This dollar-centric argument has been challenged by the ultimate arbiters of the public good, the people themselves, who embarked on a campaign of protests. Several networks of NGOs, fishing communities and environmental activists were formed. Demonstrations, fasts and strikes were undertaken to focus the attention of the powers-that-be on the problems caused by the 'blue revolution', as the aquaculture industry was heralded, bringing back bitter memories of a chemical-intensive agricultural transformation strategy employed in India during the 1960s and 1970s. Such a boom had already been witnessed in Taiwan, China, Thailand, the Philippines, Indonesia and Malaysia, though the environment there was subsequently ravaged by this industry.

Needless to say, governments of the coastal States as well as the Centre, remained impervious to people's sensitivities and the fact that the farms were violating the law. A petition under Article 32 of the Constitution of India was filed before the Supreme Court by a Gandhian, S. Jaganatthan.

Enforcement sought

This sought the enforcement of the Coastal Regulation Zone (CRZ) Notification of 1991, passed under the Environment Protection Act, 1986, under which all activity within 500 metres of the High Tide Line (HTL) and near creeks, backwaters, estuaries and other water-bodies influenced by tidal action, was regulated. This notification has hardly been enforced in most states.

The petition also sought the stoppage of intensive and semi-intensive type of prawn farming and also a ban on converting wastelands and agricultural lands to prawn farms. The Tamil Nadu based Campaign against Shrimp Industry filed intervention applications in this petition.

In March 1995, the Supreme Court ordered that no further shrimp or aquaculture farms be permitted, that no ground water be drawn for aquaculture and that no part of agricultural lands and salt pans be converted to commercial aquaculture farms.

In spite of the Supreme Court directing the District Collectors to enforce this, prawn farms continued to be established with no let-up. Going by a recent report filed by the Tamil Nadu Pollution Control Board in the Madras High Court, at least 65 farms in Tamil Nadu have been established in violation of the March 1995 order of the Supreme Court and the Tamil Nadu Aquaculture Regulation Act, 1995.

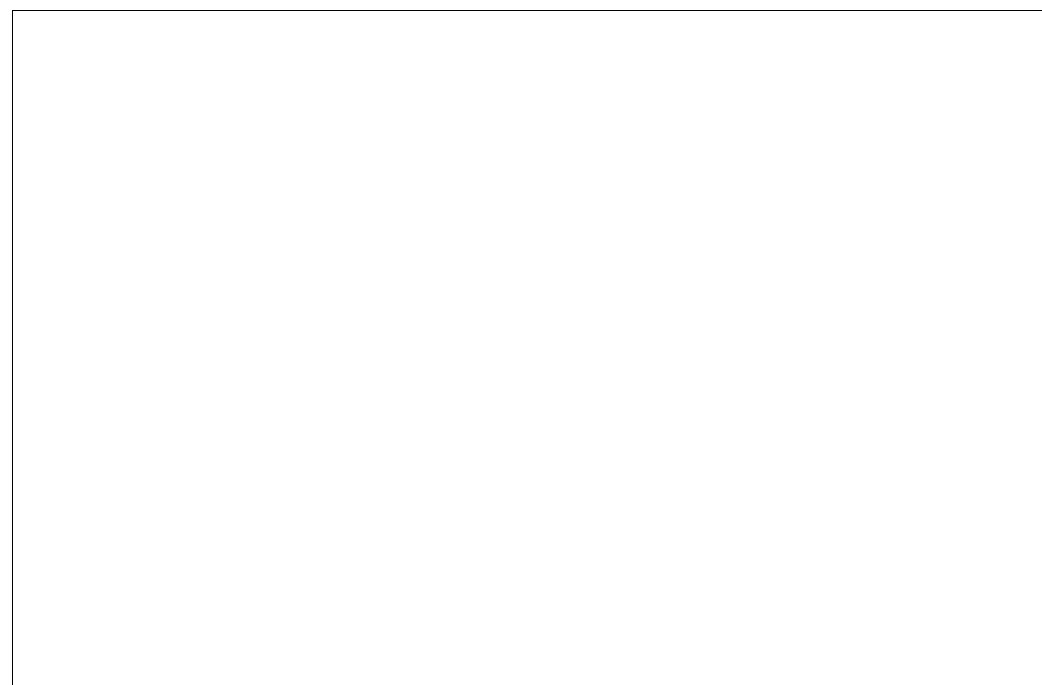
By May 1995, Tamil Nadu had enacted the Tamil Nadu Aquaculture Regulation Act, 1995. Under this, no prawn farm could be set up without a licence from the government. Existing farms also had to obtain a licence by 10 July 1995. According to data provided by the Tamil Nadu Pollution Control Board to the Madras High Court in December 1996, out of the

910 prawn farms in Tamil Nadu, 744 farms had not even applied for a license. No information was available on this aspect for 49 farms of Pudukottai district. None of the 78 farms in Thanjavur had applied for a licence. Out of 402 farms in Nagai Quaid-E-Milleth district, only five farms had applied for a licence. The majority of the farms which had applied for licence had done so only after the Madras High Court ordered the closure of all farms by Order dated 7 November 1996.

None of the 910 farms or 54 hatcheries in Tamil Nadu has a valid order of consent from the Tamil Nadu Pollution Control Board under the Water (Prevention of Pollution) Act, 1974. Of the farms, 702 had not applied for permission from the Pollution Control Board to discharge effluent. Only 208 units had applied for such permission.

Court order

Many of these applications had been made after the order of the Madras High Court. Of the 54 hatcheries, 30 had not bothered to apply for permission to operate from the Pollution Control Board. The Tamil Nadu Pollution Control Board has categorically gone on record that there is a likelihood of groundwater, surface water, creeks, sea and land being polluted, and that untreated effluent generated from the aquaculture farms or hatcheries are being disposed into the sea, creeks, land and inland surface water.



A 13-member scientific team from the National Environmental Engineering Research Institute (NEERI), on the directions of the Supreme Court, visited prawn farms in Tamil Nadu between 10 and 19 April 1995, and submitted a report. This report quantified the total permanent damage on account of aquaculture at Rs 17,791.2 million, the annualized damage at Rs 4,230 million and the annual earnings from the aquaculture activity at Rs 2,800 million.

Needless to say, this report was criticised by the aquaculture industry. They questioned its methodology and its findings, without pausing to think that they had not undertaken any environmental impact assessments before setting up their farms.

The Campaign Against Shrimp Industry also set up an Expert Committee to undertake a fact-finding mission on the environmental impact of prawn farms in Tamil Nadu and Karaikal in Pondicherry. This Committee comprised of Justice H. Suresh, a retired judge of the Bombay High Court, A. Sreenivasan, retired Joint Director of the Fisheries Department, A. G. K. Menon, ichthyologist, V. Karuppan, a retired civil servant, and Dakshinamurthy, a medical surgeon. This Committee also submitted a report clearly indicting the prawn farmers for their unfriendly practices on the environment and the livelihood of the

fishing communities dependent on the coast. The report was extensively quoted by the Supreme Court in its 110-page order, passed in December 1996, after hearing all points of view over several months.

The order directed the demolition of all prawn farms set up within 500 m of the HTL and alongside creeks, backwaters, estuaries, rivers, etc. and within 1000 m of the Chilka lake in Orissa and the Pulicat lake in Tamil Nadu and Pondichery, by 31 March 1997. The Court further directed the setting up of a Special Authority to protect the coast. This Authority alone would licence all aquaculture industry outside this area. It would also be empowered to assess the loss caused to the ecology and to the villagers and collect damages from the prawn farms.

Apart from the CRZ areas (500 m from the HTL and within 100 m of lakes, rivers, creeks and backwaters, as set out in the Coastal Zone Management Plan of the State of Tamil Nadu), the Court also banned the conversion to shrimp farms of agricultural land, salt pans, mangroves, wetlands, forest lands, land for village commons and land meant for public purposes.

Environmentalists hailed the judgment as historic. The response from the industry was muted. The industry claimed that the majority of the farms in Tamil Nadu were

traditional and, therefore, outside the scope of the Court order.

They also claimed that they had Pollution Control Board clearance and that the majority of farms were outside the CRZ areas. All this in the face of clear reports that out of 910 prawn farms in Tamil Nadu, 119 were situated within 0-200 m of the HTL, 64 within 200-500 m of the HTL and 722 next to creeks.

Out of the 54 hatcheries in Tamil Nadu, 37 were within 0-200 m of the HTL, 10 within 200-500 m of the HTL and six were next to creeks. Therefore, contrary to claims that only a small percentage would be affected by the order of the Supreme Court, merely five farms and one hatchery possibly lie outside the CRZ area.

Even these may still fall foul of the Tamil Nadu Aquaculture Regulation Act, 1995, and the Supreme Court directive on non-conversion of agricultural and other lands to aquaculture.

The claim of the Tamil Nadu aquaculture industry that it was traditional was clearly belied by the finding of the Supreme Court that the only States in India where traditional aquaculture was practised were West Bengal, Kerala and Goa.

When the full impact of the Supreme Court order was understood by the industry, it started laying claims that the majority of the farms were held by small farmers. Actually, only a few farms involve investment of under Rs 200,000.

The industry further claimed that Rs 2,000 million had been advanced by public sector financial institutions and that many fishing communities depended on the industry. However, the industry is hardly labour-intensive. On the other hand, it tends to displace and marginalize labour.

All or most of the farms, claimed industry spokesmen, had pollution control technology installed. In truth, over half the farms do not even have the space to install effluent treatment plants.

The falsity and untenability of these claims was exposed when a petition referred by some of the industrialists

before the Supreme Court, seeking review of the December 1996 order, was dismissed on 4 January 1997.

Whatever be the arguments of the industry, it can have no valid claim to any sympathy. In several parts of Tamil Nadu, the industry has attempted to intimidate environmental activists, employed child labour and committed innumerable acts of human rights deprivation, with the active connivance of the State government machinery.

In the context of the conduct of the industry, the order of the Supreme Court is but a richly deserved hangman's noose. In the process of bringing the errant aquaculture industry to book, the litigation against the industry has enriched environmental jurisprudence.

From a purely legal point of view, the court has reiterated the principles of 'precaution' and 'the polluter should pay'. Ever since the Union Carbide Bhopal gas tragedy, the courts have been sympathetic to environmental concerns and have imported well established principles of law into Indian tort law.

Simply put, the precautionary principle means that environmental regulation should anticipate and prevent environmental degradation, and not merely attempt to provide relief after the damage has occurred.

This principle postulates that the onus of proof is on industry to show that its operation is benign and that even if there is a threat of serious and irreversible damage to the environment, immediate steps should be taken to prevent it, without quibbling over scientific certainty. In the case of the 'polluter pays' principle, the industry would be absolutely liable to compensate victims of pollution, and also reverse environmental degradation.

Jurisprudence

These principles are nothing new to the world of environmental jurisprudence. But their reiteration could not have come at a more opportune moment than now. From the viewpoint of an environmental lawyer. The judgment is trend setting for its acceptance of the validity of the citizens

reports on environmental litigation. It thus takes to its logical conclusion the long-accepted view that all public interest litigation is non-adversarial in search of the truth.

The judgment is also a clear indictment of the Pollution Control Boards. With no public representation, these regulatory bodies have held themselves out to be the final arbiters of environmental standards and have for years been acting as an active limb of the industry, neglecting the interests of the people.

Concepts such as 'sustainable development', 'the polluter pays', the precautionary principle' and 'inter-generational equity' have thus been indelibly stamped on to Indian environmental jurisprudence. This will enrich other ongoing struggles against national and multinational industries (like Enron's Dabhol power project and DuPont's nylon-6,6 project, to name a couple) which have set up shop in India violating these norms. It has shown the way for the courts of the future to employ tools of environmental economics to give short shrift to the half-baked 'dollar' argument.

However, in my opinion, the most progressive part of the judgement lies in its articulation of inter-generational equity, the central tenet of which is the right of each generation of human beings to benefit from the cultural and natural inheritance from past generations as well as the obligation to preserve such heritage for future generations.

The recognition of this principle by the Supreme Court of India points to the long road that human rights jurisprudence has traversed in India. It should also serve as a timely reminder to policymakers who indiscriminately allocate resources that are already threatened.

The judgement by the Supreme Court of India is radical, progressive and empowers people, hitherto marginalized to fight longer and harder battles. §

This piece has been written by T. Mohan, a lawyer based in Madras, who is associated with the Coastal Action Network

Muddy waters

The Indian Supreme Court's judgement on regulating aquaculture will have a varying impact in the State of Andhra Pradesh

Any attempt to study fisheries (marine and inland) in the south Indian State of Andhra Pradesh has to contend with the basic drawback that the available reports and secondary data are extremely superficial. The problem is worsened by the fact that none of the data—neither from the Central Marine Fisheries Research Institute (CMFRI) nor the State government—seems to have been seriously utilized to arrive at conclusions and policy decisions. Only under pressure do agencies bother to collate information into a particular format. Whatever data is available thus exists in an inert, unformatted and poorly presented fashion.

For instance, the State Government's handbook on fisheries quotes a figure of 177,000 as the total number of marine fishermen in the coastal districts. But coastal Andhra Pradesh comprises different regions like Telengana and Rayalaseema. And within these, there also exists a marked differentiation amongst the types of fishermen, based on whether they fish in the interior areas, in rivers or in the sea.

A broad categorization of Andhra Pradesh would start with the Krishna-Godavari delta area, with Nizampattnam as one boundary. South of Nizampattnam is the open, beach-based fishery, where *kattumarams* (catamarans) operate. North of Nizampattnam, up to Kakinada, is the delta region, entirely a fertile, paddy-growing area, rich in mangroves. Here, the fishing community lives largely by the river banks, fishing either in the river or in the sea (accessing the sea through the river mouth). In the delta region there is, by and large, no beach-based fishery. Only north of Kakinada can be found, once again, a beach-based fishery where *kattumarams*

operate. As far as data is concerned, aquaculture is an area which has been relatively better researched in Andhra Pradesh, since several NGOs have worked to gather information. Nonetheless, analyzing the available facts leads to the impression of some sort of confusion and lack of clarity.

Even though, at the ground level, many people are aware of what is actually happening in Andhra Pradesh, the information that has been projected to the outside world, particularly in the present controversy over the implementation of the Coastal Regulation Zone (CRZ.) notification, seems to relate more or less to the southern districts of Nellore and Prakasam, where the corporate invasion has triggered the movement against aquaculture.

However, the Krishna-Godavari delta region, which accounts for approximately 70 per cent of the total aquafarm area of Andhra Pradesh, presents a distinctly different picture. The southern beach zone contains about 20 per cent of the aquafarms, while another five per cent lie along the beaches of the north. Totally different sets of issues and problems are raised by beach-based aquaculture and aquaculture in the delta region.

The conversion of paddy fields into aquaculture farms, which is definitely a matter of major concern, occurs entirely in the delta region. But this region has other problems, which tend to be overlooked.

Corporate entry

The initial entry of the corporate sector and private investors took place in the beach-based aquaculture in the south of Andhra Pradesh—probably because, among other factors, the area is close to the city of Madras. Some of the farms are

situated right on the beach, pumping in sea water. Others are by the side of salt-water creeks.

For the fishermen operating from the beaches, the first problem faced is 'land grab'. In this part of Andhra Pradesh, land has traditionally been cheap, and large areas of apparent wasteland are easily available. But how much of these really constitute wasteland is a moot question. Some areas have been used to grow casuarina trees, some were used by fishermen for small-scale cultivation, while other areas have long remained as the village commons.

Such land has been acquired by the corporate sector and private investors in various ways. Some have been straightforward, outright purchases. In other cases, after a plot of land was bought, local bosses have used incentives, influence and even muscle power to grab the surrounding areas too.

The other problem typical of the area is more technical. Due to their greater porosity, sandy beaches are not very suitable for aquaculture. The salt water from the aquafarms seeps into the surrounding areas and affects the groundwater. In many of the villages, agriculture in the neighbouring areas was thus badly affected. Hence, technically, beach-based aquaculture does not appear very healthy—with some notable

exceptions. As it is based on substantial externalities, such aquaculture is unlikely to be technically and economically sound, especially if the externalities have to be avoided or paid for.

In some areas, hatcheries have constructed long pipelines to pump in water from the sea. This has led to, for instance, shore seines and gill-nets getting trapped in the pipelines. Pumping in large quantities of water creates some turbulence and so fish may avoid the area. Thus, fishermen would feel strong negative externalities on their fishing operations.

Furthermore, fishermen's access to the sea has been curtailed or hampered. What was previously common, open land through which the fishermen could freely walk has now been closed, with guards posted to check the passes issued to them. Often, [he fishermen see this as a terrible kind of indignity.

Buckingham Canal

A related problem centres on the Buckingham Canal, which flows through the whole beach area up to Madras. For the aquafarms in the south of Andhra Pradesh, the Buckingham Canal has become the favourite dumping ground for all the waste from aquaculture. This silts up the canal, which, in any case, has long been neglected environmentally. Fishermen of the area have often blamed

the polluted Buckingham Canal for their skin diseases, as well as for being a breeding ground for mosquitoes.

These complaints have motivated the NGOs of the area to take the lead in mobilizing public opinion against aquafarms. Some NGOs also implicated themselves in the Supreme Court case.

For these very tangible reasons, the Nellore and Prakasam districts of Andhra Pradesh, where corporate private investment has taken place on a large scale, have become the focus of the anti-aquaculture movement.

In the delta region, however, the situation is quite different. This is not to imply that the aquaculture practised there is more justifiable or healthy. Not only do the problems differ, so do the actors. Most often, people who have been cultivating paddy, especially in the Krishna district, which accounts for more than half the total aquafarm area of Andhra Pradesh, have *en masse* shifted to prawn culture, attracted by the tremendous difference in profitability.

In paddy cultivation, an annual profit of Rs 10,000 per acre is considered good. Prawn culture, on the other hand, can fetch up to Rs 100,000. Even those who initially hesitated finally plunged into aquaculture. The profits made in the first year have been used to buy or lease more land for the second season.

Strictly speaking, the aquafarm boom began only in 1991, even though a slow diffusion had set in since the late 1980s, as medium-sized farmers and private investors started learning about aquaculture.

Between 1991 and 1992, the area in Andhra Pradesh under aquafarms doubled. A further doubling occurred over the next two years, as the majority of aquafarmers chose to reinvest their earnings. Many of these farms are five or 10 acres in size, the largest ones going up to 20 acres. The smaller ones are around two acres in area.

There are also quite a few two-hectare farms, most of which belong to investors

from the fishing community. Medium-sized farms of five to 10 acres (large in a normal agricultural context, but regarded small in aquaculture) are considerable in number, while truly large farms are rare. Many of the small farms do not have proper legal documents to establish ownership rights. Several are leased from neighbours.

Though both fishing and agricultural communities have sunk money into the new aquafarms, investors from the agriculture sector dominate since they had more land to start with, as well as better access to funds.

The truly big farms in Nellore and Prakasam districts present an awesome sight—beautifully laid out ponds of half or one ha size and 10 to 12 ft deep, fed with large pipelines. In contrast, in the delta region, the ponds are very shallow, with side trenches merely a couple of feet below the level of the existing paddy fields. This prevents any exchange of water, after the initial pumping-in period. The water in these ponds thus remains stagnant.

Capitalist agriculture, based on cash crops like tobacco, exists in Prakasam. However, Nellore's economy is still largely feudal. Most paddy fields there belong to landlords from the Reddy community. They are also the ones who control fishing villages through the head of the village. Usually, the relationship with the local landlord community facilitates the sale of land belonging to the fishing village—often for a song.

Other areas lack similar large tracts of land for sale. Even when available, small- and medium-sized farmers would not easily part with their land. In a sense, therefore, the failure of land reforms and the existence of a feudal economy helped the development of this particular kind of aquaculture in the Nellore district of Andhra Pradesh.

Initially, the aquaculture in this area was very extensive, fed with wild prawn seed and natural feeds like oilcake mixed with fishmeal.

New rush

Subsequently, once manufacturers of aquaculture industry the boom began,

inputs for the (like feed, chemicals and antibiotics) established roots in the area. In towns like Nellore and Machillipatnam, hoardings for shrimp feed prominently crowd out advertisements and billboards for other consumer goods.

As a result, hatcheries began getting into the business. In the initial stages, hatchery production was much below demand. So wild seeds were greatly sought after. Lured by the Rs 3 or Rs 4 paid for each seed, children and women used nylon drag-nets to catch prawn seed in the river mouths. This undoubtedly would have badly affected marine prawn production.

Once hatcheries began operating, however, the price of prawn seed dropped to less than half a rupee. But wild seed collection continues, since there exists some consumer demand for shrimps reared from natural wild seed.

Soon enough, in Andhra Pradesh's aquaculture industry, the corporate sector found itself in the doldrums, mainly due to the outbreak of disease in aquafarms in 1994 and the enormous seepage of water from the ponds, which raised the cost of maintaining the farms. For this sector, therefore, the Supreme Court judgement is the proverbial last nail in the coffin. In the delta region of Andhra Pradesh, where only extensive

aquaculture is practised, the investment in farms has been meagre—only Rs 10,000 to Rs 15,000 per acre for conversion from paddy land.

Interestingly enough, this raises the question of the intensity of aquaculture, an important focus of the ongoing debate in India on the worth of aquafarms. Intensity does not appear to be the crucial factor. Though it undoubtedly matters in attempts to control or regulate the industry, the more basic and significant question is whether the technology used is appropriate for the particular social and natural environment where the aquafarms operate. It is very clear that in Andhra Pradesh, the smaller aquafarmers using extensive techniques have destroyed their businesses and the environment in perhaps a more damaging fashion than the bigger farms.

Poor water management and the nature of land being not especially suited for aquaculture, coupled with the small farmers' inability to invest in water treatment technology, have been behind this disaster. Yet, the profits from aquaculture were far greater than those from paddy cultivation. This continued to motivate 'the pink gold rush'.

Approval unlikely

To be fair, the Government of India and the Marine Products Export Development Authority (MPEDA) may never have

approved these farms. All of them were in the informal sector, and were started without technical support by ordinary farmers in a merely pragmatic, unorthodox, unconventional and unscientific manner.

Many of them began their ventures by observing and copying the practices of neighbouring farms, some of which were closer to brackish water areas and benefited from technical support. Some farmers even visited aquafarms as far up as Kakinada. Others leased part of their land to outsiders from Vijayawada, for instance, and used the money earned to then build up their own farms.

At the height of the boom, the area under aquaculture in Krishna district went up to 32,000 ha. (The actual area of paddy converted is not clear. Some government officials say it amounts to between 2,000 ha to 5,000 ha. It is also unclear how much mangrove area has been lost. While one official figure is 500 ha, another fisheries official claims 80 per cent of all mangroves have been converted. This seems to be an extreme estimate.)

With disease affecting most aquafarms in 1994, the entire industry collapsed. Tragically, most of the farmers' investments had been made from huge borrowings. The smallest loan amounted to Rs 20,000, but most other, debts ranged from Rs 100,000 to Rs 500,000. Some of those who could not repay their debts committed suicide.

Since 1995, the area under aquaculture has shrunk to 20,000 ha. Many farmers who earlier harvested shrimps twice a year, during summer and winter, have now confined their farming to a single summer harvest, since it is in winter that water salinity is low and the chances of disease higher. These farmers are also risking reinvesting their earnings from that single crop so that they can repay their debts. Overall, however, the situation is far from even. Some farmers have got good returns, while others have only sunk further into debt.

The Supreme Court judgement has now created panic. In Andhra Pradesh, the limit of 500 m from the High Tide Line

(HTL) stipulated by the Coastal Regulation Zone (CRZ) notification is not the major problem. Perhaps only 10 per cent of the farms will be affected by this ruling. The average fishing village can be one to three km from the HTL. As protection against cyclones, the government has built a large shelter belt of casuarina trees between the villages and the HTL. In such a context, some people will be drastically hit by the 500-in limit, but certainly not everyone.

The truly crucial matter relates to the distance from the salt-water creeks and canals. The original 1991 CRZ notification puts it at 100 m from creeks and canals. Subsequently, in 1994, it was amended to 50 m. But it is unclear whether the amendment is still valid.

Each State was asked to draw up its own Coastal Zone Management Plan (CZMP). Andhra Pradesh's plan, which runs into almost 5,000 pages, is reportedly the most elaborate and, from an environmentalist point of view, perhaps the best. Andhra Pradesh's CZMP has been very generous in stipulating the distance from creeks and canals as 500 m.

Since the Ministry of Environment and Forests has accepted the plan, and its approval has been conveyed to the Supreme Court, there is currently a strong belief that implementation of the Supreme Court ruling means observance of the 500-in limit from creeks and canals. This is what the Collector of Krishna district and the Assistant Director in the Department of Fisheries have told the people. This interpretation implies that around half the total number of farms in the area will simply have to close down. For instance, in Kandeleru creek in Nellore district, an important area for the corporate sector, whether the limit from the creek is 50 m or 500 m will critically determine the future of farms there.

Ensuring compliance with the Supreme Court's orders is the responsibility of the district administration, specifically the District Collector and the Superintendent of Police. But confusion reigns.

Differing impressions

In other districts of Andhra Pradesh, like West Godavari and East Godavari, officials in the local administration seem

to be under the impression that implementation of the Supreme Court judgement means a limit of either 50 m or 100 in, not 500 m. So, most of the aquafarmers are not overly bothered. The original notification stipulates a limit "not less than" 100 in, the actual limit to be decided by each State government, according to its CZMP. In the case of Andhra Pradesh, the plan has made the limit 500 m.

The Supreme Court judgement, however, creates more problems for Andhra Pradesh than it solves. In Tamil Nadu, the ruling deals a deathblow to the aquaculture industry, especially in the Tanjore delta region, home to big corporate investors.

But in the Krishna-Godavari delta in Andhra Pradesh, most of the farmers are small-scale operators who have invested either their own savings or personal loans, and who simply do not have the option of declaring bankruptcy. These minor farmers and fishermen are bound to lose their land to the moneylenders. Thus, large-scale dispossession and loss of land will occur in the Krishna-Godavari delta.

On the other hand, consider the Vashista Godavari, a distributary which divides the east and west sides of the Godavari. On one side lie very well-developed farms which could not possibly pose any

major problem to the environment or the locals, but these farms are the ones which will be affected by the 500-in limit ban, while many undeserving companies will be allowed to remain. Ironically, in cases like these, those who pose the least threat are the ones closest to salt-water areas.

Naturally, responses to the Supreme Court judgement have been varied. In Machillipatnam, farmers quickly formed an association and, on 14 February, rallied in a demonstration against the proposal to destroy their prawn farms. Krishna district is likely to witness some resistance from the farmers, but this will be equally mixed. Some of the farmers will succumb to pressure, while others will defy and fight attempts to raze down their farms. A problem of law and order may arise, which may even provide a safe and convenient excuse for the government administration not to go ahead with the destruction of the aquafarms.

Evidently, unless there is a proper rehabilitation plan for farmers, including aid to convert aquafarms back to paddy fields, the tragedy slowly unfolding in the delta region will spell the end of the small-scale aquafarmers. But this tragedy is largely of their own creation.

Already disease-hit

Even prior to the Supreme Court ruling, a large number of these farms had already been devastated by disease and poor

water management, and several farmers were already in deep debt. Thus, a huge disaster was in the making in any case. But, in some of the areas of Andhra Pradesh, the Supreme Court judgement robs aquafarmers of any chance of recovery.

In analyzing the problems posed by aquaculture, it is important to examine the agriculture-aquaculture interface. There is a danger in viewing aquaculture as a problem area which exists in the fisheries sector. Had it been seen as an agricultural problem, within the jurisdiction of agricultural officers, a greater balance would have occurred in perceiving and understanding the way natural resources have been used.

A related problem is the economic return that agriculture entails, particularly in the Krishna district of Andhra Pradesh. Despite the existence of a wide distributary of the Krishna river, the area suffers from an acute problem of water salinity. Many of the canals and distributaries of the Krishna are saline up to 10km or 15 km inland from the sea. The farmers thus have to depend on irrigation canals coming from further up. Those who live at the tail-end of these canals do not get this water as easily, so they end up using saline water. Clearly, environmental issues differ from socioeconomic and equity issues. Given the nature of the political economy that currently exists in India, it seems very unlikely that aquaculture can ever be made environmentally and socially sound. How can a farmer be prevented from cultivating what he wants on his own land? On the other hand, ironically enough, it may be easier to check and regulate the corporate sector.

Interestingly, within this sector, a new trend of employing a team of technical experts to turn around sick aquafarms can be observed, especially within the 50-in limit. Often, the starting point is a corporate farm which has been devalued by disease and could be bought cheap by a new entrepreneur who then brings in turnaround specialists. Yet, even these new ventures will have to contend with the judgement. In its interim ruling, the Supreme Court had banned the pumping of sea water and groundwater, and

conversion of paddy fields into aquafarms. These conditions would have crippled the industry. But, in its final judgement, the Court has only taken recourse to the CRZ norms: No aquafarms other than 'improved traditional' ones will be permitted within the CRZ. Although paddy field conversion has been disallowed, nothing has been specifically said about the fields already converted.

Further, whether the new regulatory authority for aquaculture to be set up under the terms of the Supreme Court judgement will be able to tackle all these problems is not very clear. The essential focus of the judgement thus does not appear to be aquaculture problems in toto, with an unambiguous ruling on the entire gamut of issues. Rather, it has preferred to stick to the strict implementation of the CRZ norms, apart from mandating the formation of a regulatory authority.

Although it has propounded very useful principles like the 'polluter pays' norm and the 'precautionary approach', which can be followed up by this new authority, the Supreme Court judgement does not state where aquaculture can be legitimately carried out. Had the focus of the judgement been purely environmental, it would have considered the whole range of issues raised by the operations of the aquaculture industry in India. Instead, the Supreme Court has somewhat limited itself to the CRZ notification.

It also remains vague to what extent the new regulatory authority will be able to rectify the situation. Usually, duly constituted authorities prove efficient only in implementing measures like licensing and taxation, for instance, which ensure the future health of a sector. But today in India a drastic step like razing down farms can only be taken by the Supreme Court. ♣

This analysis by V.Vivekanandan, Co-ordinator of ICSF's Animation Team, is based on a recent tour of the aquaculture areas of Andhra Pradesh

Women fish traders

Tussle in Tranquebar

The problem of access to credit has divided the women fish traders of three villages in Tamil Nadu, India

Women in India's artisanal fishing communities do not usually catch fish, but they do just about everything else related to fishing—net-making, processing, gutting, drying, smoking and marketing. Many of them also work as petty fish traders.

A major problem such traders face is their inability to save. Savings would not only form a cheap source of credit but also allow these women to tide over lean periods. Now, during crises, they have to depend on informal sources of credit for loans at fairly high rates of interest, from middlemen and moneylenders, for example. While formal sources of credit, such as banks, would charge lower interest, their procedures are difficult to understand. In addition, the petty fish traders are largely regarded as bad risks.

This problem of access to credit has led to an interesting power struggle among the petty fish traders in three Tamil Nadu villages— Pudukottai, Kuttiyandiyur and Vellakovil, located close to Tranquebar town in Nagai Quad-E-Millet district.

To facilitate access to credit, the Rural Organisation for Social Action (ROSA), an NGO formed seven years ago near Nagapattinam, organized groups of petty fish traders and encouraged them to save part of their income. The money thus saved was then re-loaned at rates of interest below those charged by the local moneylender. The whole operation was managed by the petty fish traders through a management committee.

Petty fish traders are often seen as a homogenous group with similar characteristics and needs. This has meant that development programmes end up

actually helping only a small proportion of the population. In reality, there are considerable variations in the socioeconomic status of the petty fish traders, due to differential access to local resources.

Over the years, recognizing these differences, ROSA has classified the petty fish traders into three categories on the basis of the value of their transactions, the markets accessed, type of assets possessed and their status within the household and the community.

The first category comprises the vast majority. These women usually belong to nuclear households. They are the have-nots of the community, with few material possessions, a low social status and little decision-making power within the household.

They usually buy low-value fish, like sardines and mackerels, from catamarans which land fish between 7a.m. and 8a.m, and engage in door-to-door sale till 10a.m. Their turnover is typically between Rs 100 to Rs 750. They carry fish on their heads to households located in the surrounding agricultural villages within a 25 km radius. The physical work is heavy, competition is high and profit margins are low.

The fish is usually procured on credit, either from the auctioneer or from friends and relatives. The auctioneer is repaid at the end of the day—no interest is charged. Friends or relatives can be repaid over two or three days; but the interest is as high as 120 per cent.

Woman's earnings

The women have to care for their small children, with little help from the family. Most often, husbands work as crew

members on fishing vessels, with low earnings. The women's earnings are thus needed to keep the kitchen fires burning. Some husbands have no income and are alcoholics living off their wives.

Within their households, these traders do not enjoy any decision-making power. The inability to save reduces the capacity of the household to meet the periodic crises that are common to fishing activities. The formation of the thrift group has provided the petty fish traders from this category an opportunity to save a part of their income, most often without the knowledge of their husbands.

Nagavalli of Vellakovil, who entered into fish trade recently, says, "The credit group has enabled me to set apart some of the money which would otherwise have gone into alcohol or gambling. I now have a larger circle of friends whom I can turn to when I need money."

The second category of petty fish traders usually deals with high-value species, such as prawns and seer fish. They also procure sardines, mackerels and clupeids, when in season, but handle much larger quantities. Their turnover is usually between Rs 1,000 to Rs 10,000 per day.

These women get fish from both traditional craft and from trawlers which land their catch at the Nagapattinam

fisheries harbour. They procure their fish around 5a.m and leave for the market by 6 am. Most often, to ensure a regular supply of fish, they advance credit to the auctioneers located both in their fishing villages and at Nagapattinam.

The capital they use is either their own or borrowed. The latter is most likely to be from a friend or relative, who would typically charge an interest of around 60 per cent per annum. Traders belonging to this category are usually considered creditworthy. Hence, they are better placed to bargain for lower interest rates, unlike the women in the first category.

These better-off traders access distant markets, such as Mayiladuthurai and Sankaranpanthal located 60km from their fishing villages. Their clients are usually men, often of rich households, that have a family member working in Singapore or the Middle East countries. The prices they charge are fairly high as their customers demand a regular supply of good quality fish. As transactions are usually based on the weight of fish, it is easy for the traders to cheat on the quantity sold. Consequently, traders from this category have fairly large margins.

Greater powers

These women enjoy relatively greater decision-making powers within their households. They also save fairly well. Due to this high rate of savings, these

women are the major contributors to the business transacted by the savings and credit group to which they belong. They express keen interest in the working of the group and most often play a major role in the management of the group's resources.

The biggest problem faced by these traders is getting their fish to the markets on time. They can only use public transport buses to reach Mayiladuthurai and Sankaranpanthal, since fish baskets are not allowed inside private buses. It costs approximately Rs 35 to transport two baskets. Apart from the ticket fare of Rs 11, the cost includes a bribe for permitting fish on board.

A woman needs to sell at least two baskets to make a decent profit. The women use ice to preserve the fish. Water from the melting ice seeps from their baskets, much to the irritation of fellow commuters. During peak hours, these women are not allowed to board. As a result, some of the fish gets spoilt.

When there are more than five women going to the market, they get together and hire a van, paying around Rs 50 per head for a one-way trip. On their return from the market, they usually buy groceries or essentials for their households.

As the timing of their return varies, some of them take buses to come home. "I have a difficult time when I return from the market. The conductors object to my entering the bus on the ground that the basket stinks. They want me to pay the bribe I would otherwise have paid on my onward journey," says Idumbayi of Kuttiyandiur.

Most of the traders in this category come from households that possess at least one traditional fishing craft. They usually have grown-up children who manage the household while they are away selling fish. Large sums of money have to be raised to acquire a craft for a grown-up son or to marry off a daughter, after paying a big dowry. Sometimes both these obligations have to be met.

The money needed for a fishing craft is usually around Rs 150,000. The amount given as dowry varies. A dowry usually

consists of a range of assets, such as craft and gear, cash and jewellery. The groom's family status in the village hierarchy often determines the amount of cash and jewellery.

A recent development has been the construction of brick and concrete houses or 'cement *veedus*'. A State government loan of Rs 25,000 for such construction is supplemented with loans from the local prawn trader. And instead of a two-room dwelling, a two-storied house is then built. Up to Rs 200,000 may be borrowed to construct the house. The rise in status, and the consequent access to government structures in the local area, drives such debt burdens.

Consequently, many traders in this category are either in the process of building houses or have completed construction. They are confident they will be able to repay the prawn traders. A big rental market for accommodation has opened up with the establishment of prawn farms in the local area. "I had to spend Rs 3,000 for bribing and entertaining the officials of the fisheries department," says Ariyamuthu of Kuttiyandiur. She clearly did not intend to repay the amount.

The third category of fish traders deals in dried fish—usually ribbon fish and flying fish as well as mackerels, when there are glut landings—and sell them in the interior. Besides this, when there are very large landings of sardines, they are dried for use as poultry feed. Women from both the second and third categories of traders help produce such poultry feed, following [the expansion of the poultry industry around Namakkal in Salem district.

Fish used for drying is usually bought from traditional fishing craft, usually when there is a glut in landings. The traders also use the catches from their own family's catamarans. The value of fish procured is between Rs 10,000 and Rs 15,000. With unit prices being the lowest, the quantity of fish procured is large.

Distant markets

These traders usually access distant markets, such as Kumbakonam and Thanjavnr located about 120 km from their villages. In most cases, the markets

are weekly fairs where all manner of agricultural, marine and artisanal products are sold. The low procurement cost, and the relatively long shelf-life of dried fish products, make the profit margins relatively high.

The scale of the operation allows the individual trader to hire transport on her own. Market timings are such that the women reach the market on the previous night to set up shop early the next morning. "I have often had to sleep in the open in order to ensure that I get a suitable place next day," says Madathachi of Kuttiyandiyur. The women usually sell fish on a retail basis but sometimes they get involved in wholesale trade.

The traders in this category are usually heads of joint families are over 60 years old and have few social commitments. Unlike young women, they can venture out far from the village.

The young women in the families manage the household and supervise the processing of fish. The older women belong to some of the most powerful families in the region and they are the ones who control the activities of the savings and credit groups.

The traders take part in these groups so that they can influence the other petty fish traders and the auctions on the beach. Many catamaran operators and

beach-level auctioneers, who owe them money, give the dry fish traders preferential access in return.

The other petty fish traders borrow money from the dry-fish traders. They curry favour with the latter traders for another reason as well—to buy fish on more favourable terms from the catamaran operators.

The typical thrift and credit group in these villages consists of 15 to 20 members. Each member pays Rs 20 per month. Every month the total amount collected is loaned out in multiples of Rs 200. The size of the loan and the repayment schedule are decided by members of the credit group. Decision-making power in the group is usually in the hands of the second and third categories of petty fish traders, although in all they constitute just 20 per cent of the members of the group.

The members are encouraged to open individual bank accounts. This enables access to concessional credit provided by the National Bank for Agriculture and Rural Development (NABARD), under its self-help group programme. Although this is a major achievement, the beneficiaries are the well-to-do fish traders.

Bank loans

To qualify for a NABARD loan, the individual trader must maintain a savings

account for a minimum of six months. During this period, she is not allowed to withdraw any money and should maintain a balance of Rs 250 at the end of the probation period. This stipulation effectively prevents traders from the first category accessing NABARD funding.

Worse, traders from the second and third categories often re-loan the money they get from NABARD to needy traders from the first category. Similarly, the lack of access to public transport is a major issue for the credit groups, though it affects only the few relatively well-off fish traders. The vast majority walk to the markets. For them, access to buses is merely an academic question.

The credit group spends a lot of time and effort in agitating for special public transport services from the town of Tranquebar to the large markets of Mayiladuthurai and Sankaranpanthal, though this will benefit only a few members.

Through its animators, ROSA has taken several steps to break the stranglehold of the well-to-do traders in the credit group, and also ensure that the group stays together. Recognizing the need for greater control over the allocation of financial resources within the household by petty fish traders of the first category, ROSA devised a series of training exercises

to improve the self-confidence of these traders. After 15 months of these exercises, 25 traders from the first category, from three villages, reported that they had more than doubled their savings. "for the past three months, I have been able to save Ks 30 per month, as I do not give any money to my husband. Instead, I demand that he contribute to the running of the household," says Selvi of Kuttiyandiur.

Two additional income-generating activities were initiated: production of fish pickles and high-quality rack-dried mackerels, both of which enjoy a good local market. Both these activities were taken up exclusively by women of the first category of traders.

While ROSA supplied the initial working capital and did the marketing, the traders provided their labour and skills to get raw materials at the cheapest prices- Profits generated from the activities were reinvested. After three production cycles, the volumes were large enough to ensure that each individual had a bank balance of Rs 250 at the end of a six-month period. Although only five benefited from this activity, it did open NABARD's doors to the traders.

Strenuous work

Transporting fish from the landing centre to the market is the most strenuous part for petty fish traders belonging to the first category. I am so tired by the time I reach

the nearby villages, I have little energy left to market the fish," says Deviga of Kuttiyandiyur. To reduce the strain, an appropriate means of transportation—a motorized tricycle that could carry eight persons and their baskets—was introduced in the villages.

It turned out that the tricycle benefited others as well. The second category of traders used them to travel from fish landing centres to the bus-stand. Besides, fishermen started using the tricycles to visit cinema theatres or tea shops at Tranquebar.

Local merchants used them to transport commodities from large towns such as Mayiladuthurai and Karaikal. The income generated from such operations was reinvested in a capital fund meant to be used to buy a new tricycle when the present one becomes unusable.

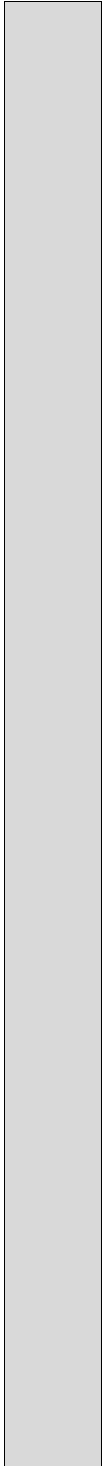
Breaking the stranglehold of the second and third category of fish traders is not easy. They resist any overt attempt to organize and strengthen the first category of traders. Since these women lack the entrepreneurial skills needed to run small units, the second and third category of traders manage to control these units too—by taking on administrative tasks such as procuring raw materials and maintaining the accounts.

Lately, though, the first-category traders have managed to muster enough confidence to take over the maintenance of accounts in two credit groups. In a few other cases, the group had to restructure itself to allow the first-category traders to form a group of their own.

However, it remains to be seen whether such a group can maintain its cohesion. Earlier, credit groups formed in this way tended to break up within a few months, as their management committee often lacked the ability to enforce decisions. ❧

This article is written by George Mathew, Officer, Social & Economic Unit, ODA Post-harvest Fisheries Project, Madras, India. The views expressed in it are his own

India



Community-based fishery management

Fishing by turns

The *paadu* system of fishery management used in certain fishing villages of Tamil Nadu, India is unique

The Pichavaram mangrove forest, located in the coastal districts of Cudalore and Thanjore in Tamil Nadu, India is of the estuarine type. This forest is surrounded by four main fishing villages, namely, Killai, Thandavarayan Cholagan Pettai (T.S.Pettai), Kodyampalayam and Palayaru. Nearly 60 per cent of the fishermen from these hamlets are completely dependent on the mangroves for their livelihood. The remaining 40 per cent utilize fishery resources of both the continental waters and the mangrove wetlands.

From time immemorial, the fishermen of Tamil Nadu have been following a traditional system of fishery management in the backwaters and estuaries. This system of management is locally called *paadu* or 'rotation' system. In the Pichavaram area, this traditional system is called *vunuvalai kattit* (*vunu* = stake; *valai* = net; *kattu* = regulation). This is mainly followed to manage fishery resources in the backwaters connected to the mangroves. In the Pichavaram mangrove waters, the intensity of fishing activities is mainly related to seasons.

Fishing during the summer season (mid-February to mid-October) is called *kodainaal* fishing (*kodai* = summer; *naul* = days) and fishing during the north-east monsoon season (mid-October to mid-February) is called *vaadainaal* fishing (*vaadai* = north; *naal* = days). The summer season is the lean season for fishing in the mangrove backwaters. During that time, the catch per unit effort is low, while the fishery abounds during the monsoon season.

In the traditional system of fishery management, fishing with any gear other than stake-net is restricted. To fish with *vunuvalai*, fishermen have to strictly

follow the *paadu* system of management. One of the main aspects of this management system is related to the place and period of using stake-nets. The stake-net is normally used to catch prawns by putting it across the tidal creeks, channels and other large canals, particularly during the low tide when the prawns move towards the sea. In order to evenly share the resources, certain regulations are followed.

Villagers should engage in fishing only in areas of the backwater earmarked for them. Fishermen from other villages should not enter into areas earmarked for others, even if they catch less of prawn and fish in their allotted areas. The areas earmarked for a particular village are subdivided into smaller areas with different names and the village fishermen are divided into different groups. Each group should fish in all the selected areas on a rotation basis.

Each fishing village in the Pichavaram area has its own traditional system of fishery management. This can be illustrated by the following example. Killai village is one of the main villages that depends on the mangrove fisheries. The fishing population of this village is distributed in seven hamlets.

All the fishermen from these seven hamlets are grouped together and divided into six groups of approximately 60 to 80 fishermen. Each group is called a *kattu*. In the mangrove backwaters, five fishing areas have been earmarked for Killai fishing village.

Moving around

Of the six groups of fishermen, the first five will fish in five different places together as one group, moving from one place to another. The sixth group will not

go stake-net fishing on that day but go fishing individually instead.

Each group's members go out together with their nets and canoes to their respective grounds and place the stake-nets across the canal in single or double rows, depending upon the availability of the prawn catch. In the end, all the catches are put together and divided equally among all the members engaged in fishing on that day. On the next day, the sixth group can go fishing in the first ground, and the first group in the second ground, while the second group goes to third ground, and so on. The fifth group rests on that day and engages in other individual fishing activities.

Thus, every group covers all the five places in five days and rests on the sixth day, and the rotation starts again on the seventh day. Each group thus fishes in an allotted area once in seven days. This is mainly to avoid overcrowding of the area where fish and prawns are available in large quantities. This system of fishery management not only helps in avoiding overexploitation but also provides an opportunity for equal sharing of the fishery resources among the fishermen.

The other fishing villages also have their own *paadu* system and each village respects the *paadu* system of the other villages. Every year, the fishermen conduct meetings to admit new members

to the groups or *kattus*, following requests and also to ensure that all the groups are balanced in number.

The *vanuvali kattu* system evolved thus: Earlier, when the population was small and the number of families few, there were more fishing areas. *Vanuvalai* requires more labour, nets and canoes. To ensure these inputs, family members who, earlier, went individually to some selected grounds for fishing, were grouped together.

In this method, those who reached the fishing ground first could occupy the entire ground and block access to all the fishes and prawns, while those who reached a little later would have lost their catch. Also, those families which were larger in size could dominate the village and effortlessly occupy the good fertile grounds, without permitting other weaker groups to come in.

The *paadu* system

To avoid these two problems, the villagers came to agree on a *paadu* system through which, on a particular day, one family goes to one place and another family goes to another place. On the next day, the first family goes to the second place with their family members. In the course of time, the original strength of each family increased through new linkages via marriage. The village population was grouped on the basis of *vagaiyaras* (families).

Due to declining fish resources as a result of siltation of many fertile grounds and the reduction in the flow of fresh and sea water, the Killai fishermen used to go to the Colerone river mouth, namely, Palayar, to fish during the summer (when the catch in the backwater is generally reduced) as well as in the backwaters, and return to their home village when the north-east monsoon started. In the course of time, some of the fisher families who had migrated did not want to return to Killai. But they found difficulties in taking part in the *paadu* system, since most of the demarcated areas were too far away. So they wanted separate areas for their stake-net operations. This matter was discussed in the Killai village panchayat (local council) and the claim of the Palayar fishermen was accepted.

Finally, Killai had to part with two *paadus*, with the condition that they must be used only by the Palayar fishermen who migrated from Killai and not by others who migrated from other fishing villages. Later, this condition was ignored and these places began to be used even by those who had migrated from other villages.

There are also other traditional methods of fishery management. Fishing for ray fish in the Coleron estuarine area using gill-nets has been banned by the local fishing community for the following

reasons: Ray fish fishing needs vast areas to operate and thus hampers other fishermen from fishing. Ray fish fishing takes longer, around 12 hours-fishermen have to keep their nets in the water undisturbed throughout the night. This too prevents other fishermen free access to the area. It is to avoid this and also to give a chance to others that ray fish fishing was banned at the community level.

Another method of traditional fishery management is migration of fishermen to different places. During the summer, the fishery resources in the backwaters decline. The quantity of fish available then is normally not enough for all the fishermen living around the backwaters. So, many of the fishermen do not go to the backwaters to fish during that season but instead go to the sea. This reduces the population pressure on fishery resources in the backwaters. During the monsoon season, the fishery resource in the backwaters increases and so most of the fishermen fish in the backwaters. This also prevents the overexploitation of the fishery resources of the mangrove backwaters.

Migratory fishermen

Interestingly, though the migration of the fishermen during different seasons reduces population pressure on fishery resources, it increases the dependency of the migratory fishermen on forest resources, particularly fuelwood. During

the summer, fishermen from Killai village migrate to the seashore and develop settlements, which, being on the seashore, have no suitable land for growing any tree species that can be utilized as fuelwood. They thus have to depend on the mangrove forest.

For a long time, the fishermen of Pichavaram mangrove backwaters enjoyed fishing in the backwaters without any external disturbance and, at the same time, they managed the fishery resources at the community level by self-regulation. In recent times, apart from the traditional fishermen, other communities, such as *Vedar*, *Vanniyars* and Scheduled Castes, have also started fishing in the mangrove backwaters. The fishing methods that these non-traditional fishermen follow are destructive to both fishery and forestry resources of the Pichavaram mangroves. The 'bundling' method of fishing followed by the *Vedars* prevents free flushing of the mangrove forest floor and even causes stagnation of tidal water and thus affects the biophysical conditions of the mangrove forest.

Due to the development of aquaculture farms in the region around mangroves, the demand for prawn seeds increased sharply over the last five years. The cost for each seed is between Rs 0.50 and Rs 1.00 and this attracts the non-traditional fishermen, particularly *Vanniyars*, to catch only prawn seeds in the backwaters. This goes against the wishes of the traditional fishermen who never exploit prawn seeds, since they know that this will affect future fishery resources. They asked the *Vanniyars* to desist from catching juveniles. But the *Vanniyars* refused to obey, emboldened by their majority status in the population. This led to communal clashes between the two groups and ultimately paved the way for the *Vanniyars* to stop fishing the juvenile prawns.

In recent times, according to the fishermen, fishery resources have slowly begun declining, due to siltation of the backwaters and creeks, and reduction in fresh water supply, and also due to the closing or silting of river mouths during the summer season. At the same time, the fishermen population has increased,

while other communities have also entered the mangrove backwaters. As a result of declining fishery resources and the heterogeneous nature of the communities utilizing fishery resources, the management of the fishery has become complicated.

According to the elderly local fishermen, at one time, the Pichavaram mangrove forest was very thick and trees were very tall. Each trunk of the *Avitennia* tree, particularly of *Avicennia officinalis* (*karungkandal*), was so huge that a single person could not put his arms around a tree. Now, according to these elderly fishermen, the forest cover has diminished to less than a quarter, and the tree density has been greatly reduced. They also say that now they see only shrubs, not big trees.

Several reasons are offered to explain the degradation of the Pichavaram mangrove forest. According to the local people, until 1972, the Department of Forest followed the coop system for tree-felling. They say that five coops were conducted between 1952 and 1972 in various areas of the Pichavaram mangrove forest. Only local people took the contract for felling the trees. In this system of tree-felling, the contractor should cut the matured and dead trees about 1.5 feet above the ground level within the area specified.

The area covered by one coop was about 30 acres and, altogether, seven coops were given for felling. Thus, the total area in which felling was permitted was about 210 acres. The labour charge for felling the trees was Rs 2 per tonne, while transportation by boat cost another Rs 2 per tonne. In all the coops, felling was carried out over the 20 years between 1952 and 1972. The coop system has since been abandoned.

Rampant felling

According to local people, the contractors used to remove all the trees, irrespective of age, ignoring norms and conditions. They also removed more than they were permitted. The villagers say that, after the felling, not a single tree has grown in these areas. The villagers also say that in certain areas, land has been converted into farming land and is now being used for the cultivation of groundnut.

Since 1972, the trees of the Pichavaram mangrove forest were felled on a large scale mainly for festivals, marriages and cremations. This mass felling of trees was carried out with the knowledge of the forest officials. During the festival season, the Forest Department used to publicly announce that villagers were allowed to fell trees for festive reasons. This resulted in unrestricted felling of trees during festivals. During weddings, invitations were given to the local forest officials by the head of the family, and consent for felling trees obtained. These practices, however, stopped about ten years ago.

The mangrove forests of the Pichavaram area have also been degraded by the collection of firewood for domestic purpose. But during the last five or seven years, local people say, collection of firewood has reduced, mainly due to strict enforcement of laws by the Forest Department. However, informal surveys reveal a continuous removal of large trees and twigs from the mangroves for domestic use.

All the local people believe that the mangroves are not degraded by grazing. In fact, some of them say that grazing actually helps the mangrove trees to grow since the cattle plough the ground with their hooves, apart from providing organic manure in the form of urine and dung.

The elderly fishermen of the area fully understand the importance of mangroves for fishery resources, protection against cyclones and soil erosion, etc., but do not have any idea on conservation. Most of the elderly fisherwomen were not aware of the importance of mangrove forests, but were willing to accept the truth. At the same time, they have the feeling that cutting wood for fuel is harmless to the forest. The youth among the fishers know the importance of the mangrove trees but also lack any idea on how to conserve them.

All of them, however, blamed the Forest Department officials for giving permission to cut the trees under the coop system, and for illegal felling in the past. But they also said that the forest officials are now strict in protecting the forest. ♣

This article has been written by S. Subramanian of the Fisherfolk Organization for Advancement, Chennai, India

Natural disasters

Cyclone warning

Under an FAO project in India, a pilot scheme for disaster preparedness training in coastal villages is under way

The FAO project on Training in Sea Safety Development Programmes to Reduce the Loss of Life Amongst Fisherfolk During Cyclones was initiated as a result of the high loss of life amongst fisherfolk in the November 1996 cyclone in East Godavari, Andhra Pradesh, India. Balusuthippa, Bhairavapalem and the surrounding hamlets were amongst the worst affected, resulting in this project being focused there.

A baseline survey commissioned by FAO shows that of the 1,435 fisherfolk lost during the cyclone, the vast majority were from two categories: 830 were shrimp-seed collectors lost from the outlying sand banks and islets; and 569 were fishermen lost at sea from capsized trawlers. The study shows that very few lives were lost in the villages.

For these reasons, this project has been focusing its efforts on reducing the vulnerability of these two most affected groups, namely, the shrimp-seed collectors and the fishermen on trawlers going for several days of fishing. (Fishermen of *navas* and other craft generally go for much shorter fishing trips and, having watched the weather signs, generally do not get caught out in severe conditions).

For both groups, the project intends to work to increase their confidence, comprehension and response to cyclone warnings, and improve their ability and diligence in monitoring them. Wider use of transistor radios and two-way VHF radio communication systems will be encouraged and demonstrated. One hundred VHF sets, provided by the project, are to be installed, mainly in trawlers, but also in fishing villages. The sets in the villages will be mobile ones

which could be relocated to other villages, if required. The District Collector's office and the Department of Fisheries in Kakinada will also have a set each. Two continuously manned VHF shore stations, with 30-in antenna towers, complete the network for this pilot project. The system operators will be trained to communicate timely and appropriate warnings to the villages and trawlers, in addition to general weather and fishing information at other times of the year.

For the trawler fishermen, direct communication about weather conditions and with their colleagues on other craft is intended to assist them in taking more appropriate action in the face of deteriorating weather.

Additionally, the project aims to provide at least 50 lifefloats to trawlers. The lifefloats are based on an established US Coast Guard design adapted by FAO's naval architect for fabrication in local boatyards. A prototype has been tested in Kakinada and meets the approval of the boatowners, fishermen and the Department of Fisheries. Each lifefloat easily supports 10 men in the water.

In the 1996 cyclone, most fishermen drowned after their trawler capsized, because no floatation devices were available—crafts are observed to contradict Marine Fishing Act regulations stipulating the carrying of lifejackets and lifebuoys. However, experience shows that very few crew know how to correctly don a lifejacket. The crews have little confidence in them and the owners do not ensure that they are carried.

Uses of lifefloat

The lifefloat, on the other hand, sits on the roof of the wheel-house, is easily accessible and its use is instinctive. It can

be produced locally and relatively inexpensively, probably cheaper than 10 lifejackets. Initially, pressure from crew may see its more widespread installation, but later, legislation might ensure that it becomes mandatory equipment.

In efforts to reduce the vulnerability of shrimp-seed collectors, it is important that they are brought back from the outlying and low-lying areas before conditions deteriorate to a point where this becomes impossible.

As mentioned above, the village is a much safer place than the shrimp-seed collection grounds. Disaster preparedness training in the villages is under way in a pilot scheme being implemented by a team of 20 Storm Safety Extension Officers (SSEOs) trained by the project.

These SSEOs will mobilize volunteer Storm Safety Action Groups (SSAGs) in up to 30 pilot villages. They will facilitate the development and rehearsal of a community-developed contingency plan of action for each village. These plans are intended to complement the government's Cyclone Contingency Plan of Action and the work of the local revenue officers.

These plans will have two main components developed and rehearsed by the community SSAGs: preparation in the weeks before the cyclone-prone periods;

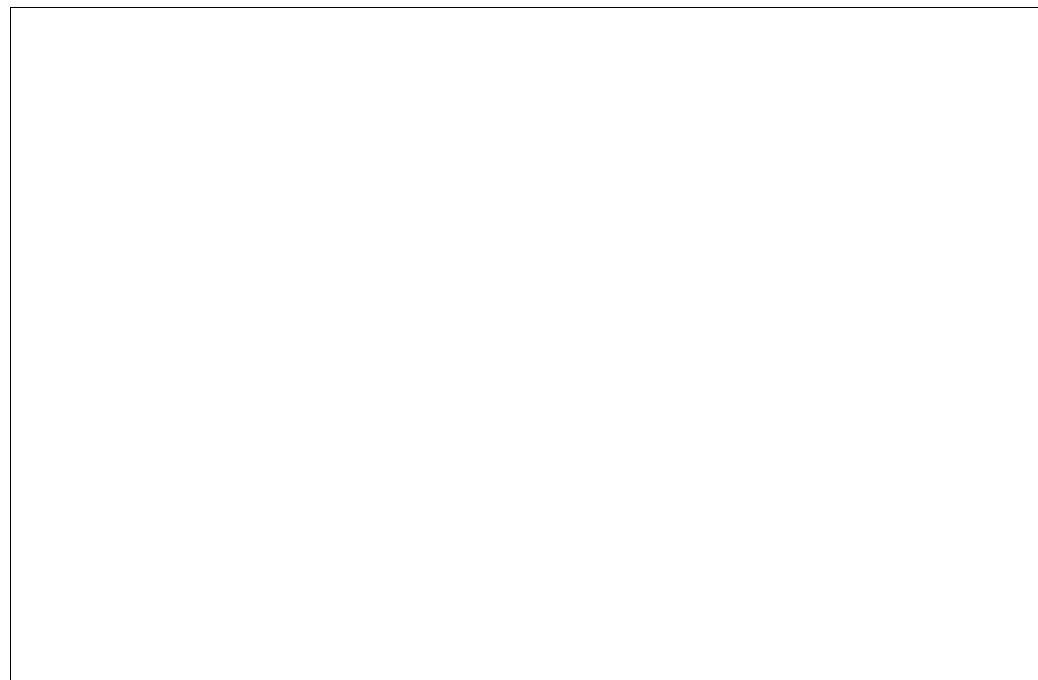
and actions to be taken in the event of an imminent cyclone. They will be location-specific, but will include:

- collection and storage of food, fuel and water at safe houses and cyclone shelters in the weeks before the cyclone-prone periods;
- continuous monitoring of weather bulletins and sharing of information in the community;
- plans for helping sick, infirm, aged and handicapped persons and pregnant women in the event of a cyclone; and
- plans for retrieving shrimp-seed collectors from the outlying areas and bringing them to cyclone shelters and safe houses.

The project will endeavour to provide the SSAGs with some basic equipment, such as transistor radios and yellow hard hats for protection and identification as managers in a crisis situation.

Constraints at work

The retrieval of shrimp-seed collectors from their collection grounds is constrained by the lack of motorized craft in some villages. The project has 12 diesel engines which will be installed in *navas* in villages with significant numbers of people engaged in shrimp-seed collection,



but with very few motorized navas. The beneficiaries of these engines should agree to use their *navas* for retrieval of shrimp-seed collectors, under the co-ordination of the SSAG, in the event of a cyclone.

A video, promoting diligent monitoring of weather bulletins and making sound preparations in the village in the pre-cyclone weeks, has also been planned. The Director of Doordarshan (India's national state-owned TV network) in Hyderabad has offered full support in producing this material.

During 1-3 February 1999, a workshop entitled 'Measures to Reduce Loss of Life Among Fisherfolk during Cyclones' will be held. This will review the events of November 1996 and seek to learn from them. It will also seek to draw on the responses to similar events in other countries and [he experiences gained in this project. The workshop hopes to produce concrete recommendations on reducing loss of life amongst fisherfolk during these type of natural disasters.


The project also proposes a vision for SSEOs' work so that fishing communities become very much more aware of:

- the causes, nature and behaviour of cyclones, and the effects they induce and why their track is hard to predict; and the need for increased confidence in the Indian Meteorological Department/All India Radio weather reports and cyclone warnings;
- what they themselves can do to be better prepared for cyclone disasters; and
- how the government machinery will interact with them in such emergencies.

The SSEOs will, by working closely and participatorily with volunteers, facilitate the development of SSAGs in each village and will be able to co-ordinate their own community-developed contingency plan of action. The result should be that the SSAGs and village community very much

feel ownership of, and commitment to, their plan.

Although many components of the community developed contingency plans of action may be similar, each will probably display a number of specific details which are appropriate to their location and their situation.

The measure of success will be how well the SSAGs are able to sustain and demonstrate the contents of their village plan, rather than how impressive it looks on paper. It is hoped that they will not have to put their plans to the ultimate test, but if they do, it is expected that the diligence of the SSEOs in this work now and SSAGs in future will save lives and minimize suffering. 

This report has been written by Paul Calvert, an independent consultant formerly with ITDG, UK

Of men and cyclones

The 'super-cyclone' that hit the coastal Indian State of Orissa has left in its wake untold miseries — and lessons

The dead were the luckiest of all. This is the recurrent feeling one gets as one walks past the huddled figures of men, women and children who survived the 'Mother of All Cyclones', as one commentator labelled it. Most dead bodies were 'disposed of', yet you could sense their presence, in the constant refrain from the survivors: "Why did we survive?" They do not mourn the dead, they mourn the living.

That was the most traumatic effect of the 'super-cyclone' that hit the coast of Orissa, India on 29 October: not the loss of livelihoods, food, shelter, clothing or even close relations — it was the loss of the will to live, perhaps a cumulative effect of all the other losses.

The official statistics provide reassuringly low figures and it is difficult to find two sources agreeing on any number, even after allowing for wide margins. Under the circumstances, suffice to say that Orissa, 'the domicile of gods', as a tourist brochure puts it, found itself turned into a purgatory when actually dealing with gods.

The eight coastal districts which have been affected by the cyclone were the most productive by any standard, and are rightly regarded as the 'rice bowl of Orissa'. The super-cyclone has turned everyone's attention away from another cyclone that had preceded it a couple of weeks ago. It did enough damage of its own to seriously affect dozens of villages in Ganjam district.

In fact, the counting of the dead from the previous cyclone had not yet been completed before the second one struck. The first cyclone took a toll of 1,000 human lives and 50,000 livestock, besides washing away an entire crop of paddy and

other crops. Between them, the two cyclones have laid waste the entire coast of Orissa.

From a fisheries perspective, the Bay of Bengal off the Northern Orissa coast is the most productive on the east coast of India. A wide variety of traditional fishing crafts and an eclectic mixture of fishing communities characterized the marine and estuarine fisheries in Orissa. Bengali fishermen dominated the northern parts of the coastline, migrant-settlers from Bangladesh fished the waters to the north of Paradeep, fishers from Andhra Pradesh dominated the Paradeep-Puri belt, and Telugu-speaking Orissa fisherfolk accounted for the southern parts. The Oriya people were not much interested in eating sea fish ("Too salty!" they would explain), were not seafaring people either, and until recently, were not bothered if people from other regions pitched tents en masse right in the middle of towns like Puri, Paradeep and Astaranga. The Mahanadi's deltaic region was lush with green vegetation, some of the most beautiful mangrove forests, mostly untouched by human activity, and numerous creeks lined by magnificent trees on both sides, which carried fishermen from villages like Jambo and Kharinasi all the way to the river mouth. Now, not a single tree remains, nor, for that matter, do large sections of the villages themselves. Mountains of mud have covered the villages and the neighbouring agricultural fields.

Bustling town

Before the cyclone, Paradeep was a bustling, — and not a very exciting — industrial town, with a PPL (Paradeep Phosphates Ltd.) and a PPT (Paradeep Port Trust) (pronounced ppi-ppi-yell and ppi-ppi-tee locally) which accounted for most of the employment in the area.

Paradeep is also the biggest fishing port in Orissa. Along with Chandipur-on-Sea in Balasore district, it is the base for all mechanized boats in Orissa (and often an emergency base for trawlers from Andhra Pradesh and elsewhere, in times of cyclones).

Besides, a large number of fishermen from Andhra Pradesh migrate to Paradeep or Puri annually in September and stay there fishing until January. These fishermen often take their families along with them, and live in makeshift tents on the beaches, and are accepted as a part of the milieu.

Singiri Narayana, who was from Subbampeta, near Kakinada, was one such fisherman who got caught in the cyclone with his family. He went to Orissa in September and the fishing was not good for the next two months. He owned an FRP (fibre-reinforced plastic) boat, on which there was an outstanding loan of over Rs.100,000. The traders in Paradeep advance huge amounts of money to the fishermen in return for their catches, and Narayana had obtained Rs. 50,000 from a trader. The fishing operations were just sufficient to buy fuel for the next trip and to pay wages to the crew, and Narayana had begun to despair about repayments.

On Thursday, 28 October, the fishermen could sense that a cyclone was brewing, and berthed their boats in the new fishing harbour, which, though constructed nearly five years ago, became functional only this year. Cyclones, one must remember, are a part and parcel of life in this part of the world, and are often no more than a nuisance. Normally, three or four cyclones hit the Orissa coast in a year. The real big ones often manage to go past Orissa and hit Bangladesh. Narayana had been caught in a few cyclones while fishing at sea, and though scary, they were not something that he dreaded. He made suitable arrangements to anchor the boat safely in the harbour and returned to Sandakhud, the fishing village of Paradeep, where he lived in a rented house with his wife and four children.

“Even if there had been a warning on the radio, it would not have been much help because it would be in Oriya,” he says. There was a cyclone warning out anyway.

The official cyclone warning wing did notice a storm brewing and sent out a warning notice to all districts. It is said that the devices for measuring the wind speed malfunctioned, which resulted in the department not being able to assess the intensity of the cyclone. Whatever happened, it was treated as just another cyclone. The district administrations had been alerted as a matter of course, and they apparently did whatever they were expected to do. That the cyclone ultimately destroyed Bhubaneswar, which was a full 60 km away from the sea, indicates that it would have been practically impossible to have evacuated the entire population. And the fisherfolk themselves were quite clear that they would not have been evacuated because cyclones were a ‘common occurrence’, and they stood to lose more by going away than by staying on. The disaster was almost inevitable.

Kodanda, a boy of 15, was one of the crew members who remained behind on his boat to keep watch. The fishing boat is the most important possession of a fisherman, and under no circumstances would he sleep undisturbed without knowing his boat was safe. As Kasulu, another migrant fisherman from Uppada, put it, “Our most important concern during the cyclone was the boats and how they fared.” The first thing the fishermen attempted to do immediately after the cyclone subsided was to rush to the fishing harbour.

By the morning of Friday, 29 October, the winds and the rain started — and continued for the next 48 hours without slowing down once. The house tops were the first to go, and houses started crumbling before the very eyes of the people. Large trees were uprooted and carried away. The gales were so forceful that a crew member on Narayana’s boat still nurses the wounds he received when he was carried away by the gales and flung on to the bushes nearby. Things started getting worse by the afternoon. The waves were breaking almost on top of the houses — and, within a few hours, not much of the village remained.

Worst effects

Meanwhile, Kodanda was experiencing the worst effects of the cyclone: the boat repeatedly rose high up into the air and

fell back with a crash. It was obvious that it would not survive any more impacts and would destroy whoever was on it.

Kodanda prepared to jump into the water to reach the shore. Ramana, who was keeping vigil on the next boat, jumped into the water and was immediately hurled against the rocks and crushed to death. Kodanda was luckier, and he reached the shore with much difficulty. From the harbour, it was about 5 km to the town, and walking on all fours, it took him about 12 hours to reach the town.

Narayana and family, whose house was destroyed after the first few hours of the cyclone, moved into the nearby temple, which provided sanctuary to hundreds of people. There was not enough space to sit, and everyone was forced to stand for the entire duration they spent in the temple. The kids started crying from hunger. Intense cold added to the general misery.

Meanwhile, water started streaming up, digging channels by the sheer force of its velocity, and pincer-like, encircled the village and destroyed the smaller hamlets on either side of it. Not only have these hamlets vanished altogether, most of the inhabitants too were carried away. "We could see people being washed away, and apart from shouting, there was nothing we could do," Narayana recounts. Sandakhud was lucky as it was located on

an elevated spot (a fact that you would not have noticed at other times), and remained standing like an island, while, all around, the cyclone wreaked its destruction.

Bishnu Pattnaik, an elderly entrepreneur whose small but efficient Oriental Dry Fish Industries was not only a profitable venture, but one which provided inspiration for many other such units to come up in Orissa and elsewhere, had entered into an agreement with an NGO in Cuttack to conduct training for fisherwomen on improved processing methods. He had refurbished the production unit at Sandakhud at a cost of Rs. 50,000 and was returning to Cuttack, when he got stuck in the cyclone, and barely survived the fury of the storm. Now, an empty patch of land remains where Oriental Dry Fish Industries used to be, because it was located right on the beach and must have been the first to go in the tidal wave.

Pangs of hunger

When the cyclone finally relented around the afternoon of Sunday, hunger continued to be the biggest problem: none of the fisherfolk — including the children — had eaten for three days, and there was nothing to eat. People were seen rummaging through what were once their homes to find anything to eat. They found powdered maize in one of the godowns, intended for export from Paradeep Port,

and grabbed whatever they could to eat. In two days, the army rescue boats appeared on the scene, and started relief operations.

Many other villages, in the neighbouring districts were not so lucky. It would be a week or more before any help reached people in Astaranga or Kakatpur blocks of Puri district and doubtless many other districts. Food supplies were airdropped for nearly a month before land routes could be established to several villages. It will be quite a while before electricity is restored in many areas.

The impact of the cyclone was quite widespread — starting just north of Puri, it extended up to the northern reaches of Balasore district, about 200 km of coastline. And it travelled inland up to Bhubaneswar, Cuttack and Baripada, which were quite some distance from the sea. The wind velocities were estimated to have been in excess of 350 km/hour. In all, the cyclone affected eight coastal districts very badly. Erasama block in Jagatsinghpur district, Mahakalpara block in Kendrapara, and Astaranga in Puri are the worst affected.

There were more horrors. And more death (official death toll: 10,000): dead bodies floating by in the creeks, bloated bodies flowing down the Mahanadi river and its various tributaries — a commonplace

incident at Nayagarh fish landing centre, which was itself totally devastated. Four dead bodies lay in Paradeep fishing harbour for three days before somebody noticed them and had them cremated. Hundreds of thousands of dead cattle lay everywhere (official toll: over 400,000). For a few weeks after the cyclone, the dead bodies from everywhere were brought to a central place, piled up, doused in petrol, and funeral pyres lit.

Hundreds fishing boats were lost or damaged, often beyond repair. To Narayana's dismay, he found no traces of his boat. His relatives in Andhra Pradesh managed to reach him after a week, and they helped him get back to Andhra Pradesh — completely washed-out, literally as well as figuratively.

Back in Orissa, people continue to hesitatingly explore their villages, which have turned into mounds of mud. They still huddle together as much as they can, and venture out only in groups. And they tread very carefully indeed: the villages they were born and lived in all their lives do not now exist as they knew them. And there is the constant fear of finding something new, like a dead body: bloated, blackened, and partially eaten — hardly human, or perhaps too human.

Dirty water

Nobody could bring themselves to drink the river water because of the bodies.

Cholera had broken out in many villages in Kendrapara and Jagatsinghpur districts. To add to the troubles, winter had set in with a vengeance.

Many people were left with nothing more than the clothes they wore at the time of the cyclone — some lacked even that. Many villages are still inaccessible. Sahana in Astaranga block was reached more than a week after the cyclone. Not a single house remained standing in the village. Some villages in Mahakalpara block no longer exist. What could have happened to the people there is anybody's guess.

Chandrabhaga, near Konark, has another tale to tell: the fishing community consists almost entirely of migrants from Andhra Pradesh, who have lived here for a long time, but they do not have any land rights. The local government wants to develop the beach here into a tourist spot, and have repeatedly evicted the community from their homes and destroyed the dwellings. A couple of years ago, the villagers were given some land to build on and the village shifted its location only recently. The cyclone came just as things were settling into a routine, sweeping away all the houses, and the fishers are again homeless.

The famous beach near Konark, once lined by tall casuarina plantations, is totally denuded of all vegetation, and the Konark lighthouse, which was normally hidden behind thick groves of casuarina, stands naked in the middle of a desert.

The spontaneous gestures of goodwill and co-operation that poured forth from different corners of the country were of great help. Many international and national organizations quickly reached the State and started rehabilitation programmes. Many NGOs banded together and formed task forces to co-ordinate relief efforts. Bhubaneswar, Cuttack, Khurda, Balasore and Bhadrak railway stations were besieged by huge bundles of clothes, food and other essential items. And assistance came from the fisherfolk in other States also. NGO workers in Andhra Pradesh reported that even poor households contributed something. Clothes, rice and cooking utensils were donated by many poor

households in the villages. The response from the urban elite was more informed and, hence, more muted.

The administrative machinery is said to have failed, but it was clear that neither the government nor the fishers fully comprehended the magnitude of the impending cyclone. The State's disaster relief wing and the district administrations were prepared to deal with the situation basing their calculations on past experiences. But this cyclone was not like any of the previous ones (the last cyclone of similar intensity can be traced back to 1942, and resulted in the Great Orissa Famine in 1944). Its impact was so vast and the destruction it wrought so complete that everybody was totally taken aback, and it took some time to get their bearings right.

Unfortunately, the people who made up the 'machinery' were themselves affected by the cyclone—rarely did one come across government employees who did not have their families, relations and/or friends caught in the cyclone. Given a similar situation, the consequences would not have been much different in any other State. At the best of times, the inaccessibility of the fishing villages in Orissa is legendary. The basic facilities that the government has at any level are far from adequate to cope with a disaster this huge. The total disruption of roads and communication systems—continuing to this day in many affected areas—made it even more difficult to access many areas. Under these circumstances, discussions with local people indicate, the administration did reasonably well. As for politicians, I should quote a senior leader: "The state elections should be held as scheduled, because there is no provision in the Constitution (of India) to postpone them because of a natural disaster. The people of Orissa want elections right away."

Opposite effect

The moral high ground appropriated by all and sundry at the expense of the 'government machinery' has achieved the exact opposite of what it was intended to do: it helped engender apathy among those who are really concerned and wanted to do something, and the fisherfolk are worse off for it. Stories about

looting of relief materials also helped assuage troubled consciences, as some people decided that there was no point in helping looters.

Reports indicate that the actual looting was no more than a fraction of the assistance received. Maiti, a fisherman-turned-'looter' from Nayagarh, was quite honest: "My kids were starving and so was I. In my position, you would have done the same."

However, things improved quite fast, and the more urgent needs of the people began to be met satisfactorily. Cold and lack of suitable clothing continue to remain problems, but there are indications that most of the people would receive assistance one way or the other.

A few weeks after the cyclone, when those of the boats that were still operational attempted to go fishing, the government declared a ban on all fish sales in the State. The ban, which is in force at the time of writing this article, has crippled the fishing communities yet again. With everything they owned gone with the wind, and their only source of livelihood banned, they are reduced to depending on the generosity of the external agencies for survival. Even if the ban were to be lifted, thousands of fisherfolk would still have to rebuild their livelihoods, and that would take a long time and a lot of money.

Life is resilient, if nothing else. And the fisherman is the best symbol of that. Even as these lines are being written, word has come from Orissa—from Paradeep, to be exact—that fishing operations have started once again, and very good catches were reportedly landing. The Uppada fishermen have got down to business: dozens of boats are being readied for the long journey ahead. They intend to take additional rations, just in case. The fish caught will generally be sold out of the State, so the ban will not affect them. No, they will not take their families this time.

And so it goes on. Life.

This report is by Venkatesh Salagrama of Integrated Coastal Management, an independent NGO based in Kakinada, Andhra Pradesh, India

Books or motors?

The case of the little fishing village of Jaleshwar in Gujarat, India throws up questions about the payoffs involved in 'growth' and 'development'

Adjacent to the western end of the Veraval marine drive and just behind the famous Birla temple lies the little Indian fishing community of Jaleshwar. Veraval is today one of the largest fishing harbours in the State of Gujarat. To people in fisheries, Jaleshwar was known in the 1970s as a prosperous fishing village, where the outboard motors (OBMs) had become part and parcel of the artisanal fishery. Visiting the village 30 years later, one notices that it still looks the same; children run around happily, looking scruffy and dirty; the adults go about their business as usual; and besides the new-looking fibreglass canoes on the shore, everything else in the community seems to have remained just the same.

Talking to a group of men in October of 2000, generally a peak fishing time, one realized that the season has not been as good as it should have been, but they are surviving because they had had a surprise catch of whale shark (*Rincodone*). The little community of around 400 families caught 70 large sharks. The large ones fetched Rs125,000 (Rs46.76 = US\$1) each and the smallest ones, Rs75,000. So that was like a windfall.

Mora Arab, now 70 and the first to have tried the OBM, narrates the story of their village. Their forefathers belonged to Patan, the *panchayat* (local council) adjoining the eastern end of the old Veraval municipality. They were cast-net fishermen who went to Hirakote or Sutrapada to fish in good seasons.

But as they did not get good prices for their fish there, 20-25 of Arab's father's generation decided to settle in Veraval so that they could have access to the Veraval market. This was in the 1940s. But, being Muslim, they were denied access to the jetty at Veraval, and so they decided to

settle illegally at the western end of the town, in this unoccupied, sandy space, where a tiny stream flows into the sea at Jaleshwar.

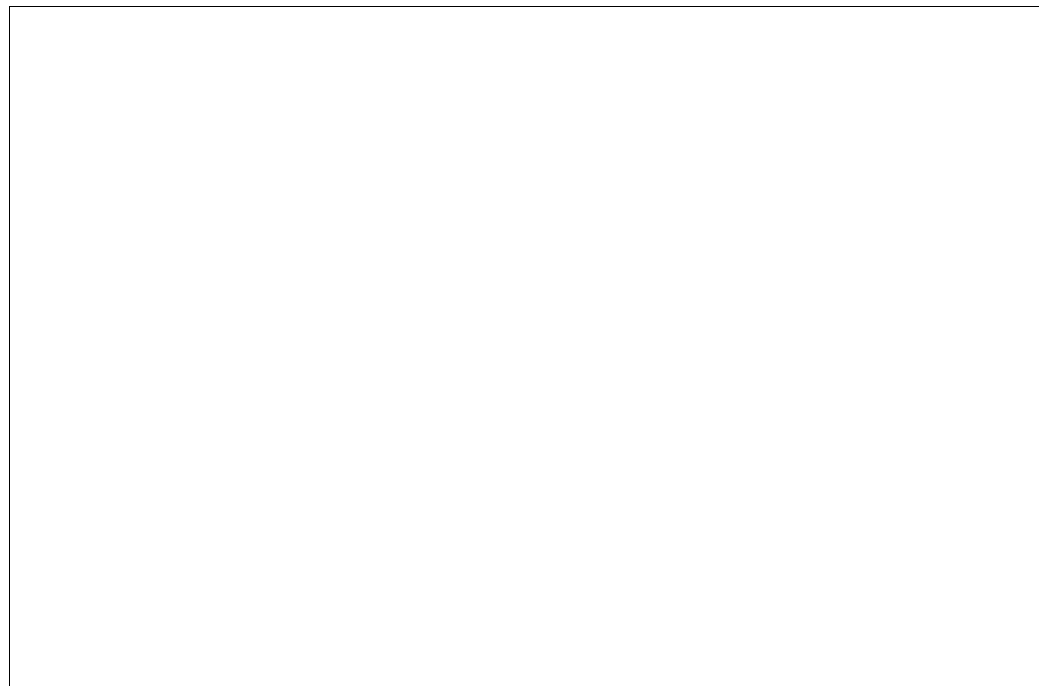
There are still unauthorized settlers today, accounting for around 1,600 votes in an otherwise Hindu-dominated ward of the municipality. The electricity line enters the village and so the houses have unauthorized electric connections, but little else of other infrastructure, like water, sanitation, roads, etc. Everyone buys water on an individual basis from private tankers. But the community has grown in numbers and the fishing too has developed.

The first big change was when the cast-nets were replaced by gill-nets, and the good pomfret catches increased incomes. This community attracted the attention of the government's fisheries officer in 1956, when the fisheries department had received six 4-hp British Anjani OBMs for trial fishing.

The established Kharva Hindu fishermen had refused these engines as they were skilled sailors and their catches were good. The fisheries officer was able to talk a few of these Machiyaras (the caste of Muslim fishermen) into trying the OBM as, for the most part, they were still rowing themselves to the fishing grounds or using very primitive sails.

First trials

"We were reluctant to use the motors at the start because we thought the noise of the motors would scare the fish away," says Arab. But the first trials came back with good catches. The fishermen realized that they were able to go to fishing grounds beyond the 15 fathoms where they normally fished. Encouraged by the catches but still untrained, others went in



for the motors, letting the new contraption run as long as the fuel permitted, afraid to touch it, lest it hit back.

Once the trials proved successful, the fishermen were ready to buy the OBMs and the more daring ones made a down payment of Rs500 for a 5-hp Evinrude motor. Evinrude's technician was on the spot to train them in the proper use of the engine and, from then on, there was no return. The fishermen soon needed one, two and three motors to keep them fishing regularly. Very soon, the Johnson 5-hp, Yamaha Aircool 8-hp and, finally, the Mariner 8-hp made their entries. Today, it is the Mariner 8-hp OBM that is the most popular because of its 365-degree rotation feature.

It was not only the motor but also the craft and gear that were gradually transformed. The cotton gill-nets were replaced by nylon ones in the early 1960s and, in the early 1980s, these were replaced or accompanied by plastic rope-nets and, in the mid-1990s, came the much lighter monofilament nets. So while the gear remained mainly gill-nets, their size did change. The number of pieces remained the usual 50-60, but the number of meshes increased. This meant that each piece got longer. Each fisherman utilized three or four different mesh-sized gill-nets to target pomfret, horse mackerel, seer fish and *hilsa*. Over the years, the width of the net also increased and being fixed

gill-nets, they targeted a larger variety of column fish.

These fishermen are also skilled shark fishers. They actually hunt shark in April and May with large spear-like devices with hooks at their ends. The operation can last for two to three days, during which a couple of boats encircle the shark, hook it and leave it to weaken, while they make sure that it remains afloat with buoys attached to the hook-line.

When they see the shark tire, they draw it nearer and then knock it on the head before hauling it in. One really wonders how they do this from their small boats, as the sharks they target are only the really large ones. But the fishermen do not recall any accidents at sea.

Fishing seasons

During the good fishing season, all the fishermen stay in the village, and a normal fishing trip starts around 4 a.m and ends by 9 a.m. In poorer fishing months, many of the fishermen are accustomed to migrate, with their equipment and family, to other fishing locations, generally to Shill, about 50 km west, where they live for about three or sometimes five, months. They sell their fish to local merchants there. With the introduction of the fibre reinforced plastic (FRP) boats in the mid-1970s, which were fitted with ice boxes, the fishermen were able to go for two-day fishing trips to 50-fathom depths.

In Jaleshwar, Muslim fish merchants from Veraval advance the fishermen money for their high-value fish. So, although they are assured of a market, they do not get the best prices because of the merchants' control. Although many of the fishermen are indebted to the merchants, they generally clear their debts during each season.

The fish catches have decreased since the mid-1990s. Veraval, where the fishery was modernized with huge landing and berthing facilities as part of a World Bank project, is home to 2,000 trawlers of 32-55 ft length, and 800 FRPs. Veraval has seen the boom-and-bust of the fishery between 1980 and 1996, with 50 per cent of its fleet out of operation in 2000. But this little community of Jaleshwar, which is still an illegal settlement, has continued to remain operative, adding between three to eight craft to its fleet annually. As the growth of this community has been from within, with no in-migration, over time, the labour to haul the craft and their large nets on shore has decreased, and, for the last two years, oil-operated winches have been used to haul the boats on shore.

So, from all technical points of view, this fishery has modernized, while remaining sustainable. But, then, we may ask how we assess sustainability if the living standards in the community have not 'improved'. While the houses have a more permanent look, they appear more like patched-up structures, growing as and when money becomes available. But, except for a couple of houses at the entrance of the village, few have a new look. Families have remained largely joint and, being Muslim, some of the fishermen have a second wife, a peaceful and regulated system of polygamy, with the first wife managing the common household. So households are large and the age of marriage very young, between 14-15 years, for both boys and girls. Interestingly, all deliveries take place at home, and the younger generation increasingly practices family planning, with the result that a young woman, before 18 years of age, has had two kids and has also undergone laproscopy.

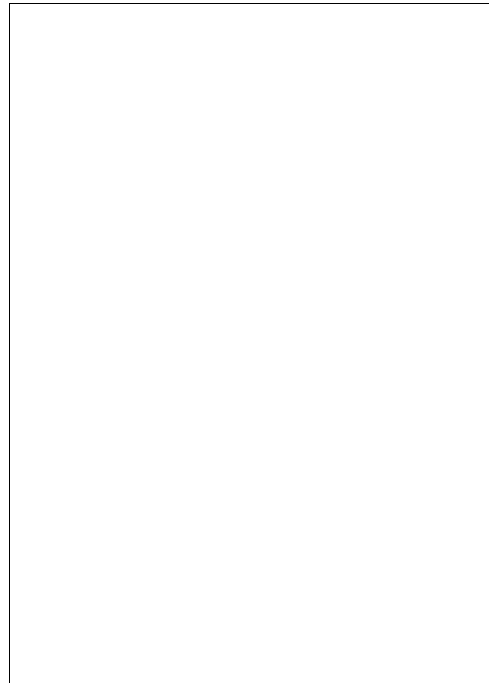
All the women get involved in the fishing activity, as the village is right on the beach.

They are at the shore at landing time, helping in the unloading, sorting fish, if necessary, and retailing the lower-valued species and drying the surplus. Once they cross the 35-year age limit, they seem to have greater freedom of movement and often take off on pilgrimages to holy places in all-women's groups. A few of the older ones have even accompanied their husbands to Mecca. Religious practice gives them their sense of identity and sanctions social behaviour, and the women are convinced that Allah takes care of them. In fact, all marriages take place within the community and between close relatives, but people do not report of many physically deformed or mentally handicapped children.

Though it is situated not even a kilometre away from the busy and bustling city of Veraval, not a single person from Jaleshwar seeks employment in the city. "We all live on the fishery and, in any case, how will we get employment without education?" asks Arab. Besides basic primary education for a small proportion of the youth, the majority in the village are still illiterate. Only one young man has studied up to the high school level. Being Muslim, the men do not drink; so where do all their excess earnings go? They say that the extra earnings have only helped them continue fishing. They need new motors almost every other year, for which they now pay Rs52,000. Although the monofilament nets are lighter, they have to be replaced every almost season. The fishermen continue to use plastic and nylon nets, replacing which is expensive. They get the kerosene for their motors at a subsidized rate, but they still require Rs5,000 or more for kerosene every four months, for each boat. The FRP boats are lighter than the wooden ones and require less maintenance, but their quality is running down too. The fishermen pay Rs52,000 a boat, which needs to be replaced once in five or six years, although their actual life may be from between 10 to 15 years. Together with the subsidies that they received in the initial stages from the Fisheries Department, the fishermen's earnings just manage to keep them afloat.

No wild ambitions

As a community, they do not seem to have any wild ambitions. They all work hard, do not starve and have a basic community



life. Ismail Arab is the community *Patel* (head), together with five other elected elders, who sort out intra-family disputes and represent the community when needed.

But they obviously have very little political clout and suffer caste discrimination even from their better-off Muslim brethren, who belong to the old business community of Veraval. This social 'backwardness' is not surprising in a State like Gujarat. Though Gujarat is productive and rich, the State has not felt the need to develop social infrastructure in the rural areas. With the State abdicating its responsibility to safeguard citizens' social and economic rights, it is no wonder that in this era of liberalization and globalization, Gujarat ranks highest in the development of private investment in infrastructure, according to the most recent World Bank report.

In the context of a search for a sustainable fishery in an otherwise 'growth'-oriented development paradigm, the reality of Jaleshwar raises several questions. The community has adopted modern technology to remain afloat. The investments in the fishery are large and, therefore, the fishing assets are substantial. This actually means that the greatest advantage from the fishery is taken by the companies that supply the fishermen with inputs. The excess

earnings have not been siphoned away for 'social development', like better education and habitation. The fishermen, for their part, have not desired to get bigger and more aggressive in their fishing, despite the trawler threat.

Comparing Jaleshwar to the little fishing village of Marianad in Kerala brings up an interesting contrast. Marianad was where a community development experiment was initiated, which became famous for the people's fish marketing co-operative that provided a case in favour of the artisanal fishery. In 1974, when fishermen from Marianad visited Jaleshwar to see how the OBM was faring, they returned saying, "Fine, the OBMs have helped them catch more fish, but they are still 'uncultured'." Since then, the fishermen of Marianad have motorized too and are not only using 25-hp motors, but also devices like global positioning systems to help locate the fishing grounds. Artificial reefs and more efficient nets have become common too. The village has grown, both internally and due to in-migration, and one can visibly see the developments in housing, infrastructure, allied businesses and material prosperity. The children of the fishermen now go to college and there are even a couple of doctors, engineers, M. Phils., teachers, nurses, priests and several graduates in the village. The fishery is still very vibrant, but indebtedness and wasteful consumerist expenditure is also very high. Violence in the village—both interpersonal and against women—is on the increase. The percentage of suicides and murders in the population is also high. So one wonders about the payoffs. Has competitiveness and aggression at sea led to greater competition and violence on land? Only a deeper study will throw more light on assessing 'growth' and 'development' in the context of the artisanal fishery. ♣

This piece is written by Nalini Nayak (nalinin@md5.vsnl.net.in), Member of ICSF, with inputs from A. J. Vijayan, activist-researcher, and A. D. Dholakia, Associate Professor, Fisheries College, Veraval

Tamil Nadu fisheries

The twilight zone

The experiences of zoning for small-scale fishermen in Tamil Nadu, India reveal both potential and hazards

One of the suggestions made to protect the livelihoods of small-scale fishermen throughout the world is the installation of special artisanal fishing zones. Such zones would make inshore fishing areas off-limit to industrial fishermen and, correspondingly, reserve them for small-scale operators. The experiences of Tamil Nadu's zoning from the 1970s onward point out potential hazards as well as conditions necessary for the success of such arrangements.

At the onset of the so-called Blue Revolution in the early 1960s, Tamil Nadu had thousands of marine fishermen, operating from small hamlets along its 1000-km long coastline. These fishermen generally confined their operations to an innermost sea area, which roughly coincided with the contours of the continental shelf. Seasonal migration took them up and down the coast, but rarely further than 10 km from shore.

The government's promotion of trawling technology drastically changed the seaside panorama. By the late 1960s, harbour centres berthing small trawlers had developed all along the coast, and conflicts between trawler and artisanal fishermen were rampant. The main problem was that trawlers ventured inshore to catch high-value shrimp. Not only did they intrude on grounds that artisanal fishermen considered theirs, but the trawlers also caused extensive damage to artisanal fishing gear.

These confrontations resulted in major unrest. The State government, anxious to keep the peace, constituted committees to investigate and settle whatever incidents came to its attention. At the same time, it started to explore available policy choices. One of its core options was the physical

separation of the antagonists through the installation of distinct fishing zones.


As the government of Tamil Nadu exerted strong control over access to trawling technology in the first phase of modernization—most trawler fishermen depended on the government loans and construction schemes for their vessels—it first tried out this lever. Around 1968, the Fisheries Department included a clause in its contract, stating that recipients of trawling gear could only fish outside a limit of three nautical miles.

This clause is important as it constituted the first, albeit indirect, mention of an official artisanal fishing zone in Tamil Nadu. However noble its intent, the measure failed to make a dent on the flow of the 'pink gold rush'. As trawlers did not bear registration marks, violators of the clause could not easily be identified. Moreover, the clause's foundations were shaky, such as in the case of a transfer of ownership. Could the new trawler owner be held to the original terms of agreement? The Fisheries Department had its doubts and rarely seems to have pursued the matter.

In 1978, after serious riots between artisanal and trawler fishermen rocked Tamil Nadu's capital, Madras (now Chennai), the State government decided to formulate legislation based on the distinction of fishing zones.

Long-drawn process

Realising, however, that law-making is a long-drawn process and that immediate action was being expected, the government immediately issued an executive Government Order (GO 881 of 1978). Alongside other measures such as time zoning, GO 881 prohibited trawling activities within a 3-mile inshore zone. For



the first time, the government also made attempts to *mark* this zone by means of a series of 'country buoys'. As the name suggests, however, these markers were so elementary that the first storm washed them away.

Trawler fishermen straightaway challenged GO 881 in court. It was not the 3-mile rule which incurred most of their wrath, however; it was time-zoning. According to the order, time-zoning implied that trawler fishermen remain in port during the night, only to be released at 6 a.m. Not only would this deny them the best fishing moments (night-fishing purportedly being more productive than fishing in daytime), it also closed off fishing grounds that could not be reached in a day's voyage. Most seriously, time-zoning stood a great chance of being *enforced*, as it involved no more than installing a chain across the harbour mouth.

In response to the appeals, the High Court of Chennai imposed a stay order suspending GO 881's main clauses for several years. The order was finally superseded by the Tamil Nadu Marine Fishing Regulation Act of 1983. This Act continued along earlier lines, decreeing the introduction of geographical fishing zones as well as time-zoning arrangements for trawler fishermen. It too was greeted by a flurry of court cases from disquieted trawler owners.

Interestingly, one of the plaintiffs argued that if trawler fishermen were to be relegated outside the 3-mile zone, artisanal fishermen should be obliged to stay within. Although this was contrary to the import of the Act, which did not make any mention of a mandatory zone for artisanal fishermen, the district court judge who was handling the case felt otherwise. According to his decree, artisanal fishermen not only enjoyed a preferential *right* to a separate inshore zone, it was also their *duty* to confine their operations to this area. This, of course, artisanal fishermen protested against.

As in the case of GO 881, courts pronounced stay orders on the Act of 1983, and it was only toward the end of the decade that the various legal objections were definitely refuted by the Supreme Court of India. During all this time, the State government was unable to enact any of its fishing regulations.

By 1995, the situation had fundamentally changed. Although time-zoning was still in cold storage, the Fisheries Department was now free to implement other sections of the 1983 Act. The 3-mile rule was its showpiece regulation. Any beachside visitor, however, could tell that it was poorly observed. In fact, trawler fishermen regularly encroached on inshore waters, and conflicts with artisanal fishermen persisted. It is instructive to consider why the 3-mile rule

was, and is, so badly implemented by the State government.

One of the basic factors is a lack of political will. This is related to the fact that trawler fishermen wield considerable clout in Tamil Nadu, whereas the movement of artisanal fishermen has lost force since the 1970s. Fisheries Department officers charged with enforcement thus receive insufficient backing to undertake sensitive missions, such as the apprehension of trawlers. Another reason is found in the Act's motivation, which is primarily of a social nature. Like similar legislation in other parts of the world, its main goal was the resolution of social conflict, not the management of depleting marine resources. Once overt conflicts died down, government attention was once again diverted.

The character of coastal fisheries and the set-up of fisheries management also posed formidable barriers to the enforcement of an artisanal fishing zone. Where does one find the resources to install an infrastructure capable of guarding a 1000-km long coastline? And how does one establish encroachments, if the artisanal fishing zone is unmarked and participants lack advanced positioning technology?

In 1995, the Fisheries Department in northern Tamil Nadu owned only one

small speedboat and a small crew to patrol 400 km of shore. This boat was slow and frequently out of order. In addition, officers generally lack sea legs and are reluctant to set out for sea, fearing molestation and other unpleasantness. The prevailing reality, therefore, is that patrolling seldom occurs, and fishermen are left to settle any problems that arise amongst themselves.

This directs attention to the management set-up. In spite of the fact that fishermen along the Coromandel Coast of India have a long and rich tradition of resource management, their institutions do not enjoy any official recognition. As it is, the State government is the sole authority for fisheries regulation and enforcement with regard to inshore waters. There is, however, a mismatch between governmental capacities and the sweep of fisheries legislation. Under present circumstances, the 3-mile rule in Tamil Nadu mainly has a token value.

The idea of artisanal fishing zones derives its charm from its comprehensiveness as well as its simplicity. It ventures a simple and apparently effective solution to the problems of artisanal fisherfolk. Developments in Tamil Nadu, however, indicate potential obstacles and potholes.

Unenforceable rule

An important question is whether it is worth striving for an artisanal fishing

zone if the rule cannot be enforced. Many inshore fishing zones are heavily contested, and industrial fishing interests do not give up their stakes without a fight. Political support is imperative to achieve any success.

It also helps if a proposal stands a real chance of being implemented. Declaring an artisanal zone many kilometres in length and badly marked does not contribute to its realization, particularly if staffing and resources are meagre. Co-management arrangements of government, together with fishermen, might form a solution, provided fishermen are also given official enforcement authority. To my knowledge, however, this has not been tried out seriously at a more than local level in Africa, Asia or Latin America. Many governments are wary of decentralization and the loss of power it implies, and will not readily concede far-reaching co-management arrangements.

This does not deny the potential value of artisanal fishing zones as an instrument of fisheries management. It does suggest, however, that the scheme should be well designed and tested.

The Tamil Nadu experience finally makes clear that the successful enactment of any measure to defend the interests of artisanal fishermen requires concerted and enduring effort. The proclamation of GO 881 and the Tamil Nadu Marine Fishing Regulation Act of 1983 was directly related to the activities of the artisanal fishermen movement in India. This movement, starting in Tamil Nadu and in Goa, soon developed into a potent nationwide force. The decline of the same movement in Tamil Nadu after the 1970s, likewise, constitutes one of the main reasons for the non-implementation of available legislation. To achieve success, political momentum must clearly be maintained over a long time period. For many fishermen movements, this is a huge challenge.

This article is by Maarten Bavinck (mbavinck@siswo.uva.nl) of the Centre for Maritime Research (MARE), University of Amsterdam, The Netherlands

The Chennai Declaration

The Chennai Declaration on Sea Safety for Artisanal and Small-scale Fishermen was adopted at a recent BOBP/FAO workshop

Conscious that fishing is the world's most dangerous occupation with more than 24,000 deaths per year attributable to weaknesses in the institutional and regulatory environment, a declining resource base, and poor socioeconomic conditions in the sector;

Realizing that sea safety regimes are weakest amongst the artisanal and small-scale fisheries sectors, particularly in developing countries;

Realizing that more than 80 per cent of the world's artisanal and small-scale fishers are concentrated in Asia, where many of the coastal target stocks are over- or fully exploited;

Recognizing that the consequences of loss of life fall most heavily on the surviving families, for whom alternative sources of livelihood may not exist;

Concerned about the inadequacy of social and political will to address the issue of fatalities amongst artisanal and small-scale fishermen;

Accepting that the issue of safety for the artisanal and small-scale fisheries sectors is not fully recognized, or acknowledged, by fisheries policy objectives and further, that the focus is more on economic and resource management issues than the safety of artisanal and small-scale fishermen;

Concerned that current fisheries management regimes for coastal fisheries in the region may lead to increased levels of operational risk for artisanal and small-scale fishermen;

Concerned that safety measures, together with supporting regulations and standards relevant to the needs of artisanal and small-scale fisheries sectors, remain inadequately addressed by fisheries and maritime administrations in the region;

Recognizing that neither the Torremolinos International Convention for the Safety of

Fishing Vessels, 1977, as amended by the 1993 Protocol, and the 1995 Convention for the Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel are in force, nor are they applicable to fishing vessels under 24 metres in length;

Recognizing the limitations in institutional capacity of fisheries and maritime administrations in the region to undertake all responsibilities associated with their mandate;

Realizing that fishing operations are carried out in a hostile and hazardous environment from vessels often having weaknesses in their design, construction and equipment, thus being prone to failure;

Accepting that fishermen in both traditional and diversified fisheries are exposed to inherently high levels of risk and resulting accidents, for which there are few survival or rescue strategies;

Emphasizing the urgent need to address the multi-dimensional issue of sea safety for artisanal and small-scale fishermen on a regional basis and in a holistic manner; and

Recognizing that the problem is not insurmountable;

We, the representatives of Fisheries and Maritime Administrations, Coast Guard/ Navy and Fishermen's Associations, nominated by the Governments of Bangladesh, India, Indonesia, Malaysia, the Maldives, Sri Lanka and Thailand, having participated in the BOBP/FAO Regional Workshop on Sea Safety for Artisanal and Small-scale Fishermen held in Chennai, India from 8th to 12th October 2001, now therefore:

Resolve to address, as a matter of urgency, the issue of safety at sea for artisanal and small-scale fishermen;

Recommend that sea safety issues be comprehensively integrated into member country's fisheries policy and management

frameworks. This would include associated commitments under the Code of Conduct for Responsible Fisheries and other regional, inter-regional or global instruments and initiatives;

Recommend measures, which would result in a harmonized and holistic fisheries management framework for the Bay of Bengal;

Emphasize the need to rationalize institutional mandates, legislation, regulation and enforcement at the national level, in order to enhance sea safety in artisanal and small-scale fisheries;

Ensure the incorporation of FAO/IMO/ILO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels and the FAO/IMO/ILO Document for Guidance on the Training and Certification of Fishing Vessel Personnel into regulatory frameworks, as appropriate;

Recommend that fisheries and maritime administrations enhance their knowledge of the operations and constraints of the artisanal and small-scale fisheries sectors in order to formulate effective guidelines, standards and regulations for the safety of fishing vessels, including the certification and training of crews;

Recommend the development and implementation of education, training and awareness programmes, which satisfy regulatory requirements, while also building a culture of sea safety within artisanal and small-scale fishing communities;

Recommend that mandatory requirements for improving sea safety be supplemented by other strategies, which involve the participation of the fisher communities, families, the media, and other stakeholders in order to promote the adoption of a wide range of safety measures;

Recommend that member countries undertake measures directed towards ensuring enhanced economic viability of artisanal and small-scale fishing enterprises as an essential element of the sea safety issue;


Recommend that administrations consider the provision of financial and other incentives to encourage and ensure the widespread use of safety equipment, together with training in the use of such equipment;

Recommend that a programme of applied research and development be initiated, focusing on the development of cost-effective safety-related equipment relevant to the needs of the artisanal and small-scale fisheries sectors;

Strongly recommend the formulation and implementation of a regional sea safety programme, employing a consultative and participatory approach, building upon institutionally derived data, together with the operational experience of artisanal and small-scale fisher communities;

Recommend that the issue of sea safety be addressed on an urgent basis. This could be achieved through a regional mechanism such as the Inter-Governmental Organization proposed by the BOBP member countries during the 24th meeting of the BOBP Advisory Committee at Phuket, Thailand. (The Phuket Resolution - October 1999);

Agree to seek the support of the donor community for the development of a sea safety programme, and also request FAO to seek such assistance on our behalf.

Adopted on Friday, 12th October 2001 in Chennai, India 

The Chennai Declaration was adopted by participants from Bangladesh, India, Indonesia, Malaysia, the Maldives, Sri Lanka and Thailand, at the BOBP/FAO Regional Workshop on Sea Safety for Artisanal and Small-scale Fishermen held in Chennai, India from 8th to 12th October 2001

Sustaining marine biodiversity

Ecosystem-based fisheries management has a special relevance in a multispecies context

Fish, and, more generally, living aquatic resources are an integral part of the ecosystem. (Ecosystem is a natural environment in which living organisms are in continuous dependence and interchange among themselves, and also with the nonliving matter.) However, the management of exploitation of fish and other living aquatic resources has been handled on a group-by-group or species-by-species basis.

One example from India is the recent classification of sharks, rays, gastropods and bivalves under Schedule I of the Wild Life (Protection) Act, thereby protecting only these groups from exploitation. These management options on conservation are under the paradigm that the productivity of fish stocks is a function only of their inherent characteristics such as growth, mortality, fecundity, etc. While this assumption holds good to a certain extent, the reality of the interdependence of fish and the ecosystem components needs to be recognized. Moreover, it is almost impossible to exclude a particular group or species of fishes from exploitation in a multispecies context. This is true for the trawl, gill-net, line and seine fisheries.

Distribution and abundance of fish stocks are related to (i) the dynamics of the marine environment, namely, the weather, and the physical and chemical oceanography; and (ii) the interactions between the predator and prey species.

The dynamics of several environmental and oceanic factors such as monsoon, upwelling, currents and productivity, influence the distribution, aggregation and abundance of fish stocks. If the available fish stocks were to be uniformly dispersed in the seas, they would seldom be encountered in the fishing areas. For

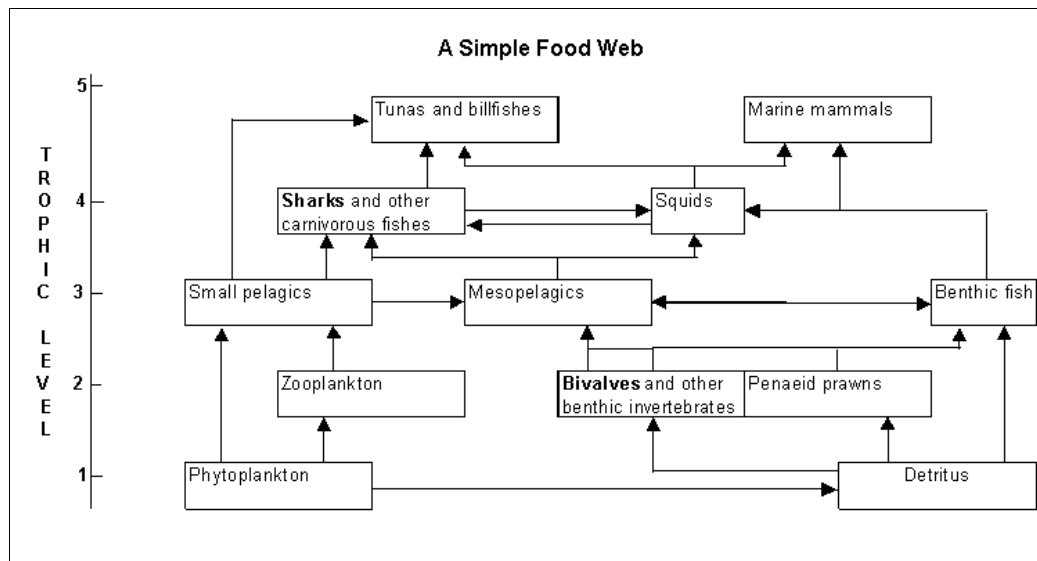
example, if the yellowfin tuna were to be uniformly distributed in the world oceans, it has been estimated that there would be only one yellowfin tuna of 10 kg for every 2.8 sq km of the ocean. Such a density is of no fisheries value because of the high cost of searching and catching that tuna of 10 kg from a 2.8 sq km area. However, the environmental and oceanographic features do not allow uniform distribution of marine organisms and there are wide spatial differences in the abundance of fish stocks, which is related to the carrying capacity of the ecosystem. (Carrying capacity is the number or biomass that can be supported by an ecosystem.)

Moreover, there are large differences in the composition of fish stocks. For instance, the fishery off Kerala, in the southwest coast of India, is dominated by small pelagics such as sardines, whitebaits and Indian mackerel, whereas the one off Gujarat, in the northwest coast, is dominated by demersals such as sciaenids, cuttlefishes and nonpenaeid prawns.

Thus, there is a vast quantitative and qualitative difference in the fish stocks occurring in different ecosystems. It is important that the uniqueness of each ecosystem is given due consideration for formulating fisheries management. Fish are dependant on the ecosystem for their food.

Flow network

Through the prey-predator relationship and the complicated food web, there is a network of flows of matter (biomass) in the ecosystem. In the marine ecosystem, the network links the phytoplankton (plant matter) with the herbivores (phytoplankton feeders), and the latter with the small carnivores and further with their predators. These networks of flows



are affected directly by fishing. Large, long-lived predators (for example, sharks, tunas, seerfishes) as well as small, short-lived prey (for example, sardines, whitebaits, Indian mackerel, penaeid shrimps) contribute in major ways to marine fish catches.

The figure above gives an example of a simplified food web, the position of major fish groups in the web, and the flow between the various levels in the web. Conservation or heavy fishing at a particular trophic level (an indicator of the position of each group/species within the food web) will lead to ecological imbalance and thereby to species replacements.

For instance, for 46,335 tonnes of sharks (which are predatory and hence are at a higher trophic level), exploited by body weight, the exploited shark populations would have consumed approximately 3,475 tonnes per day or 1.3 million tonnes every year. (Juvenile fishes normally consume about 10 per cent of their own body weight every day; the rate of consumption decreases to 5 per cent per day as they grow old.) If the sharks alone are protected from fishing, they would predate on other fishes, prawns, squids and cuttlefishes at the rate of 1.3 million tonnes per year, thereby competing for food not only with the human predators but also among themselves and with other predatory fishes.

Take an example of organisms at the lower level of the food web. The bivalves feed by filtering the phytoplankton from

the sea water and are at lower trophic level in the food web. If the bivalves alone are protected from exploitation, there is likelihood of phytoplankton depletion in the areas of bivalve abundance, which, in turn, will severely affect the other plankton feeders such as sardines and whitebaits, and the bivalves themselves.

Hence, it is imperative to recognize the reality of the inter-dependence of all ecosystem components, instead of assuming that stocks are independent. Though the practical problems raised by the recognition are immense, there are pragmatic ways to begin implementation of ecosystem-based fisheries management actions aimed at conserving the structure and function of marine ecosystems in addition to conserving the fisheries resources.

The fisheries management agencies and the stakeholders involved in the use of aquatic resources need to identify the different ecosystems under their jurisdiction, the boundaries of those ecosystems and their characteristics. Broadly, there may be six types of ecosystems as outlined in the table.

Modelling tool

Modelling is an essential scientific tool in developing ecosystem approaches for fisheries management. A budget on the potential yield and yield at different trophic levels has to be prepared for each ecosystem. Management options such as optimizing craft and gear combinations could be advocated based on these models. For instance, if the pelagic sharks

Table: Considerations for Ecosystem-based Fisheries Management

Type of Ecosystem	Components	Management Options	Type of Fishing Regulation
I. Critical ecosystem	Coral reefs; sponges; mangroves	Marine protected area; coral rebuilding; mangrove afforestation	Fishing ban altogether
II. Vulnerable ecosystem	Declining fish stocks; concentration of vulnerable/endangered species	No-fishing zone; resource-enhancement programmes like sea-ranching	Fishing ban altogether; alternative livelihood like mariculture
III. Polluted ecosystem	Bioaccumulation of pollutants	Ecowatch; evolve standards for waste discharge; implement polluter-pays principle	Fishing and marketing of fish with pollutant load to be prevented
IV Estuaries, lagoons and backwaters	Nurseries; closure of bar mouth	Seasonal closure of fishing	Ban all forms of fishing during seasons of spawner and juvenile abundance, and closure of bar mouth; regulate mesh size
V Open coastal waters	Combination of Under- and overexploited stocks	Seasonal closure of mechanized fishing; area demarcation for mechanized and traditional craft; limited entry; part of the area as no-fishing zone either on rotation or permanently	Regular but controlled fishing; precautionary approach; alternative livelihood like mariculture
VI Far-sea/deep-sea	Mostly under- and unexploited stocks	Atlas on areas of resource abundance; devise economically viable craft and gear; regional co-operation	No restriction for the present; local fishing communities deserve encouragement

are overexploited in a particular ecosystem, the target gear such as lines could be restricted or banned in that ecosystem.

In consultation with all legitimate stakeholders and interest groups, objectives must be agreed upon for each ecosystem. For instance, the short-term objective for a coral reef ecosystem should be protection of the reef and its dependent fauna and flora, and the long-term objective should be to rebuild and extend the reef area (see table). The objectives for an urbanized/ industrialized ecosystem should be to set standards for the effluent discharge, and regularly monitor the pollutant load in the coastal waters and in the body components of the organisms. The objectives for sustaining the

open-water ecosystem should encompass a combination of technical measures, closed areas and seasons, input and/or output controls, and a suitable system of access rights for all users. The objectives for the far-sea ecosystem should be to develop the fisheries for increasing the catch in a sustainable way.

Fisheries management programmes thus far remain as independent entities. As one of the multiple users of the coastal zones, some of the fisheries management programmes could be part of the Integrated Coastal Zone Management (ICZM). The ICZM programmes are less involved with control of fishermen or fisheries harvests, but more with habitats of fish and shellfish. In the ecosystem-based fisheries management,

there could be a close connection between the ICZM programmes and the management options for the first four ecosystems listed in the table (critical, vulnerable, polluted and estuarine).

Moreover, there could be a closer co-operation between the ICZM programmes and the small-scale fisheries, because the artisanal fisheries are conducted in inshore, lagoon and estuarine waters, where the ICZM programmes would be most relevant.

Ecosystem-based fisheries management is expected to yield short-term and long-term benefits. However, this type of management demands larger participation by the stakeholders initially, and perhaps governance by them at a later stage. A scientifically planned protocol and careful implementation of ecosystem-based management within a logistic timeframe is expected to sustain marine biodiversity and fisheries. ♣

This article is by E.Vivekanandan of the Madras Research Centre of the Central Marine Fisheries Research Institute, Chennai, based on his presentation at the ICSF/IOI Indian Ocean Conference in October 2001. The views expressed here are purely personal and they do not necessarily reflect the views of the organization to which the author belongs.

Tawa dam

Naturally ours

The displaced indigenous people of the Tawa dam area in India are fighting to retain their rights over water, forest and land

In Kesla block of Hoshangabad District in Madhya Pradesh, the *adivasis* (indigenous forest and tribal people) have constantly faced displacement and consequent deprivation of their resource base. The last 15 - 20 years have seen tribal struggles seeking resettlement and resolution of other issues relating to land, water and forest rights. Around five years ago, they got their first taste of success in the form of fishing and marketing rights in the reservoir of dam at Tawa, which is a tributary of the Narmada river. An ordinance testing range had displaced people earlier, and the Tawa dam also contributes to continuing displacements of the same people. Hence, the permission for fishing and marketing rights for the displaced persons of Tawa in 1996 was indeed a welcome step by the government of Madhya Pradesh.

Earlier, in 1994, the oustees of Bargi dam (another dam on the Narmada) in Jabalpur succeeded in the entrepreneurial venture entrusted to them by the government. In 1996, the government had accepted in principle the rights of the *adivasis* to natural resources. Encouraged by this, the government granted fishing and marketing rights to the Tawa Vistapit Adivasi Matsya Utpadan Evam Vipnan Sahkari Sangh (briefly known as Tawa Matsya Sangh) for a period of five years.

The *adivasis* were initially apprehensive about the prospects of fishing in such a large reservoir and of marketing their catch. But, with the strong support of Kisan Adivasi Sangathan, the last five years has been quite a fruitful experience of collective action.

Today, 36 fish co-operative societies are active in various villages. Three affiliated

societies and about 12,000 to 13,000 fisherfolk have joined hands to form a federation that runs the whole show. Uninitiated in the ways of business co-operatives and official correspondence, these people did have a hard time in the beginning. But the success of their forerunner, the Bargi fish co-operative, encouraged the Tawa fisherfolk to persist with their efforts. Today, they are adept at handling all affairs concerned with their business, be it techniques of fish culture, fish catching, identifying fish species, business accounting or negotiating with traders in cities like Calcutta or Nagpur. The revenue collected by the government in the form of royalty through the Sangh has shown a steady increase.

Prior to the Sangh's involvement, the government had laid down a target of 45 tonnes of fish production for three months in 1996-97. But the Sangh more than doubled the target to reach 93.33 tonnes. Production has been increasing and 327.18 tonnes of fish were produced in 2000-2001. Earlier, the Fish Development Corporation (FDC) had produced only 131, 146, 89 and 84 tonnes of fish respectively for the four years 1990-94. During this period, each year the FDC and the contractors had hired 140 fisherfolk, most of whom were outsiders. On the other hand, the Matsya Sangh engages as many as 477 fisherfolk and all are local, tribal, displaced people.

Regular income

One great achievement is that the people have been able to acquire a regular job and reasonable income. Today, each person earns around Rs. 90-100 (around US\$2) daily. Besides, 20 per cent of the catch goes to the fisherfolk who can either consume or sell them at their own prices. They are also entitled to bonus and other

facilities. Apart from a fulltime employment for 10 months a year, the fisherfolk also get dole of Rs1 per kg during the closed season (15 June to 15 August).

This arrangement ensures a token salary during the period of joblessness and also safeguards against clandestine fishing. The Sangh paid nearly Rs2,450,000 during 1997-98 towards dole alone, apart from Rs3,044,000 as a whole year's remuneration. Earlier, the FDC and the contractors jointly used to disburse an average of Rs6,820,000 towards remuneration. The maximum amount paid by them towards wages was Rs1,120,000 during 1994-95, whereas the Sangh made a record payment of Rs1,109,000 in just the first three months, reaching Rs 4,746,000 in 2000-2001.

Similarly, the fisherfolk worked for 267 days in a year, as against 221 for the contractors hired by FDC. Apart from fishing, other assignments like transport, packing, sales, collection of fish seeds, boatbuilding and maintenance of office accounts are also managed by the local people, including plenty of women as well.

It is evident that the fish produced on such a large scale can not be consumed by the local market alone. So the Sangh began marketing in the bigger cities like

Calcutta, Nagpur, Lucknow and Bhopal, where it had mixed experiences. It faced ups and downs on sale prices. Also, at times, the consignments got spoilt before they could be sold and occasionally the Sangh had to pay higher cartage too. Although the Sangh tried to transport the consignments in insulated vans, its main thrust continued to be the local and nearby markets.

The Sangh also tried to help the fisherfolk to buy boats and fishing nets by arranging for loans on easy terms. Many societies benefited from this arrangement. The preference for locally built boats and wholesale purchase of fishing nets from Mumbai proved to be cost-effective.

But the inaction of the government machinery is proving to be a hindrance for the Sangh. Constant vigilance had resulted in the apprehension of many poachers. But due to the laxity of the police and the administration, the criminals got away unpunished. Subsequently, the Sangh announced prizes for nabbing fish poachers. This brought down the incidents of poaching and nowadays theft is greatly under control.

Seedlings collected

Despite a lack of experience, the Sangh took upon itself the task of collecting fish seedlings, as the government and FDC had abdicated their responsibility in this

regard. During 1997-98, nearly 2,613,000 seedlings were collected and released in the Tawa reservoir and this increased to 3,219,000 in 2000-2001.

This was, however, lower than the target of 3,600,000. The seedlings had to be collected from various places. The Sangh was also handicapped by a paucity of funds and absence of hatchery and nursery facilities. Hence, it had decided to earmark about Rs. 50,000 to Rs. 100,000 from fish sale every month towards the purchase of costly seedlings. It also promoted fish culture and encouraged local people to breed fish seedlings in small natural ponds. This ensures a substantial reduction in both expenditure on transportation and the death rate of fish

The Sangh made a net profit of Rs29,400,000 in 2000-2001. In contrast, under the contractors and the FDC, there were recurrent losses year after year. Between 1991 and 1994, the losses were to the tune of Rs25,500,000, Rs47,100,000 and Rs34,200,000 a year, respectively. Thus, the Tawa experiment had not only benefited the displaced people but also made a substantial contribution of Rs1,570,000 to the public exchequer in 2000-2001 by way of royalty at the rate of Rs6 per kg. of fish. Within a period of five years, Rs6,737,000 of royalty had been paid (see Table 1).

Table 1: Royalty Paid by Tawa Matsya Sangh

Year	Royalty (Rupees million)
1996-97	0.45
1997-98	1.18
1998-99	1.65
1999-2000	1.89
2000-01	1.57
Total	6.74

Source: Annual Report, 2000-2001, Tawa Matsya Sangh

But ironically, despite having contributed so much in royalty, the government has not seen it fit to provide the area with facilities like roads, water, lighting, education, etc. The Sangh also questions

the wisdom of having to pay royalty, especially as the contributors are displaced people for whom the government had denied even survival necessities in the name of development (read the dam). Even otherwise, the attitude of the administration has not been one of goodwill or support. On the issue of the need to construct an ice factory, the government withheld the funds that were sanctioned by the central government for the purpose. Further, the Sangh is not being allowed to use the government reservoir at Powarkheda (a nearby village), which is currently lying idle, for the breeding of fish seedlings.

23 December, 2001 marks the completion of the five year period of Tawa Matsya Sangh's right to fishing and marketing granted by the government. As yet the Madhya Pradesh government has not taken any decision on its renewal. The irony of this hesitation is particularly striking, since the State is in the thick of a campaign on decentralisation, tribal self-rule and people's participation. The Tawa experiment is a very sincere demonstration of all these parameters. Yet, there seems to be a nexus amongst the bureaucracy, Matsya Maha Sangh (which takes the place of the earlier Nigam or Corporation, now a State-level co-operative of the government) and local politicians and contractors to override the collective efforts of the people. Their attempt is to take away marketing rights from the hands of the Tawa Matsya Sangh. Hence, the primary societies may get confined to fishing rights only. The marketing rights are being sought by the Matsya Maha Sangh of the Madhya Pradesh government. An official committee set up to look into the functioning of the Tawa Sangh and to recommend to the government a future course of action has not done its job. It has not consulted the federation officially; on the contrary, it has been giving it the cold shoulder.

Comparative performance

On 19 November, 2001, in response to a question raised on this issue in the Madhya Pradesh State assembly, a comparative picture of the performance of the Tawa Matsya Sangh and the earlier one of the Nigam (through contractors) was presented (see Table 2). The Matsya

Table 2: Comparative Performance of FDC and Tawa Matsya Sangh

Year	FDC Management					Tawa Matsya Sangh Management				
	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
Fish Production (tonnes)	146.00	87.89	84.42	176.01	93.53	93.22	245.81	344.37	393.16	327.17
Employment (full days)	20,520	67,935	32,037	30,719	10,640	17,255	44,589	50,826	56,854	59,500
Release of fish seedlings (100,000)	24.08	17.65	27.48	17.96	34.21	31.59	26.13	27.90	29.47	32.19
Total income to fisherfolk (Rs100,000)	7.53	4.55	4.92	13.69	7.97	10.62	27.72	44.25	45.27	41.34
Income per day per person (Rs)	36.69	32.11	15.02	44.59	74.91	61.55	62.17	87.00	79.63	61.00

Sangh is way ahead in all indices of performance. This very clearly establishes the efficiency and sustainability of the Tawa experiment.

It is worthwhile here to recall the experiences of the Bargi co-operative (the forerunners of Tawa Matsya Sangh) at a similar juncture of functioning. The Chief Minister had assured the co-operative of renewal of its contract. But the instruction finally issued mentioned only fishing rights for primary societies. The marketing rights remained with the government (Matsya Maha Sangh). This implies that the status of the fisherfolk in Bargi would henceforth be that of wage earners only.

When the Chief Minister was again approached, he expressed surprise over such an outcome and the order was changed. But the Maha Sangh had already started functioning with the earlier order and had signed an agreement with a contractor. The matter was taken to court and a stay order obtained. Ironically, the government has not made any clear stand on the issue.

Tawa Matsya Sangh and Kisan Adivasi Sangathan envisage a distinct possibility of a repetition of the Bargi type treatment in Tawa too. Hence, they are engaged in trying to pressure the government to take

a sensible decision. Efforts are on to push the matter through a campaign by people's organizations (of the region and outside), the media, intellectuals and experts. The Sangh and the Sangathan firmly stand by the view that their hard-earned rights over the natural resources, along with the creative and collective efforts of the past few years, can not be simply taken away. With the slogan of "people's rights over water, forest and land", they have geared up to continue their struggle. **3**

This article is written by Yogesh Diwan and Yemuna Sunny (yemunasy@yahoo.com)

An ill-thought ban

This article was written before the Government of India's recent revocation of the total ban on shark fishing

The ban on shark fishing under the Wild Life (Protection) Act, 1972, by the Ministry of Environment and Forests (MOEF), Government of India, came as bolt from the blue for the entire fisheries sector of India. In a Gazette notification dated 11 July 2001, the government has included 60 different items caught or removed from the sea under Schedule 1 of the Wildlife Protection Act. The items include certain types of coral, a wide range of mollusc species, including *chanks* (conch shells), sea horses and the giant grouper.

However, the most prominent inclusion is the entire class of elasmobranchii that includes all species of shark, rays and skates. The inclusion of these items under Schedule 1 of the Act means that they can not be caught or harvested. Neither can they be traded or made into any product for sale. Mere stocking of these species in any form is a crime.

The entire ban process has been something of a mystery. Even now, there are no details on the basis of the ban and how the MOEF has concluded that these 60 items are endangered. There was no consultation whatsoever with fishermen's organizations and NGOs working in the sector. We understand that even the fisheries departments of the State governments were not consulted.

Whether the central scientific institutions in fisheries were consulted is not clear at the moment. Some press reports indicate that they did not recommend any ban and have questioned its wisdom (see *The Hindu* Trivandrum edition, 5 October 2001, page 5).

Even some officials we contacted in the Fisheries Division, Department of Animal Husbandry and Dairying, Ministry of

Agriculture in Delhi appeared unaware of the ban as late as end September.

The ban itself came to light some time in September, when the Coast Guard started harassing the fishermen of Thoothoor in Tamil Nadu, who have the only fleet in India dedicated to shark fishing. It was the Coast Guard that informed the fishermen about the ban and not the State fisheries departments. Subsequently, in early October, shark fin exporters in Chennai got wind of the problem when their consignments to Singapore were held up by the Customs authorities. Only then did news about the ban spread rapidly.

According to newspaper reports, the ban is the result of lobbying by environmental groups. An NGO called Reef Watch Marine Conservation and *Sanctuary Asia*, an ecology magazine published from Mumbai, have been particularly mentioned (see *Times of India*, 4 August 2001 and 11 October 2001).

Most media comments refer to the whale shark, the subject of an international protection campaign by environmental groups. True, the campaigners for ban on whale shark fishing had been in touch with fishermen organizations like the National Fishworkers' Forum (NFF), but there was no talk about all shark species or the entire family of elasmobranchs. The newspaper reports also seem to refer to problems of shark fishing in the Andamans, where unauthorized foreign fleets are said to be catching shark and discarding the carcass at sea, after removing the fins (*Times of India*, 11 October 2001; *Sanctuary Asia* April issue: article by Mitali Kakkar and Bittu Sahgal).

Cruel practice

There appears to be considerable unhappiness over the cruel way sharks are

slaughtered and the environmental pollution caused by dumping the shark carcass at sea. It seems unlikely, however, that this alone could have been the rationale for the ban on shark fishing all over India's Exclusive Economic Zone (EEZ) of 2,000,000 sq km.

We can only take a stand based on our own understanding of shark resources and the current level of exploitation. 1977 saw the publication of the first estimate of India's potential catch of fish. Subsequently, it was revised in 1991 by a committee appointed by the Government of India (Working Group on Revalidation of the Potential Marine Fisheries Resources of the EEZ of India, Ministry of Agriculture, Government of India).

The total fish resource harvestable is estimated to be 3,900,000 tonnes. Of this, 2,200,000 tonnes are available within a depth of 50 m, and the rest are spread out in the deeper waters. The following is the information available on the potential catches of elasmobranchii (sharks, rays and skates): up to 50 m depth: 65,000 tonnes; beyond 50 m: 103,000 tonnes; total: 168,000 tonnes (*The maximum potential yield has since been revised downwards by the Central Marine Fisheries Research Institute, CMFRI, to 96,000 tonnes—Editor.*)

The approximate break-up of the available elasmobranch resources in depths up to 50 m along the Indian coast is as follows (No information is available on individual categories):

Northeast (W.Bengal, Orissa and Andhra)	11,000 tonnes
Southeast (Tamil Nadu and Pondicherry)	19,000 tonnes
Southwest (Kerala, Karnataka and Goa)	11,000 tonnes
Northwest (Maharashtra and Gujarat)	24,000 tonnes
Total	65,000 tonnes

Another piece of information from the report of the working group referred to earlier, is that there are 31,600 tonnes of pelagic shark that can be harvested in the

open ocean (beyond depths of 200 m). This is part of the 103,000 tonnes of elasmobranchii available beyond 50 m depth.

Importantly, the above figures are not for the total stock available but for what can be safely harvested for each species, depending on its longevity and reproductive capacity. The percentage of elasmobranch stock (or any other species) that can be safely harvested is not mentioned. We do not know enough to question the basis of these figures and, until more information is available, we have to take them at face value.

A few words on how these estimates are made may be useful. There are two agencies responsible. The CMFRI is responsible for collecting information on the catches landed all over India for the purpose of resource estimation. It does this through a sampling method that is accepted internationally.

Based on the figures for the fish caught, and other scientific information, CMFRI has methods to estimate the resource availability in areas where fishing occurs. For the deeper waters, where fishing activity is low, the resource estimates are made by the Fisheries Survey of India (FSI), whose vessels are involved in surveying different parts of the Indian seas.

The final resource estimates are based on CMFRI and FSI putting together their respective information and working out a common estimate. Though there can be many questions about the quality of data and the assumptions made by these scientific institutions, it is acknowledged that the resource estimates in India are a reasonable approximation and are much better than those available in many other developing countries.

Detailed published information on the catches is somewhat difficult to come by. From various reports, it appears that the total catch of elasmobranchii is around 70,000 tonnes.

Catch figures

In 1999, the following were the catches of elasmobranchii as per CMFRI figures: shark: 42,778 tonnes; rays: 23,064 tonnes; skates: 2,670 tonnes; total: 68,512 tonnes.

The current catches are only half of the potential catch of 168,000 tonnes in the Indian EEZ. Importantly, elasmobranch catches have been steadily increasing since 1950, when it was only 17,000 tonnes. Thus, the overall figures give the impression of a fish resource that is still underexploited.

A detailed study of the landings between 1987 and 1999 by CMFRI (CMFRI Special Publication No. 70: *Pelagic Sharks in the Indian Seas: Their Exploitation, Trade, Management and Conservation* by P. P. Pillai and Baiju Parakkal, August 2000) reveals the following:

- The average catch of elasmobranchii during 1987-99 was 61,591 tonnes. The landings of sharks during the same period was 41,483 tonnes.
- The peak landings of elasmobranchii was in 1998—more than 70,000 tonnes. The peak landing for shark was 47,279 tonnes the same year.
- While there has been some year-to-year fluctuations, the overall trend during the period is one of a steady increase.
- The major share of landings is in Gujarat and the northwest coast. During the period, the catches

increased in all States, except in Maharashtra and Kerala, where there was a decline.

- While some caution is required, there is scope for increased exploitation of sharks in deeper waters.

However, aggregate figures can conceal a number of problems. Within the overall picture of an underexploited fishery, one can perhaps find individual species or areas that are overexploited. Even a single category of shark is made up of a number of individual species. The actual number of species in Indian waters is not known exactly. Around 49 species are detailed in CMFRI reports.

However, only six of these are found in abundance, 12 in moderate abundance and 22 in limited quantities (From Hanfee F. 1999. *Management of Shark Fisheries in Two Indian Coastal States: Tamil Nadu and Kerala*, quoted in Pillai and Parakkal, op cit).

Without information on each species, it will be difficult to determine whether or not there is overfishing of any of the species.

Another aspect to be considered is that, compared to many short-lived species, sharks are long-lived and produce very few offspring. Thus, they are more

vulnerable to overfishing. One has to, therefore, adopt a cautious approach to their exploitation.

While not ruling out overfishing of individual species, there seems to be no concrete evidence of elasmobranchii being overfished as a whole. The issue of elasmobranchs being endangered does not arise at all. In fact, there is a strong case for improving the catches in the deep, especially of pelagic shark.

Targeting of shark has been limited traditionally to some fishermen's groups. However, shark and other elasmobranchs form part of the by-catch of the trawl fishery, sometimes in large quantities. They are also found as non-targeted catches in other gear like gill-nets. The following are the various groups that exploit elasmobranchs.

- (i) Traditional fishermen using *kattumaram* with hand lines go for shark fishing seasonally in parts of the east coast. The *kattumaram* fishermen on the west coast in Kanyakumari and Trivandrum also used to do so, but this has declined with the coming of trawling.
- (ii) Motorized canoes like the *nava* of Andhra Pradesh go seasonally for shark fishing, with Kakinada being a major centre. Bottom-set gill-netting as well as hooks-and-line are used in different parts of India.
- (iii) Motorized *kattumaram* (including fibre reinforced plastic or FRP *teppa*) between Vishakapatnam and Puri go shark fishing with hooks-and-line seasonally.
- (iv) Traditional long-line fishermen of Malabar in north Kerala go shark fishing in certain locations like Elathoor.
- (v) Shark and other elasmobranchii are caught as by-catch by trawlers all over the country. To a large extent, this is an unavoidable feature.
- (vi) The only fleet that can be said to be specialized in shark fishing is the mechanized vessel fleet of the Thoothoor area in Kanyakumari District, Tamil Nadu. Around 500 to 600 mechanized vessels (32-45 ft long) use long-lines and go shark fishing all over the west coast of India, from Kanyakumari to Okha in Gujarat. This fleet, employing around 6,000 fishermen, came up in the late 1980s and is perhaps India's only genuinely deep-sea fleet. Though a part of the fleet has diversified to use large-mesh drift-nets for seer and hand-lines for perches, shark fishing remains the most important source of income. Though this fleet started with bottom long-lining for shark on the continental shelf, especially between 100 m and 300 m depth, some of the units now fish with pelagic lines in the open ocean, where the depth is more than 1,000 m and where pelagic sharks are plentiful.
- (vii) The catch in Gujarat today comprises over half the total landings, and shark is caught seasonally by a large number of vessels with a variety of gear, including gill-nets, hooks-and-line and trawls. The actual number of fishermen involved is likely to be significant.
- (viii) Sri Lankan fishermen with their multi-day fishing vessels fish for both tuna and pelagic shark in the deeper waters, using a combination of long-line and gill-nets. They operate seasonally in the Gulf of Mannar and the Arabian Sea. Some also go to the Andamans. Though strictly illegal, this fishing has not been opposed by the Indian fishermen as it is done by relatively small vessels using labour-intensive and selective fishing gear and techniques. However, the Coast Guard catches some of these vessels and the fishermen are detained for months in India. It must be mentioned that shark meat enjoys a good market in Sri Lanka, while the fins are exported to Singapore and Hong Kong.
- (ix) Foreign vessels from many other countries, mostly industrial and large-scale vessels, poach in Indian

waters. The extent to which they target or incidentally catch shark is not known.

- (x) A note on shark fishing in the Andamans is perhaps needed. For long, there has been the issue of shark finning (finning is the practice of removing the fin or fins from a shark and discarding the remainder of the shark or the carcass into the sea). Some of the local boats in the Andamans are also believed to indulge in such destructive practices. For them, the main problem is the lack of a market for shark meat in the Andamans and the problem of transporting salted shark meat to the mainland (salted shark meat is not accepted as cargo by ships). It is possible that some of the foreign fleet involved in illegal fishing in the Andamans is also dumping the shark carcasses back into the sea, as they do not want to carry the voluminous, low-value meat with them.

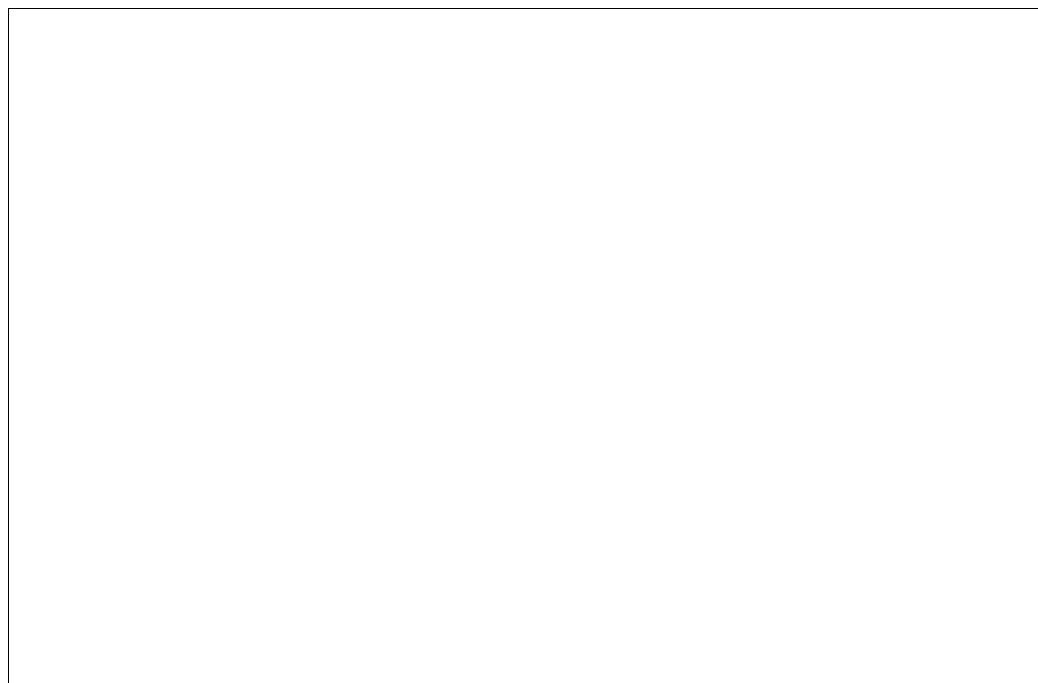
Thus, shark fishing is important for a significant number of fishermen all over India, despite it being a niche fishery. Sharks are valuable mainly for their fins, which enjoy a good market in the Far East, where it is an essential component of Chinese cuisine. The fins are cut off and dried. The dried fins are then cut by the merchants according to certain standard

practices, before being exported to Singapore and Hong Kong, where they are processed to extract fibres that are then used for shark fin soup. Chennai is the main centre for the export of shark fins, with supplies coming from all over the Indian coast.

The exact value of the Indian shark trade is difficult to obtain. Shark fin export from Chennai is an informal business, devoid of the formalities followed by other seafood exporters, like recording the sale. Often, couriers carry shark fins to Singapore by air. Thus, the statistics of the Marine Products Export Development Agency (MPEDA) on export of shark fins is likely to be a considerable underestimate.

Shark fin rays, which are the final products, are not normally produced in India, even though the technology has been developed by the Central Institute of Fisheries Technology (CIFT). One or two plants for rays are said to exist but whether they are successful is not known. Business interests in Hong Kong and Singapore are perhaps not keen on the final product being made in India.

Shark meat, as well as the meat of other elasmobranchii like rays, are salted and sold in the domestic market. The main market is Kerala, where the hill areas have a long history of consuming salted and dried fish products. Shark meat is a delicacy here and command high prices.



Hence, all the salted shark meat finds its way to the dry fish markets of Kerala like Athirampuzha, Kottayam, Changanassery, Alwaye and Thalassery. Mangalore is a major assembling centre for shark meat for catches from Karnataka and the upper west coast.

The meat of juvenile shark is consumed fresh in many coastal areas, especially by the poor. Shark liver oil is extracted by simple local methods and used for oiling wooden canoes as well as for pharmaceutical purposes.

From the above, it is apparent that the immediate impacts of the ban are several. The approximately 15,000 to 20,000 fishermen who depend almost entirely on shark fishing will lose their source of livelihood. This will affect, in turn, their families and dependents. The total population affected is likely to be between 150,000 and 200,000. Tamil Nadu and Gujarat will be the most affected States.

Around 100,000 fishermen will see a reduction in their seasonal and occasional income from shark and elasmobranchii. This will obviously affect their families and dependents, numbering anywhere between 500,000 and 1,000,000. The States affected will include Andhra Pradesh and Orissa.

Thousands involved in drying and processing shark and in the domestic and international trade will be affected. Large numbers of consumers in Kerala's uplands and plantations will be deprived of an important item of diet. The Mangalore dry fish market that assembles all the salted shark meat from Karnataka, Goa, Maharashtra and Gujarat will also be affected.

The long-term impacts will be even worse. The ban is a setback for the development of deep-sea fishing in India. Tuna and pelagic shark are the main offshore resources not exploited by Indian vessels, except to a limited extent by the Thoothoor fishermen.

For long, the Government of India has been trying to develop offshore fishing, but with little success, despite large

vessels and foreign technology through charters, joint ventures, etc. These have only had negative effects on coastal fishing. However, just when the Thoothoor fishermen, like the Sri Lankans, are showing the potential for an indigenous offshore fleet, using appropriate technologies and labour-intensive methods, comes the ban on shark fishing. This will perhaps be the biggest setback. The beneficiaries will be the poachers.

To some extent, India's neighbouring countries may also benefit. Some varieties of shark, especially pelagic species, are likely to be moving across boundaries. Therefore, the ban may benefit those who fish in the high seas or in neighbouring waters.

The ban will also have a negative effect on the populations of prey fish, which are the target of most fishermen. Not fishing an apex predator like the shark will decimate prey fish and seriously affect the livelihood of most fishermen. The actual impact is, however, difficult to assess at the moment.

Information on other species and items banned, like molluscs, is still somewhat hazy at the moment. However, the same problem of lack of consultation and disregard for the consequence of the ban on the livelihoods of marginalized sections is obvious.

Even scientific officers are still searching for the common and local equivalents of the zoological names of molluscs. These mollusc varieties include a large number of items that are collected by poor people near the seashore in a variety of ways for sale as handicrafts and decorative items. Included in the banned list are varieties of *chanks* (conch shells), which are caught by fishermen of Ramnad District of Tamil Nadu.

Ban on conch shells

The ban on *chanks* came to light in an interesting manner. A consignment of *chanks* that had been imported from Sri Lanka (proof of an obvious demand-supply gap), was unexpectedly seized by the customs in October (see *The Statesman* and *The Times of India*, 20 October 2001). This created a panic in the

trade and the Bengali press was full of stories of the ban. It is not clear, however, what the ban achieves by restricting imports from Sri Lanka.

The plight of the *chank* fishermen and those involved in the making of products from *chanks* is worth a special mention. While *chanks* are collected in many parts of the country like Orissa and even Gujarat, the most important *chank* fishery, which has a tradition extending over centuries, is the *chank* fishery of Ramnad District. Specialized skin divers risk their lives to collect a variety of *chanks* from the sea bottom. Ironically enough, this fishery is a regulated fishery, with the Tamil Nadu Fisheries Department licensing the fishermen as well as the traders. Only specified sizes of *chank* can be harvested from the sea and marketed. Interestingly, the use of oxygen cylinders while diving is prohibited.

Equally interesting is that while the production of *chanks* is concentrated in parts of Tamil Nadu, the main market is in West Bengal. The Hindus of Bengal put a great cultural value on *chanks*, which explains the extremely high annual demand. *Chanks* are used during the *puja* festival. A number of products, involving a large number of craftsmen, are made out of *chanks*, and married women wear bangles made of *chanks*.

To sum up, shark and elasmobranchs are, by no stretch of imagination, endangered in India. Potential dangers of overfishing can be tackled through normal fishery regulations, like fleet and gear control, and closed seasons and areas. The ban is clearly unscientific and arbitrary, and will have major negative consequences. 🐟

This article by V.Vivekanandan (vivek@siffs.org), Chief Executive, South Indian Federation of Fishermen Societies (SIFFS), is a revised version of a paper presented at a fishermen's meeting at Nagercoil, Tamil Nadu, India, organized by the National Fishworkers' Forum on 1 November 2001



India



Seaweed power

Seaweed has great value in providing low-cost, wholesome nutrition and therapeutic protection

Almost everywhere in the world, from ancient times, people have been consuming marine algae. The Chinese, the Japanese, the Filipinos and the Hawaiians consider seaweed a food of great delicacy and have been using it in their diets for centuries. Archaeological research has shown that the Japanese have been eating seaweed for more than 10,000 years. In Japan and in parts of Southeast Asia, seaweed is consumed raw, with salads or with cooked vegetables. The Japanese refer to seaweed as 'sea vegetables'.

In the countries around the Atlantic Ocean too, people have been eating seaweed for hundreds of years, and, since 1800, a seaweed industry has prospered here. Scientists and industrialists are constantly developing new uses for seaweed—in the food industry, in chemistry, pharmacology, cosmetology and agriculture, in the paper and textile industry, in the film industry and in several other areas, even in metallurgy.

Seaweed has plenty of essential nutrients, especially trace elements and several other bioactive substances. That is why today seaweed is considered as the food supplement for the 21st century, containing proteins, lipids, polysaccharides, minerals, trace elements, vitamins, and enzymes.

Seaweed contains between 7 and 36 per cent of proteins by dry weight. The amino acids they contain are very similar to those of vegetables, but they are more complete, comparable to those found in eggs. Almost all edible varieties of seaweed contain the amino acids that humans need.

The proteins found in seaweed are of very high quality and have all the essential and

non-essential amino acids. The lipids, which are present in very small amounts, are unsaturated and thus afford protection against cardiovascular pathologies. The polysaccharides (with alginic acids) have exceptional properties. The high quantities of glucides in algae are mucilaginous and, with the cellulose that they also contain, they have a positive effect on digestive pathologies. As these polysaccharides are not assimilated, even diabetic patients may consume seaweed.

Seaweed has a very high content of minerals and trace elements. It is a perfect source of calcium, phosphorus, iron, sodium, potassium, magnesium, sulphur, copper, zinc, cobalt and iodine. The content of calcium in seaweed is not only up to 10 times higher than that in cow's milk but is also much easier for the body to assimilate. Pregnant and lactating women, as well as malnourished children, should thus consume some seaweed daily to ensure that they get enough of the element that is found in the greatest quantity in our bodies.

More than one million people are exposed to goitre and related diseases, mainly in developing countries. Through iodine deficiency alone, nearly 20 million youth suffer severe mental and thyroid problems. Most algae and seaweed contain more iodine than sea water and are a much better alternative than iodised salt or drugs in regulating the production of thyroid hormone. Seaweed also strengthens the immune system and help maintain psycho-emotional equilibrium by increasing physical resistance to stress.

Vitamins aplenty

Seaweed has abundant vitamins, including betacarotene, which is the precursor of vitamin A, the vitamins of the B group, including B12, vitamin C, D, E

and K. The very high levels of enzyme activity in seaweed help the assimilation of all these vital elements.

Seaweed is very rich in betacarotene and may contain up to 44,500 IU (international units) per 100 g. Normally, high doses of vitamin A may be toxic, but the betacarotene found in vegetables, spirullina and seaweed is totally safe, because the human body converts betacarotene into vitamin A only as needed. Vitamin C is also an important factor in seaweed. Sea lettuce (*ulva lactuca*), for instance, contains much more vitamin C than oranges.

The most astonishing quality of seaweed is its ability to purge the body of pollutants. Watanabe, a Japanese scientist, discovered in 1968 that certain algae may overcome the toxic effects of nicotine.

Dr Slorvna of McGill University, Canada, discovered that seaweed protects us from X-rays and even reduce radioactive heavy-metal contamination. Not only does it prevent absorption but also helps evacuate toxins, including strontium and other radioactive elements that were already stored in the body.

In places where people suffer from a deficiency of minerals and vitamins, the consumption of seaweed seems to be one of the most natural solutions to these nutritional deficiencies. Thus, low-income developing countries ought to propagate the use of seaweed. But this does not seem to be happening.


Consider the case of India. There is plenty of edible seaweed along the coasts of India and Sri Lanka. But the people of these countries are not yet familiar with using seaweed as a food supplement. Only sporadically is awareness imparted of the importance of including seaweed in the daily diet.

In India, where thousands of the population live along the coastal zone, people should use seaweed as one of the vital sources of good nutrition. Since it can be easily dried and preserves well, seaweed can be easily transported inland to places where people suffer from thyroid problems due to lack of iodine

(goitre). In Kanyakumari District of the Indian State of Tamil Nadu, where we have started awareness programmes on the value of seaweed, some fishermen collect sea lettuce, which is dried and powdered at the Community Health Development Programme (CHDP) centre. People use it as a food supplement or as a medicine, mainly for goitre-related problems. They report very good results, without any side-effects, unlike the case with most allopathic drugs.

Japan, China, Korea, Taiwan, Philippines and Indonesia have successfully produced a few hundred thousand tonnes of seaweed a year. There is no reason why India should not follow suit. India boasts a wide variety of seaweed along its coasts, mainly in the Gulf of Mannar, as well as around its several hundred islands. The huge stretches of coastal marshy lands and bays are natural centres for seaweed cultivation, which could open new possibilities of combating malnutrition, poverty and unemployment.

In the Philippines, more than 10,000 families earn their living through seaweed cultivation. The government has encouraged the private sector to invest in seaweed cultivation. It would be good if the Indian government took similar steps to encourage local communities with subsidies and appropriate technologies, through demonstration and training programmes.

One reason why India has not, so far, given importance to seaweed cultivation could be the absence of experienced cultivators. Philippines and Indonesia have skilled cultivators, whose services could be made available to Indian cultivators through training programmes and demonstrations. India's Ministry of Agriculture could be requested to assist such projects. 

This piece is by Jacqueline Leyman (jacq_leyman@hotmail.com) of the Thirumalai Ashram Social Centre (thirumalai2@vsnl.net), Tamil Nadu, India

Safety at sea

SOS

A recent one-day consultation discussed sea rescue systems for fishermen of Kerala

A workshop on “Sea Rescue Systems for Fishermen” was organized by the South Indian Federation of Fishermen Societies (SIFFS) at the Institute of Management in Government (IMG), Trivandrum, Kerala, India on 18 June 2002.

Inaugurating the workshop, P C George, former Fisheries Development Commissioner, Government of India, stressed the importance of matching technology with needs and affordability. He said that the protection of life and property and ensuring safety at the workplace is the responsibility of the government. However, various practical, financial and organizational problems make this objective difficult to achieve. Though technologies are available in other countries, it is not easy to use them for the kind of small motorized boats that dominate the Kerala fisheries. Various adaptations are required to suit local needs.

Raveendran Nair, Deputy Director of Fisheries for the Marine Enforcement Division (MED), made a detailed presentation on the current sea rescue methods and operations of the Kerala State government. In the last five years since 1997, 418 accidents were reported, in which 72 fishermen died and another 22 were missing. The rescue operations of the MED, in co-operation with other agencies and the fishermen themselves, led to the rescue of 1,150 fishermen. Nair, however, stressed that many accidents were non-fatal, and the rescue operations conducted by the local communities were not reported to the MED.

According to Nair, the existing sea rescue system works under the co-ordination of the District Collector and involves nine departments, namely, Revenue,

Fisheries, Ports, Police, Navy, Coast Guard, Meteorology, Fire Force and Health. Kerala has five fisheries stations at Vizhinjam, Neendakara, Vypeen, Beypore and Kannur, from where sea rescue operations are launched. The five speedboats that were being used for sea rescue operations have been scrapped and put up for auction as they were found to be unsatisfactory. At present, the MED has hired 11 mechanized boats, over 43 ft in length, which are stationed in different locations.

The MED’s major initiative has been to develop a Fisheries Information Network (FIN) based on the use of Very High Frequency (VHF) radio sets. The State government has established base stations at places like Vizhinjam on the coast, and set up hill-top repeater stations at places like Ponmudi. The current coverage extends from Vypeen in the north to Vizhinjam in the south, and 200 handsets have been distributed to selected fishermen on an experimental basis. Feedback indicates that the system is quite useful and has a range of 40-50 km in the sea. Fishermen are also able to use the walkie-talkie to communicate important messages to the shore, to enquire about fish prices, and so on. The government has already sanctioned Rs4.3 mn to extend the FIN to the northern parts of the State, which will mean setting up hill-top repeater stations at Ezhimalai and Palakkad.

Technological options

Krishna Warriar, Joint Director, Electronic Research and Development Centre (ER&DC), Department of Electronics, Government of India, explained the various technological options available for fishing boats to send distress signals and for shore-based systems that are needed for picking up the signals and

locating the fishing boats at sea. He elaborated on a low-cost radio beacon that had been developed by the ER&DC some years back.

However, the project could not be completed due to the failure to develop a low-cost direction finding equipment to be used on the rescue vessel to locate the boat in distress. The change in government policies that led to the closure of the Department of Rural Electronics in the ER&DC led to the premature closure of the project. Warriar also felt that since technology options have now widened due to the easy availability of imported equipment, a fresh review of all options should be considered. He stressed that multifunctional devices will be more useful and better accepted among fishermen than the simple radio beacon. Warriar suggested combining a radio beacon with voice communication facility or a Global Positioning System (GPS).

Local fishermen, who had experience using the VHF handsets as well as mobile phones, shared their experience at the seminar. Fishermen using nets found the range of the communication adequate for their needs, but those who are involved in hook-and-line operations in places like Vizhinjam, Poonthura and Marianad, found the range grossly inadequate. In general, it was accepted that the VHF communication system would be suitable

for most fishing grounds in Kerala and needs to be further promoted. The problem of non-functioning for a large number of handsets distributed by the government was raised. As the handsets are owned by the government and given to the fishermen on a nominal rental basis, it is up to the government to maintain them.

Unfortunately, no system is in place to ensure prompt repairs and maintenance of the handsets. This has led to a majority of them getting shelved. It was, therefore, recommended that the government seriously move towards a policy of allowing handsets to be owned by individual fishermen. This would ensure that only those who are in genuine need would acquire the handsets; it would also ensure that they are maintained properly. The private companies distributing the handsets would have to create a proper after-sales network. The government needs to promote such a scheme by providing subsidies for fishermen who wish to acquire handsets.

Waterproof handsets

It was also pointed out that the widespread use of walkie-talkies led to airways getting jammed, in the absence of discipline and restraint in the use of the handsets. It was also pointed out that the existing handsets are not waterproof; only waterproof handsets will be really useful in marine operations.

What's at stake

Each year, the southwest monsoon is a testing time for the fisheries sector of Kerala. The trawl ban and coastal erosion are two regular problems. To these is added the perennial problem of loss of lives at sea and the difficulties in sea rescue. No year goes by without some fishermen and boats going missing and the resultant hue and cry about the failure of the government machinery. However, we believe that it is not a simple matter of government apathy. The problem appears to be one of lack of appropriate technologies, systems and procedures.

The problems of sea rescue can be summed up under the following three points:

1. There is no mechanism for immediate information to reach the shore when an accident occurs at sea. Given the uncertainties in fishing, a long period is allowed to elapse before the families concerned can even be sure that fishermen are missing at sea. By the time the alarm is raised it may be too late.
2. The actual location of the boat or fishermen is difficult to ascertain and it is like searching

for a needle in a haystack. Without precise information, it needs a lot of luck to locate the fishermen or boats in the vast sea, especially in conditions of lashing rains and high waves.

3. The rescue system is also weak with so-called 'speedboats' that are not suitable for rough sea conditions and whose maintenance is an expensive affair. Given the government's normal procedures for getting some equipment repaired, the problem is further aggravated. Equally problematic is that government staff on board rescue vessels may be unsuitable for the risky operation of sea rescue.

We, therefore, need a totally new approach and system for sea rescue with appropriate technologies, systems and procedures. Some of the questions that need to be explored are:

1. Which categories of boats are most vulnerable? Which centres, areas and regions are more vulnerable?
2. What are the technological options available for communication and signalling in the case

The workshop participants were quite critical of the sea rescue systems. They narrated a number of experiences where the rescue boats were not pressed into service promptly due to lack of fuel and poor maintenance of vessels as well as unwillingness and lack of capability on the part of the staff. It was suggested that greater community control of the sea rescue system could ensure its proper functioning.

Cleetus, a third officer in the merchant navy, expressed strong reservations about the various approaches that are currently in vogue with respect to sea rescue systems for fishermen. He felt that sea rescue systems should be linked to the marine rescue co-ordination system that exists for larger vessels. He said that the rescue co-ordination centres are currently functioning at Mumbai and Visakhapatnam. There are no such centres further south. He felt that lobbying was necessary at the level of the Central government to bring a sea rescue co-ordination centre to Kochi and Tuticorin. Once the fishing boats are

covered under the system, the passage of information will be quick and the sea rescue system prompt. All ships at sea can then be easily identified and those in the vicinity of the distressed fishing boat can be directed to conduct prompt rescue operations. Cleetus also felt that the rescue vessels need to be much larger, better designed and equipped. He proposed vessels about 25m long for rescue operations, as the small mechanized boats currently used are incapable of operating under adverse sea conditions.

After wide-ranging discussions among the participants, who included government officials, the following recommendations were accepted:

1. The government should encourage fishermen to acquire VHF handsets on an individual basis by providing adequate subsidies.
2. The handsets for marine operations need to be well selected or else the existing handsets should be made waterproof.

of an emergency, on small boats that are used by artisanal fishermen? Are the mechanized boats properly equipped?

3. What are the investments needed for such technologies to be used? What are the investments in common facilities and what are the investments on individual vessels? Can the State and the fishermen afford these investments?
4. The Fisheries Department is already experimenting with radio communication at Vizhinjam. What has been the experience so far? Is the range of the equipment adequate, given the long distances motorized boats go nowadays? Is the technology and its economics suited for universal use on all artisanal boats in Kerala?
5. SIFFS and ER&DC had experimented 10 years ago with a low-cost radio beacon and tracking system. This was given up due to lack of funding. Is this idea still relevant? Has easy access to imported technology and new technologies made this obsolete?
6. What about satellite-based surveillance and rescue systems? Are they affordable?


7. What are the limitations of the current sea rescue system of the government? Are their vessels suitable? Are their staff capable of what is expected of them? What are the problems of information, co-ordination and decision-making? Is the amount spent on the current system worth it?

8. What kinds of vessels are suited for sea rescue? Is it feasible to hand over the rescue operations to fishermen themselves? If so, how would such a system look like?

Perhaps one can argue that fishermen can avoid some of the accidents if they take proper precautions. The motorized boats are no more interested in taking along sails, just for emergency situations. Often the problem is engine failure and this can be avoided by proper preventive maintenance. The issue of accident prevention or avoidance is an important issue and SIFFS is itself working on some of these issues and will conduct a training programme for fishermen soon.

This background note was prepared for the workshop by V. Vivekandan, Chief Executive, SIFFS.

3. For fishing boats that go beyond the 40km range, especially for hook-and-line fishing, the technological options need to be carefully reviewed and different schemes developed.
4. The State government needs to discuss with various Central agencies, including the Indian Space Research Organization (ISRO), the possibility of bringing the small fishing boats of Kerala under the sea rescue co-ordination centres.
5. There should be a complete revamp of the existing system of sea rescue based on the boats managed by the Fisheries Department. A proper review of the type of boats that are required, their staffing and control need to be done before a new system is put in place. Subsequently, the scope for community participation and control over the rescue vessels needs to be looked into.

6. It was recommended that SIFFS should set up a small study group to go into all the issues raised at the workshop and to develop greater clarity on the various technological and organizational options that are available.
7. NGOs like SIFFS and the government need to build greater awareness among the fishermen about the various ways of reducing accidents and also the impact of such accidents. 

This report is based on a summary by V. Vivekanandan (vivek@siffs.org), Chief Executive, South Indian Federation of Fishermen Societies (SIFFS)

Reading the perfect storm

Only an integrated approach to disaster preparedness can work, especially in the context of artisanal fisheries

November 1996

One of the most severe cyclones of recent times hit East Godavari district of Andhra Pradesh, India on 6 November 1996. Although cyclone warnings kept coming out from early morning, there was no way the information could reach the fishers at sea or in the outlying areas. Conventional warning systems more or less depended on the time-tested word-of-mouth technologies, which were unfortunately not adequate to deal with emergencies and long-distance transmissions. When the cyclone did hit the coast, the damages were enormous, and as many as 2,560 people lost their lives, of whom, as many as 1,435 were fisher people. Of the fishers, 600 died at sea fishing on mechanized boats, and 830 people lost their lives while collecting shrimp seed. They had been away at sea before the cyclone started, and had no warnings, except for those who had transistor radios. Some of those who had received such warnings could not move to safer locations fast enough. Around 7.12 mn people (over 80 per cent of inhabitants of the Godavari delta) were affected by the storm.

There were very few deaths in the villages due to the cyclone, in spite of the great loss of housing and property. The deaths occurred at the seed collection grounds: about 830 people—women, children and men—died while engaged in shrimp seed collection in remote seashore areas away from the villages. These were some of the poorest people in the region, and also the most vulnerable.

A baseline study done by Action for Food Production (AFPRO), sponsored by the Food and Agriculture Organisation of the United Nations (FAO) soon after the cyclone, indicated the following factors to be responsible for the high death toll in the worst affected areas.

To begin with, the communities were caught mostly unawares; the last experience of a cyclone of such intensity was in 1969, and the development in the area since then—construction of flood banks, bridges to the mainland, roads connecting the remote villages, cyclone shelters, and general overall improvement in the quality of life as well as infrastructure—have all led to complacency. Fishing activities generally peak during May and November, which are also the most cyclone-prone periods of the year, and a period of high risk for the fishers. Moreover, according to the Indian Meteorological Department, one of the reasons for the high death toll was the atypical nature of the cyclone itself, which manifested in unusually rapid development and highly organized form.

Although phones were available in most of the villages, investigations revealed that most of them had been defunct, and were not used to send warnings anyway. The cyclone shelters in most places were hardly functional, and were scarcely used during the cyclone. Only a fraction of the houses in the villages were of concrete, and the rest afforded poor protection to the inhabitants.

Radio transmissions

The only source of information on the impending cyclone during this period was the All India Radio transmissions, and more sporadic warnings on the television. Most trawlers did not carry a transistor radio, and the crew did not regularly listen to the weather forecasts. Many fishers did not take the warnings seriously until it was too late. The local administrative structures were ill equipped either to receive or transmit emergency information. The chain of information flow in such cases was found to be tortuous and lengthy, and was prone

to breaks or delays that could significantly or completely erode the useful time left for a response at the village level before the cyclone struck. It was also found that people had a very poor comprehension of the warnings.

The community-level preparedness to face catastrophes of this intensity was very low. The fishers were not prepared to meet a cyclone either at sea or in their place of work or in their villages. The erosion of natural barriers such as forests and mangroves too was found to have increased the vulnerability of the fishing communities. However, it was also noted that the strategies adopted by fishermen and their families in the face of disaster—though fatalistic in most instances—were also more collective, indicating a strong sense of social cohesion.

The boats were not built for manoeuvring in rough seas, particularly in times of cyclones, and consequently, either foundered or capsized. The boats carried little by way of floatation devices, and, where available, these were seen to have saved many lives. The safety equipment on board was neither adequate, nor properly maintained. The Coast Guard reported that, without exception, fishing boats fail to carry the mandatory safety equipment. Being so ill-equipped, it was not surprising that so many fishing crews perished when the vessels foundered. Moreover, the fact that none of the fishing boats carried any means of communicating with the outside world made it impossible to search and locate these vessels.

As the enormity of the disaster took time to sink in, the State government realized the need for a comprehensive disaster preparedness programme to deal with such emergencies in future. It sought the help of the Government of India for a Sea Safety Development Programme (SSDP), which, in turn, approached the FAO for assistance. The FAO sanctioned a project, TCP/IND/6712, to assist the State Department of Fisheries in the implementation of a pilot project in and around Kakinada, which investigated and introduced measures that could reduce casualties amongst fishers both on sea and on land in times of cyclones. The

project involved setting up a Very High Frequency (VHF) shore-to-vessel communication system, provision of life-saving equipment, provision of diesel engines to assist in the rescue of shrimp-seed collectors in emergencies, and a comprehensive programme for community-based disaster preparedness in fishing villages, which involved facilitating the formation of self-help groups in 30 remote villages.

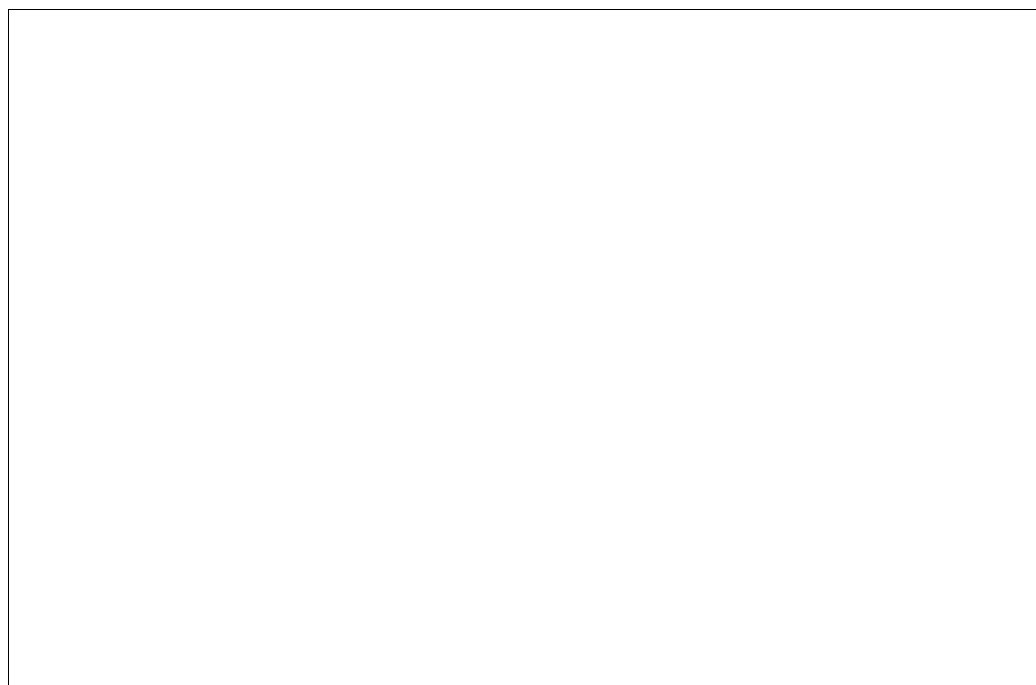
As part of the radio communication system, two VHF shore stations were established, one in Kakinada and the other at Balusutippa, both in East Godavari District, which, between them, covered most of the area affected during the cyclone of 1996. FAO-trained Department of Fisheries (DOF) personnel were employed to monitor these stations round-the-clock. The shore stations are meant to ensure:

- Life safety of fishers when they are at sea
- Periodic broadcasts of the weather forecast
- Transmittal of cyclone warning messages well in advance for the fishing community (at land and on sea)
- Co-ordination of search-and-rescue operations in case of any emergency at sea

The range achieved by these shore stations exceeds 50 km radial distance. The shore stations were equipped to receive the cyclone warnings from the Meteorological Office in Visakhapatnam via the East Godavari District Collector's office on VHF channels 15 and 16. Once a message is received, it will only need to be broadcast on the VHF frequency to all vessels having the handsets.

VHF sets

As part of the FAO project, a total of 150 25W VHF radio transceivers (powered through 12V batteries) were provided to the mechanized boatowners based at the Kakinada fishing harbour free of cost. Training in using the VHF sets was given to two members of each boat's crew. Even those boats that did not have handsets



received information almost as quickly because most boats tend to congregate in particular fishing grounds.

Fixed VHF radio transceivers with 3 dB GP antennas, mounted on 90-ft masts, were considered for installation in the remote villages on the coastal islands to establish a voice communication link during the cyclone periods as a disaster preparedness measure. These radios are powered through 12v lead acid batteries as standby power supply.

Two safety workshops were conducted for boatowners, operators and inspectors to provide them the necessary information on the maintenance and management of the VHF sets in vessel-to-vessel and vessel-to-shore communications, besides discussing the safety aspects in boatbuilding, amending and enforcing regulations and using sea safety equipment.

The project demonstrated a prototype Fibreglass Reinforced Plastic (FRP) life float for carrying on board the mechanized boats, which costs less than Rs7,000, but has the advantage of being locally made and maintenance-free. It can keep the survivors together in case of their boat capsizing, and, being brightly coloured, can attract rescue boats or aeroplanes. The float can be fitted on the top of the boat's wheelhouse in such a way

that it will float free in case of capsizing. The project manufactured and distributed 100 life floats to the mechanized boats to increase awareness about their usefulness.

In spite of much improvement in relief and rehabilitation efforts of the government and NGOs, there were still areas where the responses were not adequate.

Very little work had been done to enable the communities themselves to be more prepared and able to receive, comprehend and respond to warnings. The cyclone of 6 November 1996 focused attention on the need to take a fresh look at disasters and their management.

The awareness programmes for disaster preparedness included:

- Training 20 Storm Safety Extension Officers (SSEOs), two of whom were sent to observe disaster preparedness systems in Bangladesh and also attended a training course on Community Disaster Preparedness at the Asian Disaster Preparedness Centre, Asian Institute of Technology, Bangkok. Of the 20, ten SSEOs were drawn from the DOF and the rest from local NGOs, with the express intention of building stronger working relationships between the two.

- Establishing and training 30 volunteer disaster preparedness groups called Storm Safety Action Groups (SSAGs) in 30 villages, which was expected to reduce vulnerability within the villages. Each SSAG comprised 25 volunteers, who were mobilized by raising awareness about cyclones and disaster preparedness in their village, and then trained in a range of disaster preparedness skills by a team of SSEOs.
 - Equipping the SSAGs with transistor radios to receive warnings, megaphones to transmit the warning throughout the village, torches, first-aid kits, coats, hats and boots (for the SSAG members), lifejackets (for the shrimp seed collector rescue crew). The SSAG will manage the safety of the community through their Community Cyclone Contingency Plan (CCCP), and, ultimately, everyone in the village should know where to go, and who to help, etc., in the event of a cyclone warning.
 - Specific components to warn and rescue the shrimp seed collectors in times of cyclone threat, for, besides the mechanized boat crews, shrimp seed collectors were the other group of worst affected people in the cyclone.
 - Making an educational video about Community Disaster Preparedness and Storm Safety Action Groups.
- The project took into consideration the need to maintain a gender balance amongst the SSEOs, and tried to ensure equal participation from men and women in the programme.
- June 2001*
Prior to 1996, cyclones were mostly taken for granted and fishers looked upon them as no more than occupational hazards, at best upsetting the fishing operations for a few days. But now, all that has changed. Cyclones have come to be taken more seriously, and so are the VHF sets.
- “November 1996 will not happen again, not in this area anyway,” insists Siva, a mechanized boatowner based at Kakinada. “The radio handsets are easy to carry on board, cost next to nothing in maintenance, and are a great source of comfort and protection; having them on board is like taking a life insurance,” he says.
- Five cyclones**
In the last three years, there have been at least five cyclones which came close to the shore in the area, and every time, it was

possible for the Kakinada boats to reach the shore quickly.

Another boatowner, Srinu, adds, “It is not as though the VHF sets are useful only in emergencies. Once we started using VHF handsets, we quickly found other uses for them such as keeping in touch with the base regularly and communicating from boat to boat on possible good fishing grounds and so forth.” The DOF is also exploring possibilities for relaying remote sensing application data on possible fishing grounds in a consistent and reliable manner, which will automatically add to the value of the service.

The Government of Andhra Pradesh, which was convinced of the efficacy of the FAO project, stepped in with a project of its own to set up more shore stations and to provide handsets to the boatowners at a subsidized price. The DOF in Andhra Pradesh has so far provided 400 VHF sets after the pilot phase came to an end, and the programme will continue. The boatowners quickly realized the multiple uses that the VHF sets can be put to, and the DOF constantly receives enquiries for VHFs from other boatowners. The Government of Andhra Pradesh also set up a Vulnerability Reduction Fund (VRF), under which in the year 2000, 10 more shore stations have been established along the coast of Andhra Pradesh.

Gangadhar, a semi-retired fishworker of 70, who lost a son in the cyclone, can not help wondering if having VHF sets on board could not have saved his son. “I understand how painful it is to lose someone so close. I did not allow my other sons to go fishing for fear they may not return, although we were starving. Now, with the radios on board, I feel more confident, and my sons have started fishing once again.”

A cyclone of such magnitude affects a wide range of people with different backgrounds and livelihood strategies, and the response to it should necessarily have to be as wide-ranging as possible. One particularly significant outcome of the programme, which has long-term implications not only in terms of disaster preparedness, but also in other development initiatives in the coastal

areas, is the networks that the project managed to establish: between the government and the NGOs and between the secondary stakeholders and the fishers. Even between different government departments, it was possible to establish horizontal linkages through training and awareness generation.

Most SSEOs, both from the DOF and from the NGOs, have reported that the project helped them understand one another’s roles and responsibilities better. It also sensitized them to the problems and constraints that each organization and individual within a system is regularly exposed to, and this, in turn, has led to very productive post-project interactions and the establishment of personal relationships. This appreciation of the integrated nature of development—be it disaster preparedness, sea safety, resource management or sustainable livelihoods—has also led to joint initiatives with a holistic approach to all these issues.

Most importantly, it is the response of the fishing communities to the programme that is overwhelming. Interactions with the fishers involved in the programme indicated that they felt it had been instrumental in opening doors to many agencies and individuals previously considered unapproachable.

In summary, it can be concluded that an integrated approach to the issue of disaster preparedness—which means considering not just the technical issues, but also the social, cultural and economic implications of any intervention among the artisanal fishers, and recognizing the need for a multidisciplinary and multisectoral approach, involving the primary stakeholders at every level of decision-making—does not only work, but also provides a framework for development as a whole. 📌

This article has been written by Venkatesh Salagrama (sujata@hd2.dot.net.in), Director, Integrated Coastal Management, Kakinada and D S Murty, Commissioner of Fisheries, Government of Andhra Pradesh, Hyderabad

Mussel muscle

Around the Ashtamudi estuary in south India are a few examples of community initiatives in managing inland fisheries resources

Beyond the palm trees and shining waters of the enchantingly beautiful backwaters of Kerala, India, some community initiatives towards estuarine resource management are taking place that deserve attention. A specific example is located in the Ashtamudi estuary in Kollam district, the second largest estuarine system in the State.

Historically, the town of Kollam had flourished as a centre of trade with China, and later with the Dutch and the Portuguese. The renowned traveller Marco Polo had set foot on Kollam during his journeys, when black pepper was one of the most sought-after merchandise there.

The landscape surrounding Ashtamudi has changed little since the time of Marco Polo. Everywhere one looks, deep green palm trees stand still. On the edge of the estuary, palm trees hang over, as if watching their reflections on the calm water.

The region's prosperity derives from trade-related activities, and the most prominent economic activities in and around Ashtamudi estuary today are fishing and coir manufacturing. Although fishing has been the traditional occupation of the inhabitants of the region from time immemorial, Ashtamudi's vibrant fishing practice entered the estuary in the 1950s and early 1960s, when fishing turned into a localized industry of artisanal fishermen using traditional craft and gear. By the late 1960s, the international demand for prawns opened up a possibility for commercial fishing in the region. The construction of the Neendakara fishing harbour led to the flourishing of commercial fishing activities in the region. Norwegian aid not

only contributed to the development of the harbour, but also to the mechanization of fishing craft, which created an apparent economic class difference among the communities.

The inland fisheries in Ashtamudi estuary include both capture and culture fisheries. For capture fishing practices, stake net (locally called *kutivala*), Chinese net (*cheena vala*), gill-net (*vysali vala*), cast-net (*veesu vala*), drift-net (*ozhukku vala*) and trawl net (*koru vala*) are used. Although the fishing industry supports the livelihood of the majority of people in this region, the inland fisheries remain at the subsistence level. The decrease in per capita catch is also evident partly due to the increasing number of fisherfolk in the region. Consequently, the fishing industry in Ashtamudi estuary is no longer on the rise. Rather, it is on the decline due to inadequate management of the estuary. Moreover, despite the fact that the estuary supports a lucrative fishery, no effort has been made so far to assess the exploited fishery resources.

In this market-driven resource milieu, Ashtamudi estuary has a few examples of community initiatives in managing inland fisheries resource. Though often overlooked, the initiatives are certainly worth studying for their distinctive practices.

People's plan

Nurturing fish by marking off a protected area within the estuary is a community initiative, a first of its kind in inland fisheries in Kerala. Fisherfolk have recognized the importance of allowing fish to grow and, thus, have set aside a 'fishing prohibited' zone in the estuary. Motivated by the Kerala State's Peoples' Planning Campaign, one hectare of estuary was fenced off and declared as a

no-fishing area, with the financial support of Rs100,000 from the Chavara block *panchayat* (local governing body) and the technical support of the Brackish Water Fish Farmers Development Agency. (As part of the decentralizing Peoples Planning Campaign, a three-tier administrative structure exists in the State, comprising district *panchayats*, block *panchayats* and *grama panchayats*.)

They created artificial reefs with tree branches and concrete slabs. The fisherfolk of four *grama panchayats*, namely Chavara, Thekkumbhagam, Thevelakara and Neendakara, are benefiting from this bioreserve. The catch has tremendously increased, especially of pearl spot (*Etroplus suratensis*), locally known as *karimeen*, a delicacy in Kerala cuisine.

Collection of mussels for their meat has a recent origin, compared to other inland fishing activities in Ashtamudi estuary, and is only a generation old, though shell collection for lime is an ancient practice. The shell collectors used to consume the mussel flesh sometimes, if the mussels were caught live, but only marginally. However, with the increased demand in the export market for mussel meat, a small group started collecting the live shells, which are abundant in some selected pockets in the estuary. The participation of family and community in the mussel collection makes the practice unique and noteworthy.

There are about 1,000 families at Dalawapuram village in Thekkumbhagam involved in harvesting the rich mussel bed of the region. The nature of the resource necessitates a proper regulation of who catches where. This has been well observed by the community, even though there is pressure from the market for more mussels.

Each household has demarcated its fishing ground in the estuary by placing tree branches in the water about 20 to 50 m away from the land border of their houses. The males in the family collect shells manually, standing chest-deep in the water, and using a small hand-net. Shells are collected in the morning, when there is an ebb tide and the water column

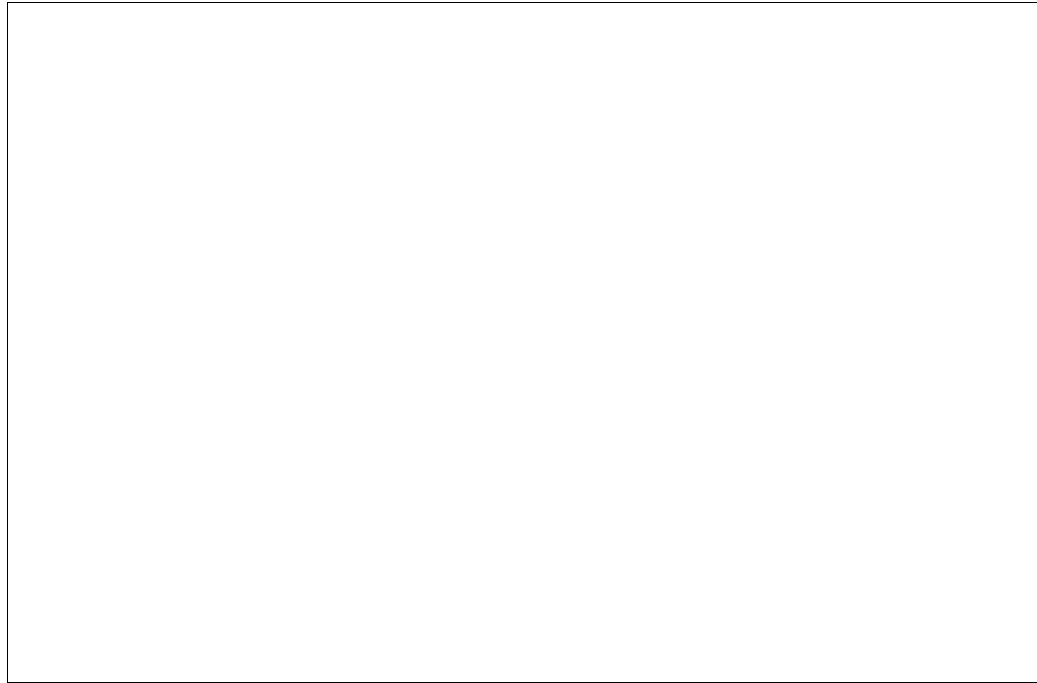
is low. By noon, the collected shells are taken home, adjacent to the fishing ground. The female members and the children of the family sort the shells, returning the young mussels to the estuary to grow. In other parts of the estuary, some people exploit the mussels for cattle and duck feed, irrespective of their maturity.

The fishermen receive an average of Rs150-200 each day; however, the catch is available only for a third of the year. During the breeding period, the community has to frequently cope with the death of mussels due to the high nitrate content in the water. The community claims that this is caused by the runoff of fertilizers and pesticides heavily used in the upland regions.

There is no organized society in the mussel collecting community that facilitates the collection of the meat for the export market, and so, a few agents who act as middlemen reap the profits. They collect the mussel meat from each household and transport them to the export businesses, based mostly near the Neendakara fishing harbour, 6 km from the village.

Scientific studies have indicated that the breeding period of the mussels is during November to February, and the State government has imposed a ban on shell collection during that period. In reality, the actual breeding period is never fixed, but depends on tide character and other weather variables, and may sometimes prolong for another month or so. The community is very aware of this, and observes a consensus not to collect shells during that time, in addition to observing the government restriction.

Nonetheless, such community initiatives are not free of the profit motive. In the case of the inland fishery, influential fishermen in the area have piled up tree branches close to the fenced-off area. Fish aggregating devices prevent fish from moving to other parts of the estuary. As a result, they make a large catch, while denying other fishermen their catch. To an extent, it can be said that these fishermen have privatized the fishing ground, while other marginalized fishermen suffer from low catches. Moreover, those fishermen



who use fish aggregating devices outside the fenced-off area also catch juvenile fish, which affects future catches.

A collective community-level effort of this kind is important in managing resources for sustainable fisheries. Given the scenario of dwindling mangrove vegetation, which traditionally functioned as natural bioreserves, more initiatives are needed to develop bioreserves in the estuaries and backwaters of Kerala.

Community initiatives of this kind lend hope for the sustainable management of inland fishery resources. ♣

This article has been written by geographers M. Muralikrishna and Yumi Onishi of Gaia Info Systems (gaia@vsnl.com), Trivandrum, India, a research consultancy for coastal studies, natural resource management and Geographic Information Systems

Festively fishy

The first-ever South India Fisherfolk Festival threw up an interesting mix of song, dance, drama, culture and technology

That the Liberation Tigers of Tamil Eelam (LTTE) is responsible for the preservation of traditional technology and culture may come as a surprise to many, including the LTTE itself. However, this is entirely an unintended consequence of the long drawn civil war in Sri Lanka. Due to the civil war and the consequent security concerns, the government of the State of Tamil Nadu, India is not keen on providing outboard motors (OBMs) to the artisanal fishermen of the Palk Bay. This means that the fishermen have to continue operating their traditional craft, the *vathai*, a large sailing boat operated with two or three large lug sails.

The *vathai* is one of the few traditional craft that remains in use and seems threatened with obsolescence once peace returns to Sri Lanka. The *vathai* is unique in that it is the only craft in South Asia that uses a balance beam rather than an outrigger to balance itself. Given a choice, though, the fishermen, in all probability, will dump it and shift to a fibreglass boat equipped with a diesel longtail.

This is one among the many interesting insights thrown up by the South India Fisherfolk Festival organized by the South Indian Federation of Fishermen Societies (SIFFS) at Trivandrum, the capital of Kerala, from 14 to 16 September 2002. The festival was sponsored by Ford Foundation India as part of its 50th anniversary celebrations.

The festival, held at the city beach, was a colourful event that attracted large crowds. The event showcased the fishing technology of the artisanal fishermen of south India as well as some aspects of their culture. Perhaps the first of its kind in India, the festival helped to enhance the image of fishing communities, and focus

public attention on the rich heritage of the coast.

The festival comprised three components—a fishing technology exhibition, a fisherfolk cultural programme, and a public function. The outdoor exhibition of boats and fishing gear was complemented by a number of stalls displaying fishing-related products and information.

The exhibition of boats, though, was the most attractive part of the festival. Twenty-six types of boats from the four south Indian States of Tamil Nadu, Kerala, Karnataka and Andhra Pradesh were assembled for the exhibition. These included both the traditional craft as well as those introduced in recent times.

The traditional fishing craft of south India are basically of three types. The dugout canoes dominate the coasts of Karnataka and north Kerala, while plank canoes dominate central Kerala, and the calm waters of the Krishna-Godavari delta and the Palk Bay. The rest of the coast is home to different types of *kattumarams*, which are nothing but finely shaped logs of wood lashed together with rope to form a craft that is ideal for surf-beaten coasts. The exhibition displayed both the original craft and their recently introduced alternatives in plywood and fibreglass.

Fascinating craft

The boats that captured the public imagination, however, were the large *vathai* from the Palk Bay with its double sail and balance beam, and the 65-foot plank canoe, with multiple OBMs, used for ring-seine operations in central and northern Kerala. Equally fascinating was the 'shoe' *dhoni* from the Godavari delta, which is a 24-foot canoe shaped like a slip-on shoe and which can accommodate an entire family that travels for months on

end in the Godavari delta waterways in search of fish, crabs and bivalves.

The large *kattumaram* from Uvay in the Tirunelveli district of Tamil Nadu was another attraction. Of the various SIFFS boat designs on display, the 36-foot offshore or 'stay-fishing' boat was impressive. It is gaining popularity in Trivandrum district of Kerala, where the fishermen of Vizhinjam have started going for five-day voyages. The various plywood and fibreglass *kattumaram* lookalikes generated a lot of interest too.

The exhibition of fishing gear was also perhaps unique in that real, life-size nets, rather than scale models, were put on display. The nets displayed ranged from the huge ring-seine net to the small anchovy net. While the original cotton nets are still used for certain types of gear, nylon multifilament nets currently dominate the scene.

However, the rapid spread of nylon monofilament nets at the lower end of the scale (small nets with small meshes) is a recent phenomenon. The coast of Tamil Nadu has plenty of these nets, especially bottom-set gill-nets that use small pieces of lead as weights. Also at the festival on display was the monofilament bottom-set net for catching soles, which, when introduced a few months ago in the Kollam district of Kerala, led to riots and burning of 70 plywood boats. Various

types of hooks-and-line and traps were on display as well.

The other exhibits included OBMs, fishing accessories and sea-safety equipment. The stall put up by the Kerala Fisheries Department to demonstrate the newly introduced wireless communication system for small boats was of special interest to the fishermen. The stall of the Central Institute of Fishing Technology also displayed many models of fishing gear, both mechanized and artisanal. A surprise stall was that of a visiting delegation of Sri Lankan fishermen who put up pictures, models and posters of their fisheries and fishing techniques.

In conjunction with the exhibition, SIFFS brought out a reprint of the classic report of James Hornell entitled *The Origins and Ethnological Significance of Indian Boat Designs*, written way back in 1920, but still relevant. The reprint edition of the book, along with an interactive CD-ROM on fishing craft and gear of south India, was released by G. Karthikeyan, Kerala's Minister for Culture.

Cultural programmes

During the evenings of the festival, cultural programmes were staged on a giant stage put up for the purpose. This was another unique concept meant to bring on stage songs, dances, drama and other cultural items that are performed by fisherfolk from different parts of south

India. The inspiration came from a programme organized by the National Folklore Support Centre, Chennai, where a couple of the items staged in a week-long folklore festival were from the fishing community.

The fact that the fisherfolk have some unique programmes of their own is not recognized, even by the fishing community itself. Why not try to put together an event that would exclusively project the culture of the fisherfolk? That was the question that prompted SIFFS to include a cultural component to the festival. That, of course, necessitated a wide-ranging search, as SIFFS had no prior information or experience in that area. Based on information and contacts provided by various sources, SIFFS managed to put together nearly 15 items from the four south Indian States.

Though uneven in quality and somewhat amateurish, the programmes turned out to be far more entertaining and attention-grabbing than anticipated. The crowds kept streaming into the exhibition venue and the ground was packed for most performances.

One set of items represented songs sung during different fishing operations, like rowing or pulling the net. These included the shore-seine songs from the west coast and the *amba pattu* from the east coast. These are now disappearing as the pace of life gets faster and motorization has changed the way fishermen operate. Interestingly enough, some of the song forms presented at the festival were related to the surf conditions and the natural environment.

Another set of items comprised performances during religious festivals and marriages. These largely represented performances belonging to different religious groups.

The *kol kali* (group dance with sticks), *oppana* (pre-wedding group song and dance by women) and *def muttu* (group dance with percussion instruments) are part of the Kerala Muslim fishermen's heritage but do not appear to have any special reference to fishing. Interestingly, except for *kol kali*, which is mainly

performed by the fishermen, the other items are common to all Muslim groups of Kerala.

The *paricha muttu*, a group dance with shields and swords, performed by the Catholic fishermen of central Kerala, has no direct reference to fishing. It has its origins in the conversion of fishermen to Christianity by Portuguese missionaries in the 16th century. The *kalial*, a group dance to the rhythm of sticks, also belongs to the Catholic fishermen from the Tirunelveli coast of Tamil Nadu and relates to marriage celebrations and religious festivals. This disappearing art form has been revived in recent years by a dedicated group, and the troupe at the festival gave a truly professional performance.

The remaining items defy classification. From the Hindu fishermen of Andhra Pradesh came the *kola sambharam*, a ritual dance conducted with fire to improve fishing fortunes. Held twice a year, it is also performed whenever the fishing season is poor. The Karnataka fishermen surprised everyone with very entertaining skits and songs. A skit based on the legend of a ghost of a woman who is said to emerge from the sea to terrorize fishermen in Mangalore, was done imaginatively and had the entire audience on their feet. Young girls from Trivandrum put up a meaningful folk dance projecting the harm done by trawlers to the traditional fishermen. *Gana*, a lament for the dead, came from Chennai, where this particular piece of folk art form has been picked up by movie music directors.

Portuguese influence

A major performance was the *chavittu natakam*, a costumed drama belonging to the Christian fishermen of central Kerala. An elaborate affair, this drama form is about the Crusades and is replete with references to European kings and nobles. Also introduced by the Portuguese, the *chavittu natakam* sought to impart a separate religious and cultural identity for the new converts. What was most unexpected was the revelation that the same drama form exists in Negombo in Sri Lanka, where the fishermen were converted by the same Portuguese. The Sri Lankan delegation displayed photographs that showed the similarities.

The cultural programme was thus a great voyage of discovery that threw up many interesting relationships between culture, technology, religion and the environment.

The public meeting on the last day of the festival was essentially meant to reward achievements by fishermen of the SIFFS network. Awards were given to fishermen with the highest catch in each district, divided into motorized and non-motorized units. Awards were also given to the societies with the highest fish catch and best loan repayment performance. Special awards were distributed to the fishermen with the oldest SIFFS boats still in operation. Sushma Raman of Ford Foundation India was the chief guest at the public meeting. Disappointingly, the Chief Minister and Fisheries Minister of Kerala could not attend the public meeting due to other unexpected engagements.

Though media coverage was generally weak before the start of the festival, all local television channels and newspapers subsequently gave excellent coverage to the event. This resulted in huge crowd turnouts on the second and third days. Some schools sent their students to see the exhibition as it had educational value. Local fishermen came in large numbers on all days. SIFFS members and clients had come in batches from all the four southern States and the Union Territory of

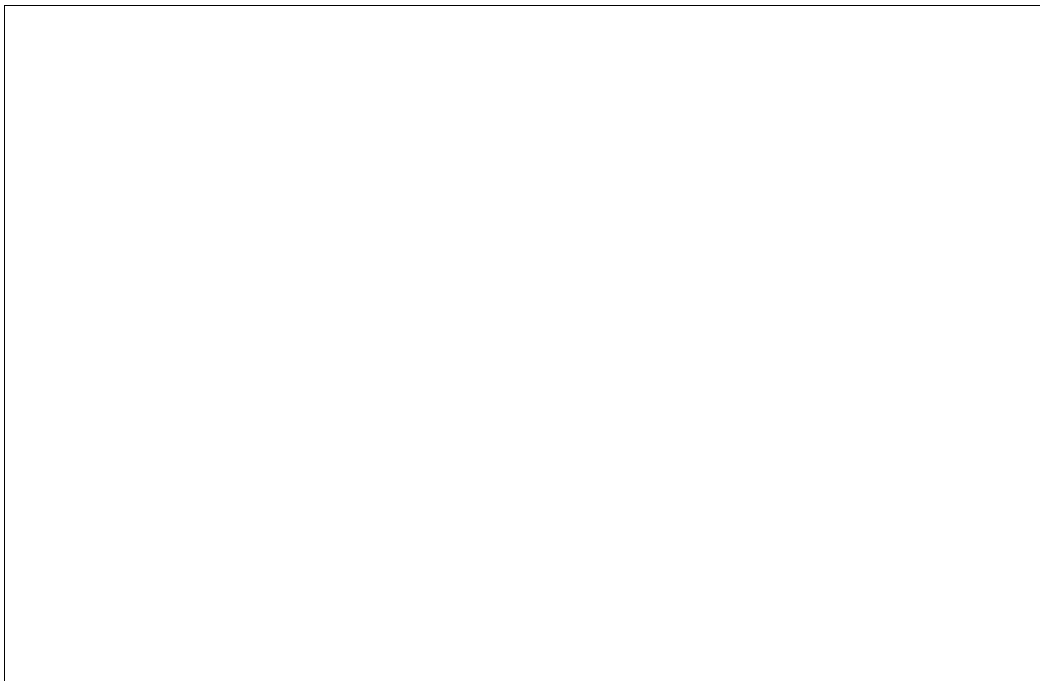
Pondicherry. The feedback from all quarters was positive, and most visitors were dazzled by the exhibits and the novelty of the whole event.

In addition to Ford Foundation representatives, present at the festival were ICSF members and staff, as well as friend and well-wisher Ery Damayanti from Indonesia. NGOs, including Dhan Foundation from Madurai, and Basix and Ankuram from Hyderabad, also turned up to give encouragement to SIFFS.

Being the first of its kind, the event obviously had many limitations. The exhibition of boats, while interesting, missed out on presenting in a systematic manner the stories behind the boats, the current trends and future prospects. The same could be said for the gear as well. Only a few of the visitors were privileged with such information, garnered when senior SIFFS staff were free to take them around.

Technology exhibit

The displays in the stalls were routine and lacked creativity; much more information and knowledge could have been passed on with some proper planning. A lot of the information was technical and needed to have been simplified for the lay person. For a technology exhibition, the issues relating to technology could not be highlighted well enough. As far as the cultural programme was concerned, SIFFS



lacked adequate prior information on the items to be presented on stage, and so could not provide much background material.

Mercifully, most visitors to the festival were unaware of these limitations, and there was enough of visually attractive material for them to go back satisfied. Hopefully, if there is another event like it, SIFFS will be able to make a bigger impact.

All in all, though, the South India Fisherfolk Festival was a satisfying event that provided interesting insights and threw up many surprises to everyone, including the organizers. The enormous potential of such events for entertaining and educating fishermen and the public was revealed, but more needs to be done to fulfil that potential. The festival also brought out the need to document the rich culture of the fisherfolk before it gets rapidly absorbed by mainstream culture. ♣

This report comes from V. Vivekanandan (vivek@siffs.org), Chief Executive, South Indian Federation of Fishermen Societies, Trivandrum, India

Traditional fisheries

Jammed in Jambudwip

The traditional stake-net fishers of the ecologically sensitive Jambudwip island face a likely ban of their seasonal fisheries

In the South 24-Parganas district of the State of West Bengal in India is the 20-sq km island of Jambudwip. Located about 10 km offshore in the southwest corner of the Sundarbans at the mouth of river Hooghly in the Bay of Bengal, the island can be reached in 45 minutes from the Frasergunj fishing harbour by *bhut bhuti*, a small powered country craft.

Jambudwip has been used as a site for fisheries camps at least since 1955, according to Bikash Raychoudhury's *Moon and Net* (published by the Anthropological Survey of India in 1980). *Behundi jal* or stake-net fishery is a traditional activity in different parts of the Sundarbans delta, on both the Indian and Bangladesh sides.

The largest stake-net fishing operation in the Sundarbans is based in Jambudwip. It is the *Jalia Kaibartha* community from the Chittagong hills that mainly practices *behundi jal* fishery in the marine waters of the Sundarbans. After India attained independence in 1947, the members of this highly enterprising fishing community settled down in places like Kakdwip, Namkhana, Sagar and Pathar Pratima in West Bengal, and Champaran in Bihar.

However, this traditional source of livelihood and sustenance is now under serious threat. The Central Empowered Committee (CEC), has said that the seasonal "occupation" of the Jambudwip island by fishermen and the fish-drying activity was a non-forest activity that cannot be permitted under the Forest (Conservation) Act, 1980, without prior approval of the central government. (The CEC was constituted by the Supreme Court of India by a Notification on 20 June 2002 to provide relief against any

action taken by the Central/State Governments or any other authority regarding, *inter alia*, deforestation and encroachments, and the implementation of legal instruments for forest conservation.) It has directed the West Bengal government to remove all traces of encroachment on Jambudwip island by 31 March 2003.

While the Fisheries Department of West Bengal under Minister Kiranmoy Nanda strongly defends the fishermen's claim to the seasonal use of the island, the Forest Department is bitterly opposed. The fishermen are now living in the shadow of uncertainty. Will their two-generations old fishery be treated as an activity eligible for regularization or will they be summarily evicted?

It was on 29 May 1943 that, under a Notification of the Government of West Bengal, Jambudwip became reserved forest as part of the protected forests in the Namkhana Division. As a result, no activity was allowed on the island, except those permitted by the Forest Department. From at least 1968 onwards, fishermen have been issued permits to use the island to collect firewood and to launch boats into the main creek.

Since 1989, Jambudwip has been part of the Buffer Zone of the Sundarbans Biosphere Reserve, where ecologically sound practices, including fisheries, are permitted (unlike the Core Area of a Biosphere Reserve, which is securely protected for conserving biological diversity). Jambudwip is, however, located outside the Sundarbans Tiger Reserve.

Mangroves destroyed

The CEC visited Jambudwip on 3 December 2002, in response to an

application from the Executive Director, Wildlife Protection Society of India, seeking suitable relief against alleged encroachment and destruction of mangroves by fishermen.

The CEC's report of 24 December 2002 directed the West Bengal government to remove all traces of encroachment on Jambudwip by 31 March 2003. However, the CEC observed that the proposal for fish drying on the island could still be considered, but only after obtaining clearance from the Ministry of Home Affairs and the Ministry of External Affairs for the fishermen involved, since some Bangladeshis were alleged to be involved illegally in the island's fisheries.

The CEC denouement followed a series of events consequent to the Supreme Court order of 12 December 1996 on the issue of forest encroachment. Further to its Order of 23 November 2001 restraining the Central Government from regularizing all encroachments, the Ministry of Environment and Forests (MoEF) wrote to all States and Union Territories on 3 May 2002 to regularize *only* eligible encroachments before 1980 and to evict all other encroachments by 30 September 2002. The Forest Department, soon after receiving this letter from the MoEF, ordered the Jambudwip fishermen not to use the island and to remove their fishing implements from their makeshift sheds.

Subsequently, the Department set fire to the sheds and fishing implements in July-August 2002. The torching of bamboo-and-reed sheds and fishing implements is particularly intriguing since there was a Ministerial meeting held between the Fisheries and the Forest Departments on 9 August 2002. At this meeting, a decision was made, as reported in the press, to regularize the seasonal use of a demarcated area of Jambudwip for fish drying by fishermen holding identity cards issued by the Fisheries Department.

A subsequent letter dated 30 October 2002 from the MoEF even made provision for setting up district-level committees or commissions to settle disputed claims of eligible encroachments. But no such initiative was taken in the case of Jambudwip. The letter also revealed a softening of the MoEF's position; the earlier rigid stand on "summary eviction" by 30 September gave way to "showing progress on the eviction of ineligible encroachments".

Entry blocked

The West Bengal forest authorities, however, hardened their stand on Jambudwip. They erected concrete pillars at the mouth of the creek—the lifeblood of the fishermen and their fisheries—allegedly to block the entry of fishing vessels into the creek. On 12 November 2002, for the first time in the history of Jambudwip, ten fishermen drowned at

sea during a cyclone, as they were unable to seek shelter in the creek.

Soon after the drowning incident, the National Fishworkers' Forum (NFF), India, launched an agitation on 18 November 2002 against preventing seasonal fisheries camps and blocking entry of fishing vessels into the creek in Jambudwip. Subsequently, the Principal Secretary of Fisheries, West Bengal, informed the CEC that the West Bengal State Government had decided to permit fishing activity in Jambudwip on the ground that it has been continuing for almost 50 years.

The fishermen resumed fishing but they were still prevented from landing their catch in Jambudwip. On 25 November 2002, after removing a few of the concrete pillars erected by the West Bengal Forest Department, the fishermen entered the creek and sat in their fishing vessels in peaceful protest against being denied access to the island.

On 26 November 2002, the Chief Secretary of West Bengal wrote to the CEC requesting it to agree to the State Government proposal to allow the fishermen to resume fish-drying activities up to February 2003 as an interim measure and to await a formal proposal on the issue from the State Government. The letter also contained viable proposals for long-term solutions to the vexing issue, such as allowing the seasonal fishery in a fenced area along the seaboard of Jambudwip, with full protection to mangroves beyond the fenced area.

Although it indirectly makes provisions for resuming fish-drying activities for the 2002-03 season, the report of the CEC hangs like a Damocles sword on the future of the Jambudwip fishery. As we go to press, there is still uncertainty if the fishermen could resume their fishery from the year 2003-04. About 3,000 fishworkers live on the island during the season, staying in makeshift sheds of bamboo and reed, repairing fishing nets, sorting, drying and storing fish, while about 3,500 fishermen engage in *behundi jal* fishing in the adjacent sea. What makes *behundi jal* fisheries possible is the unique delta ecosystem and the community's

indepth understanding of the inter-relationships between the lunar cycle, oceanic currents and the migratory behaviour of fish, in conjunction with the dynamics of bottom topography of the sea, including the pattern of sedimentation and soil quality. The fishery is marked by simultaneous capture, transport and processing activities, with different sets of people involved round-the-clock as one unit under one *bahardar*, or fleet operator.

In actual practice, it is like setting up two camps: one on land and the other at sea, since the fishermen who fish do not return to the island until the end of the season, unless there is a cyclone or some accident. The fishing ground is connected to the fish-drying yards by fish transport vessels that operate daily, sometimes twice a day.

The island—especially the creek during high tide—is not only useful for unloading fish and loading victuals for the fishermen staying on the fishing ground, it is also beneficial as a refuge from cyclones. Drinking water and firewood are also available on the island. Easy access to sufficient quantities of firewood was a long-term requirement not only for cooking, but, more importantly, for boiling hemp fishing nets in natural dyes to make them invisible to fish in the thick mud of *khari*. These days though, firewood is used only for cooking since everyone has switched to nylon nets, which do not require any dyeing.

In the *behundi jal* fishery, a series of bag nets are fixed in the black, sticky mud in the seabed undulations called *khari* at a distance of about 25 nautical miles from Jambudwip. The *khari* has a combination of disintegrated mangrove wood and mud, and is an important source of food for bottom-feeder fish. Aggregation of benthic fish attracts other fish that predate on them. Both prey and predator fish become quarry to the fishermen.

Bagnet design

Each fishing unit has about 20 bag nets. The bag net has an average length of 75 ft and has a 60-ft mouth. Ropes, corresponding to the water column depth, bind wings of bag net on either side of its mouth to metal stakes driven into the mud. The knots are ingeniously tied so

that the mouth of the net always faces the water current, in both high and low tide.

The net is designed in such a manner that a strong current would take it to the bottom of the channel, while a weaker current would keep it at the midwater level. In the absence of a current, the net would float on the surface. Two hardy bamboo poles are tied vertically to the mouth of the net, 20 ft apart, to keep it open. The nets are fixed at depths of 12 to 15 fathoms. The high opening of the bag net, in synchrony with the currents, allows both demersal and midwater species to be caught.

In each of the *khari*, five nets are fixed in a row, as a cluster. Often, different *khari* are chosen to deploy the nets. Unlike the trawl net, which furrows the seabed, the stationary bag nets do not cause any damage to the seabed. The fish are emptied every six hours, at the time of the equilibrium between the high and low tides, when there are no currents, and when the mouth of the net floats on the surface of the sea. Fish are emptied from the cod-end of the net; *doa* the Bengali word for emptying the cod-end can be translated as “milking” the net. Each unit catches about 400 tonnes of fish in a single season. Two-thirds of the catch comprise species like Bombay duck, ribbonfish, anchovies, silver belly and wolf herring that are dried for human consumption and poultry feed. The remainder one-third comprises high-value species like shrimp, jewfish, catfish, Indian salmon, eels, and rays, which are sold fresh. It is estimated that each unit catches fish worth Rs4 mn (approx. US\$80,000) in a good season. Putting all the units together, Jambudwip produces about 16,000 tonnes of fish worth Rs168 mn (approx. US\$3.4 mn) in a five-month long fishing season.

According to Dr L K Banerjee, Retired Joint Director, Botanical Survey of India, who has worked on the mangroves of Sundarbans for the past 30 years, Jambudwip has successive stages of vegetation, comprising mainly *Avicennia* species of mangroves, and species of grass like *Porteraesia coarctata* and *Phoenix paludosa*. The species diversity on the island is not that significant. However, the satellite imageries of Jambudwip for the

period 1981 to 2001 from the National Remote Sensing Agency (NRSA) furnished to the CEC by the Forest Department as “irrefutable proof” of mangrove destruction show dense mangrove vegetation coverage except in areas that are allegedly cleared by the fishermen. Moreover, since higher-resolution satellite images clearly showing deforestation to the detail that the NRSA images are claiming to portray have been produced in India only from 1998, the authenticity of the images as irrefutable proof for the period prior to 1998 needs to be independently verified scientifically.

Even if there is felling of mangroves on the Jambudwip island for firewood by the fishworkers, it is not an impossible situation to salvage since the *Avicennia* species of mangroves found on the island can be successfully regenerated. There are several examples from India as well as other parts of the world. Moreover, the fishworkers are ready to move from firewood to liquefied petroleum gas for cooking purposes.

There are about 10,000 people dependent on the stake-net fishery today, as against a couple of hundreds 35 years ago. Instead of extinguishing the fishery, what is required is to recognize its salient aspects and mitigate negative impacts through better coastal area management, treating the island and the fishing ground within one framework. The Fisheries and Forest Departments have to develop mechanisms to collaborate with the fishermen to achieve this goal.

“I gave commands; Then all smiles stopped together”, the poet Robert Browning made the Count say in “My Last Duchess”. In the case of Jambudwip, it is high time to retract the command and bring back the smiles to the faces of the fishermen of the island. ♣

This article is by Sebastian Mathew,
Programme Adviser of ICSF
(icsf@vsnl.com)

Documentary

Under the sun

A film recently produced by ICSF documents the plight of the transient fisherfolk of Jambudwip island in West Bengal, India

Jambudwip is a 20-sq km island in the district of South 24-Parganas, in the Indian State of West Bengal, in the Sunderbans delta. Since at least 1955, Jambudwip has been used as a base for fishery operations and as a fish-drying site, mostly by small-scale, artisanal fishworkers. *Behundi jal* or stake-net fishery is the traditional activity practised in different parts of the Sunderbans delta. The largest stake-net fishing operation in the Sunderbans is based in Jambudwip.

However, this traditional source of livelihood and sustenance is now under serious threat. It is being alleged that the seasonal 'occupation' of the Jambudwip island by fishermen and the fish-drying activity is a non-forest activity that cannot be permitted under the Forest (Conservation) Act, 1980, without prior approval of the central government. The West Bengal government has been asked to remove all traces of 'encroachment' on Jambudwip island.

While the Fisheries Department of West Bengal has strongly defended the fishermen's claim to the seasonal use of the island for their fishery, the State's Forest Department is bitterly opposed. The fishermen are now living in the shadow of uncertainty. Will their two-generations old fishery be treated as an activity eligible for regularization or will they be summarily evicted when their fisheries are dismissed as ineligible for regularization?

These issues are dealt with in the documentary film, *Under the Sun*, produced by the International Collective in Support of Fishworkers (ICSF) and directed by Rita Banerji for Dusty Foot

Productions. The film tackles the issues involved in the stake-net fishery of Jambudwip. It traces the genesis of the standoff between the fishworkers and the government, and analyzes the processes that led to the government action against the traditional fishworkers. It also documents the response of the fishworkers, as well as the actions taken by the National Fishworkers' Forum to help them regain their rights to the fishery.

Copies of the film (format: CD-ROM; duration: 36 minutes; language: English) can be had from ICSF for a suggested contribution of US\$15 each. Please contact icsf@vsnl.com.

This notice comes from the ICSF Secretariat (icsf@vsnl.com)

Ganging up

The experience of trawler fishermen of Chennai, India shows how user groups find it difficult to manage their fisheries

Traditionally, the fishermen from Chennai and Chengulput areas of Tamil Nadu, India used *madavalai* (traditional dip-net made of cotton), *thurivalai* (cotton drag-net), *edavalai* (nylon dip-net) and *periyavalai* (cotton shore seine) to fish both pelagic and demersal species. These fishing nets required more investment and their operations needed more than one *kattumaram* (catamaran) and more labour. Thus, each fishing hamlet had three or four nets of each type, which gave employment for all the fishermen of the village. All the villagers were involved in groups in fishing, living in harmony with neighbouring villagers. In earlier days, there was no individual fishing, except hook-and-line fishing, which was performed by one or two persons jointly in a single catamaran. Fish aggregating devices (FADs) were also very common in those days.

Since all the fishing operations required groups, each fisherman felt responsible for managing the fishery resources and there was no competition among fishermen. The benefit was shared equally among the fishermen who felt that the resource in the sea is for the common good. Also, each village observed a territorial limit for fishing operations. There was no overexploitation and no one poached the other's resources, thereby giving every hamlet an equal opportunity to benefit from the resources.

In the early 1950s, nylon gill-nets of different mesh sizes were introduced. These weighed little, cost less and could be easily handled by two or three persons. Individual fishermen started to buy these nets and employed two or three persons on a share basis. This paved the way for the erosion of group or community fishing, and encouraged individual fishing, leading to competition and

fishing during the night, resulting in the continuous disturbance of the sea.

In the 1960s, the government of Tamil Nadu introduced mechanized gill-nets with the help of Norway. The first boat introduced was a 26-ft bottom gill-netter. Such boats were given to fishermen's societies and community leaders. In 1965-66, 30-ft gill-netters and trawling boats were introduced. Simultaneously, the export markets were opened with the collaboration of Japan and the US. During this period, fishing operations with mechanized boats were carried out in the 40-km stretch between Ennore and Thiruvanniyur. The maximum fuel they carried per day was 50 litres. The fishing was carried out during daytime, from 6 am to 2 pm. During this time, they did two hauls and got good catches. In 1969-70, 32-ft boats were introduced. In 1972-73, the area of operation was extended to Sriharikota in the north and Mahabalipuram in the south, a stretch of about 120 km.

During this period, the shrimp catch was very good. The fishing was done both by gill-netters and trawl boats. Since the shrimp were caught in the shallow waters, all the boats were concentrated in the inshore areas where the traditional fishermen fished, resulting in a continuous ploughing of the fishing ground, which caused the resources to start depleting very fast.

Heavy losses

Also, the movement of boats in the inshore areas made the traditional fishing more vulnerable. Fishing operations by mechanized boats damaged the traditional craft and gear, and caused heavy losses to the traditional sectors in terms of resource and properties. This led to conflicts between mechanized and

traditional fishermen in 1977, when the catamaran fishermen started seizing boats operating in the shallow waters.

The government interfered and introduced some regulations on the mechanized sector, and also a territorial boundary between traditional and mechanized fishermen, which was patrolled by the Fisheries Department officials. This conflict led to the creation of the Federation of *Panchayat* Councils (in Tamil, *Aikkiya Panchayat Sabai*) in Royapuram.

Around 90 per cent of the boatowners lived in Royapuram and neighbouring villages, where they were attacked by the catamaran fishermen. To get support from the traditional fishermen, the boatowners conducted a meeting of about 10 villages in the Royapuram area and formed an *Aikkiya Panchayat*.

At the *panchayat* meeting, the boatowners promised to develop their village economically. They collected 25 paise per basket of fish sold and handed over the money to the *Aikkiya Panchayat*.

The money was spent for village needs. In this way, with the help of the *Aikkiya Panchayat*, the boatowners got immunity from attack by the catamaran fishermen. Fishing disputes between boatowners and catamaran fishermen were now cleared through the *panchayat*.

Until 1977, the maximum fuel carried on board a boat was 150 litres per trip. In the 1980s, the shrimp catch began declining and some of the trawlers started to fish finfish and squid in the deep sea, at about 40-42 fathoms, where some ridges (patches of rocks) are present. They caught about 100 baskets of fish per trip (around 2,500 kg). The fishing operation was between 3 am and 2 pm daily. By 1985-87, the fertile ground had become deserted by continuous trawling. Daily fishing became unprofitable and fishermen began to fish continuously throughout the night and the next day, and slowly long trips (stay fishing) became common. The boats now began to carry 200 litres of fuel per trip, along with some ice.

In 1987, the mechanized fishermen started to feel the depletion of fish resources in and around Chennai due to the continuous ploughing of the fishing grounds and changes in the bottom ecosystem. Most of the fertile grounds became unfertile. In order to stay out at sea longer, the fishermen built onboard fish-holds to store the fish with ice.

Two-day trips

They also carried one 140-kg block of ice with them, as well as extra fuel, stored in plastic containers. With these facilities, they started to go for two-three day trips between Kalpakkam and the northern part of Shriharikotta.

With this system, the fishermen caught more fish, saved fuel and spent more time fishing. At the same time, boat maintenance costs increased due to the continuous running of the engine. The fishermen also found that the Andhra Pradesh coast has greater potential, which can be easily exploited with better facilities like larger boats, bigger fish-holds and more fuel. They thus began to desire the big boats available in Mangalore in Karnataka. Some of the fishermen brought these 40-ft boats from there in 1987. These could carry 1000 litres of fuel and 10 to 15 blocks of ice to stay at sea for three or four days, fishing along the Nellore coast of Andhra. The catch increased per unit effort. Soon, every fisherman in Chennai wanted to follow this method. The fishermen started modifying their 32-ft boats into 40-ft boats with engine capacity of 120 hp.

In 1990, the Central government pumped money into the sector by giving 20 per cent subsidy for new boats through the National Bank for Agriculture and Rural Development (NABARD). This led to the sudden increase of 40-42-ft trawlers in a short time. The boats had fuel tanks with capacities of about 1,000-1,500 litres, and huge insulated fish-holds under the deck to hold about 2.5-3 tonnes of fish. Extra fuel was carried in plastic containers and about 3 tonnes of ice in the fish-holds. One important innovation was the fibre coating to the outer sides of the boats, which provided more buoyancy and added confidence to the fishermen. With these facilities, they started to go farther to northern Nellore and crossed Prakasam District in Andhra Pradesh.

The 1980s was the period when the trawl fishery progressed remarkably and attained peak production of 23,953 tonnes in 1989. The threefold rise in the annual fish production observed in 1985-89, compared to the previous five-year period, was due to the start of long-trip shrimp trawling operations off the Sriharikotta-Nellore coast, which resulted in greater catches and catch rates than the short-trip shrimp trawlers operating off the Chennai and adjacent coasts.

In the beginning, the Andhra fishermen did not give any problem to the Chennai

boats. But the Chennai boats violated the local fishery regulation by operating their trawlers in the shallow waters and damaging the craft and gear of the traditional fishermen, who were even assaulted at sea. This led the local catamaran fishermen to retaliate. They started to catch and detain the Chennai boats, offloaded their catches and collected fines. This resulted in regular law-and-order problems in the sea.

The Andhra fishermen claimed that the Tamil Nadu fishermen had no right to fish in their waters, particularly in the notified traditional fishermen's areas. But the Chennai fishermen claimed they were fishing in the deep sea beyond the traditional fishing areas and were not damaging the craft and gear.

The Chennai fishermen also argued that, as citizens of India, they are free to go anywhere to do business, and preventing them from fishing in Andhra waters was against fundamental rights guaranteed in the Indian Constitution.

From 1993, the Tamil Nadu government started a solatium fund by collecting money from the Chennai boatowners. Each boatowner would pay Rs500 per year to the government, who would give a compensation amount to any victims of clashes between the Chennai and Andhra fishermen. After a few years, the boatowners found it difficult to pay the amount, and so they requested the government to reduce it, which was done. They now pay Rs300 per year. This amount is meant only for those who are either injured or have lost their lives in clashes, and not for the penalties sought by Andhra fishermen who detain the Chennai boats.

As the conflicts usually occur in Nellore and Prakasam districts, the Chennai fishermen started to avoid these areas, even though the grounds are very fertile. They began to go further north and now reach up to the Kakinada coast, with basic equipment like echo sounders, compasses and global positioning systems (GPS).

Not seaworthy

Most of the boats are not certified for seaworthiness. Carrying about 2,000-3,000 litres of fuel and 40-45 blocks

of ice (weighing around 6,300 kg), they spend about 10-15 days at sea.

In the 1960s, only Pablo-type mechanized boats of 26 ft in length were introduced for bottom gill-nets, and in 1965, the preferred size became 30 ft. After that, fishermen started giving importance to trawlers rather than gill-netters because of good shrimp catches and good returns from the export markets. Trawlers became dominant between 1965 and 1990. In 1980, the number of gill-net boats had declined to about 10 to 15, compared with 500 trawlers. Before 1990, the gill-nets were operated between Mahabalipuram and Sriharikotta in the 20-50 m depth range throughout the year except during the northeast monsoon season. The main species caught were shark, ray, seer, carangid and tuna.

In 1990, seeing the improvement in trawlers with respect to size, catch and storage, the gill-net fishermen also started to convert their small boats into big size (42-ft or 12-m) boats and went for long-trip fishing in distant places off the Andhra coast and earned good profits. At the same time, the catch of the 42-ft trawlers started declining. Since gill-net fishing is not as risky as trawling and also giving good profit, the attention of the trawler fishermen was diverted to gill-net fishing. So in 1997-98, some of the trawler owners converted their big trawling boats into gill-net boats for better profits. All the big gill-net boats have insulated fish-holds as in trawlers and large fuel tanks to store 750-1,000 litres of fuel. They carry 30 blocks (4,200 kg) of ice, and use long gill-nets of about 150-300 fathoms length (450-900 m), weighing about 1-1.5 tonnes.

After the conversion to a larger size, the gill-net boats go up to Nizampatinam to catch shark, ray, seer, carangid, tuna and flying fish. They go into deeper waters of more than 100 fathoms (300 m), about 60-75 km from the shore. At present, more than 70 gill-netters are operating from the Chennai fishing harbour and nearly 20 trawlers are being converted to gill-net boats. Alongside the gill-nets are longlines with 200 hooks for shark, fished in the deeper rocky areas locally called *maadai*, where the trawlers also

operate for fin fish and squid. Since the trawler fishermen are in the majority, they banned longline fishing from gill-net boats.

At present, the trawlers operating from Chennai comprise four different overall length groups, 9.5-10 m, 11 m, 12 m and 13-14 m (the conventional 32-ft, 36-ft, 40-ft and 45-ft), with the horsepower varying between 90 and 120. The vessels of overall length 9.5-10 m and 11 m exclusively operate fish trawls northeast of Chennai in slightly deep waters of 30-40m adjacent to the rocky patches, whereas the 12-m and a few 11-m vessels conduct daily shrimp trawling trips in the coastal waters off Chennai at depths of 15-30 m. The trawlers with length range of 13-14 m and 120 hp engines are engaged in long-trip fish and shrimp trawling off Sriharikotta and Kakinada at depths of 15-30 m for durations of 15 days.


When mechanized boats were first introduced in Chennai, there was no union for mechanized boatowners. Later, they formed two associations and one co-operative society. Both long-trip gill-netters and trawler boatowners are members of the Chennai-Chengai Boatowners Association. The *madai* boatowners have formed an association called the Singaravellar Boatowners Association.

The Chennai Boatowners Association soon became the trumpet of the ruling political party. That is one reason why fishing regulations are not implemented properly along the Chennai coast. The other reason is that the Chennai fishing harbour is situated in the Royapuram legislative constituency, where the majority are fishermen working in the mechanized sector. Most of the Association rules favour its leaders and the other large boatowners.

That is why most boatowners are not interested in renewing their registration, paying berth charges or solatium funds and taking out insurance on their boats.

Fishing holidays

To replenish fishery resources, all coastal States in India have been implementing fishing holidays of 45 days every year for two years now. But artisanal fishermen



fish during this period with the knowledge of fisheries officials, who know that they are not doing any destructive fishing like trawling. In Tamil Nadu, the fishing holiday is declared every year from 1 May to 15 June. Though the boatowners realize it is good for the replenishment of resources, they are ready to go fishing if there is no legal action against violators. Evidently, the boatowners are not too bothered about managing the resources. They are now claiming compensation from the government for the holiday period.

In an effort at self-management, the Boatowners Association has banned midwater trawling and molluscan conch shell (*chank*) fishing. It banned longline fishing by gill-net boats, since they were operating in the same rocky grounds as bottom trawling. It banned outsiders other than Chennai, Chengai and Kanchipuram fishermen. It banned the addition of new boats. However, the Association has not banned shrimp trawling which is exclusively operated very near the coast, just opposite the river mouth, using very small-mesh nets (*semakker* net) and damaging the fishing ground more than any other nets. ♣

This article is by B. Subramanian (bsmanian9@rediffmail.com), a Fisheries and Environmental Consultant based in Chennai, India

For a few rupees more

The boatworkers of Veraval in the Indian State of Gujarat are a harried lot, facing a bleak future

It is just a mass of humanity—‘suppliers’ as they are called—scrambling over several boats to carry baskets of fish to the marketing shed, or crushing ice at the crushers on the landing site and carrying it off to the boats, or fetching water and stores for the boat. Some of them even look jolly, dressed up as if to go off to the cinema, for this is their only day at shore. Some look so young and should be in school or playing around rather than carrying heavy weights at the harbour.

In between all that movement, there are yells, shouts and commands, in a language that does not sound familiar—a large bunch of these workers do not speak Gujarati, the language of the place. Yes, it is quite a sight, and when one gets closer to these people, one is amazed by the stories they tell. They are the people on whom the fishing industry of Veraval depends, and not a single one of them—over 20,000 this season—has a space of his own in this town.

They hail from other parts of Gujarat, mainly from Valsad, the southernmost district of the State, and a large number of them come from across the country, from Andhra Pradesh on the east coast of India. Interestingly, none of the boatworkers are from Veraval itself.

Veraval is the largest fishing harbour of Gujarat, which was developed in the 1960s. Traditionally, too, it was a port but mainly for sailing vessels, large wooden *vahans* which carried grain, chilli, groundnut and, later, cement and soda ash to Rethnagiri in Maharashtra and Kozhikode in Kerala, and from there some of them took spices and terracotta tiles to the Middle East, sometimes bringing back dates to Gujarat. It was mainly the Kharwa community that was engaged in this

trade. The actual fishing—generally estuarine fishing—was done by the poorer Kharwas, using gillnets and smaller canoes, and by Muslim fishermen who were skilled hook-and-line and gillnet fishermen. There were a handful of Kharwas who used plank boats of fairly large size (up to 32 ft) and made multiday fishing trips with gillnets.

In the mid-1950s, the *vahans* began to get mechanized, and, by the mid-1970s, they began to decline with the development of roadways. Trawl fishing was launched by the Department of Fisheries in 1962 with the idea of demonstrating the technology.

By the mid-1960s, the government of Gujarat had realized the need to develop a fishing port at Veraval, as the potential of fish export was already being demonstrated by Maharashtra, its southern neighbour.

The Kharwas, whose *vahans* were becoming redundant, plunged their monies into the fishery, but not knowing much about fishing themselves, engaged the Valsad skippers and crew on their boats. With the completion of the port in 1978 and with the stimulus from the Fisheries Department and encouragement from one enterprising exporter of Kerala origin, who also happened to be in the Department, the gillnets were soon transformed into trawls, and shrimp was the main target.

Largely illiterate

Government subsidies were rooted through co-operatives and were meant only for the Kharwa community. The community, largely illiterate, was dependent on the Fisheries Department and some community leaders who were somewhat educated or had an economic standing from the seafaring trade.

Here too, it was the processor who took the lead in making advances to the boatowners and this is how the actual fishing for export commenced. It did not take long for a few enterprising Kharwas themselves to acquire trawlers and supply fish to the exporter. In the initial stages, these adventurous Kharwas acquired five to 10 trawlers, as business depended on the size of the turnover. They also set the tone of the industry—they were managers of their boats. They employed crew from other areas on a salaried basis and regarded it as a business. Trash fish, which easily made up half the catch, was also in demand. In the early years, much of it was dried and sent to the southern States of India and even to the northeast. By 1984, because of the presence of large ribbonfish, the high open-bottom trawl was introduced and Gujarat saw a new spurt in the fish catches.

During this phase, the poorer Kharwas went into the fishery, taking advantage of the government subsidies both for acquiring boats and for diesel. Some of these poorer Kharwas had worked on traditional craft before, but many had worked with the bigger Kharwar 'suppliers' as wage labour. Seeing the potential in the industry and the fact that others were making big profits, they put all they had into the industry. Instead of getting on to the boats themselves, they followed the others, engaging crew from

the outside, while they themselves turned into shore managers of their boats. Around 40 per cent of them acquired only one boat each, which they managed themselves or through their sons, and all they would do would be to wait for that boat to return after four days at sea. (This duration has become eight to nine days now, in 2003.)

The number of trawlers grew by leaps and bounds between 1986 and 1994. While in 1984-85, there were about 1,030 trawlers of 32-48 ft length in the district, by 1995-96 there were 4,191, which made up 58 per cent of the trawler fleet of Gujarat. This was also due to the liberalized export regulations and the fact that ribbonfish was in big demand in China at that time. Seeing the large profits in the business, several salaried Kharwas went into the industry and the number of boats increased. By 1999, there were 6,749 small trawlers in Gujarat. The southern States of India were already seeing the downward slump in the fishery. Fishworkers were in the dumps in other parts of the country and so this growing industry in Veraval was alluring to these workers who migrated there and were willing to work under very difficult conditions.

Total workers

At the peak time of the Veraval fishery, which was around 1998-1999, there were about 4,000 boats, each with six workers, which made a total of 24,000 workers

working for eight months of the year when the port was open. Since 1999, the catches have fallen, and several boats operate only for four to five months a season. But since around 2001, one-fifth of the fleet has not operated at all because the boats are either too old or because the catch per unit effort has declined so drastically that fishing is no longer viable. Kharwa owners who have other occupations—several have salaried jobs—do not find it profitable enough to spend time managing the boats. Some of them have also borrowed money from their employers, which they have to repay.

The boatworkers of Veraval range from 14 to 60 years of age. Some of them came as experienced fishermen but a lot of them have learnt the ropes on the job. Gurumurthy from Srikakulam in Andhra came to the Kandla port in Gujarat at the age of 13 to work as a casual labourer, loading and unloading goods at the harbour. He had completed his seventh standard at school, but had to go to work as there was no other income in his family and he had three sisters to look after. After working a couple of years there, an older fisherman took him on to a fishing boat, where he worked as a cook. While on the boat, he learnt the work on board and then became a boathand or *khalasi*. He remembers getting typhoid during his first boat trip, after which he had to go home. But he returned soon after he got well and continued to work. Some years later, he moved to Veraval and gradually became a *tandel*, the key person among the workers. Now, for the past six years, he has been regularly based at Veraval, bringing with him others from his district. Several of the deckhands tell the same story as Gurumurthy, many starting as cooks at very early ages and gradually graduating to higher positions.

Despite all the hardships, for boatworkers like Gurumurthy, life is more gainful here than back home. Most of those who come from Andhra are from fishing villages; often, hundreds come from a single fishing village. But in the case of those from Valsad, this need not always be the case. Several of the *tandels* and *khalasis* have come from an agricultural background, or had been wage workers in construction or other fields, and have

learnt the fishing work on the job. Those who have been traditional fishermen from the Valsad area are called *mota bhais* (big brothers), and they are probably the best-paid too. They also have the fortune to work on the better and bigger boats, while the Andhra *tandels* get the smaller and older boats—and lower salaries. Both the Valsad and Andhra skippers bring their teenage sons along, together with their brothers and other relatives.

The *tandel* is the key person among the workers. It is with him that the boatowner makes the deal for the next season. He is given an advance of around Rs60,000-80,000 at the end of one season in lieu of the next, which is four months off. It is his job to recruit the crew, which he does mainly from his own village, giving each of them a small advance as well. Most of the crew do not know exactly what they will get for the season, but it is generally around Rs2,000, while the *tandel* gets around Rs. 8,000-9,000 a month.

Once they take charge of a boat, this will be their home for the next eight months. The cabin room is the cleanest space on the boat. This is the room dedicated by the owner to God, and the place where the deckhands eat and sleep. There they have a clock and a calendar, with which they religiously keep track of the time.

They start right away, soon after the owner has supplied the boat with provisions to take care of the crew's food, and so on. The crew does all the loading and unloading of the material on board. Their fishing trips are generally of eight to nine days duration now. When they are back in the harbour, they get exactly 24 hours to offload, reload and get to a cinema if they can. While on the boat, they are not allowed to consume liquor. They use sea water to bathe and wash their clothes. They also have to sort the fish to some extent, to make sure the good varieties are well preserved. The boat is often decorated with lines on which they dry some of the fish too.

Sending money

The boatowner handles all the accounts. He also sends money to the families of the workers on their request. But settlements are made only at the end of the season, at which time they are at his mercy, as most

of them are illiterate. If they feel they have not been treated well, they do not work for the same owner the next year. Very few continue to work for the same owner for more than three years.

Some boatowners have been let down by *tandels* who collect their advances and do not return. It has also happened that *tandels* have not received their full settlement at the end of the season. Everything in the business runs on trust. A worker is allowed to go home once during the season. This is the only time he gets to communicate with his family and to take money home.

The Veraval harbour now has a modern toilet facility, which is a welcome change. The condition of the water in the harbour itself—a dirty blue-red and foul-smelling—could be the result of human waste. But the workers refute this conclusion, saying it is due to waste from the processing plants that is released into the harbour.

The Veraval fishery has been built on the sweat and toil of these boatworkers. But for them, the future is grim—they can see the boon gradually fading before their own eyes, as the unmanaged fishery spins into steady decline. ❧

This article has been written by Nalini Nayak (tvm_nalinin@sancharnet.in), a Member of ICSF, and A J Vijayan (ajv@protsahan.org) of Protsahan, an Indian NGO

Sea cucumbers

A resource in peril

Indiscriminate fishing of sea cucumbers in Indian seas has led to their overexploitation

Sea cucumbers or *Holothurians* are an interesting group of marine invertebrates under the phylum *Echinodermata*. They are worm-like animals with exuberant colour, inhabiting a variety of marine habitats like mud flats, sand flats, seagrass beds, coral reefs and abyssal plains. They are bestowed with the power of regeneration and are capable of growing into two separate individuals if cut into two equal halves. Ecologically, sea cucumbers are very important as 'bioturbators' reworking the grain size of the substratum and releasing nutrients from the substratum into the sea water. Sea cucumbers, by their repeated digging action, aerate the substratum.

Sea cucumbers are an important commercial fishery resource. They are boiled, dried or smoked to prepare a product known as *beche de mer*. In China and many Southeast Asian countries, *beche de mer* is a delicacy. In *beche de mer* production, only those species of sea cucumbers with thick body walls are used. Apart from its value as a delicacy, *beche de mer* also finds an important place in the traditional Chinese medicine. *Beche de mer* is a revenue-spinning product in many of the tropical countries around the globe.

About 200 species of sea cucumbers can be found in the Indian seas, of which only a dozen species are harvested for preparing *beche de mer*. Andaman and Nicobar islands have the richest diversity of sea cucumbers in India, followed by Lakshadweep islands, Gulf of Mannar, Palk Bay and Gulf of Kachchh. In the southeast coast of India, Palk Bay and Gulf of Mannar are known for *beche de mer* resources. The most commonly exploited species for the *beche de mer* trade in Palk Bay and Gulf of Mannar are *Holothuria*

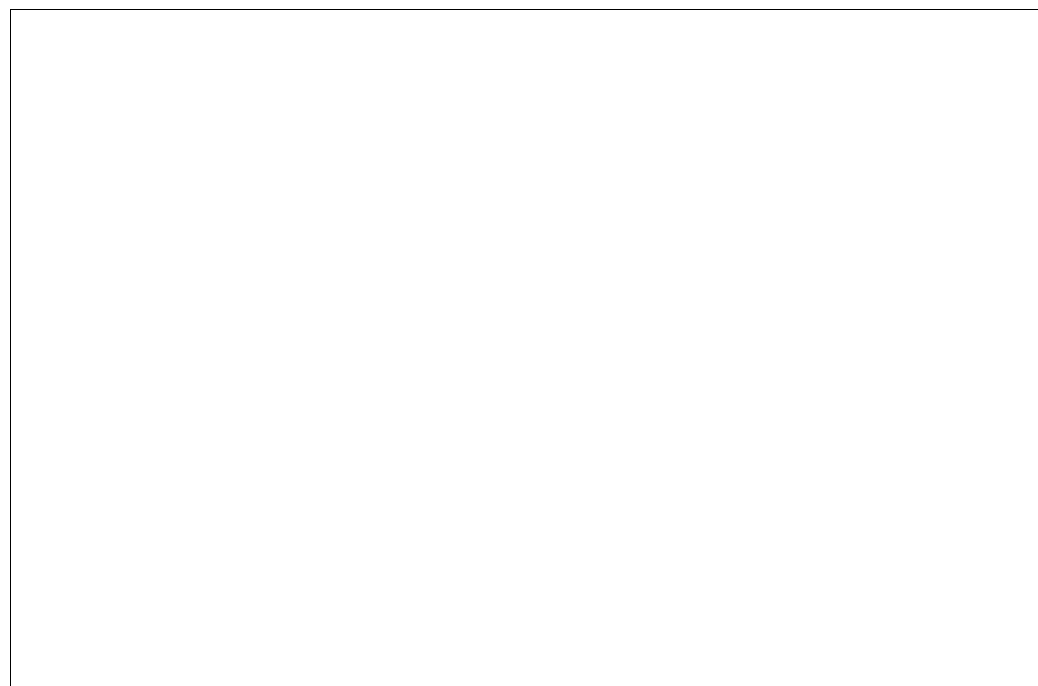
scabra (sandfish), *Holothuria spinifera*, *Holothuria atra* (lolly fish) and *Actinopyga echinites* (deep-water redfish). All these species are available upto 20-m depth and are intensively collected by skindivers.

Chinese visitors to India brought the technique of processing sea cucumbers for the *beche de mer* trade. The Indian *beche de mer* industry is more than 1,000 years old. Palk Bay and Gulf of Mannar, with their potential sea cucumber resources, supported the *beche de mer* industry in India. Palk Bay was the hot spot area for sea cucumber collection, processing and export. It remains famous for its oldest *beche de mer* industry in the country. The industry grew at a tremendous rate in Palk Bay and Gulf of Mannar due to the attractive price and increasing demand for *beche de mer* in the international market. More *beche de mer* processing units were established in Palk Bay than in any other region of the country. A *beche de mer* industry also existed in Andaman and Nicobar and Lakshadweep islands, but not as successful as in Palk Bay and Gulf of Mannar. In the 1980s and 1990s, the industry was generating considerable foreign exchange for the country. Various factors like overexploitation, conservation and increasing population subsequently led to a downturn in the industry in India.

Indiscriminate fishing of sea cucumbers in Palk Bay and Gulf of Mannar led to the overexploitation of resources. Higher concentration of skindivers engaged in sea cucumber collection and intensive trawling in Palk Bay and Gulf of Mannar have depleted the stocks to such a level that they need a long time for revival.

Selective harvest

Selective harvest depletes a particular species. For example, *Holothuria scabra*, which yields high-quality *beche de mer*, is



more intensively collected in Palk Bay and Gulf of Mannar than *Holothuria spinifera*, *Holothuria atra* and *Actinopyga echinites*. The population of *Holothuria scabra* is dwindling at an alarming rate. Fishing pressure increases with rising prices for *beche de mer* in the international market. The peak spawning season for *H. scabra* is July and October, which coincides with the peak fishing season, causing irreparable damage to the stock.

Use of drag-nets in the shallow seagrass beds damages the sea grasses and they are washed ashore. Sea grasses play a major role in the lifecycle of sea cucumbers. They serve as a substrate for the settlement of pentactulae larvae and also as a nursery ground for juveniles. Habitat destruction reduces the recruitment rate of sea cucumbers. Particularly in Thondi in the Palk Bay, severe destruction of sea grasses due to drag-net operation can be witnessed.

In 1982, the Government of India banned the export of *beche de mer* below 3 inches. Due to this ban, the *beche de mer* industry in Palk Bay and Gulf of Mannar suffered a severe setback. After a long gap, in 2001, the Ministry of Environment and Forests, Government of India brought all sea cucumbers under the Schedule I list of the Wild Life Protection Act, 1972 and strictly banned their collection. This was the ultimate step of conservation taken up by the Government of India to revive the

damaged stock. Though it is felt that the ban had crushed the industry, illegal exploitation and processing of sea cucumbers in Palk Bay and Gulf of Mannar have provided a chance for the survival of the *beche de mer* industry. Sea cucumbers have been recommended for inclusion under Appendix II listing of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to conserve their declining population.

The post-ban management of *beche de mer* resources in Palk Bay, Gulf of Mannar and other parts of India has been a Herculean task for the fisheries managers. The State forest department of Tamil Nadu has been assigned the task of monitoring the illegal fishing activities and many fishermen have been apprehended and prosecuted for illegal fishing of sea cucumbers. Law enforcements have to be strict for effective conservation and management of *beche de mer* resources in India.

Closed season

A huge fishing population's livelihood depends on the *beche de mer* resources of Palk Bay and Gulf of Mannar. The concentration of skindivers in Palk Bay is very high, compared to Gulf of Mannar. Though the recent government ban can revive stocks, from a fishermen's perspective, a closed fishing season would be more helpful than a total ban on the collection of sea cucumbers. In view of

this, a research team from Chennai recently conducted an *in situ* survey to assess the density of *beche de mer* resources in Palk Bay. The observed density was less than one individual per square metre. This suggests that the population of sea cucumbers is under intense illegal fishing pressure. The ban and resource management efforts have not been synergetic to prevent the depletion of stocks. In order to relieve the fishing pressure on sea cucumbers, the fishermen need an alternative source of livelihood for sustenance.

In view of these facts, the ban on sea cucumbers should be extended for a few more years to allow the damaged stocks to recuperate. Periodical surveys (*in situ* observations) have to be initiated for effective management. With the available culture technology for sea cucumber like *Holothuria scabra*, sea ranching of hatchery-grown seeds in the areas of low density, and periodic monitoring are recommended.

A strict ban should be imposed for trawling in shallow areas to prevent further damage to the stocks. There should be a ban on drag-nets in the seagrass zone to prevent habitat loss of larval and juvenile sea cucumbers. Fishing in the months when peak spawning takes place should be banned. If the ban on collecting sea cucumbers is lifted, there should be size regulations and a catch quota system for the sea cucumber fishing and trade. Projects should be initiated by co-ordinating national research laboratories to study the biology, ecology and population dynamics of commercially important sea cucumbers to collect baseline data for effective conservation and management.

Though the above recommendations have been suggested earlier, few steps have been taken to implement them effectively. Strengthening the patrolling manpower, creating awareness among the fishermen about the need for the conservation of sea cucumbers, and initiating research projects related to sea cucumbers are some of the areas where the Government of India should apply a sharper focus for effective conservation and management. Merely banning the collection of sea cucumbers will not

revive the damaged stock. Only effective management through strict regulation, periodic monitoring and indepth scientific knowledge can save the sea cucumbers.

This article is by M. Nithyanandan (nithyanandanm@yahoo.com), a Chennai-based researcher on marine ecology

Empowerment through information

ICSF's recent training programme sought to empower fishworker organizations through information and related resources

A total of 26 participants from six countries participated in *Empowerment through Information: ICSFs Training Programme for Fishworker Organizations and Non-governmental Organizations* (NGOs), held in Chennai and Trivandrum, India, between 18 and 28 August 2003. Twenty-four participants came from six countries in Asia, namely, Philippines, India, Cambodia, Indonesia, Sri Lanka, and Thailand, while two were from South Africa. Participants included representatives of artisanal fishworker organizations and NGOs working with, and providing support to, artisanal fishing communities in their countries.

The programme sought to explore the potential relevance of international legal instruments and processes to field-level experiences and developments. The methodology used was to start off with a presentation by resource person/s for each session, to be followed by presentations by participants.

The following themes were discussed at the sessions: property rights and fisheries resources management; international legal instruments relevant to fisheries; rights and responsibilities of fishworkers in managing small-scale fisheries; coastal area management; labour; trade, environment and subsidies; women in fisheries; and information resources on fisheries, a hands-on session that exposed the participants to the basics of locating and accessing online resources as well as a tour of the ICSF Documentation Centre and its resources.

Two panel discussions dealt with international instruments for the management of small-scale fisheries and those relevant for coastal area management. A group discussion followed on the relevance of these

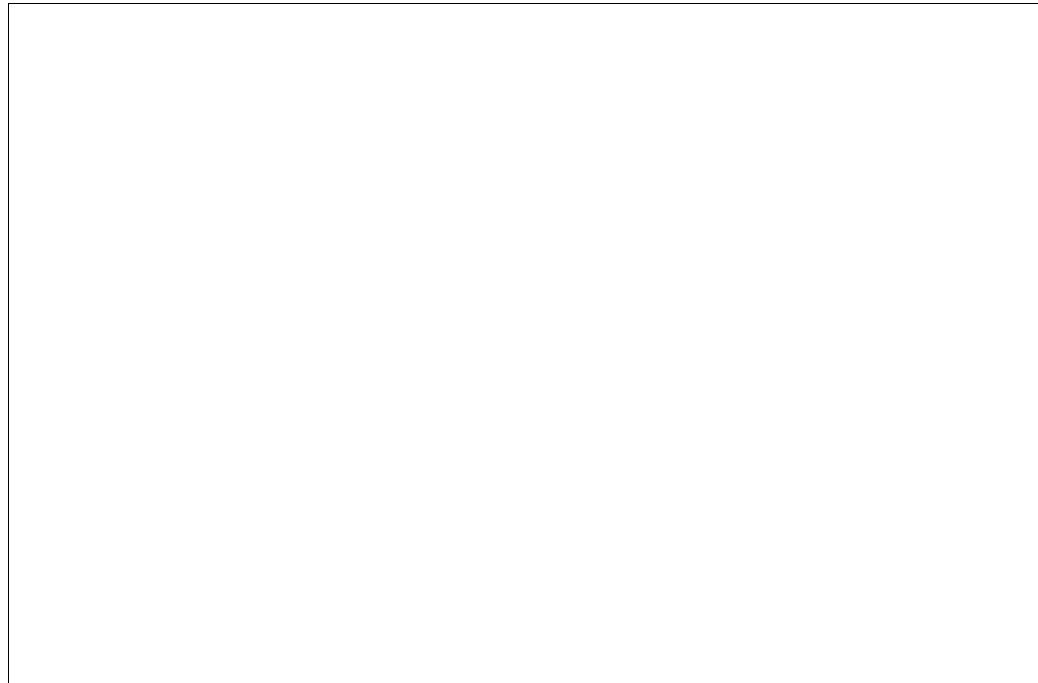
instruments to ground realities and the extent to which they were integrated into legislation at the national level.

At one post-dinner session, the film *Under the Sun: The Transient Fisherfolk of Jambudwip*, produced by ICSF and directed by Rita Banerji, was screened. The film documents the work and life of small-scale fishworkers using the island of Jambudwip in the Sunderbans mangrove forest in West Bengal, India, for drying fish. These fishworkers are now being threatened with eviction in the name of forest conservation. Another post-dinner session focused on fisheries trade and food security.

In general, the emphasis in all the sessions was to ensure that expertise available with participants was shared with the rest of the group. The methodology used was also a function of the diversity among participants. Several participants had difficulty following the English language. Use of audio-visual aids was encouraged, especially as it facilitated better understanding among participants who had some difficulty with English.

Preparatory material

Given that a major focus of the five-day training programme was on international legal instruments and processes of relevance to artisanal and small-scale fishworkers, as part of the preparatory material for the training programme, the ICSF Documentation Centre had compiled information on international instruments and institutions of relevance to fishworkers. A user-friendly interactive CD-ROM titled *International Instruments and Institutions Related to Fisheries* and a booklet titled *Handbook on International Legal Instruments Related to Fisheries* was prepared as a ready reckoner on these instruments and processes. A Flash



presentation based on the *UN Treaty Handbook* and included in the CD-ROM, was shown to participants.

The five-day training programme was followed by a four-day field visit to Trivandrum in Kerala. The visit was anchored by the South Indian Federation of Fishermen Societies (SIFFS) and included visits to village-level societies, boatbuilding yards, outboard motor repair units, ice factories and other activities of SIFFS. It also included a visit to the office of the Kerala Independent Fishworkers Federation, the National Fishworkers Forum (NFF) and the World Forum of Fisher Peoples (WFFP).

At the close of the training programme and field visit, a questionnaire was circulated to all participants, seeking their feedback. The feedback, in general, was positive. Several participants requested regular follow-up of the programme, and similar programmes to be organized at the national level. They also requested a revision of the handbook to include illustrations, as this would make it easier for fishworker organizations to use in their work. Several other suggestions were made. Some participants proposed that for future programmes, participants with comparable levels of experience should be invited, and that selection criteria should be clearly stated in the invitation. Some participants also felt that the programme was too dense. Another

suggestion was to circulate the programme and background information beforehand, so that participants could come prepared for the programme. For the field visit, several participants said that they would have liked to spend more time interacting with fishermen and fishing communities. 3

This report was prepared by the ICSF Secretariat (icsf@vsnl.com)

Traditional fisheries

Along the Konkan coast

The *rampani* fishermen of the Konkan coast of India have convenient and environmentally sustainable fishing practices

The shore or beach seine operated along the Malabar and Konkan coasts of India is locally known as *rampani*. The *rampani* fishery is a seasonal one, lasting for about six months from August to January. The main fish species caught are Indian mackerel, Indian oil sardine and ribbonfish.

In the Konkan coast, the gear is concentrated in Sindhudurg district, an important centre for traditional fisheries. The south Konkan coast is characterized by long sandy beaches, shallow waters, a wide continental shelf and mild currents, all conditions that have helped the fisheries to develop in a sustainable manner.

The traditional *rampani* is around 800-1,000 m long, made by joining together pieces of netting. Both ends of the net are narrower and feature a larger mesh size. Towards the centre, the height of the net increases, while its mesh size decreases. Generally, the net is divided into three parts: *karal* (around 16 pieces), *modan* (around 8 pieces) and *ghol* (around 8 pieces). The *karal* and *modan* are at the ends of the net, while the *ghol* is the central portion.

The *rampani* net is collectively owned by 30 to 40 fishermen, who become owners according to their contributions in the form of pieces of net or monetary input. These fishermen become permanent members of the collective. Some temporary members may be included on a daily pay basis. The *rampani* group of fishermen is called *rampani sangh* and each village has two or three *sanghs*, depending on its population. The functioning of the *rampani sangh* is controlled by a headman called *mukadam*. He is responsible for storing all assets of the *rampani sangh*, inclusion of temporary

members, decisions about the operation of the net, and so on. He also forms teams comprising eight to 10 fishermen from among the *sangh* members, allocating turns to those who will go out to sea to pay the net on a rotation basis, such that each team gets its turn after a gap of three or four days. The financial affairs of the *sangh* are looked upon by another person, a treasurer called *hundiwala*, who can be changed by the *sangh*. He is responsible for paying wages to temporary members, keeping records of earnings, showing the account to members, and distributing the earnings to them during meetings held every two or three months in a shed located near the shore.

The *rampani* net is generally operated near the shore, at about 4 fathoms depth. At the start of the operation, a person is sent out in a small boat to look for, and signal, the arrival of fish shoals. He locates the shoal based on the colour of the water. Immediately on sighting a shoal, he shouts out a signal, on hearing which net-laden craft called *hoda* set out to pay the net in a semi-circular fashion, encircling the shoal. One end of the net is handed over to a group of fishermen on the shore and the other end of the rope is brought to another point on the shore. The net is then dragged in by both the groups of fishermen.

Rotation system

Rotation is a characteristic feature of this fishery. If there are several *rampani sanghs* operating on the same stretch of shore during the season, each of them gets a turn to fish. This rotation system is based on mutual understanding and is strictly binding on all *rampani sanghs*. Each *sangh* wait for its turn by keeping the net-laden craft anchored near the shore, adjacent to the *sangh* that is already fishing. When their turn comes, the fishermen again go

out in a dinghy to the craft, bring it back, and hand one end of the rope to fishermen on the shore to lay the net.

After landing, the catch is sorted. Some proportion of it is set aside for self-consumption and the rest is auctioned at the beach. If there are no middlemen present at the time, the catch is equally distributed among the members. The members either consume the catch themselves, give it to other people or sell it. If there is a huge amount of catch and it is late in the evening or night, the net is not hauled in entirely but only up to the edge of the shore, and both ends of the rope are brought together and tied to the boat or any other fixed object. The net is then hauled in in the morning, when the catch is auctioned.

A fixed amount of money from the auction is kept aside as working capital and for maintenance costs. The rest is distributed equally among the members, except for the head of the *sangh*, who gets 50 per cent more than the ordinary members.

Over time, the fishermen operating the *rampani* shore seine in Sindhudurg have developed effective ways of resource management that are environmentally sustainable and convenient.

This article has been written by Vivek Nirmale (vivekkop10@usa.net), Senior Research Fellow, and Santosh Metar (santoshmetar@usa.net), Ph.D scholar, Central Institute of Fisheries Education (CIFE), Mumbai

Littering the seas

As a source of ecological problems, marine debris needs to be tackled through the simplest and most effective way of prevention

Marine debris is trash that gets into the marine environment as a result of careless handling or disposal. Marine debris includes all objects found in the marine environment that do not naturally occur in the ocean. Although items such as tree branches and the bones of land animals can be considered marine debris, the term generally refers to trash (articles that have been made or used by people and discarded). The most common categories of marine debris are plastic, glass, rubber, metal, paper, wood and cloth.

The two main characteristics of marine debris are buoyancy and degradability. Buoyancy means the ability to be blown around; degradability refers to how long the trash will remain in the marine environment. The longer a piece of trash remains in the marine environment, the greater the threat it poses to people, wildlife and vessels.

There are several sources of marine debris, both in the ocean and on land. Any trash that is improperly disposed, as well as any materials that are improperly transported or stored, can become marine debris. The main sources of marine debris are: beach-goers, trash improperly disposed on land, stormwater sewers and combined sewer overflow, ships and other vessels, industrial facilities, waste disposal activities, and offshore oil and gas platforms.

Thousands of people visit beaches every year throughout the world. Many of them leave behind materials that become marine debris, such as food wrappers, cans, cigarette butts, and toys like shovels, pails and beach balls. This trash can be blown into the ocean, picked up by waves or washed into the water during rains. Stormwater runoff (the water that flows

along streets or along the ground as a result of a storm) can carry street litter into sewer pipes, which flow to the ocean. At the sewage treatment plant, sewage is separated into sludge (solid waste materials) and water. The sludge is dried and either disposed in a landfill or treated and sold as a fertilizer. The treated water is discharged into a river or other nearby waterway, free of solid waste.

Industrial facilities contribute to marine debris through the improper disposal of waste items generated by industrial processes on land. Finished products can also become marine debris if they are lost during loading and unloading at port facilities or when they are transported through waterways or over land. Waste disposal activities can cause a problem when trash is lost during collection or transportation, or when trash blows or is washed away from disposal facilities.

Boats are also sources of marine debris. Sometimes, trash is purposefully thrown overboard. One major reason for the overboard disposal of trash is the limited storage space aboard these vessels. Most of the time, however, trash is disposed into the ocean by people who are unaware of the problems that they can cause. Trash can also accidentally fall, blow or wash off vessels into the water. In addition, fishing nets and lines, and other types of equipment, can be lost at sea and become marine debris.

Sources of debris

Once debris has found its way into the ocean, it is very difficult to trace the source of the debris. A plastic cup, for instance, could have been left by a beach-goer, littered in a city street and washed into a storm sewer and out to sea, blown off a recreational boat, used on a shipping vessel and disposed of overboard, and so

on. Clearly, marine debris is a complex problem whose solution will require that many sources of marine debris be controlled simultaneously.

The two primary problems that marine debris poses to wildlife are entanglement and ingestion. Entanglement results when an animal becomes encircled or ensnared by debris. Entanglement can occur accidentally, or when the animal is attracted to the debris as part of its normal behavior or out of curiosity. For example, an animal may use a piece of marine debris for shelter, as a plaything, or as a source of food (if other plants and animals are already trapped in the debris or if the debris resembles prey that is a normal part of its diet). Entanglement is harmful to wildlife for several reasons.

Not only can entanglement trap the animal, but it can also cause strangulation or suffocation. In addition, entanglement can impair an animal's ability to swim, which can cause drowning or difficulty in moving about, finding food, and escaping predators. Ingestion occurs when an animal swallows marine debris. Ingestion sometimes happens accidentally, but, generally, animals feed on debris because it looks like food.

Ingestion can lead to starvation or malnutrition if the ingested items block the intestinal tract and prevent digestion, or accumulate in the digestive tract and make the animal feel "full", lessening its desire to feed. Ingestion of sharp objects can damage the digestive tract or stomach lining and cause infection or pain. Ingested items may also block air passages and prevent breathing, thereby causing death.

Marine plastic debris can harm fish species and other aquatic organisms that use the coral reefs by continually rubbing against them or smothering them. Floating plastic is just like a poison pill, which is regarded as a potential endocrine disrupter. Most of the plastic floating on the surface of the ocean are mistakenly ingested by marine turtles. This may be a potential hazard to turtle populations that are regarded as endangered. Another major ecological problem contributed by marine debris is

the movement of invading species. Debris floating in the sea can carry many organisms such as crustaceans, plankton, algae, bacteria and fungi. A raft of debris can even colonize some land-based species. When organisms from one environment are carried to another part of the world, significant problems can arise.

Wildlife is also affected when marine debris disturbs its environment. For example, lost or discarded fishing gear and nets can drag along the ocean floor or through coral reefs, disrupting the animals and plants that live there. Fish and crustaceans such as lobsters and crabs are frequently caught in lost or discarded fishing gear, in a phenomenon known as "ghost fishing". Lost traps also continue to attract fish and crustaceans, which enter them in search of food or shelter.


Nearly a million seabirds are thought to die from entanglement or ingestion each year. Since most seabirds feed on fish, they are often attracted to fish that have been caught or entangled in nets and fishing lines. As many as 100 birds have been found in a single abandoned net.

It is estimated that approximately 100,000 marine mammals die every year from entanglement or ingestion of marine debris. Of the different types of marine mammals, seals and sea lions are the most affected because of their natural curiosity and tendency to investigate unusual objects in the environment.

Recycling—the collection and reprocessing of materials so they can be used again—is one way to reduce trash. Before materials can be processed for reuse, they must be separated into different types (such as plastic, glass and metal). Although recycling has become widespread, not every type of material can be recycled.

Recycled waste

Paper is the most frequently recycled type of trash. Three types of paper are recycled: high-grade paper (such as computer paper), newspaper and corrugated cardboard. Metals are also commonly recycled, particularly aluminum cans. All types of glass, except light bulbs, ceramic glass, dishes and plate glass, can currently be recycled. Overall,



very little plastic waste is recycled, with the exception of plastic milk jugs and soft drink bottles.

Even better than recycling is adopting pollution-prevention strategies that produce less waste in the first place. Ways to produce less waste include reusing materials, using reusable items rather than disposable ones, and reducing the amount of packaging we use.

We can also take steps to keep waste from getting into the ocean. Most importantly, littering should be prevented. Boaters and beach-goers should ensure that trash and other items are not blown or washed away. Before trash is left out for collection, it should be tightly secured in bags or trash cans to ensure that trash stays in its proper place.

Marine debris has created many ecological problems throughout the world. Many governments and private organizations have become increasingly active in combating marine debris, but individual initiative remains one of the best ways to tackle ocean pollution. Since prevention is the simplest and most effective way to reduce marine debris, individuals can begin by examining their lifestyles, considering how much garbage they generate, and where it all ends up. ♻️

This piece is by Santosh Metar (santoshmetar@rediffmail.com) and Pranaya Parida (pranaya@indiatimes.com), doctoral scholars at the Central Institute of Fisheries Education (CIFE), Mumbai, India

Transborder fishing

Historic goodwill

This is a report on a goodwill mission of Indian fishermen to Sri Lanka in May 2004

Since the start of the civil war in Sri Lanka in 1983, the Palk Bay has been a troubled location. (Palk Bay needs to be understood as also referring to Palk Straits and proximate areas in the Gulf of Mannar and Bay of Bengal.) As the bay is a shallow sea with a limited area between the Indian State of Tamil Nadu and the northern province of Sri Lanka, the civil war has had a deep impact on the fishing operations on both sides. Until 1983, the fishermen of both sides, who share a common language and a long history of contact, fished harmoniously in the Palk Bay, with only occasional problems being reported. Though an international border was demarcated at sea in 1974, fishing across the border was not uncommon and rarely an issue. However, the civil war led to major changes. The fishing operations of the Sri Lankan fishermen were drastically reduced due to severe restrictions placed on fishing on account of security requirements and the large-scale displacement of fishermen from their areas due to the war.

On the Indian side, fishermen faced great hardship as the Sri Lankan Navy shot at and imprisoned a large number of those who crossed over to Sri Lankan waters in the two decades of the civil war. However, as such incidents were only occasional ones, and the Indian fishermen were not generally prevented from fishing in the Sri Lankan waters by the Sri Lankan Navy, the Indian fleet, especially the trawlers, had free access to the fish resources of the Palk Bay, without competition from the Sri Lankan fishermen. This led to a significant expansion of the Indian fleet. Currently, 4,000 trawl boats operate on the Indian coast from Rameswaram in the south to Nagapattinam in the north, with all these boats depending, to varying degrees, on

fishing in Sri Lankan waters. The 1,000 boats of Rameswaram are almost totally dependent on Sri Lankan resources, being very close to the Sri Lankan border. (The distances from the Indian coast to the Sri Lankan border at sea range from 7 km to 22 km.) Over the years the trawlers have been fishing right up to the shores of Sri Lanka, helped by Sri Lankan refugee fishermen in India who often went as crew on Indian boats. The Indian fleet fishing in Sri Lankan waters includes motorized canoes involved in gill-netting as well as, at times, sailing country craft.

The truce between the Sri Lankan government and the Liberation Tigers of Tamil Eelam (LTTE) that came into effect in 2002 has altered the situation in the Palk Bay. For the first time in two decades, restrictions on fishing have been removed in many areas of the Northern Province and normal fishing operations have commenced. The return of displaced fishermen from the refugee camps has accelerated and there is considerable amount of re-investment in fishing equipment, both privately and by various donor-supported rehabilitation programmes. This has led to an eclipse of the virtual monopoly the Indian boats had in Sri Lankan waters, and the emergence of competition. The operations of the Indian fleet, especially the trawlers, have become a major threat to the rejuvenation of the livelihood of the Sri Lankan fishermen, who have started protesting.

Clashes at sea

Starting from February 2003, there have been a number of incidents of Indian boats being captured by Sri Lankan fishermen and handed over to the authorities for further action. In some instances, there have been clashes at sea; in early 2004, a Sri Lankan fisherman was killed in one such clash.

In late 1996, various trade unions, non-governmental organizations (NGOs) and fishermen's associations got together in India to take up the problem of Indian fishermen getting arrested on the Indo-Sri Lankan border. The Alliance for Release of Innocent Fishermen (ARIF) was formed with the secretariat hosted by the South Indian Federation of Fishermen Societies (SIFFS) in Trivandrum. ARIF took up cases of Indian fishermen arrested and detained in Sri Lanka and, with the help of a variety of civil society actors in Sri Lanka, managed to expedite the release of the fishermen. Similarly, ARIF also took up the issue of Sri Lankan fishermen detained by the Indian Coast Guard and provided them humanitarian and legal assistance. The Sri Lankan boats that fished in Indian waters were basically 'multi-day' fishing boats that fished in deeper waters with longlines and drift-nets. These boats came from the south and west of Sri Lanka, where normal fisheries development had taken place and there were no restrictions on fishing operations.

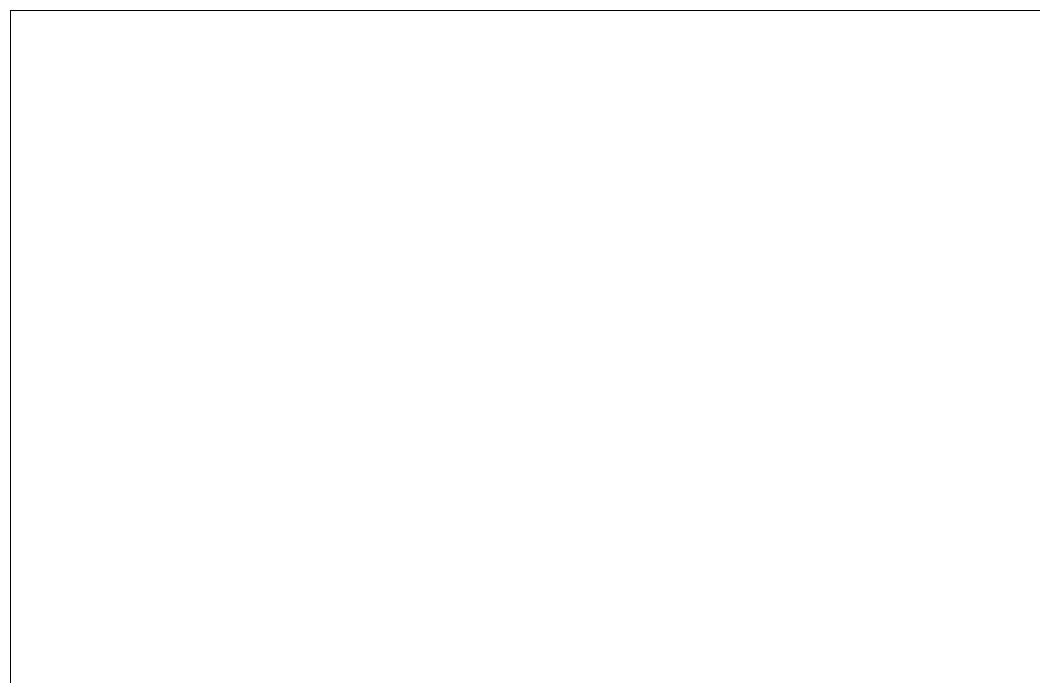
The idea for a dialogue between the Tamil Nadu fishermen and Sri Lankan fishermen of the Palk Bay was mooted in early 2003 by some Sri Lankan leaders when the first set of clashes took place between the two fishermen groups. Subsequently, ARIF worked on the idea with the Tamil Nadu fishermen, many of whom were sceptical about an entirely

unofficial dialogue without government backing. By the end of 2003, the situation in the Palk Bay had deteriorated and the Tamil Nadu fishermen realized that they have to take the initiative for a dialogue if they wished to fish peacefully in the Palk Bay. ARIF then took a fresh initiative to organize the dialogue through a mission programme designed to include exposure trips to Mannar and Negombo, and culminating in Colombo with a two-day workshop where the Indian and Sri Lankan fishermen would be able to discuss the problem and work out solutions.

The general consensus among the Indian fishermen was to keep an open mind in responding to the proposals of the Sri Lankan fishermen, realizing that they could fish in Sri Lankan waters only with the co-operation and understanding of the Sri Lankan fishermen. Nonetheless, there was great optimism that the Sri Lankan fishermen would give a fair deal as the relationship between the two sides remains very good, despite the recent capture of boats and the violent clashes.

Warm welcome

The goodwill team arrived in Colombo on 23 May and reached Mannar by midnight. While there was a warm welcome for the mission and no shortage of love and affection, there was also a firm resolve against the Indian trawlers. Speaker after speaker stressed the havoc done by



trawling to local fish resources, fish habitats and livelihoods.

It became clear that between the Fisheries Department, the church and others, a local awareness-building campaign had been organized on the need to preserve fish resources. Various harmful fishing methods, including the dynamiting of fish by locals, had been targeted by the campaign and a consensus was built among the fishermen against such practices. A local consensus had also been built against monofilament nets that were felt to be harmful. The fishermen, who were perhaps more bothered about livelihood loss rather than resource depletion, were clearly made to see the link between the two and ensure community control over fishing activities. It was in this context that the objection to Indian trawlers was presented, rather than in purely emotional terms.

While the harm done by the Indian trawlers to the Sri Lankan fishermen's livelihoods was expected to be the main theme, trawling and its environmental impacts became the main theme of discussion, much to the discomfort of the mission members. The Indian team explained the constraints under which the boats of Tamil Nadu operated and agreed to give serious consideration to the issues raised by the Sri Lankan fishermen.

Field visits revealed that the local fishermen were quite bitter about the Indian trawlers and the loss they caused to their nets. The three days of the week that the Rameswaram trawlers fish are dreaded by the Sri Lankan fishermen, and many take evasive action and avoid getting in the way of the trawlers or even stop fishing. (Boats from Rameswaram and Pudukottai fish only on Tuesdays, Thursdays and Saturdays on account of an agreement with local traditional fishermen, who fish on the other four days with their drift-nets. This compromise formula was worked out after a long period of conflict in the Palk Bay.) The local fishing communities in the villages that the team visited appeared to be well-knit, with the local fishermen's co-operative societies providing a common forum.

The Indian fishermen leaders had clearly not expected such a strong attack on trawling as a method of fishing. They had also underestimated the depth of anger and resentment of the Sri Lankan fishermen in response to the operations of the Indian fishermen. The mission leader expressed his opinion that the situation had appeared a lot more manageable when he had visited the area in June 2003. Then, although similar views had been proffered, the fishermen themselves appeared to be ready for compromise. Now they appeared to be closing ranks, and the opinions of the fishermen have hardened, reflecting an overall consensus reached between the fishermen, the church, the district administration and political leaders. A number of incidents, including the death of a Sri Lankan fisherman in Vadamarachi, seem to have contributed to this state of affairs. If some of the restraint that the Indian fishermen were now ready to show had happened even a few months back, the situation might not have become so bad.

Although many fishermen were ready to accept that trawling caused environmental damage, some felt that this was exaggerated. It was argued that the total catch in Rameswaram had actually not come down and the current crisis is due to the increased fleet size as well as the unprofitable operations on account of increasing fuel costs and reduced price for shrimp. (In technical terms, this means that there is no 'biological overfishing', just 'economic overfishing'.) Some of the Rameswaram fishermen felt that the four types of trawl nets that were recently voluntarily banned (pair trawl, 'mixture' net, *chank* net and 'roller' net) did most of the damage, and the standard shrimp trawl was not such a danger. According to them, it is some of these nets that are operated very close to the shore that did most of the damage to the environment as well as the livelihoods of the Sri Lankan fishermen. The Nagapattinam fishermen were more ready to accept that the trawl net did damage the environment but they were unable to dismount the tiger they had chosen to ride.

Trawl crisis

The recent changes in the Nagapattinam fisheries were also discussed. There has been a crisis in the trawl sector on account

of uneconomic operations, and 40 to 50 trawlers had been sold off as scrap during the last season. In recent seasons, the boats have become larger in size so as to help reach the deep-sea prawn resources available at the depth of 500 m.

These deep-sea prawn resources were showing signs of decline too, as the Chennai trawlers competed for the same resource. However, an interesting development in Nagapattinam district was the diversification into hook-and-line operations for yellowfin tuna that the fishermen have discovered in deeper waters. Around 60 boats from Akkaraipettai are seasonally catching yellowfin tuna, using the deep-sea prawns as bait. Even more revolutionary was a group of Nagore fishermen who have completely given up trawling and shifted to yellowfin tuna fishing. They have even set up Philippines-style fish aggregating devices called *payaos* for aggregating tuna. For this group, the multi-day fishing boats of Sri Lanka are a threat as they have, on occasion, destroyed the *payaos*.

Whatever be the truth about the damage caused by trawling to the environment, there was a consensus that the trawl sector, from Rameswaram to Nagapattinam, was facing a major economic crisis and that the current fleet size is just not sustainable. The discussion then shifted to the possibility of fleet reduction. All agreed that fleet reduction

was essential but had no clue how this could be effected. ARIF members suggested various methods by which the fleet could be reduced, either compulsorily or voluntarily. The possibility of approaching the government and, in turn, international donors for a buyback scheme was also suggested. The response to this idea was enthusiastic, as a large number of trawler owners were just looking for a way out and were prepared to jump at any offer that covered at least their debts. Obviously, any buyback scheme should be backed by a management regime that did not allow new trawlers to come in place of those that have left the sector.

Interestingly, some of the associations had sought a freezing of the fleet strength in Rameswaram, when the number of boats had swelled to 500. However, the Fisheries Department did not take this suggestion seriously and kept issuing licences until the current fleet strength of nearly 1,000 was reached. The attitude of the department to trawling was also discussed and it was felt that many of the officers were still in the old frame of mind that saw promotion of trawling as being synonymous with 'modernization' and 'progress'.

Working together

The divisions and lack of unity among the Rameswaram fishermen were also discussed. The fishermen were clear that

Details of trawlers engaged in transboundary fishing

District and trawl bases	No. of trawlers	No. of trawlers that cross over to Sri Lanka	Areas in Sri Lanka where fishing is done	Dependence on Sri Lankan resources
Ramnad dist. (Rameswaram, Mandapam)	1700	900	Arc between Thalai Mannar and Delft Island	Very High
Pudukottai (Kot-taipatinam, Jagadapatnam)	1000	1000	Delft Island to Jaffna within the Bay	High
Nagapatinam (Kodikarai and further north on Bay of Bengal coast)	1200	600	Palk Straits and beyond; Jaffna, Vadamarachi area	Medium to low; mostly seasonal incursion into Sri Lankan waters
Total	3900	2500		

the time has come for working together and if ARIF facilitated a coming together, a coordination committee of the 13 associations could be set up to follow up the results of the mission and to work on long-term issues. They were ready to initiate a process of discussion on hard issues like fleet reduction and alternative employment, if ARIF also helped out.

The discussion reflected a significant departure from the normal position that trawl boat associations in India tend to take when criticized. The strong stand taken by the Sri Lankan fishermen, the atmosphere of camaraderie created by the mission and the consequent breaking down of mental barriers undoubtedly contributed to this change in stance.

On 25 May, the mission members met to decide on the stand to be taken at the workshop in Colombo, now that the Sri Lankan fishermen had revealed their thinking in Mannar. The meeting tried to understand the dimensions of transborder fishing by the Indian boats in the Palk Bay. It emerged that the Ramnad, Pudukottai and Nagapatinam fishermen had different areas of fishing in Sri Lanka, with perhaps some overlap. An attempt was made to quantify the size of the problem by looking at numbers of boats involved in each district in transborder fishing and the extent of dependence on Sri Lankan fish resources. The table summarizes the result of the discussion.

This exercise helped to clarify the kinds of concessions that the different groups could offer. The Rameswaram fishermen

felt they could keep a distance of three nautical miles from the Sri Lankan shore, which should, to a large extent, take care of the problems faced by the Mannar fishermen. The Pudukottai fishermen also felt that they could remain three nautical miles from the Sri Lankan coast. The Nagapattinam fishermen, on the other hand, felt that they could stay as far as seven nautical miles on the Jaffna-Vadamarachi stretch where they normally operate and where the sea is also deeper near the shore. Though there already is an informal ban on the use of four types of trawl nets, a rigorous application and formalization of this ban was also suggested as an additional concession from the Indian side. Any violation of the agreement by Indian boats would be punished by not allowing such boats to fish any longer (that is, by getting the Fisheries Department to withdraw their licences or stop issuing tokens).

It was felt that if trawling became an issue, the Indian side could offer to reduce the fleet strength gradually to around half, over a period of three to five years, based on discussions with the government.

Maritime borders

The workshop in Colombo on 27 May featured a session of presentations on the problem at hand. V.Vivekanandan, leader of the Indian mission, outlined the historical evolution of the fishing conflict in the Palk Bay, starting from pre-independence days to the present time, with major changes taking place due to the 1974 and 1976 agreements on the maritime borders, the start of the civil war in 1983 and the recent post-2002 peace

process in Sri Lanka. He stressed the historical relationship between fishermen on both sides and the general harmony that has prevailed in the Palk Bay, despite the occasional hiccups that occurred when new technologies were introduced like nylon nets in the early 1960s and trawling in the late 1960s.

The 1974 Kachchativu agreement produced a political storm in Tamil Nadu but did not actually affect fishing operations in the Palk Bay, where movement of fishermen across borders continued unabated. The start of the civil war and the restrictions of fishing on the Sri Lankan side led to the Indian fleet expanding to make use of the unexploited resources on the Sri Lankan side. The restart of fishing operation on the Sri Lankan side has now led to a situation wherein the Indian fleet is in conflict with the Sri Lankan fishermen who are re-establishing their claim over the Palk Bay resources.

Soosai Anandan, Reader in Geography, University of Jaffna, made a presentation of the problem from the perspective of the fishermen from the Northern Province. He stressed the importance of resource conservation and management for a small nation like Sri Lanka and the enormous importance of fish resources for the livelihoods of people in the northern province. He talked about the 1974 and 1976 agreements. He pointed out that the

very productive Wadge Bank, south of Kanyakumari, went entirely to India. Even though India allowed fishing by Sri Lankan fishermen in the Wadge Bank for some years, the benefit was only for the Western Province; the Northern Province fishermen had no real chance to fish in the Wadge Bank. As far as the Pedro Bank on the northern side is concerned, two-thirds of it went to India after the boundary was demarcated. Thus the fishermen of the Northern Province have limited fishing areas and have to protect their resources.

Fish catches had peaked in Jaffna around 1983, when the civil war started. Subsequently, they declined drastically before making a small recovery in the early 1990s. Now, after the peace process began, there has been a new growth in fish landings, but catch levels still remain a far cry from the heydays of 1983. Resource depletion seems to be the main cause, as the fishing effort is now significant.

The problem of the 'high security zones' that cover large areas of Jaffna, where fishing is prohibited up to 5 km from the shore, was also discussed. It was also pointed out that the government was unwilling to give multi-day fishing boats to the Tamil fishermen in the north, citing security reasons.

Sharing session

The post-lunch session saw representatives from each district sharing

their problems and experiences. Devadoss from Rameswaram talked about the risks to life and limb that the fishermen faced during the two-decade civil war and the price they paid for pursuing their livelihood in a war-affected zone.

He also explained why Rameswaram trawlers ended up in Sri Lanka. It was not because of depletion of resources, as assumed by the Sri Lankan fishermen, but because the area close to Rameswaram was rocky and unsuitable for trawling. The trawling grounds start only after a few miles and any normal trawling operation will automatically take the trawler into Sri Lankan waters, since the boundary was just 7 km from Dhanushkodi.

Ravi from Pudukottai talked about a similar problem that made their trawlers end up in Sri Lankan waters. The 3-mile zone reserved for artisanal fishermen in Tamil Nadu force the trawlers to start operations after that distance from the shore, which only increases chances of crossing the border and ending up in Sri Lankan waters. Manoharan from Nagapattinam explained how the Nagapattinam fishermen come to Sri Lankan waters seasonally and concentrate on deep-sea fishing in the other months. He explained how some of their boats have diversified operations to go after yellowfin tuna and face

competition from the multi-day fishing boats of Sri Lanka.

The Sri Lankan fishermen cited the long war period and the loss of fishing livelihoods, the large-scale displacement of fishermen and the loss of property as common problems. Though NGOs and the church were helping to some extent with revolving funds for equipment purchase through co-operatives, fishermen still had to raise a lot of resources themselves. It is in this context that the incursion of Indian trawlers was hampering the pursuit of their livelihoods. Based on the awareness-raising campaign conducted by the Fisheries Department, the church and concerned individuals, action has been taken against harmful methods of fishing.

The operations of around 200 trawlers in the Jaffna area have been curtailed by the Sri Lankan fishermen. The trawler owners have been given a deadline of December 2004 to stop trawling completely. The co-operatives, even though short of resources, have offered to help them shift to alternative fishing methods.

Unacceptable operations

The Vadamarachi fishermen also found the operation of Indian trawlers close to their shores unacceptable, especially as long stretches of their coast had been converted into high-security zones. They felt that the Indian fishermen have a large

area of their own to fish in and it made no sense for them to operate in the limited area that Sri Lankan fishermen of the north possessed.

The group discussions resulted in two points of view. The Sri Lankan fishermen wanted an end to trawling in their waters. They felt that the Indian trawlers could be given a few months to stop trawling. The Indian fishermen, on the other hand, wanted to keep a 3-mile distance from the shore and avoid certain trawl nets.

A working group was then formed to work out a compromise solution. In its report, it said that the Indian side had agreed in principle that trawling has to be stopped in Sri Lankan waters, given that Sri Lankans are banning their own trawlers. No agreement was, however, reached on the time frame for stopping trawling, as the Indian side wanted a much longer period than what the Sri Lankans found acceptable. A three-month period has been given for further dialogue on the issue and for a mutually acceptable time frame; a Sri Lankan delegation will visit India during this period to carry forward the dialogue.

As an interim measure, the Indian trawlers will keep a distance of three miles from the Sri Lankan coast in the Palk Bay and seven miles on the northern coast (the Jaffna-Vadamarachi stretch). The Indians will not use the four types of trawl nets earlier identified. Any violation of the above understanding by Indian boats will be reported to the Indian fishermen's organizations, which will take suitable action against the erring boats; the Sri Lankan fishermen will not take direct action. Both sides will work for the speedy release of fishermen and boats currently detained by both countries.

In an intervention, Vivekanandan explained the significance of the agreement reached by the two fishermen groups. He wanted the Sri Lankan fishermen to understand the implications of the agreement for Indian fishermen. He said that the agreement, in principle, to stop trawling was a revolutionary decision in the Indian context. Despite various conflicts over trawling in Indian waters, it had, over the years, become the

most important fishing method. India caught around 2.8 million tonnes of fish each year and was among the leading marine fish producing countries in the world. It is important to recognize that trawling contributes to over half of this catch.

Though the dangers of trawling were acknowledged, and many restrictions put on trawling, including a seasonal ban, the vast shelf area that India possessed gave trawling greater scope than in Sri Lanka. Given the importance of trawling and the sheer size of the sector (which has approximately 50,000 trawlers), it was unthinkable of talking about stopping trawling in India. Even government agencies and fisheries departments would find it difficult to accept such an idea.

In the area between Rameswaram and Nagapattinam (the area relevant for the agreement with Sri Lankan fishermen), the total trawl fleet was 4,000, representing an investment of around 1.2 billion Indian rupees (approximately 2.5 billion Sri Lankan rupees). The total debt of trawl fishermen would be at least 600 million Indian rupees. The total number of fishermen manning this fleet was around 20,000. If shore-based workers and dependent families are also counted, the numbers would be in the range of 200,000-300,000 in this area alone. Given the size of the sector, stopping it overnight was impossible. Only the government can take up the task of rehabilitating such a large population and even this is a difficult and time-consuming task, according to Vivekanandan.

He, however, acknowledged that a great beginning had been made in the Colombo meeting, which had the potential to transform fishing in India. He felt that the Indian fishermen's representatives might not have made the trip had they had even a hint of the nature of the agreement they were to conclude.

Unexpected outcome

The fishermen back home would wonder whether it had been worth sending this team to Sri Lanka, if the outcome was to stop trawling. Therefore, it needed a lot of courage on the part of the Indian fishermen to accept this agreement. Sri Lanka may be a small country but the

concern shown by the Sri Lankan fishermen for resource protection is a lesson for Indian fishermen.

The mission team met on 29 May to take stock of the situation and decide on follow-up action. Though the members had boldly agreed to the decision to stop trawling in Sri Lankan waters, there were doubts about the implementation of the decision. There was also a feeling that some of the Sri Lankan fishermen had got the impression that the Indians had agreed to stop trawling in three months, rather than ask for three months' time to take a decision on the time frame for stopping trawling. It was felt that the reciprocal visit from the Sri Lankan side would help to clear up the ambiguity. Overall, it was felt that something had been accomplished by the mission, but success now depends on follow-up.

This report has been prepared by V. Vivekanandan (vivek@siffs.org), Convenor, Association for Release of Innocent Fishermen (ARIF) and Chief Executive Officer, South Indian Federation of Fishermen Societies (SIFFS)

Video

Easy to watch and informative

Under the Sun is a film on the transient fisherfolk of Jambudwip, West Bengal, India

Under the Sun, a 33-minute film in English made for the International Collective in Support of Fishworkers (ICSF) by Dusty Foot Productions and directed by Rita Banerji, talks about the traditional stake-net fishery practised in Jambudwip island, and a recent standoff that has ensued between the fishworkers there and the government.

Jambudwip, a 20-sq km island, is just off the southern edge of West Bengal in the Sundarbans biosphere reserve. Small-scale fishworkers have been practising *behundi jal* or stake-net fishery there since at least the 1950s. Jambudwip is the largest local site for this fishery. The skills and knowledge involved in this sort of fishing are indigenous, ecofriendly and, like most traditional crafts, intuitive but transferable.

Enter the State Forest Department, which alleges that the fishermen's use of the island amounts to an encroachment of forest land. And in order to legitimize a ban, it invokes a Central government conservation act issued in 1980, that is, about 25 years after the fisherfolk are known to have started using the island. No doubt, the fishworkers have been using the forestland but only in the same way in which farmers use the soil in their fields—sustainably, and with respect for regeneration. Lurking in the shadows—and throwing light on the sudden embargo—is a plan to build an ecotourism resort in the area. That plan is said to be funded by the Sahara group, one of the few large entrepreneurial businesses originating from West Bengal.

The film documents this scenario in two parts: first, it shows us the technique and knowledge involved in the stake-net fishing process, and then, it analyzes the

standoff between the fishing community and the government. The analysis of the standoff is also a document on how bureaucratic intervention can get things entangled beyond belief.

Under the Sun is a documentary in the descriptive mould. There is an emphasis on delineating things and showing the interdependence among them: topography, people, techniques and processes. As a result, we get to see a variety of visuals that relate to Jambudwip's fishery activities: the landscape, people, shelters, tools and materials, and, of course, fishing and the sea. Where live footage is difficult to obtain, the documentary makes use of simple 3D (three-dimensional) simulations. For example, the position of the creek where the fishermen berth their boats is animated in bird's-eye view. This gives a sense of how intimately connected the fishing process is with geographic features. Likewise, underwater views of the ocean floor and the unique structure of the net are 3D-modelled and intercut with live action. Films that deal with maritime activities often revel in impressionistic shots of the sea and the boats. Not so in *Under the Sun* and, visually, this is one of the strengths of the film. The broad range of descriptive content gives a very real sense of place and context.

Misinformed officials

The second part of the film traces the genesis of the standoff. Lawyers, fishworkers and NGOs clarify that much of the Forest Department's plans and allegations are misinformed. An example: the Minister of Forests, who personifies the establishment/bureaucracy in the film, talks about an alternative site for rehabilitating the fishworkers: "Haribhanga island is ideally suited for this sort of fishing. It has a creek for

parking the boats." In reality, there is no creek in Haribhanga and it cannot accommodate a tenth of the fishworkers. This is besides the fact that the fish caught here are not for human consumption. Examples of this sort abound.

Central to the idea of encroachment is the notion that humans are at odds with nature, and that development is in opposition to what is natural. The film challenges this idea and asserts that from an ecological standpoint, such a notion is myopic and stagnant. For the viewer, however, a philosophical angle such as this can seem out of place.

Aren't the issues involved, and the probable solutions, more practical and on the surface? Living in India, one suspects that relativistic, philosophical discussions on real issues have a tactical function in bureaucracy: it buys time, misleads people, tests their patience and makes them give in to a sense of fatigue before they eventually get done in.

Documentaries also portray the cultural milieu in which they are filmed, as a by-product and outside of their area of specific focus. It is fascinating how this film conveys Bengal's culture of respect for the humane and poetic things in life. Here Bikash Raychaudhury, an anthropologist who studied Jambudwip in the late 1960s, captures the spirit of ecology as he talks about the

fisherworkers' craft in his book *The Moon and Net*:

"Living with the fishermen, quite intimately for some months, I distinctly got the impression that it is not money alone which drives them to such a wholehearted involvement in their work. The challenge and beauty of the open sea, the risk and fun of tracking *shola* fish, setting up the net and hauling up in eager expectation ...all these together have a charm for them."

This sensitivity and awareness—including the joy of reflecting on the fishermen—are not lost on the government administrators and officials either; they talk passionately about the fishermen's heritage, knowledge base and indigenous wisdom. Issues are discussed with depth and élan and all this makes *Under the Sun* an easy-to-watch, informative film. 3

This review is by Ramu Aravindan (landeater@vsnl.com), a filmmaker, based in Bangalore, India

Fishery harbours

The Kochi Declaration

The Kochi Declaration on Fishery Harbours was adopted at a recent conference in India

We, the representatives of fishworker organizations, research institutions and universities, non-governmental organizations (NGOs), trade unions and governments, having met for two days at Kochi on 24-25 June 2004, under the auspices of Protsahan (a Trivandrum-based NGO), with the involvement of the National Institute of Ocean Technology, Chennai and the Harbour Engineering Department, Government of Kerala, to deliberate on the current status and future prospects of fishery harbours and fish landing centres in India, do hereby resolve as under:

Aware that harbours are complex facilities that act as vital interfaces between capture of fish and their utilization,

Acknowledging that harbours are often situated in some of the most ecologically fragile, densely populated coastal zones, which are, in turn, the final sinks of pollutants from upstream, land-based developmental activities,

Cognizant also of the provisions of both binding and non-binding international Agreements, Conventions, Guidelines and Recommendations on resource management, environment and biodiversity, and

Recognizing that harbours form the focal point in the application of food safety control and are important points in the application of occupational safety and health standards, and measures for personal/physical security needs, and therefore call for greater participation of relevant stakeholders in harbour governance,

We *Urge* for greater recognition by governments and all other stakeholders

of the paramount importance of the management and maintenance of harbours. The responsibility of keeping harbours clean should extend beyond harbour authorities to society at large, based on the 'polluter pays' principle.

We *Call* upon governments and all other stakeholders, particularly users of harbour facilities, to acknowledge the critical role of harbours as the focal point for both fishery resource management and regulatory interventions in fish marketing.

We *Urge* governments and all stakeholders to pay keen attention to quality assurance in the supply chain, and to ensure the adequate supply of clean and/or potable water, as necessary.

We *Stress* that governments and all other stakeholders should ensure better coordination between the various agencies that have to implement safety and health standards.

We *Affirm* the necessity to create and develop governance structures that integrate the interests of the State with those of all other stakeholders.

Alongside, we *Proclaim* the need for a qualitative improvement in the amenities and public comfort facilities for the day-to-day living needs of users, especially women and small traders, and that these facilities should also be properly maintained.

We *Call* for better organizational and legal arrangements to facilitate participation of all relevant stakeholders in harbour governance.

We *Reassert* the fundamental and inalienable role of government in crucial



areas of infrastructure provision and financial support for activities like dredging and major repair of harbours.

Finally, we *Call* for the adoption of more context-specific and dynamic approaches to developing and managing fishery harbours.

This declaration was adopted on 25 June 2004, at the conference on "Fishery Harbours: Current Status and Future Management Concerns", Kochi, Kerala, India

Bloom or bust?

Jellyfish is a new fish export industry in the south Indian State of Tamil Nadu, with effects on local fishing communities

Rumours of the destroyed huts were rife in the air as the businessmen hustled all morning, frantic to negotiate and strike a deal with village leaders in an attempt to stop the upsurge of violent protest against the jellyfish industry. Some villagers were angry, some were pleased; all were talking about the 'jellyfish men' and, in the background, a lady complained bitterly that despite yielding an ample prawn catch that morning, nobody was interested.

This is a description of the scene in Pulicat, a small fishing town at the southern border of Pulicat Lake, Tamil Nadu, India on 21 July 2003, the morning after fishermen from several villages destroyed the processing huts of the newly established jellyfish industry. These villages, like many throughout India, have existed for generations in their entirety upon the precious and fragile livelihood of fishing. Often neither much changed by India's economic advance nor touched by the political storms of the wider world, the villages in Pulicat remain, at a glance, very much as they have always been: colourful arrays of houses dotted amongst coconut palms, bordered by long rows of resting wooden *kattumarams*. These traditional boats, long surviving the modernity of today's fishing fleet, remain lined up on beaches throughout the State, defiant against the onslaught of the Bay of Bengal, and calmly awaiting fishermen to again embrace the perilous sea for a daily wage.

To understand the impact of the jellyfish industry on the lives of fishermen and their families and on the structure of traditional fishing society, one must look back to the industry's arrival in the state of Tamil Nadu, less than a year before these disturbances occurred. The observant visitor to the Tamil Nadu coast may have noticed over the last year that,

amongst these familiar clusters of village homes and temple squares, has arrived a new type of building, which can now be seen in almost all coastal villages from Pondicherry in the south up to the Andhra Pradesh border in the north and beyond. The large open-thatched structures that have appeared in coastal villages throughout Tamil Nadu are not the result of some new craze of housing style; they are, in fact, the now empty processing units of the rapidly spreading jellyfish industry, lying in wait for the season to begin again this spring.

Many have generally welcomed the industry as a thankful alternative to their dwindling fish and prawn catches. Others have been angered that, for numerous reasons, they have been unable to benefit from the new export and also by the pollution that processing units have sometimes been under suspicion of causing in local surroundings. Little is known about the jellyfish industry, although what can be sure is that the industry stirs up a storm of its own within communities and between villages, as trade agreements are set up, and seaworthy boat sales soar as access to the jellyfish becomes everyone's first priority. Perhaps the questions the fishermen must ask are "How can I benefit from the trade?" and, more importantly, "Is this new industry sustainable?", before rushing out to acquire a new boat and the subsequent debts.

Major export

According to Tamil fishermen, the summer of 2003 was the first time that the jellyfish industry significantly hit Tamil Nadu. Major export industries, based predominantly in the far east, with outlets in Pondicherry and Chennai, started the impressively quick and extensive appropriation of village space, boats and

fishermen and even entire fishing villages in the haste to make profit from last year's particularly large jellyfish swarms. The mass exodus of fishermen to benefit from this trade meant that, in some areas, the jellyfish export trade usurped even prawn exports, and became the number one exportable product for several months.

The industry did not only provide alternative income through buying jellyfish, but also through developing onsite jellyfish processing units, required due to the highly perishable nature of jellyfish, which needs treatment within only a few hours of capture. Jellyfish are landed directly at the processing huts, and immediately dehydrated using a traditional step-wise reduction of water content with a 10 per cent salt-and-alum mix, although, in some instances, more potent chemicals are involved, including bleach products, used to whiten the jellyfish and, in doing so, increasing its commercial value. This operation is low-cost, requiring little capital, but it is labour-intensive, and thus provides welcome extra income to workers in the processing huts, who are usually locally employed men and women.

In the case of Pulicat, discontent grew further over concerns about the potential for pollution from the jellyfish processing huts, creating a good case for village

feuding, in an already fragile social and ecological environment.

This article attempts to answer some of the questions demanded by the upsurge of this new export interest in Tamil Nadu and India, by removing, in part, some of the mystery behind the jellyfish export industry. To begin, the global perspective of the industry is tackled: Will we all be eating jellyfish in the years to come, as fish becomes a rare delicacy, and if so, what do we understand about the jellyfish industry in terms of longer-term sustainability?

Fishing for edible jellyfish has been operational in countries like China and Japan for many centuries, providing a traditional and important component of Far Eastern cuisine, and even has its mention in writings from the Tsin Dynasty 300 AD. In spite of this, edible jellyfish became an important export commodity in Southeast Asia only in the 1970s, largely as a direct result of increased demand from the Japanese market.

Falling production

In the Japanese jellyfish industry, falling domestic production has been increasingly unable to meet rising consumer demand, partially fuelled by the introduction of shredded RTU (ready-to-use) jellyfish products. Such products have alleviated the traditional

but lengthy procedure of desalting jellyfish before cooking, a requirement that, for many, was inappropriate for today's modern busy lifestyle.

The jellyfish industry began its expansion to Southeast Asian countries such as Thailand, Indonesia and Malaysia, not only due to changes in demand and supply, but also due to the instability of production and price rises in the 1970s in China, Japan's main and traditional exporter. The result is that today, Japan's import market for jellyfish alone is valued at US\$ 25.5 mn per annum.

The main global capture production of jellyfish (in metric tonnes as recorded by the FAO Fisheries Department Statistics and Monitoring since 1995), is dominated by the northwest Pacific (Area C-61), and seconded by the West- Central Pacific (C-71). Captures in the Eastern Indian Ocean, which includes the Bay of Bengal, in comparison, are small. The only other notable jellyfish capture is in the Mediterranean and Black Sea, which harvest small amounts annually.

The interaction of jellyfish with existing fish species within an ecosystem can be quite complex, and determined by many factors. Jellyfish can be detrimental to fish populations in two ways: firstly, by those species of jellyfish that directly predate on fish eggs and larvae; and, secondly, by those species that act in competition with other predatory fish for this food source, bearing in mind that usually the top predatory fish claim the highest commercial value.

Interactions can be positive to a fishery, in that jellyfish can also provide a source of food for adult and sub-adult fish. What is interesting, in terms of maintaining the balance of the fishery ecosystem, is the potential impact that *large* numbers of jellyfish, or 'jellyfish blooms' can have on fish populations and the wider-scale impact on a commercial fishery.

Diets of many species of jellyfish overlap with the diets of zooplanktivorous fish such as anchovies, herrings and sardines. When overfishing includes these species, there could be significant unconsumed zooplankton, and jellyfish populations

might expand, because of the alleviated competition for food.

Additionally, the commercial removal of jellyfish predators, such as salmon, mackerel and butterfish, could further spur jellyfish population expansion.

However, this outcome is less clear as many jellyfish populations can be controlled by predation from other jellyfish and gelatinous species. One study points to a more sinister outlook for what jellyfish blooms might mean to a fishery.

Not only may jellyfish blooms indicate overfishing of larger top predator marine species, but also large jellyfish populations, once established, may suppress fish production in a recovering fishery, through competition and predation on fish larvae.

Once an ecological system has reached a point of stability as in this case, which is the jellyfish succeeding at the top of the food chain, the removal of its dominance may prove difficult, potentially preventing the recovery of the fishery, even if fishing effort of the fish was reduced: "The jellyfish state might be an alternative stable state which is difficult to revert," according to "Pelagic food web configurations at different levels of nutrient richness and their implications for the ratio fish production: primary production", by V. Sommer, H. Stibor, A. Katechakis, F. Sommer and T. Hanson, *Hydrobiologia* 484 (1-3), 2002.

Distributions of jellyfish populations are notoriously sporadic and unpredictable, and little is known about why or when they may occur in large numbers or 'jellyfish blooms'. Meteorological conditions, currents, water temperature, salinity and predation may play a significant role in determining the population size.

Seasonal life cycle

The life cycle of the jellyfish is seasonal in most species, which creates its seasonal appearance, although it is not yet understood what causes a jellyfish bloom to occur. In many areas, jellyfish can appear and disappear with great annual regularity, although, because populations commonly undergo inter-annual

fluctuations, some years bring much larger populations of jellyfish than others.

As a result, the fishing season for jellyfish is often restricted to only several months per year, the timing of which can vary with locality, and be influenced by fishing methods, freshwater outflow through river systems, and calm seas.

The typically high variation and fluctuation in annual catch highlight the potential instability of the fishery, and while a mass occurrence of jellyfish can bring in economic interests from outside, jellyfish, on other occasions, may suddenly disappear from fishing grounds altogether.

Jellyfish populations seem, in recent years, to have become unstable or show signs of decline in East Asian waters. Although the reasons for this are uncertain, pollution and overfishing are the most likely contenders for a cause, the effect being that Asian dealers are now exploring new sources of jellyfish.

The fishery for jellyfish has, until recently, remained predominantly in Southeast Asia, the annual catch for jellyfish for this region between the years of 1988 and 1999 being estimated at 169,000 tonnes wet weight, which is just over half of the worldwide estimated catch of 321,000 tonnes over the same period.

Jellyfish are also exported to Asia from the US and Canada, Australia and, recently, India, Mexico and Turkey, and a wide scope exists for other countries and other species to join the fishery. For example, there is a growing interest in creating an export market in Asia for the frequent swarms of the edible jellyfish *Stomolophus melea gris* L. Agassiz (cannonball jellyfish) from the US: an investment, which has the potential to change a species—traditionally a pest to fishermen, which clogs up nets and crushes the shrimp catches—into a huge environmental and economic benefit for the region.

In addition to the expansion of jelly fishing in the oceans, pond culture technology, particularly in China, is widespread, selling for US\$0.9 / kg, where large tent-like awnings are used to maintain a cultivated jellyfish production throughout the year. Although little has been written about this technology outside of the Far East, the fact that cultivation of jellyfish is not only possible, but already a well-established industry in some countries, may provide an alternative to dwindling global fish stocks.

Simple techniques

The cultivation and processing of jellyfish are simple techniques, and cost-effective. Could the increasing demand for jellyfish in the Far East provide alternatives for the

livelihoods of many fishermen around the globe, struggling to make ends meet and daily having to choose between knowingly overfishing their stocks or starvation? What terms could be put in place now, before the industry is taken over by only a few to soon become very rich?

One could and should perhaps ask the question: To what extent can the average fisherman benefit from this new industry? To answer this, one must first gain insight into how much they are already benefiting from the industry, and how much are they being exploited, simply because they lack the knowhow.

Sadly, it is not only the fishermen who lack sufficient knowledge about the jellyfish industry, but also the world of academia and even the industry itself, who do not know nearly enough about the jellyfish to claim whether it has or has not a future in fisheries in global terms. "In spite of their wide commercial availability, jellyfish processing and utilization are not sufficiently studied and reported in the literature," write P. Hsieh, F.M. Leong and J. Rudloe in "Jellyfish as food", *Hydrobiologia* 451 (1-3), 2001. Only little is known about the biology and fishery of the edible jellyfish, particularly so in Southeast Asia, where scientific studies cannot keep up with the rapid development of exploitation.

Surely, the potential for the sustainable utilization of jellyfish in the face of dwindling fish catches, as a contributor to global cuisine, and the substantiation of the many claims and beliefs of the medicinal properties of certain species, merits further interest and study by the fisheries community.

Jellyfish export is an established industry in several countries bordering the Bay of Bengal, including Myanmar, Thailand, Indonesia and Malaysia. In comparison to these countries, India's jellyfish fishery is still small-scale, although it is an industry that seems to be gaining momentum in terms of its development and import capacities.

Jellyfish blooms along the coast of Tamil Nadu are not uncommon, and many

fishermen readily recollect how much of a nuisance it is to have hundreds of jellyfish entangling themselves in their nets from year to year. Some years, however, bring more jellyfish than others, and it is not only the Tamil fishermen who are inconvenienced by the jellyfish swarms. A study by Madras University found that the nearby atomic power station situated at Kalpakkam has suffered reduced production efficiency, and has, in the past, even been forced to stop production entirely, due to the jellyfish swarms clogging up the sea water intake piping. This can cost an estimated Rs. 5.5 mn (approx. US\$122,000) per day on lost revenue.

Although only a year's data is not representative enough to predict the frequency of jellyfish blooms in this area, during the study that took place between January 1995 and December 1996, data showed that peaks in the jellyfish arrivals at the power station coincided with the reversal of the coastal water currents during the two monsoon seasons. These occur in early June (the southwest monsoon) and November (northeast monsoon) and anecdotally coincide with the activities of the jellyfish industry in Tamil Nadu in 2003.

The potential for local people to become more directly involved in the processing and export of jellyfish is largely limited by a lack of technological knowhow, although the benefits from such knowhow could be substantial. The cost of jellyfish when processed is increased nearly seven to eight times that of the raw commodity, but as the local fisherman do not have the technology to process and they get lots of jellyfish during the season, they cannot do processing and storing. However, as many fishermen get unexpected incomes, there are few complaints.

Extra income

One of the more alarming consequences of the jellyfish industry's operations is the adaptation of traditional fishermen to specialize in 'jelly fishing'. For example, in Pulicat Lake in northern Tamil Nadu, the traditional lake fishermen are naturally keen to also 'have a go' at jelly fishing to earn the substantial extra income they have watched their marine fishing



neighbours collecting on a daily basis. As a result, many fishermen are buying the expensive fibreglass boats that are necessary to venture into the sea. The traditional marine fishing villages are, of course, not at all happy about this, and the ability to repay the debts incurred by fishermen as a result of buying new boats is heavily dependent upon the continuation of the jellyfish industry in that area for several years at least.

If, however, the jellyfish industry leaves the area in a couple of years time, to follow periodic jelly blooms in other parts of the ocean, what fate awaits the lake fishermen, who are left with marine fishing boats, but no jellyfish market? Perhaps the lake fishermen will continue to fish in the ocean, but this transfer will not be straightforward; new nets and expertise would be needed. While, in the past, traditional disputes between villages at Pulicat have occurred over fishing rights in the lake, could it be that the jellyfish industry has shifted things so that future disputes may be over who can fish in the ocean? ¶

This article is by S. Jacob Magesh (jacobmagesh@yahoo.co.uk), Research Assistant based in Pulicat, Tamil Nadu, and Sarah Coulthard (s.l.coulthard@bath.ac.uk) of the Department for Economics and International Development, University of Bath, UK

A new approach to sanitation

Ecological sanitation is a sensible option for tsunami-hit coastal communities

I am sure you will agree that, as reconstruction of tsunami-hit villages gets under way, ecological sanitation should be very seriously considered as an important option. Below I outline some of the reasons.

Ecological sanitation not only provides safe sanitation and protection of the groundwater, but it also provides important fertilizer and soil improvers to establish coastal shelterbelts for protection against erosion, cyclones and tsunamis.

Sanitation is a serious issue throughout the tsunami-affected coastal belt in Tamil Nadu. Fishing communities, as well as agricultural communities and small traders and services, all suffer in this regard. The issue of safe sanitation was already a serious matter prior to the tsunami, but this disaster brings it into stark relief.

One option is to simply provide conventional sanitation in the form of pit latrines and septic tanks in the massive reconstruction phase, which is about to commence.

However, if this is done, some tremendous opportunities for addressing some of the very serious issues affecting coastal communities would have been lost. Furthermore, new problems would have been created.

Some important issues facing coastal communities are:

- poor sanitation
- lack of protection from coastal erosion, cyclones and tsunamis
- poor water supply

- unproductive soils
- poor health due to poor water, sanitation and diet

Many coastal communities are in areas of significant waterlogging and very high water tables. Groundwater is an important resource, but much of it has been affected by salt water intrusion due to the tsunami, though it will most likely recover after significant rains.

During the reconstruction phase, it is likely that conventional sanitation will be promoted and constructed on a scale that has not existed in these communities.


In high water-table areas, water-flush toilets, pit latrines and septic tanks offer the significant threat of faecal pollution of the groundwater. Thus, high concentrations of water-flush toilets will almost certainly pollute the groundwater in many of these settlements, ruining a good resource and threatening the health of the community. In a State where water is so precious, one should seriously consider protecting this resource. As such, in many locations, conventional water-flush toilets may be an inappropriate sanitation choice.

Ecological sanitation offers a far more sustainable option under these conditions. Ecological sanitation:

- protects the groundwater from faecal pollution
- saves water
- comprehensively protects public health
- provides valuable fertilizer and soil improvers for establishing and

increasing the density of coastal vegetation and shelterbelts to protect against coastal erosion, cyclones and tsunamis

- provides valuable fertilizers and soil improvers for vegetable growing, and thereby improves income and nutrition

EcoSolutions offers awareness-raising, workshops and hands-on training in ecological sanitation for children, youth, women, self-help groups, non-governmental organizations and others. We also offer quality control, project management and implementation with the objective of leaving in place high-quality toilets appreciated by the users, together with the skills and knowhow to promote, propagate and sustain a new approach to sanitation, an approach that is truly sustainable and appropriate both now and in the future. 

This letter, dated 19 January 2005 and addressed to Shantha Sheila Nair, Rural Development Secretary, Government of Tamil Nadu, was written by Paul Calvert (paulc@vsnl.com) of EcoSolutions (www.eco-solutions.org)

Rehabilitation

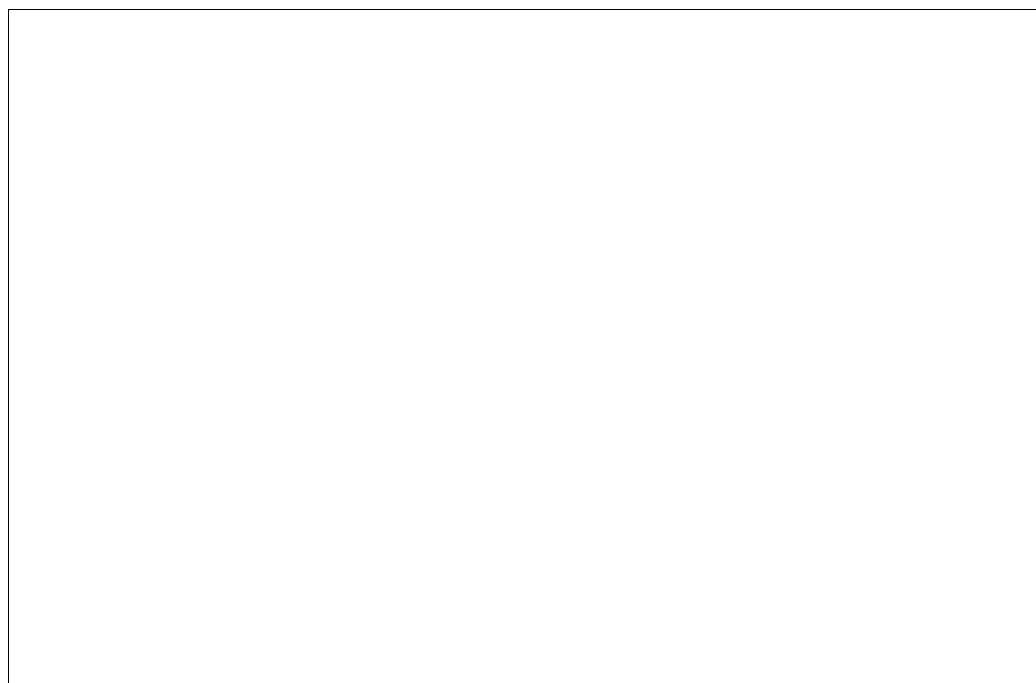
A new resource centre

This is a concept note for a proposed
NGO Resource Centre for Tsunami Relief in India

The South Indian Federation of Fishermen Societies (SIFFS), in collaboration with Social Need Education and Human Awareness (SNEHA), a non-governmental organization (NGO) working in Nagapattinam, has been running the NGO Co-ordination Centre in the Nagapattinam District Collectorate since 1 January 2005 to co-ordinate the tsunami relief work in the district. Nagapattinam was the worst-affected district on the Indian mainland and, expectedly, attracted the greatest attention from both the government and civil society. Not surprisingly, there were serious problems of co-ordination among the NGOs and also between the NGOs and the government. Realizing this quite early on, the district administration, under a group of senior officers of the Indian Administrative Service (IAS), established a working relationship with the NGOs and this led to the formation of an NGO co-ordination centre, with SIFFS given the mandate to run it. SNEHA, with its strong grassroots presence in the district, joined SIFFS to put the centre on a strong footing.

During its first three weeks, the centre did the following:

- Registered all NGOs working in the district and created a database for public access
- Set up a system of volunteers covering most of the affected villages and established a two-way system of information flow to and from the villages
- Co-ordinated with the government relief system to ensure that relief materials reached all camps and villages, based on the needs reported by the village volunteers
- Helped the government manage relief materials in the godowns, with volunteers to handle materials and install computerized inventory control systems
- Passed on details of unmet demands to other NGOs and donors, and organized supply of materials
- Conducted a series of meetings to create a sense of common purpose among the NGOs
- Provided information to all NGOs on a number of aspects that they need to understand to take up their tasks
- Formed sector groups related to shelter, livelihoods, counselling, health, sanitation, children, etc., which came up with guidelines and policies
- Ran a separate desk for legal aid for families of missing persons, and worked with the district administration for a single-window system for such cases to ensure speedy redress
- Worked out a consensus among NGOs on where each should work for interim shelter and thus avoid unnecessary overlap
- Put up policy notes to the government on the interim shelter and permanent rehabilitation plans



The Co-ordination Centre was run mainly with qualified volunteers from different parts of the country. A number of NGOs and organizations were happy to allow their staff to work with the Centre.

While relief activities needed co-ordination, the rehabilitation phase needs significant inputs of a different kind to ensure that the work is effective and that the long-term sustainability and development of the affected communities takes place. The response to the sectoral groups also indicates that the NGOs and donors involved in the rehabilitation would like to have access to technical expertise and policy guidelines in their respective areas of interest. The village communities themselves would like to have some entity which would help them understand the options available to them. Further, the strategy of working with volunteers is not sustainable for the rehabilitation phase, which could easily go on for at least a year.

In view of the above, SIFFS and SNEHA have decided to convert the Co-ordination Centre into a Resource Centre, which will provide a range of services to the communities and organizations involved in the rehabilitation process. The Resource Centre would work on the basis of a small core team of professionals and full-timers, supported by volunteers.

The Resource Centre will have two distinct constituencies: the communities and outside agencies. The outside agencies will include NGOs, donors, and governmental and inter-governmental agencies involved in the rehabilitation.

For the agencies involved in the rehabilitation, the Resource Centre will:

- function as an information centre for all relevant background studies, data and statistics;
- link with technical and other resource organizations and individual experts and make available technical knowhow, designs, etc. relevant for the rehabilitation process;
- provide technical and policy guidelines on themes like habitat, shelter, livelihoods, etc.;
- prepare policy notes for the use of the government and NGOs/donors; and
- organize regular interactions, meetings and workshops that will enable all the agencies involved in rehabilitation to learn from one another, develop common perspectives and strengthen collaboration.

Some heartburn, much confusion

According to one estimate, around 300 villages in the south Indian State of Andhra Pradesh were affected by the tsunami, which claimed 105 human lives and left 11 persons 'missing'. It completely destroyed 1,300 boats and damaged nearly 11,000 fishing vessels. Some 35,000 nets were lost, which was by far the most crippling effect of the tsunami for the fishers of the State. Nearly 300,000 fishers have been rendered jobless because their gear was lost or damaged. Over 1,500 houses were damaged and nearly 200 heads of cattle lost. The cost of reconstruction for the State has been estimated at Rs3.4 bn (us\$77.8 mn).

The response to the tsunami was quite confused in the early stages, with even the fishers unable to account for the strange happenings and fearing that the end of the world had come. Slowly, as the initial fears subsided, they began to organize relief measures. The district-level government agencies also recovered quickly with measures for evacuation and relief. Even as the waves continued to sweep in, senior officers reached some of the remote villages and took part in the evacuation, which was a notable achievement, considering that many of them had no idea

about the nature and magnitude of the disaster. Whole villages were quickly evacuated and people transported to hurriedly set up relief camps. The families of the dead were provided financial assistance on the spot for funerals and their insurance claims were settled quickly.

Once the threat passed and the fishers returned to the villages, rice was provided to those families that had ration cards, causing some discontent. Confining the assistance to providing rice alone and waiting for important officials to find the time to come and inaugurate the distribution programme (forcing the already starving people to wait for a day or more) added to the tensions too.

The response of non-governmental organizations (NGOs) and charity groups (particularly in the northern districts) was less evident, maybe because of the government's overwhelming response or because of funding constraints. One apparent shortcoming was the performance of the 'disaster preparedness' programmes in many areas, which simply seemed to have melted down in the face of a tsunami. "But we prepared people to deal with cyclones, and not this!" insisted one NGO field

For the communities, the Resource Centre will:

- strengthen the system of village volunteers (already in place) which provides two-way communication between the communities and the rehabilitation system (government, NGOs, donors, etc.); and
- equip village communities to prepare their own micro-level plans for rehabilitation and take greater control and ownership of the rehabilitation process.

The Resource Centre will be headed by a Chief Executive capable of giving leadership to the team and interfacing with both the government and NGOs/donors.

The rest of the organization structure will comprise sector team leaders, a head of administration, an information manager,

computer specialists, etc. There will also be a team leader who will lead the community support team (in place of the existing system of village volunteers and co-ordinators). A Steering Committee will supervise the activities of the Resource Centre. It will be composed of five persons who have been part of the Co-ordination Centre activities from the start, including the heads of SIFFS and SNEHA.

Volunteers needed

The actual human resources needed for each of the sectors and departments will depend on the workload and needs felt from time to time. In addition to the full-timers, part-timers and volunteers will be made use of for various tasks.

The Resource Centre will be in touch with a number of institutions and individuals with expertise in various thematic areas connected with the rehabilitation process.

It is expected that the Centre will be funded by a small group of donors who would like to encourage participatory

worker. The arrival of charity groups carrying hastily assembled relief materials—sometimes inappropriate or inadequate—that were dumped in the villages also caused some heartburn and much confusion.

The real disaster was the rehabilitation programme. There is no agency suitably equipped to handle post-disaster relief and rehabilitation in an organized manner in the State. So, every time a disaster strikes, an ad hoc body is set up to oversee relief and rehabilitation and it comes up with ad hoc responses rather than a clearly defined system of rules and guidelines.

Velugu, an ongoing State government rural poverty elimination programme focusing on the poorest of the poor, with a specific mandate and a clearly defined framework to implement it, was chosen as the nodal agency for the tsunami rehabilitation programme.

This proved problematic as it involved short-term, one-off measures and did not address the needs of a much wider constituency of people. Its group-based, women-oriented strategies did not match the objectives of a rehabilitation programme particularly targeted at a predominantly

male-oriented package of boats and nets. This too caused much heartburn among those not covered. The fishermen are upset about getting boats and nets through the women, and antagonism towards the women's groups has grown. Moreover, the *Velugu* groups do not cover *everyone* in the village. Some recent measures to form new groups exempted from fulfilling the existing *Velugu* guidelines are likely to have adverse implications on the performance of the existing portfolio of *Velugu* programmes. The rehabilitation efforts have also been hampered by reducing community participation to mere information gathering, long delays in providing support and political interference.

Migrant fish processor-traders have been ignored in the rehabilitation package, which has been confined to providing boats and nets alone. Ironically enough, support has been provided to people and areas that had no impact whatsoever from the tsunami.

—This piece is by Venkatesh Salagrama (vsalagrama@gmail.com) of *Integrated Coastal Management, Kakinada, Andhra Pradesh, India*

processes and support the autonomy of the Centre. Many NGOs, donors and corporate bodies will be encouraged to depute or second staff for the Resource Centre as their contribution to the rehabilitation efforts. 3

This note is by V. Vivekanandan (vivek@siffs.org), Chief Executive, South Indian Federation of Fishermen Societies (www.siffs.org), Trivandrum, India

Tsunami rehab

Not just four walls and a roof

An architect's thoughts on reconstruction and design of projects in the wake of a tsunami

Our knowledge of the destructive nature and force of tsunamis is limited and is only still being developed. Even standards of earthquake-resistant design are being constantly revised to incorporate new developments in the field.

Tsunami loads are far too great and it is costly and impractical to design normal structures that are resistant to all tsunamis. There is no point in making new houses extra safe, when they cannot resist all tsunamis. What about the buildings and areas that were not affected by the last tsunami? The next tsunami could affect them as well.

To calculate the potential damage to structures, several factors must be considered, including the characteristics of the particular tsunami, the exposure of the coastline, the configuration of local bays and harbours, and the area of inundation of the coastal zone. According to Diane Pierzinski (*Tsunamis*, California Geology, Vol. 34, No.3, 1981), one of the major causes of tsunami damage is surge-carried debris piled on to the shore.

Although the distance from the sea plays a significant part in damage mitigation (the energy of the waves gets dissipated with the distance), the elevation is a more critical factor.

Section 7.2.2 of the Coastal Construction Manual published by the Federal Emergency Management Administration in United States states that:

"Tsunamis have been known to damage some structures hundreds of feet inland and over 50 feet above sea level. Coastal construction in tsunami hazard zones must consider the effects of tsunami runup, flooding, erosion and debris

loads. Designers should also be aware that the 'rundown' or return of water to the sea could also damage the landward sides of structures that withstood the initial runup."

To reduce tsunami damage, the layout of new villages should consider the following aspects:

- Placing houses behind a barrier, which can be a reinforced cement concrete wall or dense vegetation.
- Elevating the buildings to allow water to pass through.
- Providing maximum spacing between the buildings.
- Providing greater mass, as with some structures that have survived the tsunami (for example, the Tranquebar Fort and the Shore Temple at Mahabalipuram), which may, however, prove very costly by present standards.

The strategy to adopt is to ensure that the structures do not collapse all of a sudden, and the occupants are able to run to a place of safety.

Expensive options

Seawalls, dykes and so on may reduce the damage, but they are very expensive and may adversely affect the environment. According to the 2001 Regional Tsunami Hazard Scoping Project Report prepared for the Wellington Regional Council by Geo Environmental Consultants, such structures constructed in Japan met with limited success as the tsunami wave heights were not accurately predicted and subsequent waves overtopped the barriers. Protective measures such as



these may be used in areas that contain essential infrastructure, such as the Kalpakkam Nuclear Power Plant in Tamil Nadu, India.

Trees that are deep-rooted, and grow with branches high off the ground, are very resistant to tsunamis. They can be used as effective barriers to partially dissipate the tsunami and catch the debris carried in the wave. The major advantage of dense vegetation over sea walls is that the former does not affect the wind movement along the coast. The planting of appropriate coastal species of vegetation would create functional and productive use for the local populations; the product yield and protection thus gives a twofold justification for implementation.

One of the best ways to do buildings is on stilts because they let the water through. If the epicentre of the earthquake is not far away, the time gap available between the warning and the real tsunami is very small, and the only way of escape is to go vertical. The houses can be made two-storeyed of reinforced cement concrete framed construction and the villagers can build around it using the normal construction practices according to their requirements.

The height of the elevated structures could be 10 feet from the ground level. There is no sanctity about this 10 feet

measurement, but based on the experience of tsunamis so far, we can say that most tsunamis cause the sea to rise no more than 10 feet. Special structures such as hospitals and shelters that come very close to the sea can be built up to a height of three storeys. Building standards for common facilities such as hospitals, schools and community centres should be made very stringent, to resist even the worst of tsunamis.

The positioning of the buildings should be such as to allow the energy of the tsunami waves to get dissipated, rather than try to be a physical barrier. Giving a large plot of land for each family will facilitate a layout that will be able to resist tsunamis better.

As far as possible, the new houses should be built in the same location of the existing village. As the villagers have developed a social bonding with the places, it is very difficult to shift to a new locality. In the case of Banegaon, in Latur, India, which was hit by a 6.3 magnitude earthquake on 30 September 1993, the new village was built on the other side of the existing village. In the case of Chapredi village in Bhuj district, 125 families refused to move into a new site which was 1 km away. So we built the houses in their old plots.

New locations

Whenever a village is relocated, for some people at least, their agricultural fields become distant, and their places of work



and worship far away from their houses. In most cases, the new location of the site is never discussed with the villagers, and the decision is taken by a few government officials.

Different strategies have to be developed for villages, towns and cities, based on the cost of land. The damaged houses might have been of various sizes and belonged to people of different economic strata. The extent of land required for each has to be worked out separately.

In rural areas, the government should be able to allocate bigger plots for each family. The main advantage of this is that there will be less overcrowding in future and the villagers have more flexibility in extending their houses based on available resources.

If there is no flexibility for expansion, then another slum will be formed in the coming years. As families expand, the demand will rise for more units for the next generation. For the poor, who have very little resources left after meeting their food and clothing needs, land can be a major resource.

The old house damaged by the tsunami might have been overcrowded, and now is the time to give the affected family two houses in the new layout. Definite criteria have to be evolved to decide about the

allocation of extra houses to overcrowded families.

A house located in the middle of a plot, with vacant space all around, might not suit the villagers' lifestyle. Flats and grid layouts could be disastrous. In deciding the final layout of the village, fishing communities need to factor in their relationship with the surroundings, and their occupational requirements regarding craft and gear, disposal of fish waste, and so on.

Any new housing scheme must provide each house with a lavatory of its own (communal lavatories rarely work) and with a cooking space designed so that smoke from the stove will not fill the entire house. The living and sleeping areas must be at least partially separated from each other.

One possibility is to provide a solid permanent core, or nucleus, of a house, around which the inmates can add their own rooms and living spaces, perhaps at first with only temporary materials such as mud and corrugated galvanized iron sheets and later with more permanent materials.

Common facilities

In many of the reconstruction projects, the thrust given for common facilities and infrastructure is low. Markets, a library, a community hall, schools, village council

office, and places of worship are some of the community facilities that can be added for a reconstruction project.

Water supply and sanitation plans are important. Many of the villagers might not have had toilets and bathing facilities in their old houses. The new layout can add water closet and bath and wash areas. Water storage facility is another important feature for each house. In many areas, tsunami inundation has caused salinity in the wells, which were the main source of drinking water.

One basic mistake we make in rehabilitation is that we want to give the villagers what we think is right. We never want to know their real needs. "People's participation" is an oft-repeated cliché; even where it does happen, it is only in the case of implementation, and not in the case of planning, design and choice of technology.

The villagers have to be convinced about the techniques and materials we use for reconstruction. In Banegaon village, in Latur, India, the villagers rejected stone for masonry walls because the same material had fallen over them during the earthquake. One of the buildings in the village which survived the earthquake was a building built with burnt bricks. Although brick is not a local material—it has to be transported from a distance of more than 70 km—the villagers' preference was for bricks. In Chapredi village in Bhuj district too, the villagers did not want stone for masonry walls, because many of them had collapsed. They agreed for cement-stabilized mud blocks for walls since the traditional mud structures had survived the earthquake.

One NGO had constructed houses in the shape of geodesic domes. The villagers could not relate with such shapes and they refused to live in those houses, which were eventually used for storing things.

Whatever the choice of technology for reconstruction, it is very important to make sure that the villagers and local masons are able to construct similar buildings in future. One major caution to be exercised here is that reinforced cement concrete framed structures, especially in a

highly corrosive coastal environment, needs lot of care in construction and maintenance. If the quality of construction cannot be ensured, the maintenance of these structures over a period of time can lead to a serious crisis.

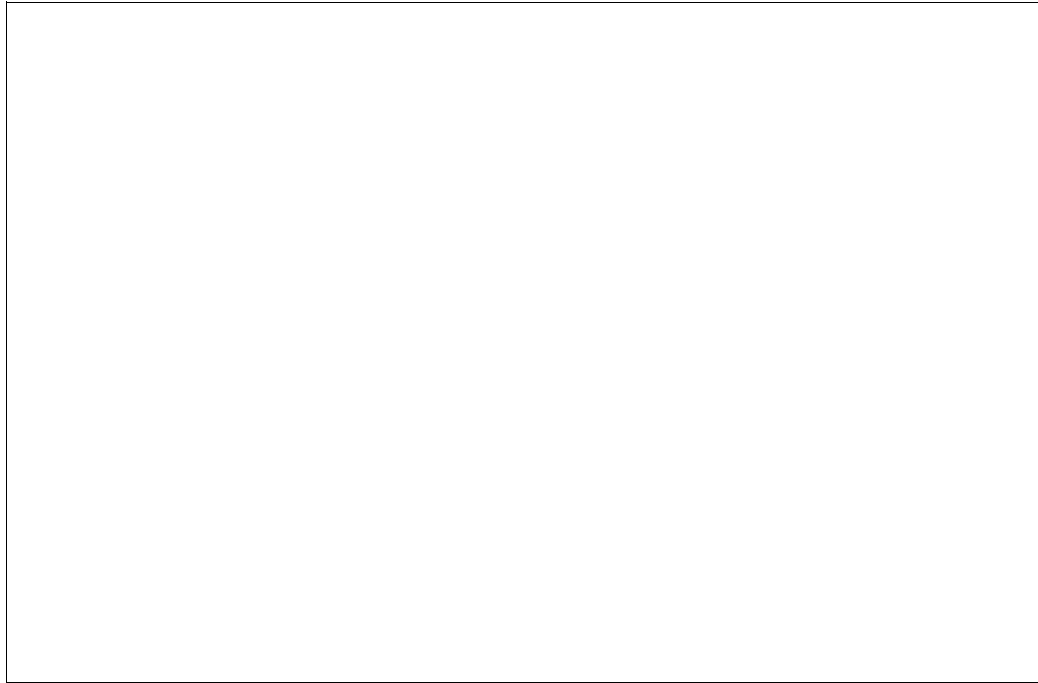
The quantum of construction activities which are going to take place in the tsunami-hit areas in the next one year is huge. There will be a tremendous shortage of construction workers, and migration of construction labour will occur. Wages will go up. Unskilled workers will become skilled masons overnight. Based on the experience in Bhuj and Latur, it is very difficult to ensure the quality of construction, which is very critical in the case of the structures that are going to come up.

When we built earthquake-resistant structures in Latur and Bhuj, we were quite convinced about the soundness of the structures. But the villagers always had doubts about the safety of such structures. It is very important that we bring them into confidence before, during and after construction. In Banegaon, we started living in one of the model houses. After one of those after-tremors, which was of moderate intensity, the villagers came running to the house where we were staying to check whether the structure had developed any cracks or damage.

To conclude, the housing problem is not a mere question of four walls and a roof. It is, in fact, a social problem, which has many cultural, economic, technical and political dimensions. The house as a microenvironment is very essential for the healthy living of individuals. We have to approach the problem in a holistic way, taking into account regional variations.

We can consider the following actions for the future:

- Producing inundation maps, which will help in the adoption of different criteria in the design of new buildings based on the data generated.
- Deploying tsunami warning systems. (Whether the dissemination of information can be done under the present



circumstances is still doubtful, since we need experience in responding to warning systems.)

- Locating and designing new buildings by taking into account the possibility of a tsunami in the future, and giving quality of construction extra importance.
- Providing tsunami-resistant structures that can function as shelters for people during a natural disaster, and finding alternative uses for them so that they can be justified. 3

This article has been written by Benny Kuriakose (bennykuriakose@vsnl.com), an architect based in Chennai, India

Whose responsibility?

Even in the post-tsunami phase of rehabilitation, few aid givers in India are addressing the issue of safety at sea

In India, the fishing craft of fishermen are particularly vulnerable to not only natural disasters like cyclones but also mechanical failure, in the case of mechanized and motorized craft, and wind failure, in the case of non-motorized craft. On several occasions, fishing craft and crew have been reported missing for these very reasons. In some cases, they have strayed into the waters of neighbouring countries like Pakistan, Maldives, Sri Lanka, Bangladesh and Myanmar, unintentionally or because the currents dragged them there consequent to the mechanical failure of their craft. Whatever the reason, they end up facing hardship.

Recently, for instance, a mechanized boat from the Chennai fishing harbour, along with its crew, entered the territorial waters of Bangladesh when the boat's engine failed. The Bangladesh government arrested the crewmembers and put them in jail for nearly six months without a proper trial and without informing the Indian government. In 2004, a fibre-reinforced plastic (FRP) boat from Nagoor capsized in the deep sea due to strong winds. The capsized boat drifted in the water, with the crewmembers sitting on its upside-down bottom. After two days, one of the rescue boats sent out by the villagers found the capsized boat and brought it back to shore.

On 20 June 2005, a FRP boat carrying three fishermen from Nochi Kuppam, a fishing village in Chennai, set out to sea. While crossing the surf, a huge wave dashed against the boat and threw all the fishermen into the sea. While two of them managed to clamber back on to the boat, another disappeared in the sea in a fraction of second. Many fishermen on the shore, who witnessed the incident, jumped into the sea and searched for the

man, but in vain. The man who disappeared was said to be a good swimmer, and his fellow fishermen guessed he must have died due to injury to some vital organ. In such cases, though the accident could not have been avoided, it would have been possible to at least recover the body had the fisherman worn a lifebelt.

Many people tend to dismiss these incidents as unavoidable natural disasters that the government and fishermen cannot do anything about. However, this is not true. While we may not be able to completely prevent such accidents, we can minimize the effects of the disasters if all the stakeholders realize their responsibilities and act collectively.

With the depletion of fishery resources in Indian coastal waters due to continuous and destructive fishing methods, the operations of mechanized boats in nearshore waters have become unprofitable. Hence, most of the mechanized boat fishermen wish to go into deeper waters in search of fish. Generally, two types of boats can be found in the mechanized sector: the 32-footer and the larger 40-45-footer. Both usually fish for about 12 to 24 hours a day, while the bigger boats can be out at sea for six to 15 days continuously. This type of fishing is called 'stay fishing'. Due to the lack of safety equipment on board, such boats fish only where visibility is good and navigation is possible with the aid of the lighthouses located along the coast.

Stay fishing

The boats are powered by diesel engines, and each boat has a crew of five to seven fishermen. They take along rice, vegetables, milk and other rations to cook for their 'stay fishing' voyage. They usually have one compass, and some have

a transistor radio too, which is used to listen to music and weather reports.

However, no boat has the life-saving equipment recommended by the Coast Guard or the State Fisheries Department, like lifebuoys, jackets and flares. Though the boats are registered with the State Fisheries Department, few are insured. During registration, the Fisheries Department officials are supposed to check the seaworthiness and safety aspects of the boat, but this is rarely done. Many of the fishermen of the motorized craft are reluctant to carry sails with them for use during engine failure. Artisanal fishing craft do not carry even basic safety equipment like life jackets, lifebuoys and flashlights. Without flashlights, the artisanal fishers find it hard to deal with mechanized boats, particularly during the night.

According to the India Meteorological Department, most of the east coast of India is vulnerable to cyclones, and usually two to four cyclones hit the east coast every year. During the cyclone period, the fishing boats stop venturing into the sea as soon as they receive weather warnings. However, the boats that are already at sea cannot receive the warnings since most lack transistors and other communication instruments. Once a boat ventures into the sea, all connection with land is effectively cut off completely.

If the engine breaks down, there is no way to call for help from land or from other fishing boats at sea. During this critical time, the boat is anchored and the fishermen have to just wait and hope for help from some boat that happens to pass by. Occasionally, some of the crew who are capable of swimming long distances, jump into the sea with empty plastic diesel cans and swim to the shore, in search of villages. There, they might get some financial help to reach their hometowns or pass on the news of the accident to the boat's owner.

During a cyclone, however, it is impossible to anchor the boat in the middle of the sea due to the strong winds, currents and waves. Boats fishing at mid-sea cannot receive weather reports on time. Even if they were to get the news, it would be too late to return for they would be far from the fishing harbour and would have to navigate their boats against the power of the cyclone. Only the lucky few manage to reach safety; the other boats drift away in the direction of the wind and water current. Some boats may capsize in the sea and their crewmembers drowned.

Mechanical failures

In some cases, the boat's engine fails due to the extra load necessitated by the cyclone. While some mechanical failures can be rectified quickly by the crewmembers themselves, others cannot. In most cases, the boats are forced to drift

towards the deep sea or towards land in other States of India or in other countries.

If the boat hits the land of other States of India, there is not much of a problem. But if it reaches other countries like Bangladesh and Myanmar on the east coast, and Pakistan on the west coast, the crewmembers invariably get arrested and face possible harassment by local law enforcers. Some fishermen, mistaken for being smugglers, may even get killed in encounters with the law enforcement authorities.

In the matter of safety at sea, there is a clear lack of co-ordination between the government machineries—like the Meteorological Department, the Fisheries Department, the Coast Guard and the Navy—and the fishing boats. (However, good co-ordination exists in the case of deep-sea fishing vessels, since they have all the electronic communication and navigational facilities.

Most of them, though, fish in the same grounds as the small-scale fishermen. This lack of co-ordination leads to conflicts between the traditional and mechanized boat fishermen. Anticipating accidents, engine failure and/or cyclones, the mechanized sector prefers to fish in the shallow waters, which allows easier escape to land in cases of emergency. This is one of the main reasons for the depletion of fish stocks in the resource-rich shallow waters. To avoid conflicts between the two sectors, the government, boatowners and fishermen should own up to their respective responsibilities and strictly abide by safety rules and regulations.

The State government must make it compulsory for all crewmembers to be registered and issued identity cards, which they must compulsorily carry with them while out fishing. All fishing craft should also be registered. The government should encourage all the registered boats to use wireless walkie-talkies or other efficient communication systems to communicate amongst themselves as well as with control stations on land. Several control stations should be installed all along the Indian coast at specified intervals, thereby facilitating easy contact during emergencies. All the coastal States should

have some search-and-rescue boats in good operational condition ready to be used in emergency.

State Fisheries Departments should not register boats that are not built in government-recognized or approved boat centres and do not fulfill all the safety norms. All mechanized fishing boats must be compulsorily painted in fluorescent colours, at least on top, with the registration numbers boldly painted in larger size type. For non-mechanized craft other than *kattamarans*, the paint should be at the side of the boats. For *kattamarans*, fluorescent strips can be attached to the wooden logs, which will help in identification during aerial search operations. Harbour berthing facilities should be given to those boats that are registered and insured, and have seaworthiness certificates and safety equipment.

The government should insist that boats carry sophisticated communication and navigational equipment on board, and it should provide crewmembers training in handling the instruments. Recently, some of the boats in Chennai, Rameswaram and Thuthukudi areas have started using the Global Positioning System (GPS) handsets to find their routes, cellular or mobile phones to communicate with land and other boats (the Thuthukudi boats were provided with wireless sets), and fish-finding devices to find fish shoals. Through communication and navigational instruments, the Fisheries Department can disseminate information on the Potential Fishing Zone (PFZ), given by the National Remote Sensing Agency, Hyderabad, using simplified language understandable by fishermen.

Though the Central Government has spent millions of rupees on this satellite information gathering system, the findings are not disseminated properly to the small-scale fishermen but are used by the deep-sea trawlers, whose contribution to the overall fish catch is minor, compared to the small-scale sector.

Fishing legislation

Once it is able to guarantee the abovementioned facilities, the government can strictly enforce the fishing regulation legislation. At the same

time, the mechanized fishermen will gain the courage to go into the deep sea to fish (beyond the area of artisanal fishermen, that is, not within 3 or 5 miles from the shore, depending on the particular coastal State's law), thereby avoiding conflicts between the traditional and mechanized sectors. The fish resources in the deep seas can be better exploited, and both fishermen and the government can benefit economically.

The government should advise and encourage artisanal fishermen to carry lifebuoys, life jackets, first-aid kits, emergency lamps or flashlights, portable compasses for non-motorized craft, and global positioning systems (GPS) for motorized craft, along with sails and identification cards.

The State Fisheries Department should act as a nodal agency to register all seagoing fishermen so they can avail of the monetary benefits of welfare schemes run by both Central and State governments, like insurance and other schemes for the unorganized sector. The government should also implement a provident fund scheme for the fishermen in which the government should pitch in with the employer's contribution. Insurance companies should consider the fishing sector as a special category and should come forward to insure boats with moderate premiums, which can be afforded by the owners who are already burdened by large operational costs.

The Coast Guard and the Navy must remain alert, particularly during the monsoon seasons, to help the State government launch search-and-rescue operations without delay. The Coast Guard and the Fisheries Department should conduct random checks at sea to ensure that safety equipment and identity cards are in place. If not, the fishing licence of the boat should be cancelled immediately and the boat seized. The Coast Guard must also, through the Fisheries Department, train fishermen how to handle conditions of distress and emergency.

Watchtowers should be constructed at the seaward entrance of each fishing harbour and posted with coast guards.

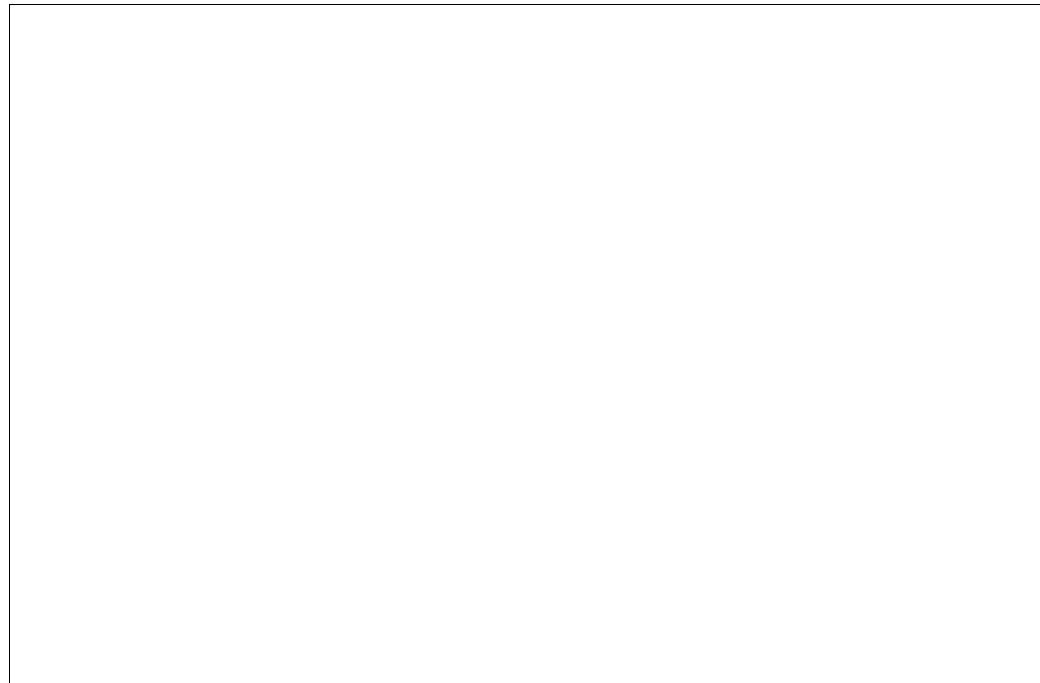
Fishing boats going out to sea should inform the Coast Guard about their expected destinations. The Coast Guard should not allow any boat to venture out to sea when there is an adverse weather warning from the Meteorology Department. This will help avoid loss of life and property.

The first and foremost responsibility of each craft owner is to keep the boat and engine in good condition always, and ensure that the boat has adequate insurance coverage. Lifebuoys, life jackets, smoke flares, first-aid kits and emergency ration kits must be on board. Each owner must know how many crewmembers have ventured out to sea for a particular voyage and their names, addresses, fisheries society membership number and also their expected fishing destination. (The lack of such information often hampers the Fisheries Department from identifying the crewmembers who have gone missing in a cyclone or have been captured in other countries' territorial waters.) The owners should keep a logbook, where all the requisite information is entered, and this information should be passed on to the fisheries authorities immediately after the departure of the fishing boat. The owners should employ only persons who are members of the fishermen's co-operative society. (According to official norms, in a fishing accident, the government will provide compensation to the family of the deceased or physically injured person only if the victim is a member of the co-operative society.)

The owners should insist that their employees insure their lives in the Group Insurance Schemes of various insurance companies. Owners should not encourage fishing during cyclone warning periods. Boatowners should build their boats in government-recognized boatbuilding centres, thereby ensuring seaworthy boats.

Co-operative membership

All crewmembers and other shore-based workers should themselves take the initiative to become members of their respective co-operative societies, and should also get their lives insured in Group Insurance Schemes. They should keep their identity cards with them when



they go fishing. The card will help the law enforcement authorities distinguish genuine fishermen from criminals like smugglers or pirates. The crewmembers must co-operate with their owners by giving accurate personal information and also their intended fishing destination. Finally, and importantly, the crew should help other boats in distress in the middle of the sea.

If these rules and regulations are followed, the loss of life and property at sea during disasters can be considerably minimized. Observing such norms can also go a long way in managing the fishery resources and thereby avoiding conflicts between artisanal and mechanized fishers. But for that to happen, there must be good co-ordination amongst all the departments concerned with fishing and safety, preferably supervised and controlled by a single authority, like the State Fisheries Department, so that needless bureaucratic delays can be avoided. The Fisheries Department, in turn, can play a vital role through vigorous campaigning using posters, seminars, meetings and documentary movies at fish-landing centres and fishing hamlets and also through mass media like radio and television.

Today, after the 26 December 2004 Indian Ocean tsunami, the safety of fishing communities and fishermen, in particular,

has gained importance in the eyes of officialdom. In the post-tsunami relief and rehabilitation phase, many non-governmental organizations (NGOs) have supplied many FRP boats and wooden *kattamarams* and a large quantity of various types of fishing nets and gear to the tsunami-affected coastal districts. With the number of artisanal craft and the length of fishing nets increasing dramatically, there is now the strong risk of overcapacity in the fisheries of the tsunami-affected areas. Unfortunately, though, little of the post-tsunami aid has focused on safety equipment. As a result of the aid in craft and gear, all the artisanal craft will now concentrate on inshore fishing with their newly acquired lengthy fishing nets, instead of going to deeper waters. This will lead to increased fishing pressure in the coastal waters, followed by conflicts among fishers. Another potential problem is the resultant lack of space to cast nets, and the restricted movement of boats in the sea. This could lead to poaching of fish from others and the destruction of competitors' nets at sea. All these problems will lead to an increase in operational costs and a decrease in returns. This will, in turn, cause new tensions among fishermen.

Safety aspects

Since safety equipment may not be affordable by all fishermen, it is time for both the government and NGOs to divert their attention towards safety aspects, and

provide money from tsunami relief funds to buy safety equipment for both mechanized and non-mechanized craft. Also, insurance companies should come forward with norms to insure all types of fishing craft at nominal, affordable premiums. Only when all the stakeholders involved with the issue of safety at sea get together to analyze the situation and find out remedies, will the problems in implementation get solved in an amicable way. ♣

This article is by B. Subramanian
(bsk_04@rediffmail.com),
Executive, Coastal Resource
Management, South Indian
Federation of Fishermen Societies
(SIFFS), India

Good intentions alone won't help

The distribution of fishing assets in the post-tsunami rehabilitation phase in India exposes several flaws

The custom prevalent in south Indian fishing villages prevents civil society organizations (CSOs) from directly supplying fishing gear and other relief material to the beneficiaries of tsunami rehabilitation schemes. It is the *panchayat* (local village council) that decides on the distribution of aid. Thus, almost all CSOs hand over the assets to the *panchayats*, which, in turn, redistribute them to the fishermen. In most cases, the *panchayats* try to share the benefits among all the fishermen, without undue consideration to the issue of damage or ownership.

Fishermen are entitled to get their boats repaired if they were partly damaged or get new ones if they were fully damaged. To do so, they had to surrender the compensation amount they received from the government to the *panchayat*. The *panchayats* try to get as many new boats as possible for their hamlets. After compensating for the losses, the surplus boats are distributed among the crew on the basis of group ownership. Accordingly, a group of four or five receives a fibre-reinforced boat (FRP). The owners of *kattamarams* (traditional craft of logs) were also treated equally and a group of four *kattamaram* owners was given one FRP boat, besides their compensation amount. In Tharangambadi, Tamil Nadu, those who did not get boats were given Rs15,000 (about US\$333) each as compensation from the common fund of the *panchayat*. This amount was derived from the cost of a boat, which is around Rs75, 000. For a group of five, each share thus amounts to Rs15,000. Even trawler owners received FRP boats besides the compensation amounts. In one instance, an organization supplied nets to the fishermen as loans. However, the fishermen refused to repay the loan amounts and, finally, the

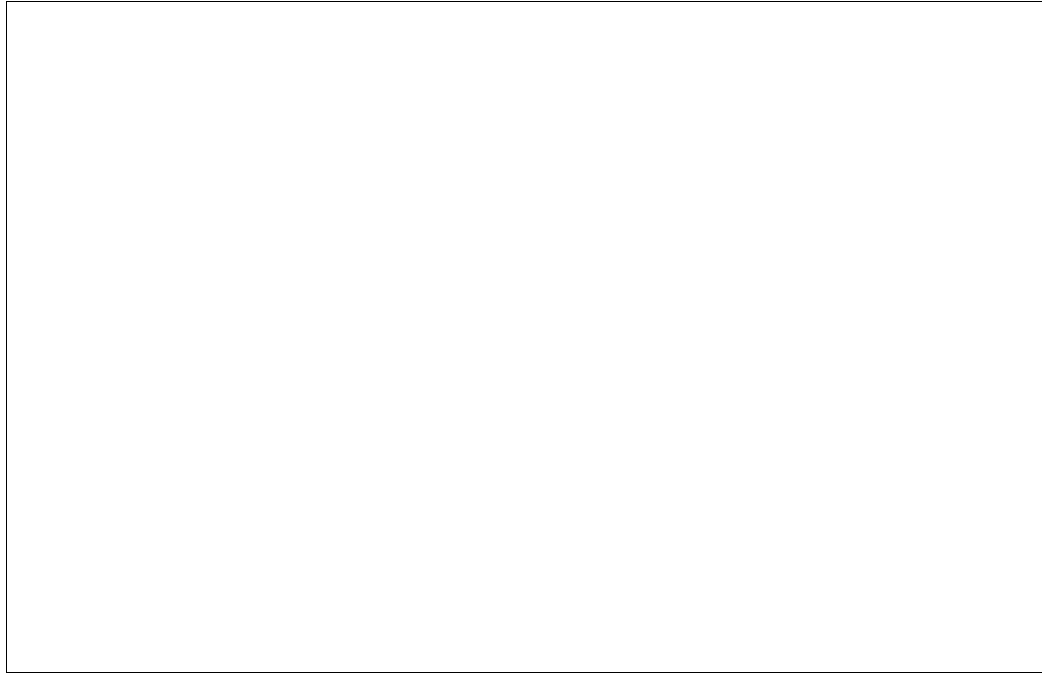
organization had to approach the *panchayat* to settle the issue.

The power structure in fishing hamlets dictates the key role of the *panchayats*. The December 2004 tsunami was a test case for the *panchayats* to prove their power over their communities. Simultaneously, it also revealed the real strength of the people over their *panchayats* as they could exercise their power to call back their representatives. The day after the tsunami, the people of Tharangambadi, for instance, asked the *panchayat* to step down for a new *panchayat* that would incorporate more eligible persons. Accordingly, a new *panchayat* comprising six members from each four wards of Tharangambadi came into power. In Arcottuthurai, another fishing hamlet, a split four years ago had resulted in two *panchayats* ruling two portions of the hamlet. After the tsunami, both *panchayat* heads tried to work together, but failed for political reasons. Both the *panchayats* are trying their best to get aid and are blaming CSOs for not distributing benefits in their area.

In Akkarapettai and Nambiar Nagar, tsunami-hit fishing villages in Nagapattinam, Tamil Nadu, the CSO intervention has had a profound impact on the traditional power structure. The distribution of FRP boats by the CSOs led to a near-revolt by crew against their owners and *panchayats*. Hearing stories of the distribution of FRP boats in other fishing hamlets, these members believed that the *panchayat*, represented by the owners, had conspired to prevent the CSOs from distributing boats to all the crew.

New assets

They thought it unfair that while the owners could get new assets from the compensations they received for their old



boats, the crew themselves, who had worked for several years on these boats, did not get anything. Moreover, the owners were preventing boat distribution, fearing they would not get enough crew to run their own boats if all the crew received boats as well.

Such double-dealing was seen as quite unjustifiable, and made the crew members get together to form their own trade unions to fight for what they believed were their rights. So strong was their power of bargaining that the *panchayats* were forced to underplay their own power in order to avoid a division in the hamlets. Under a compromise formula, the old *panchayats* were dissolved, and foundations laid for new *panchayats* comprising equal representation from the two conflicting groups.

To pacify the crew workers, the new Akkarapettai *panchayat* also purchased and distributed 10 new FRP boats among the fishermen. Although the union constituted in Akkarapettai had dissolved as per the request of the new *panchayat*, the Nambiar Nagar workers union stood firm and refused to be dissolved. It registered itself with the help of the Construction Workers Union and opened an office in the village. Their members demanded that unless the boatowners shared with their crew a portion of the benefits they got as

compensation, they would refuse to go fishing on their boats. Through some NGOs, they also got some boats for the crew fishermen in the village.

Thus, while asset distribution has, on the one hand, helped in re-constituting the traditional *panchayats* through the incorporation of representatives from the fishing community rather than exclusively from the wealthy and traditional power holders, on the other hand, it has divided the community more than ever before.

While the CSOs were competing with one another to supply boats, they ignored the needs of the other sections of people in the fisheries sector, like the women fish vendors, fish merchants, ice-plant owners, and so on. The *panchayat*, which was more concerned with fishermen, also remained aloof from these sections. In short, the entire post-harvest area in the fisheries sector has been kept in the dark during the relief and rehabilitation phase.

Poor communities

The losses of the fish-vending women were far less than those incurred by the fishermen. Yet this does not imply that they need lesser attention. A sizeable number of fish vendor women are either widows or from the poorest families in the fishing community. During the tsunami, most of them lost the implements of their trade—aluminium baskets, scales and

knives—while some others lost the fish they had procured and the thatched sheds used to store the fish.

Such losses may seem insignificant to an outsider, but they are important since they deprive the women of their means of livelihood. Though they started vending once fishing had resumed in the village, they were forced to buy new tools of the trade, for which most had to borrow money from private financiers and moneylenders, also for working capital needs, at a monthly interest rate of five per cent. Some women could get credit for a day. The average loss of a women fish vendor was Rs1, 500 (US\$33). Thus, the cost of one FRP boat could have assisted a hundred women. Only after they had bought new tools did some NGOs come forward to distribute aluminium baskets, raincoats, scales, knives and tiffin boxes. Since these were not given to all the affected women fish vendors, they at first refused to accept the aid. However, they changed their minds later, perhaps realizing it was better to accept whatever little was given.

The reduction in fishing trips post-tsunami and the poor fishing season have also negatively affected the fish vending occupation. The number of working days for the fish vendor women has drastically decreased from a monthly average of 20 to eight. The income from vending also has gone down accordingly, from a monthly average of Rs1,000 (US\$22) to Rs400 (US\$9). This has affected their living standards. Moneylenders are reluctant to give credit to the new entrants to the vending trade (usually newly widowed women and others who need the money to maintain their families), preferring old clients from whom they are fairly confident of getting repayments. Thus several women are forced to pawn their jewellery for credit.

Clearly, there is enough space for meaningful interventions in the fish-vending segment, like ensuring quality, improving processing and marketing, and so on. These are areas where the CSOs can do a lot. Although the women fish vendors have demanded equipment like insulated fibreglass display trays and storage boxes, which will improve their marketing capacity and

ensure better prices, no one has been willing to give them such equipment.

Merchants and commission agents, who used to procure around 60-70 per cent of the total fish landings, are another major group that has suffered financially due to the tsunami. They lost ice-crushing machines, storage crates, generators, sheds and fish stocks. The amounts they had advanced the fishermen for their catches have also remained unproductive throughout the enforced fishing holiday. The money was locked up for an average of three to five months, in the case of the traditional fishing units, and seven to nine months, in the case of mechanized fishing units. Some amounts also remained stuck with other wholesale merchants, who are in no position to return them as regular transactions were affected for a long period. These merchants have lost around Rs50,000 (US\$ 1,096) to Rs500,000 (US\$10,965).

Such losses have not been taken into consideration by the government or the CSOs. They have been forced to depend on moneylenders, who charge 60 per cent annual interest. Another source for borrowing is the people who got government compensations for the deaths of their family members. Normally, the rate of interest of these borrowings is 24-36 per cent per annum. The merchants are not procuring fish at former levels, which implies that their business capacities have diminished after the tsunami. There are only a few new entrants into this business, mainly from those who received death compensations. However, their lack of professional skills prevents them from doing well in the business.

There are other people as well who had invested in the fishery and suffered financial losses consequent to the tsunami, including owners of ice plants and units dealing in fishing equipment. They too have borrowed from moneylenders and those who got compensation. Some have abandoned their occupations.

New homes

As part of the rehabilitation phase, a sizeable proportion of the fishermen from Tharangambadi, Nambiar Nagar, Arcottuthurai and Akkarapettai villages will be shifted to new places that are 750

m to 1.5 km from their original habitations. The fishermen feel that would certainly have a negative impact on their livelihoods in terms of increased effort and time needed to venture into the sea, a growing detachment towards the sea and the fishing way of life and the gradual alienation of the coming generations from the traditional fishing occupation. It is very important that fishermen be at sea at a particular time, if they wish to get good catches. Only if they are by the seashore can they decide whether to go fishing on a particular day, after observing the wind and current directions. Besides, they have to repair their nets and keep their boats safe throughout the day. The fishermen cannot frequent the beach as easily if they are relocated to places that are, on average, 1 km from the shore. The women fish vendors also feel that their misery will increase after their relocation as they will have to toil more.

From these experiences, we can conclude that the post-tsunami asset distribution strategy was not derived from any proper planning, which has, to a certain extent, defeated the good intentions of CSOs. Clearly, rehabilitation interventions should not be driven by donors or CSOs that are totally unfamiliar with the local situation. A proper understanding of the field reality is essential for any meaningful intervention. Any intervention should be guided by the principle of ensuring sustainability and diversity, rather than by charity.

Media publicity should not be the sole criterion for formulating rehabilitation plans. Proper care should be taken to ensure that there is no unevenness in the attention given to various groups in the areas of intervention. Instead of enhancing vulnerability, an intervention should strengthen the cohesiveness of the beneficiary community.

The delivery of rehabilitation services should not create divisions within the recipient communities. The principles followed by some CSOs—like abstaining from creating assets in the mechanized sector—contain enough value to be highlighted. Instead of individual organizational attention, joint efforts of CSOs are better, considering the different

complex dimensions of the rehabilitation issue.

The approach of CSOs should be centred around *people*, rather than their *wishes*, which are often driven by sheer desire and could prove non-sustainable in the long run. The principles of justice and equity may carry different meanings in different contexts, and understanding this is very important for a CSO.

In sum, the distribution of fishing assets in the post-tsunami phase, while demonstrating the increasing concern of CSOs and donors, exposes the flaws in deriving a consensus among them for a more sustainable approach. Undoubtedly, indiscriminate asset creation in the fishery will not help the target community, but will do more harm to their livelihoods, tradition and culture. This should be an eye-opener for all those who wish to be involved in the rehabilitation of fishing communities, especially when the community has an organic link with its sources of livelihood, and practices that go along with such links. It is not just good intentions, but a close understanding of the situation that makes any intervention meaningful. 3

This piece is excerpted from a study by S. Thaddeus (tkp2000@gmail.com) of the NGO Co-ordination and Resource Centre (www.ncrc.in), Nagapattinam, Tamil Nadu, India

Life studies

A seasonal fishing ban meant to conserve turtles in Orissa, India, has fatally affected fishing communities

On 27 September 1997, the Gahirmatha Marine Wildlife Sanctuary was set up in the Indian State of Orissa to protect the olive ridley species of sea turtles in their nesting and breeding habitat, under Section 26 A of the Indian Wildlife Protection Act 1972. The sanctuary of 1,440 sq km is the world's largest nesting site of the endangered olive ridley turtles. It is demarcated into a core area of 725.5 sq km and a buffer zone of 709.5 sq km.

The Indian Coast Guard was appointed Wildlife Warden of the Gahirmatha sanctuary in 1998, with the power to stop and seize fishing vessels, especially trawlers, and to hand them over to the Forestry Department for further action. (The Wildlife Protection Act 1972 is implemented by the Ministry of Environment and Forests, at the national level, and by the State Forestry Departments, at the State level.) All forms of fishing are prohibited in the core area—10 km from the high-tide line—of the Gahirmatha marine sanctuary throughout the year. However, innocent passage through the core area is permitted to fishing vessels with no mechanical means of propulsion. Non-trawl forms of fishing, both mechanized and non-mechanized, are permitted in the buffer area—10 km to 20 km from the high-tide line. Trawlers that are permitted to fish beyond 20 km, however, are required to use turtle excluder devices (TEDS).

For the coastal communities of Orissa, which is amongst the poorest States of India, the fishing prohibitions and the olive ridley issue have turned into a bone of contention because the turtles' breeding habitats in the river mouths also happen to be the richest fishing grounds of the State. The marine turtle congregations

occur in the peak fishing season. Interactions between such congregations and bottom-trawl and gillnet fishing have been reported from 1974. This is perhaps the most striking example of such interactions in the world, involving the protection, almost every year, of an estimated 150,000 adult olive ridley population and their breeding and nesting grounds, on the one hand, and the livelihood interests of about 50,000 fishermen and fishworkers entirely dependent on coastal fisheries, on the other.

Fishing is considered to be the greatest threat facing the olive ridleys in Orissa. The main cause of turtle death is believed to be drowning in bottom trawls and entanglement in certain types of gillnets, which account for about 90 per cent of mortality during the December to February fishing months.

For the first two to three years after the declaration of the sanctuary in 1997, enforcement of the fishing ban was not very strict. As a result, according to forest officials, the mortality of the turtles increased. According to the Wildlife Society of Orissa and Operation Kachhapa (Operation Turtle), during the last 13 years, more than 129,000 turtles have been found dead along the Orissa coast in the Bay of Bengal. With the sandy beaches turning into turtle graveyards, pressure soon began to mount from environmentalists and conservationists from around the world. As a result, the Coast Guard and the Forest Department intensified patrolling, and began strictly enforcing the conservation law.

Traumatic effect

The net effect, however, has been traumatic for Orissa's traditional fishing community, which has to battle poverty

and starvation induced by the fishing ban.

According to Narayan Haldar, the president of the Orissa Traditional Fish Workers' Union (OTFWU), the fishing ban has already broken the backs of the fishing community, especially in the coastal areas of Kendrapara district, where suicide deaths have been reported (see case studies below).

According to Haldar, the fishermen have raised their voices in different ways. On 21 November 2005, around 2,000 fishermen demonstrated in Bhubaneswar, demanding that the sanctuary's seaward boundary should be redrawn up to 10 km from the high-tide line, from the existing 20 km. Similarly, the boundary of the core area of the sanctuary should be reduced to 5 km from the existing 10 km, and innocent passage through the sanctuary should be afforded to all their fishing units. The government should provide them larger boats and engines so they could go offshore for fishing. A 30 per cent loan and a 70 per cent subsidy should be provided to purchase fishing equipment, they demanded.

In January 2006, about 3,000 fishermen blockaded a road in Kendrapara district to protest the ban. Forest Department officials had seized three gillnetters and a trawler, and arrested nine fishermen on charges of illegally fishing in the prohibited area. The irate fishermen blocked the main road at Jamboo village for three hours, demanding the release of the arrested fishermen.

The fishermen alleged that the Forest Department officials were preventing them from fishing even beyond the 10-km distance. "They arrested the fishermen illegally when they were fishing outside the prohibited area," Tushar Kanta Sardar, secretary of the Kendrapara district fishermen's association, said.

The fishermen of the area say they use small motorized boats, and pay their nets manually, and do not hurt turtles. The large trawlers kill turtles, they allege. Turtle conservationists, however, have a different view. They say that traditional

fishing with 10-14-hp motorized boats also causes turtle mortality.

According to Mangraj Panda of OTFWU, since the fishing ban limits all options for a decent living, the fishermen should be provided an alternative source of income. The union had filed a petition with the Central Empowered Committee (CEC) constituted by the Supreme Court of India. After a visit to Orissa between 10 and 14 February 2004, the CEC directed the State government to demarcate the prohibited zone where fishing is banned.

The 2004 CEC report recommended that innocent passage through the core area of the sanctuary should be allowed only for "traditional fishermen" on local non-mechanized fishing vessels. There should be a committee at the grassroots level, constituted by the fishermen's unions, turtle conservationists, the Forest Department, the Fisheries Department and local representatives. Wildlife protection should be done with the involvement of the community of the area, the CEC proposed.

Unfortunately, nothing has been done yet. The Forest Department has neither demarcated the sea zone nor formed any grassroots committee. As a result, the resentment and misery among the local people have increased, said Narendra Behera, the president of the Mahakalpada *zilla parishad* (village council).

While local fishermen complain, the Forest Department has different views. "The fishermen are trying to make a plea in the name of demarcation. Till date, all those arrested, have been arrested within the 9-10 km sea zone, which is the prohibited area. Of course, the CEC has directed for the demarcation, but it is not an easy task. It requires millions of rupees, which the government has not yet been able to allocate," said A. K. Jena, District Forest Officer (DFO), Rajnagar.

No proposal

He added that there was no proposal from the Fisheries Department for innocent passage. Nor has the fishermen's community given any memorandum to anybody regarding such passage. He also said that the Forest Department does not even know how many boats have been

issued licences. There seems to be a major communication gap or lack of co-ordination between the Fisheries Department and the Forest Department. The fishing ban has a great impact on the fish markets also. According to data from the Fisheries Department, there has been a decline in fish production in Kendrapara district during the last few years.

Greenpeace, the international environmental group, launched *Sugaytri*, a boat specially equipped to undertake exhaustive patrolling to protect the sea turtle. The first event to mark the launch of the campaign was the laying of buoys outside the periphery of the Gahirmatha sanctuary to demarcate the non-fishing zone. Greenpeace also solicited the support of the State Forest Department for the demarcation of the remaining boundaries of Gahirmatha and eventually, the no-fishing zones of other breeding sites, said Sanjeev Gopal, Ocean Campaigner, Greenpeace India.

The CEC is clear in its directives of the need to strike a balance between the rights of traditional fishworkers and the responsibility to protect olive ridleys. The demarcation of the marine protected area in Orissa was the first step in implementing the directives, says Gopal.

Now the immediate intervention that should be made is to give passage to

traditional fishermen to venture into their fishing grounds. There should be proper demarcation in the sea, and the fishermen should be covered under special welfare schemes. They should be provided with alternative sources of income, through vocational training, says Ashish Senapati, the project director of Project Swarajya, an NGO in Kendrapara district.

The fishermen in the Mahakalpada area are mostly post-Partition immigrants and a large number are Bengali refugees from the then East Pakistan (now Bangladesh), who settled on land provided by the government. Most—80 per cent—of the coastal villagers are Bengali-speaking people who eke out a living by fishing. Being immigrants, they are a political minority, and their voices remain unheard. They are just used as a vote bank, says Rajesh Behera, a freelance journalist.

In last two years, the coastal villages of Kharnasi and Ramnagar have seen at least seven persons committing suicide and seven more reporting severe mental distress, unable to feed their families and repay bank loans after they lost their traditional means of livelihood due to the fishing ban.

Official ignorance

Both Jyotiprakash Das, the District Collector of Kendrapara, and Suresh Mohanty, the Chief Wildlife Warden, claimed to be unaware of the deaths in the

fishing community, reportedly induced by the poverty that resulted from the fishing ban. But they did not hesitate to accept the fact that the livelihoods of the fishermen have definitely been affected by the ban and that they are yet to provide a single alternative source of livelihood for them. “Definitely, the turtle conservation and fishing ban has had a great impact on the fishermen. From time to time, we visit the places that have reported the deaths, but officially, I can’t say that the deaths are due only to the fishing ban. A proper investigation is needed,” said B. C. Hembrum, a Fisheries Department official at Kujang.

It is high time that the whole international community, the government machinery, turtle conservationists, environmentalists and NGOs start thinking of the interests of the fishermen and their families and communities, and link these with the protection of the olive ridley turtles.

CASE STUDY 1: Gauranga Saha

Gauranga Saha of Kharnasi village died on 14 March 2004 at the age of 50, leaving behind his 44-year old wife, Arati, and five children—two sons and three daughters, one of whom, the second, Tulasi, 20, got married last year. The eldest son, Deepak, is 24 years, and the youngest, Debabrata, 15, studies in the ninth class. The other two daughters are Nilima, 22, and Bulu, 18.

Saha committed suicide by consuming poison, confirmed his widow. She said that after the fishing ban, he was increasingly worried about the family’s source of livelihood. The family owned four boats, outfitted in 1997 with 10-14 hp motors. A boat costs around Rs250,000 (US\$5,666) and typically, six persons work on each boat.

Saha was the *sarpanch* (village council leader) of Kharnasi during the last term. He had borrowed Rs150,000 (US\$3,399) from the fish merchants Nari Tarai and Bapina Saha of Paradeep to repair his nets and gear. In 2001 the Forest Department seized two of Saha’s boats. Another boat had already been destroyed in the 1999 supercyclone. In 2002 Saha’s second daughter got married, so he had to borrow Rs2,500 (\$56) from the fish

merchant for the dowry. Thus Saha’s loan burden multiplied as time went by—moneylenders in the coastal villages of Orissa double their interest rates for every three months of default.

According to Arati, since 2001 the family had virtually lost their source of livelihood. Though they had one boat left, the fishing ban prevented Saha from going fishing. Since then, he was a very depressed man. He constantly worried about how they would marry off their two daughters. The elder son had already dropped out of school to help his father. But as they could not venture into the sea to fish, he too sits idle. “Just two days before his death, he bought me a cotton saree as I was managing with just two sarees. He assured me that everything would be fine. He also, at the same time, said he regretted not being able to do a lot of things for the family. Destiny did not seem to support us...Who knew those would be his last words?” Arati sobbed.

Saha ended his life by consuming poison when the entire family was asleep. When they did not find him on the bed in the morning, they searched all around and finally found his body in an isolated room, which had been lying unused for a long time.

The family plans to hand over their only boat to Bapina, the fish merchant, to repay a debt of Rs70,000 (\$1,577). Their current financial condition is miserable. Deepak, the elder son, is unemployed and idles out the fishing ban period; he can get work on other boats as a deckhand for only two months, earning Rs500 (\$11) per month. Arati sells puffed rice, for which she earns Rs2 (\$0.05) a day. Her daughters roll *beedis* (cigarillos). “For 1,000 *beedis*, we make Rs30 (\$0.7). To bind 1,000 *beedis*, we take two days, so per day, we get only Rs15 (\$0.35). And in a month, we get work for only 12 to 14 days,” Nilima said. That means that on average both sisters earn about Rs225 (\$5) per month. Add to this their mother’s income of about Rs90 (\$2), and their total monthly income comes to about Rs 315 (\$7), or yearly, Rs4,780 (\$108).

CASE STUDY 2: Bidyadhar Ram

Bidyadhar Ram, 35, of Kharnasi village committed suicide by hanging himself one night in an abandoned thatched

building near his house in December 2005. His widow, Sikha, is 32 years old. "For the last few years, he was depressed and frustrated," she said. "One day two months ago, in December 2005, he came and told me that he could no longer maintain us because he had a loan burden of Rs10,000 (\$225), accumulated over time from borrowings from the trawler owners of Paradeep.

Ram did not have any boat of his own; he worked on trawlers as a helper, earning Rs100 (\$2.25) daily. I decided to go to my parent's home for some time, thinking that I would return with my children when the fishing starts.

The day after reaching my parent's house with my children, I was informed that Ram had committed suicide by hanging himself. If I could have smelled his intention, I would never have left him," Sikha lamented. Sikha said that though they were not financially very sound, they managed a hand-to-mouth existence. Their problems started over the last five years. When the fishing ban got longer, Ram could not earn anything, and so he started borrowing money from the trawler owner whom he used to work for earlier.

Asked whether they had had a fight before she left for her parent's house, Sikha said: "It soon came about that we couldn't provide a square meal for our children.

That irritated me and frustrated him. So we had arguments and fights sometimes, like any family in a similar situation, I guess. My husband was rendered helpless. He tried to go outside and get work as a wage labourer but in this area, no work was available."

Sikha now stays in a one-roomed thatched house with her three children and old mother-in-law. The eldest daughter, Mausumi, is 14 years old. The two sons, Bitu, 10, and Bibekananda, 7, are with her mother. The family does not own any land. They built their thatched house on government land. Their only source of income is the daughter, Mousimi, who now works as a maidservant in a nearby village. "I have to walk at least 2 km to reach that village. They pay me Rs2 (\$0.05) daily," Mousimi said. Both the sons have been withdrawn from their schools and will be sent to the town to work as child labour, according to their mother.

CASE STUDY 3: Sukumar Sarkar

Sukumar Sarkar, 54, of Pitapata village committed suicide by consuming pesticide in March 2004. He had three children—daughters, Sabita, 23, and Binita, 21, and a son, Bhabani, 20. His daughters had been married off before his death. His widow, Golapi, left the village with her son last year.

Though we could not contact them, we could gather information of the family



from the president of the *panchayat* (village council), Narayan Haldar, and the villagers. According to them, Sarkar owned two gillnet boats, fitted with 10-15 hp motors. In 2002, the Forest Department seized both the boats. Though Sarkar managed to work on other boats for some time, after the fishing ban, all fishermen, including the trawler owners, were in financial difficulty. Sarkar managed to marry off his daughters by borrowing some money. Meanwhile, he fell ill and could not go out in search of work. The fish merchants from whom he had borrowed money would frequently badger the family for repayment, so one day, Sarkar's son, Bhabani, migrated elsewhere and his widow Golapi went to stay with her daughter-in-law.

CASE STUDY 4: Rashyamaya Mandal

50-year old Rashyamaya Mandal of Ram Nagar village committed suicide on 10 April 2002. Mandal had six children—three daughters and three sons. The eldest daughter, Sabitri, is 26 years old; the other children are: Ganesh, 24; Laxmi, 22; Bijili, 21; Sanjay, 15; and Pintu, 14.

According to Mandal's widow, Kalidasi, they had one motorized 20-ft gillnet boat, which they had already lost to the 1999 supercyclone. Besides, they had one country boat and two acres of land, on which they sometimes grew paddy. "We were living hand-to-mouth because we

had a large family, with six children. My elder son abandoned his studies to go fishing with his father. When the ban was imposed, our economic condition got worse. Meanwhile, the marriage of our elder daughter, Sabitri, was finalized. My husband took a loan from the bank for her marriage. To repay the loan, we mortgaged our two acres of land to Ranjit Mandal of Ramnagar and Mahant Babu of Kharnasi village. During the fishing ban, we faced lots of problems in meeting our daily needs. My husband's frustration from the financial crunch cost him his mental balance. He began to behave abnormally and went out for days together. My children had to search for him and bring him back home. One day, all of us went to attend a social function and when we returned home late in the evening, he was no more. He had committed suicide by hanging himself," Kalidasi burst out in tears.

After Mandal's death, the family had to sell their country boat for Rs2,500 (\$56), though its market value is almost Rs7,000 (\$158). Their land was confiscated by Ranjit Mandal and Mahant Babu, as they could not repay their debt. Now they have neither land nor a source of livelihood. The elder boy, Ganesh, is now the sole earning member of the family. Ganesh used to work as a casual labourer for Rs50 (\$1) per day. But since there are no jobs easily available in the village, he has to go far off in search of work, and gets to work for only 10 to 12 days in a month during the seven-month fishing ban period. Occasionally, he finds work on a trawler when the fishing ban has been lifted. His monthly income is about Rs600 (\$14). His mother sells dried cowdung cakes, but makes very little income from her work. The total monthly income of the family is Rs720 (\$16). The six members of the family have to survive on that amount.

CASE STUDY 5: Sripad Jagdar

48-year-old Sripad Jagdar of Ramnagar village died in November 2004, leaving behind four children: Ranajan, 24, Ranjit, 23, Sapan, 16 and Sanjay, 12. His wife, Srimati, said that Jagdar had one motorized 10-hp gillnet boat, which is still with the Forest Department. Though they did not have any land of their own, Sripad could earn enough for his family, hiring other boats for fishing. Before the ban was

imposed, he was earning up to Rs4000 (\$90) per month. After the ban, gradually the family income shrunk and soon became insufficient for a decent living. Meanwhile, Sripad contracted a tumour in his abdomen, and doctors referred him to the city hospital.

“At first, we somehow managed to collect Rs15,000 (\$338) by borrowing and got his operation done in a hospital in the capital. When he fell ill again, the doctor diagnosed it as a stone in his kidney, and advised us to take him to Hyderabad for treatment, but we could not since we were left without even a single paisa,” Srimati said. As a result, he remained at home and ultimately died for want of proper treatment.

“If fishing had not been banned, and our fishing activities had continued as earlier, we would not have lost our father. You are directly or indirectly forcing people to die. It’s happened to us,” laments Jagdar’s eldest son, Ranjan. All the three brothers now collect shrimp fry from the river, each earning about Rs7-10 (\$0.22) per day. They have no cultivable land, and only a mud house to live in, and their mother does not even get a widow’s pension from the government.

CASE STUDY 6: Jagdish Das

Jagdish Das, 55, committed suicide by consuming poison in September 2003. His wife, Kalpana, said that after the fishing ban, both his 14-hp motorized boats got destroyed. Das has seven children: four sons and three daughters. The earnings from his two boats were not sufficient for the large family. Besides, all the children were studying, and there were loans to be repaid.

Being very introvert by nature, Das never discussed his financial condition with anyone, not even with his wife. The couple had great hopes for their two sons who were doing undergraduate studies. Both hoped to get good jobs once they graduated. Meanwhile, Das developed a physical ailment, but the family had no money to take him to the hospital. Kalpana then decided to sell their only house to treat her husband. Though she broached the subject with him, he never responded. Two days later, he committed suicide.

Now the Das’ do not have a source of income. Though the two sons gained some sort of employment in a private school, they have not started getting salaries. Das’ sons were very reluctant to give an interview. They wished to regard the whole thing as a family affair.

CASE STUDY 7: Birat Haldar

Birat Haldar of Kharnasi died in January 2003 after consuming poison. He leaves behind his wife Deepali, and two sons. They now survive by working on trawlers and collecting shrimp fry from the creeks. Though we could not meet them, the villagers of Kharnasi confirmed Haldar’s death and his family’s plight.

CASE STUDY 8: Jodan Biswas

Jodan Biswas, 46, of Ram Nagar, committed suicide by consuming poison. He leaves behind a son. The small family had been earning a living from fishing. Biswas had one boat, which has since been taken over by the fish merchant, to whom he owes Rs40,000 (\$903), which he had borrowed for the treatment of his wife’s tuberculosis, which she never survived. His wife’s death and the financial crisis following the fishing ban forced Biswas to commit suicide. His only son has since left the village.

This report has been filed by Sarada Lahangir (sarada_india@sify.com), correspondent, ANI, Bhubaneswar, Orissa, India

Braving the perils of the sea

The Third International Fishing Industry Safety and Health Conference addressed the issue of safety and health in the fishing industry

Fishing at sea has been rightly described as the most dangerous occupation in the world. Based on statistics maintained by countries on fatalities at sea, it is estimated that about 24,000 deaths occur annually. The problems are more acute in small-scale fisheries where safety and health aspects are totally neglected and, in the absence of reliable statistics, it is difficult to get a clear picture of the issues that confront the small-scale fishers. While the government has paid little attention to this growing problem, the fishers themselves appear least concerned about their safety and health, continuing to brave the perils of the sea, and living on the edge.

Overexploitation of the coastal fish stocks has forced more and more small-scale fishers to move offshore in pursuit of fish. In many developing countries, small-scale boats fish all over the exclusive economic zone (EEZ). While there have been significant advancements in fishing technology, similar improvements have not happened to fishing boats, resulting in increased accidents at sea. Poor boat and engine maintenance, fatigue from excessive days at sea, and lack of communication and safety devices on board are some of the larger issues contributing to the poor safety and health regimes in small-scale fisheries.

The Third International Fishing Industry Safety and Health Conference (IFISH 3) held at Mahabalipuram, Chennai, India, from February 1 to 4, 2006 focused on the safety and health issues of small-scale fishers. Organized jointly by the Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO), the Food and Agriculture Organization of the United Nations (FAO) and the National Institute for Occupational Safety and Health (NIOSH), Alaska, US, the conference

brought together 52 experts from small-scale and commercial fisheries as well as from governments, who debated many aspects of the subject. They included worldwide safety challenges facing the fishing industry; regional approaches to sea safety; safety equipment and training of crew; injury prevention and health promotion; fishing vessel and equipment design; and international standards and status reports.

Lack of reliable statistics has been a major constraint in addressing the sea-safety issues of small-scale fisheries in developing countries. Better estimates are needed on causes of accidents leading to deaths and injuries. This would enable proper understanding of the problems and also in finding solutions. While governments should set up mechanisms for systematic collection, collation and analysis of information, it is also essential to involve fishers and their associations and families, as well as epidemiologists.

Small-scale fisheries often lack a proper certification system for boats, and vessels are constructed by persons with traditional skills handed down from one generation to another. Some small vessels go into the deep seas in search of fish, though they are not equipped to do so; they run into both safety and legal problems.

Poor certification

Registration and insurance of small fishing boats, and better co-ordination of vessel monitoring and community participation programmes can strengthen safety at sea. Also important are the introduction of a vessel monitoring system for larger vessels, and first aid for victims of injuries at sea. In many developing countries the responsibility

for fishing vessel safety lies with many government departments, creating ambiguity.

Repetitive training, constant re-enforcement, management commitment and safety inspections have together reduced, to a large extent, fatalities at sea in the commercial fisheries; the same needs to be done in small-scale fisheries too.

A good balance is needed between 'hardware' and 'software'. At present, the cost of safety and communication equipment is prohibitive for small-scale fishers. While very high frequency (VHF) devices are inexpensive sea-safety tools, their range needs to be extended. A coastal radio network can be very useful for fishermen. The benefits of satellite weather prediction and of simple devices like hand-held radios should be made available widely to artisanal and subsistence fishermen.

In many countries the Coast Guard is responsible for protecting fishermen and assisting them at sea. They are also responsible for undertaking search and rescue (SAR) of fishermen in distress. However, SAR operations are expensive. For example, the Indian SAR region comprises 4.6 mn sq km, and the annual expenditure on SAR is estimated at approximately US\$ 1 mn. Clearly, the cost of SAR operations must be lowered.

Savings from such reduction could be used to subsidize sea-safety measures.

A related area of neglect is health. HIV/AIDS is a major threat to the health of fishermen in many parts of the world. A community health model should be adopted to tackle this and other diseases such as tuberculosis, which is commonly prevalent among small-scale fishworkers.

The United Nations agencies responsible for fisheries (FAO), working conditions of labour (the International Labour Organization, ILO) and maritime safety of vessels, equipment and life (the International Maritime Organization, IMO) have so far not been successful in their efforts to bring out guidelines/regulations that address the issues of small-scale fishing vessels, including the safety and health of workers on such vessels. The SOLAS (Safety of life at sea) and GMDSS (Global maritime distress and safety system) regulations do not apply to small-scale fishing vessels. The proposed ILO work-in-fishing Convention is strict in relation to larger vessels but flexible with small-scale vessels. There seems to be a lack of interest in the safety of fishing vessels below 12 m.

Various codes

The FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels (Parts A and B) as well as the FAO/ILO/IMO Voluntary Guidelines for the Design,

Construction and Equipment of Small Fishing Vessels are currently being revised and will be published soon.

The Code of Conduct for safety of fishing vessels should also be implemented. Fisher groups should be involved in the decision-making process. However, safety instruments can be useful only if they are implemented and enforced; this is mainly the responsibility of the governments.

Safety at sea depends largely on awareness, prevention and mitigation. Documenting best practices and disseminating sea-safety information through popular literature and the electronic media would help fishers gain the right knowledge. Also, family members, including women and children, should be approached for long-term success with safety. Women constitute a powerful pressure group and they have often taken the lead in highlighting problems of sea safety and work conditions in fishing.

The 26 December 2004 Indian Ocean tsunami killed a quarter of a million people, and made many more homeless and jobless. The absence of a proper system for boat registration, and of systematic data, compounded the problem of relief for fishermen. The tsunami generated several lessons and forced a fresh look at the development agenda in the tsunami-affected countries. The proliferation of new boats in the post-tsunami period throws up safety considerations too.

IFISH 3 succeeded in increasing awareness on the safety and health issues of fishers, especially those belonging to the small-scale category. The challenges for the future relate to government regulations, awareness and outreach programmes, and data organization and collection. Improvements are needed in the areas of communication, equipment and materials, training, community health, data collection and surveillance mechanisms. Political will is also essential to improve the safety of fishers worldwide. 3

This piece is by Yugraj Singh Yadava (yugraj.yadava@bobpigo.org), Director, Bay of Bengal Programme Inter-Governmental Organization, Chennai, India

Aiming for integrated intervention

These recommendations were made at the ICSF's Chennai workshop on post-tsunami rehabilitation

The past year has seen considerable mobilization of aid and diverse interventions towards relief and rehabilitation of tsunami-affected populations in Asia, including fishing communities, who are considered among the worst affected.

A little over a year after the tsunami and after taking stock of interventions aimed at rehabilitating fishing communities, we—organizations that have been working with fishing communities for a considerable period of time in Sri Lanka, Indonesia, Thailand and India—wish to emphasize aspects that need to be integrated into the ongoing interventions of governments, multilateral agencies and NGOs.

Land and shelter

1. It is important to urgently resolve issues still hindering completion of permanent housing as part of tsunami rehabilitation, particularly issues of land allocation, after paying special attention to the problems of tenants and the homeless. Where communities decide to relocate, rights to vacated coastal lands should remain vested with the community.

2. Housing sites for fishery-dependent tsunami victims should be located at a convenient distance from areas where fishing communities store fishing equipment, access fishing grounds and dry fish. It is important to ensure common quality standards, use of locally available material and technology, proper habitat planning, basic amenities, equity and the involvement of the fishing community in the reconstruction process.

3. Titles to houses built as part of tsunami rehabilitation should be provided, and should be in the joint names of the woman and the man of the household.

Quality of rehabilitation assistance

4. Tsunami rehabilitation programmes should adopt a broader coastal development approach, and should aim to improve the quality of life and livelihood of coastal communities, including those not directly affected by the tsunami. Particular attention should be paid to historically marginalized communities and victims of conflict.

5. Governments should put in place mechanisms for the maintenance of public utilities provided by donors/NGOs as part of tsunami relief/rehabilitation programmes.

6. Mechanisms for maintaining community assets created post-tsunami, such as auction halls and fish drying and processing facilities, should be assessed, and, where lacking or inadequate, should be established, in participation with communities.

7. Transparent, single-window mechanisms should be set up to register complaints about the quality of the tsunami rehabilitation that has been delivered, as, for example, poor housing and poor-quality boats. Such complaints should be addressed in a timely manner.

8. Regional and other imbalances in the provision of tsunami rehabilitation assistance should be assessed, and equity in access to aid, ensured.

9. Mechanisms for co-ordination of tsunami rehabilitation at different levels, and between various actors, should be established/strengthened. Government-NGO partnerships for co-ordination of tsunami rehabilitation should be fostered.

10. Mechanisms to promote accountability of the different actors



involved in tsunami rehabilitation—governments, NGOs and others—should be established.

Local institutions

11. Under tsunami rehabilitation, local and traditional institutions should be strengthened, after assessing their roles, potentials and limitations. A coherent and sensitive strategy should be developed to work with them and to strengthen them in the long run.

Protection and restoration of coastal habitats

12. Protection and restoration of coastal habitats and biodiversity should be undertaken on a priority basis and should not be confined to tsunami-affected areas. It is necessary to implement/put in place measures to regulate activities that can pollute, degrade or otherwise harm the coastal environment and its capacity to protect coastal communities from future natural disasters.

13. Habitat restoration programmes in tsunami-affected areas should be undertaken in participatory ways, and should not lead to alienation of communities from coastal lands. The focus of coastal afforestation programmes, such as shelter belts, should be on native, indigenous species, and on building local awareness about their importance.

Fisheries management

14. A scientific assessment to improve understanding about the possible impact of the tsunami on fishery resources and habitats should be undertaken in affected and unaffected areas. There is, for example, reason to believe that even some “unaffected” areas are facing problems of high tides and waves after the tsunami.

15. Further construction and distribution of small-scale fishing vessels as part of tsunami rehabilitation should be undertaken only if there is clear evidence that there has been a shortfall in replacing vessels in particular regions. Where affected persons have not received vessels in a situation of oversupply, mechanisms to provide replacements should be established without further addition to the fishing fleet.

16. Efforts should be made to ensure that appropriate and selective fishing gear compatible with the status of fishery resources are distributed under tsunami rehabilitation programmes.

17. Diversification of fishing activities to target offshore fishery resources as part of tsunami rehabilitation should be undertaken only if there is evidence of resource availability and financial viability of such fishing operations.

18. Replacement of fishing vessels lost to the tsunami that have habitually been targeting fishery resources in the waters of neighbouring countries should be done only after due consultation with stakeholders to lay down conditions of access to such fishery resources.

19. Brackishwater aquaculture and mariculture should be promoted as an alternative source of employment in tsunami-affected areas only after addressing concerns of environmental and social sustainability.

20. Systems for effective registration of craft, gear, engines and fishers should be established to streamline post-tsunami rehabilitation of the fisheries sector and, where appropriate, governments should establish such systems in co-operation with relevant local institutions and NGOs.

21. Participatory programmes to improve and strengthen management regimes for the conservation of fishery resources and protection of fish habitats should be undertaken in the context of post-tsunami rehabilitation programmes. Failures on this account in the past underline the need for greater co-operation amongst fishing communities, departments of fisheries, fishworker organizations, NGOs and scientists.

Sea safety

22. Safety of fishing vessels and fishing operations should be given greater attention under tsunami rehabilitation programmes. Setting standards for boatbuilding and developing awareness among fishers about safety aspects need to be undertaken on a priority basis. Fishers should be imparted sufficient training in basic sea safety in accordance with the draft revised FAO/ ILO/ IMO Fishing Vessel Safety Code and Voluntary Guidelines.

Post-harvest operations in fisheries

23. Tsunami-rehabilitation programmes to support the post-harvest sector should promote labour-intensive, locally appropriate, low-cost technologies of fish processing. The establishment of cold chains should ensure that they benefit, and not displace, the small-scale fish processors and traders.

Insurance, compensation and social security

24. Vessel and crew insurance should be made mandatory for all fishing operations at affordable premia. Social security schemes in tsunami-affected countries, including accident benefit schemes for fishing and other coastal communities, should be developed to enhance long-term resilience and to ensure rapid recovery from disasters. The experiences of State-run systems, commercially run systems and community-managed systems need to be reviewed, to develop systems appropriate to the social, economic and legal environment of each country affected by the tsunami.

Census of fishing communities

25. A periodic census of men and women involved in fishing and fishery-related activities, including migrant fishers, should be undertaken on a priority basis

to facilitate proper enumeration and effective compensation during natural calamities, such as a tsunami.

Disaster preparedness

26. Programmes to enhance community-based disaster preparedness and training should be initiated/continued.

Women in fisheries

27. Women of fishing communities engaged in fisheries operations (fishing, marketing processing, etc.) should be recognized as workers in their own right. Tsunami rehabilitation programmes should be tailored to meet their requirements and should aim to improve women's livelihoods, conditions of work, access to resources and social security.

Diversification of livelihood options

28. The quality of education and opportunities for skill development should be enhanced to enable diversification of the livelihood options of tsunami-affected fishing communities. 3

These recommendations were presented at ICSF's "Regional Workshop on Post-Tsunami Rehabilitation of Fishing Communities and Fisheries-based Livelihoods", held in Chennai on 18 and 19 January 2006. The complete Proceedings can be downloaded from <http://www.icsf.net/jsp/english/pubPages/proceedings/pros08.jsp>.

Learning from experience

The following is excerpted from the Proceedings of the ICSF workshop on post-tsunami rehabilitation of fishing communities

The tsunami that struck countries in the Indian Ocean region on 26 December 2004 caused severe damage to life and livelihood. The impact on fishing communities in affected countries was particularly severe. Apart from loss of life and injury, many households dependent on fisheries lost their houses, craft, gear, equipment and other means of livelihoods. Estimates indicated that damages to the fishing and aquaculture industry were substantial, to the order of US\$568 mn in India, US\$511 mn in Indonesia, US\$335 mn in Sri Lanka, about US\$139 mn in Thailand and about US\$25 mn in Maldives.

It is well known that while natural disasters make no distinction, the ability to face them and recover from them differs substantially, depending on the social, economic, environmental and political reality.

Clearly, the damage from the Indian Ocean tsunami was much greater than it should have been, because of certain underlying realities facing fishing communities along the coast. If longer-term resilience to natural disasters has to be increased, rehabilitation interventions would need to take into account, and address, issues requiring interventions of a longer-term nature.

To obtain a comprehensive understanding of the interventions that have taken place to rehabilitate the fisheries sector and communities dependent on fisheries and to identify the emerging issues/challenges, ICSF commissioned studies in four countries, namely, Indonesia, Thailand, Sri Lanka and India, in October 2005. In addition to these four studies, ICSF also commissioned a study in India on “The Role of

Traditional *Panchayats* in Coastal Fishing Communities in Tamil Nadu, with Special Reference to their Role in Mediating Tsunami Relief and Rehabilitation.”

These studies were presented at the *Regional Workshop on Post-tsunami Rehabilitation of Fishing Communities and Fisheries-based Livelihoods* held in Chennai, India on 18 and 19 January 2006.

The workshop provided a constructive space for dialogue between fishworker organizations, NGOs, policymakers and representatives of multilateral agencies, from India, Sri Lanka, Thailand, Indonesia and Maldives. It was aimed to:

- analyze the status of rehabilitation efforts in the fisheries sector and fishing communities; and
- identify issues that need to be addressed in ongoing rehabilitation projects vis-à-vis the fisheries sector for sustaining livelihoods in the longer term.

A one-day meeting of fishworker organizations and NGOs working with fishing communities in tsunami-affected countries was held on 17 January, prior to the regional workshop. The meeting was meant to:

- provide an opportunity for participants from various countries to share experiences and learn from one another; and
- enable participants to agree on basic issues that need to be addressed by ongoing rehabilitation interventions, some of which are likely to be country-specific.

The one-day NGO meeting was held at the YWCA Conference Hall, Chennai. A total of 50 delegates participated in the meeting. The meeting enabled organizations working with fishing communities to share experiences and to learn from one another. It also took stock of rehabilitation interventions and agreed on some basic issues that need to be addressed by ongoing rehabilitation interventions, keeping in mind the fact that rehabilitation initiatives by NGOs, multilateral agencies and governments are still underway. These recommendations were presented to the workshop on 19 January 2006.

The regional workshop was organized at the IMAGE Auditorium, in Chennai, Tamil Nadu, India. A total of 90 persons, primarily from the tsunami-affected countries of Indonesia, India, Sri Lanka, Maldives and Thailand, participated in the workshop. They included representatives from fishworker organizations, NGOs and multilateral organizations such as the Food and Agriculture Organization of the United Nations (FAO), the World Bank, the Asian Development Bank (ADB) and the United Nations Development Programme (UNDP). Government representatives from all the above countries also participated in the workshop.

The workshop programme included presentations of the country-level

studies, followed by discussions in the plenary. Multilateral agencies present provided an overview of their work and proposed future interventions. In a panel discussion, representatives of governments and NGOs highlighted their future priorities for tsunami rehabilitation work. The recommendations from the NGO meeting were also presented.

The field visit provided participants with an exposure to post-tsunami interventions as related to house construction, habitat restoration, appropriate technologies, alternative employment and co-ordination of aid, taking place in the districts of Nagapattinam and Villupuram in the State of Tamil Nadu, India, through interactions with government officials, women's self-help groups, NGOs and fishing communities. Initiating the inaugural session, Chandrika Sharma, Executive Secretary of ICSF welcomed the participants to the workshop and gave a short background about the organization. ICSF was formed in 1986 to defend the interests of the small-scale fisheries sector, particularly in the developing world, and to ensure their participation in important decision-making processes affecting their lives.

Sharing information

An important part of ICSF's work is to make available information for, and about, small-scale fishworkers, to bring

greater visibility to the sector, through its Documentation Centre. Towards this end, ICSF brings out various publications, such as *SAMUDRA Report*. A more recent initiative is the *SAMUDRA News Alerts* that go out free to subscribers all over the world on a daily basis.

The Documentation Centre also maintains active links with other such centres in the French and Spanish-speaking regions. ICSF has also been organizing workshops for small-scale fishworkers and NGOs, providing a constructive space for dialogue between fishworker organizations, NGOs, scientists, governments, researchers and others. The present workshop was in line with this, Chandrika Sharma said in conclusion.

R. Santhanam, Special Commissioner and Commissioner for Revenue Administration and State Relief Commissioner, Government of Tamil Nadu, India, in his inaugural address, said that the workshop was being organized at the right time, just over a year after the tsunami disaster struck the State. This is a good time to take stock of the situation, to review the state of rehabilitation efforts, to identify issues that need to be addressed, and to chalk out issues for the implementation of projects that are sustainable in the long run, said the State Relief Commissioner.

Santhanam congratulated ICSF on the reports brought out. He complimented, in particular, the author of the India study for covering the entire gamut of fisheries rehabilitation, and for the indepth analysis of significant issues in the rehabilitation process, namely, relief and compensation, livelihood restoration, relocation, role of institutions like fishermen's *panchayats* in India, the problem of surplus boats, the dilemma of workers-turned-owners, and the rights of fisherwomen in the changed structure and scenario.

Santhanam also referred to various other studies, including those brought out by the Tata Institute of Social Sciences (TISS), the Fritz Institute, the South India Producers' Association (SIPA) and others, pointing out that such studies undertaken by independent organizations, made

useful and important contributions towards providing directions to the rehabilitation processes, and identifying corrective actions, wherever necessary.

He drew attention to the fact that the tsunami disaster was the worst in living memory with the largest proportion of the damage concentrated in fisheries, housing and infrastructure. He said that it was not surprising that there was a greater focus on fishers during the relief and rehabilitation process.

The Government of Tamil Nadu not only concentrated on fishers but also took into account the requirement of other affected sections like small and marginal farmers, agricultural labourers, businessmen, petty traders, orphaned children, adolescent girls, students and various other categories of people, and provided relief packages to every category.

Just as ICSF has commissioned studies for improving the lot of fishers, similar studies by others on other affected groups would be appreciated, as the common objective is to strive for a safe and secure future for all those who are affected by the tsunami in some way or the other.

Santhanam stressed that the Tamil Nadu government's response to the tsunami disaster has been characterized by a willingness to provide adequate space for civil society organizations (CSOs), to remove bottlenecks for their functioning, and be accessible and receptive to feedback and act upon it promptly. The State Relief Commissioner then proceeded to flag three main issues that are the main areas of concern:

(i) Proliferation of boats after the tsunami
In the post-tsunami period, the Coromandel coast saw the presence of a large number of NGOs and their desire to do something quick and visible in the tsunami-affected areas. This resulted in a large number of people who previously had no boats now getting boats.

This is likely to result in a chain of other events such as shortage of people working as crew; increased dropouts from schools due to fishers taking their children to sea; competition by more boats from the same village for finite fishery resources in the

same fishing area, causing tensions both at sea and on shore; and finally, an aggravation of tensions resulting from the changed social structure of workers-turned-owners.

Santhanam also pointed out that beneficiaries who have received boats have expressed concerns over the quality of boats built in a hurry and supplied by the NGOs. This, in turn, raises safety concerns.

The other issues include a surplus of boats, alongside a shortage of nets and other equipment required for fishing; the high cost of maintenance; the unsuitability of boats to local conditions or requirements; and variations from the preferred design and make of engine. These are very serious issues that have to be dealt with and for which solutions have to be found, said the Commissioner.

(ii) Relocation

The State Relief Commissioner said that the Chief Minister of Tamil Nadu had announced a well-thought policy on housing in March 2005. The fishing communities in the tsunami-affected areas were faced with a difficult situation of deciding between safety and livelihoods. He said that while safety concerns required them to go inland, their livelihood interests forced them to be at the shoreline.

The governments' housing policy is in accordance with the coastal regulation zone (CRZ) notification, and gives the option to the fishers to relocate beyond 200 m from the high tide line (HTL) if they so wish, reiterated the Commissioner. There is no compulsory relocation. Those who are willing to relocate have been assured of a house worth Rs150,000 (US\$3,388), along with land. Those not willing to relocate would be allowed to repair, without government's assistance, if the structures are authorized and were in their current plots prior to 1991.

The Commissioner said that the government's policy is driven purely by safety considerations. There is a misconception among some people that the space vacated by fishermen who chose to relocate would be given to some other industries, which would totally destroy the fishers' livelihood.

The Chief Minister had already assured the State Legislative Assembly that the vacated land would be entered in the Prohibitory Order Book (POB) and would be maintained for public purposes, which include the occupational use of beach by the fishing community. The community would be allowed to keep their boats, nets, etc. in this area. Since new houses are to be built as per the technical specification of the government for safety and durability, it is in the interest of the community to

look at the relocation issue in the right perspective, he stressed.

(iii) Alternative livelihoods

Santhanam said that the issue of alternative livelihoods was important in the current situation where the tsunami has brought to the fore the risks involved in coastal lives. The limited nature of the aquatic resources has added another dimension. The government has addressed these needs in right earnest, and a dedicated programme of alternative livelihoods is being formulated in consultation with the affected communities.

Recognizing the advantages of group-based activities, special attention is being paid to ensure that these opportunities are delivered through self-help groups. Initiatives such as seaweed farming, crab and lobster fattening, etc. are being looked at as options. Generally, all these have got very good export markets, and can make a lot of difference to the fishers. The State Relief Commissioner emphasized the importance of establishing forward linkages if such activities are to be done in a sustainable manner.

He said that the coastal economy supply chain could be substantially altered through the identification and implementation of alternative livelihood opportunities. These will not only supplement the income gained but also provide for substantive risk diversification for the fishing communities. There is a provision of nearly US\$50 mn for livelihood promotion in the Asian Development Bank (ADB) Tsunami Emergency Assistance Project, which is now being implemented in Tamil Nadu.

Similarly, the post-tsunami sustainable livelihood programme funded by the International Fund for Agricultural Development (IFAD) focuses mainly on community resources management, community institutions, micro- and rural financial institutions and micro-enterprise development. He hoped organizations working with fishing communities, such as those present at the workshop, would help in the identification and implementation of

projects, as that would go a long way in the restoration of the community that was the worst affected in the tsunami.

V. Vivekanandan Chief Executive, South Indian Federation of Fishermen Societies (SIFFS) and a Member of ICSF, provided the background to the workshop. He said that one year on, it was a good time to take stock and reflect on post-tsunami relief and rehabilitation processes. ICSF had been, from the very beginning, monitoring and trying to follow up on the tsunami relief and rehabilitation process. He pointed out that, even though coastal areas are disaster-prone, many present at the workshop did not have much previous disaster experience.

The experience that has been gained in the post-tsunami period will help us to be better prepared for future disasters. There have also been amazing opportunities for comparison due to the vast diversity of the affected areas/countries. Areas and countries seen as distinct geopolitical entities, which previously had rarely come together to think of common approaches and programmes, were united by the indiscriminating tsunami. This has also given an excellent opportunity to look at fisheries issues with a common perspective.

Vivekanandan pointed out that Southeast Asia, for example, is way ahead of south Asia in terms of community-based coastal resource management (CBCRM). It is with this kind of a regional perspective that ICSF decided to take stock of the situation one year after the tsunami by launching country-level studies in India, Indonesia, Thailand and Sri Lanka. It was decided to present these studies and organize a discussion and debate around them. The Fisheries Department of the Maldives had also expressed its interest in the workshop even though ICSF itself has not been able to commission a study in the Maldives. The workshop thus offers the opportunity to discuss the post-tsunami situation in five tsunami-affected countries in Asia.

Long-term interventions

Vivekanandan then proceeded to give the schedule of the workshop. He pointed out that this was the time that multilateral agencies, with large funds at their disposal, were starting their longer-term

interventions. It is important to know their plans for tsunami rehabilitation, with the aim of coming out with the best way to take the whole process of rehabilitation forward. Therefore, following the presentations of country studies and inputs by government officials present on the country situations, multilateral agencies would present their plans for the coming period.

And finally, the fishworker perspective would be presented in the form of a set of recommendations that had been drafted during the NGO meeting prior to the workshop. The recommendations, he said, were based on issues that emerged during country-level processes and consultations with affected communities.¶

The Regional Workshop on Post-tsunami Rehabilitation of Fishing Communities and Fisheries-based Livelihoods was held at Chennai on 18 and 19 January 2006

Don't be hasty and impetuous

This note cautions against hasty judgement of the role of women in the fishing-caste *panchayats* of Tamil Nadu, India

The tsunami of 26 December 2004 and the relief-and-rehabilitation efforts that followed have swung the spotlight on to the fishing-caste *panchayats* (village councils) of the Coromandel coast of Tamil Nadu, India.

Non-governmental organizations (NGOs), government agencies and concerned intellectuals in India have suddenly discovered, amongst the physical wreckage, the heartbeat of an unknown and vibrant institution. It stood in their way, mediated their well-intended efforts, and, in the end, won many of their hearts.

However, in assessing the role of fishing-caste *panchayats* for the future, one must keep in mind some troubling aspects. One of the most tenacious of these is gender. All observers agree that caste *panchayats* are dominated by men. Opinions differ, however, on whether this is harmful to the interests of fisherwomen, and whether the situation can be remedied.

Having studied the functioning of caste *panchayats*, particularly with regard to their role in the regulation of marine fisheries, I would caution against hasty judgement and impetuous action. *Panchayats* should be understood in relation to their social and historical contexts. One should also take care not to throw the baby out with the bathwater.

Caste *panchayats* of the Coromandel coast are remnants of pre-colonial village administration forms of government that have survived the imposition of colonial rule and, subsequently, the establishment of the democratic republic of India. They have endured, first of all, because of the isolation of coastal areas and the government's long-term disinterest in the affairs of coastal villages. Above all,

however, they have lasted because of their essential role in village life. Settling disputes with regard to a wide range of problems—from fishing rights to domestic affairs—*panchayat* leaders decide on issues that otherwise tend to split the community.

They determine the rules for fishing in their sea territories as well as the arrangements for marketing at landing sites. In times of collective need, such as during the yearly offseason, it is the *panchayat* that distributes food and other necessary items.

When disaster strikes fishermen at sea, the *panchayat* takes action to support the widows. Finally, the *panchayat* is the community's voice to the outside world: an intermediary with the police station, the Fisheries Department, NGOs, and so on. It is in the latter capacity that *panchayats* have recently attained renown.

But the caste *panchayats* of the Coromandel coast are not standalone institutions. They are the tip of the iceberg resting on other village structures, in all of which gender distinctions are a core element. Let us, therefore, take a look at the fishing village as a social entity.

Single ethnic group

Most of the fishing villages of the Coromandel coast are dominated by a single ethnic group: the Pattinavar caste. Each Pattinavar village is broken up into several lineages, or *pangaali* groups, which are constituted according to the patrilineal principle. Patrilinearity implies that children 'belong' and are loyal to their father's family group, rather than to their mother's relatives. As a political unit, each fishing village of the Coromandel coast has three layers: the household, the lineage and the village. Households are

represented in the *pangaali* group, each of which has several leaders.

A selection of these leaders is deputed to the village *panchayat*, which is composed in such a way that it reflects the relative weight of each *pangaali* group. Dominant lineages (either in number or in economic-political significance) exercise more influence in the *panchayat* than do lesser lineages.

Throughout this sequence of institutions—household-*pangaali* group-village—it is men who exercise most influence. This emerges also in the list of village membership, which, along the Coromandel coast, is an official matter. Membership is the prerogative of adult fishermen alone. It is the collective of village members (*varikkaarar* or taxpayer) that maintains the village fund, decides on issues of joint importance, and takes action to enforce whatever decisions have been reached.

It is they who defend the village in times of danger. Contrarily, when a village enjoys an economic bonanza—and tsunami relief can be considered an example of such a bonanza—the goods are divided over the collective of village members. In this case, the system of dividing rights and responsibilities gives advantage to households with a large number of adult men, in opposition to those with many womenfolk. (However,

when it comes to taxes, the situation is reversed.)

From an institutional perspective, therefore, men enjoy more authority in village life than women do. But does this mean that the fishing villages of the Coromandel coast are glaring examples of patriarchal society? There is reason to deny such an interpretation. Fisherwomen along the Coromandel coast are vocal and quite capable of voicing their opinion, even though it sometimes needs to be channeled through men. They tend to control the household's purse strings and have an important say in expenditure. Such an economic position precludes subservience and contributes to clout.

This does not mean that women's position in the village's political system, which culminates in the *panchayat*, cannot be improved upon. It definitely can. There are indications too that the *panchayat* system is flexible enough to incorporate change, provided it is given time.

Debate and negotiation

However, any movement in the direction of larger women's representation should, in my opinion, emerge from the inside, and not from the outside. It should result from debate and negotiation within village society, and follow the local pace, and not be imposed. This, on the one hand, is a matter of respecting indigenous

cultures. It is also a recognition of the value of effective village government, also with regard to fisheries. We should take proper care of our institutional heritage, even though it sometimes contains unpalatable elements.

Gender

This piece is by Maarten Bavinck (J.M.Bavinck@uva.nl), Director, Centre for Maritime Research (MARE), University of Amsterdam, and author of *Marine Resource Management: Conflict and Regulation in the Fisheries of the Coromandel Coast*

Canada



A more direct dialogue

The film under review strives to understand the question of olive ridley marine turtles in Orissa, India, and their interactions with marine fisheries

Throughout the film under review, information is provided in a well-balanced way that keeps the viewer's attention. This readily allows for the marine turtle question and the interactions with marine fisheries in the locality to be understood. The film provides a structured view of the historical context, the current situation and future prospects. It also considers the possible effects of the development of the coast for the exploitation of petroleum and its derivatives, a matter that will affect the habitat and drastically complicate both the survival of the turtles and other marine species that are currently taken advantage of for human consumption.

Considering only the current situation, it is very important that the needs of the population in general and of the fishermen and their dependent families in particular are understood and resolved. Restrictions imposed on the exploitation of resources, in certain areas, will cease to be functional if they do not also resolve the problems of the families who depend on them. For however many regulations may be established, the food needs of the coastal population increase daily, becoming an urgent requirement.

Another issue is that the fishermen do not understand why they are banned from working in the traditional fishing areas they are accustomed to, when they observe that turtles are still abundant, although not all the year round. However, the film can be used to show them that large numbers of turtles are being found dead on the beaches, which indicates that something bad is happening. It also needs to be clarified that the fishermen of the locality know well, where and when they can catch marine turtles, whether intentionally or

unintentionally. As they are the ones who can best help avoid their capture, seasonal and zonal bans must be established through the common consent of authorities and the fishermen or their representatives. If they are established in this way, measures to restrict access to areas of turtle concentration and to delimit seasonal bans will be more easily accepted. In this sense, the film is a positive step, as, through it, a more direct dialogue is possible with all the people involved in the exploitation of marine resources in the area.

One of the most significant parts of the film shows the consequences of fishery regulations, designed to protect turtles, that in some cases have pushed a small number of fishermen to commit suicide. This is not only due to the laws established but also due to the circumstances under which the fishery is developed, where there is an apparent scarcity of facilities to support the fishermen's work or to help them to deal with their economic problems. It is, therefore, most necessary that these social and human dimensions are resolved in parallel with applying fishing restrictions. Also, the lack of credit for the purchase of vessels and fishing gear, increases the problems of the fishermen, and, with no clear solutions being provided, creates a vicious circle between working for turtle conservation and subsistence fishing.

Other options

What other options are open to the inhabitants of the Gahirmatha and Rushikulya coastal regions? Is it possible to project turtles as an ecotourist attraction? Can some of the eggs laid on the beaches during spawning be exploited, for example, through a simple process that transforms them into

powdered egg? It may be possible to establish an organization in the area responsible for ecotourism or utilizing those eggs that have no chances of survival. Questions also remain as to whether turtle eggs are consumed in the region illegally (through smuggling), or whether, in general, turtles are not eaten for religious reasons.

If the community in the area has no tradition of eating eggs, the work to protect the beaches will be made easier.

In major fisheries, quotas for by-catch have been established, as, for example, in the exploitation of tuna in the central Pacific, and when the ceiling is reached, the fishery is closed. Perhaps a system could be set up that puts limits on by-catch that does not affect people's survival. The film does not show whether a complete record is kept of the by-catch (for both dead and live turtles), nor does it indicate whether any record is kept of the number of turtles that are freed alive, and in what conditions they are returned to the sea. This is important for establishing mortality levels, and for understanding the impact incidental mortality has on the population of marine turtles. If no record is kept of by-catch, it will be necessary to design a log, particularly for trawlers and gill-netters. Using the information thus gathered, it should be possible to design a model of the (incidental) fishery, and its effects

over the years, so that it is possible to monitor the positive or negative effects of conservation measures (restrictions, closed fishing areas, restrictions on fishing effort and catch levels).

It is also important to clarify that the species in question "is not in danger of immediate extinction, unless its habitat is radically altered". The distribution of this species (*Lepidochelys olivacea*) is the widest on the planet. However, it is clear that there are places where their populations have reduced drastically, and there are even some beaches where massive spawning used to take place, and where now only a few of the turtles remain. Without any support or protection, it will be difficult for these to recuperate.

There are three countries where populations of this species occur in great numbers. These are India, Mexico and Costa Rica, and in all three countries, the issues are very similar. Fishing interacts with turtle populations, occasioning by-catch and mortalities, and, in each country, efforts to resolve the problem have adopted a different focus.

Incidental mortality

The film does not tell us whether the effects of incidental mortality rates on the abundance of the population have been quantified, nor about the effects on the survival of the populations. In the three countries mentioned, incidental mortality has been reduced substantially, but is still

considered to be very high. But there are no definitive studies.

In Mexico, it has been observed that on the beach of La Escobilla, in the State of Oaxaca, despite commercial catching and high levels of destruction by humans and animals (wild and domestic) on females, nests, eggs and hatchlings, after applying a total closure in 1990, and continuing with protection activities on the spawning beach, the population has remained stable and, in the last decade, has even shown a slight recovery. Activities to protect reproduction on this beach have been carried out since 1973, and between 1987 and 1988, after the turtle populations had reached minimum levels, they recovered and today the populations are considered abundant and healthy. A research centre has been established at La Escobilla, which undertakes monitoring of the species, and also offers alternative work opportunities for a community that was previously occupied with turtle fishing. There has been no significant recovery of the turtles on other spawning beaches in Mexico, possibly because protection and conservation activities have not been undertaken with the same intensity and constancy over the past 20 years. This implies that the recovery of this species can be achieved if protection programmes are implemented, and regulations for the fishery and closed seasons are respected, and if alternative occupations are given to those fishermen whose livelihoods depend on turtles.

The film under review has much about the need for protection and management, implying that the survival of the species may be prejudiced even more if the development of the infrastructure required by the petroleum industry is given the go-ahead. This requires the formation of a powerful and multidisciplinary movement to promote marine resource conservation and to support the dependent populations, given that industrialization in the area will not only affect turtles but also the entire ecosystem of the region. The human population will be particularly affected, as each day their inheritances are diminished, and their chances of survival, reduced. In Orissa, 47.5 per cent of the population live in poverty, including 70,000 fishermen. It is crucial that their

lives are improved, and that, at the same time, nature conservation is enhanced. Both marine turtles and traditional fishing—and their protection—should be seen as priorities. The diffusion of this documentary is a very important contribution towards that goal.

Review

This review is by Rene Marquez-M. (lkempii@prodigy.net.mx), Vice President of the Scientific Committee, Inter-American Convention on the Protection and Conservation of Marine Turtles (www.lacseaturtle.org)

Declaration of Charter

The following Declaration of Charter was adopted at the workshop on "Fisheries and Marine Reserves in India", held in New Delhi, India

Over 50 participants, from across different sections of society—State-level traditional fisher representatives and national functionaries, conservation and environmental groups, fishworker, civil society groups and marine park managers, scientists, academics and experts, were involved in a three-day workshop, between 8 and 10 October 2007, on "Fisheries and Marine Reserves in India" and their relevance.

The objective of the workshop was to facilitate a movement towards sustainable models of development and resource utilization, in order to protect and preserve India's seas and coastal zone for the present and future generations.

The workshop covered discussions and sessions on preserving the health and productivity of India's oceans, and examined mechanisms and options by which the participants can work together to achieve common goals. This included providing an overview of the scientific, institutional and evaluative experiences on marine reserves as a tool for conservation of biodiversity and enhancing fisheries.

Declaration

Conscious of the importance of fisheries as a vital sector of development and high dependence of millions of fisher and coastal communities on the ocean and the coastal environment for their food and livelihood security;

Recognizing that marine ecosystems, in particular, coastal ecosystems, are rich spawning and breeding grounds, and provide vital coastal-protection benefits;



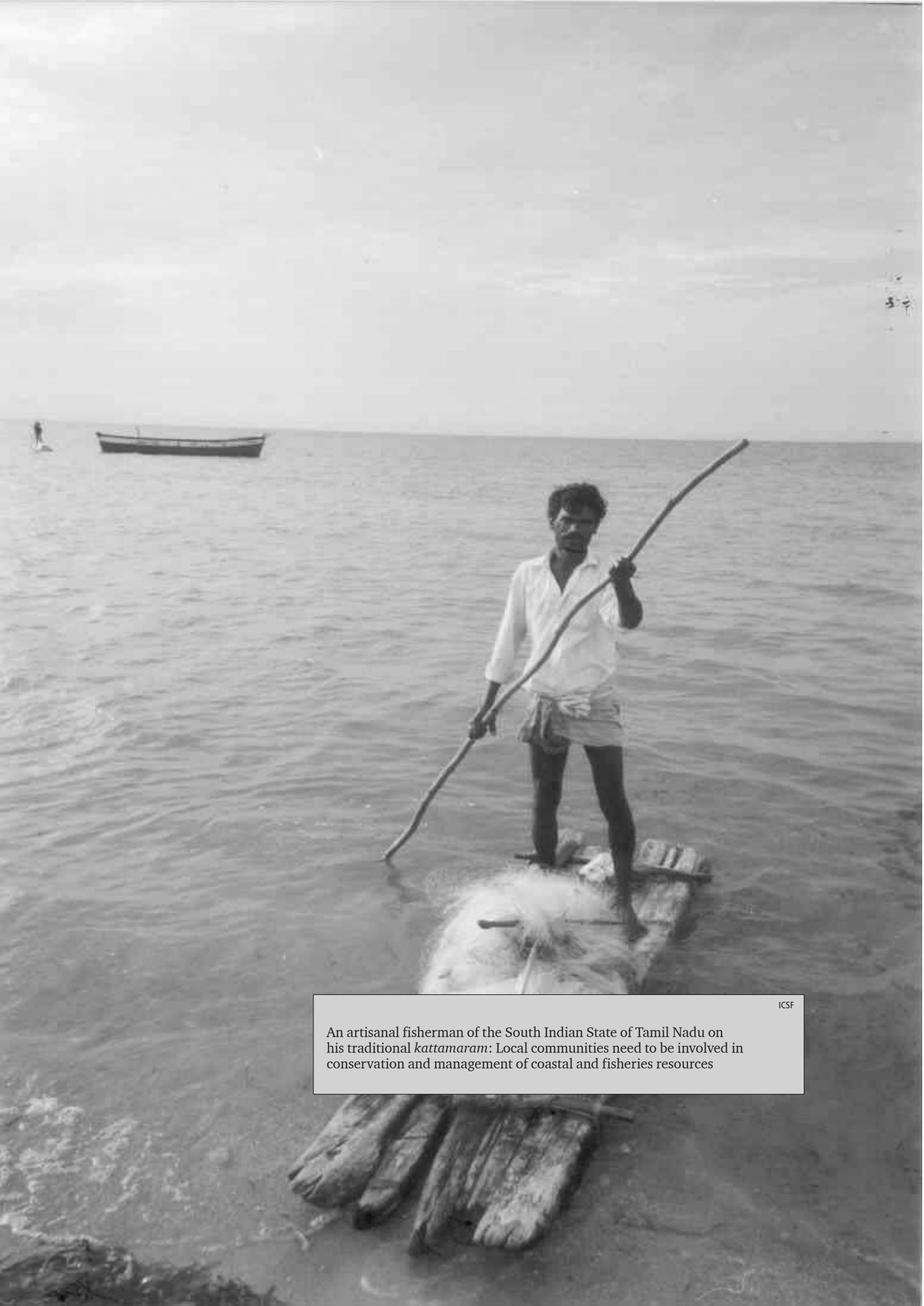
Three-day workshop, between 8 and 10 October 2007, on "Fisheries and Marine Reserves in India" and their relevance

Concerned that the marine environment and, in particular, coastal ecosystems, are under increasing threat of degradation of habitats and depletion of resources resulting from overexploitation and overcapacity, discharge of pollutants from land and at sea, destructive infrastructural and industrial projects, existing and proposed, and impacts of activities such as agriculture, intensive aquaculture and forestry; and the adverse impact of these on the livelihoods of traditional fishing communities and other dependent communities,

This assembly of concerned fishing community representatives, scientists, academics and experts, environmental, conservation and civil society groups hereby declares that it will:

The New Delhi Greenpeace Workshop was conducted during 8-10 October 2007

GREENPEACE



ICSF

An artisanal fisherman of the South Indian State of Tamil Nadu on his traditional *kattamaram*: Local communities need to be involved in conservation and management of coastal and fisheries resources

Commit to promote greater co-operation and co-ordination amongst groups concerned with coastal, marine and ocean issues-with equal emphasis on conservation of marine ecosystems and ensuring that the livelihoods of communities dependent on these resources are sustained.

Strongly recommend

1. The sharing of scientific knowledge and traditional wisdom, expertise and experience on ecosystem-based management approaches, especially in the context of balancing conservation and livelihoods.
2. The promotion of scientific research and long-term continuous monitoring of ecosystems.
3. The promotion of scientific research and long-term continuous monitoring of the socio-economic development of the fishing communities.

Demand that the exclusive economic zone (EEZ) of India should be retained as common property and heritage.

Recommend the enactment of an overarching and comprehensive legislation, which is justiciable, with the following elements:

- Covers the Indian EEZ and coastal zone, based on the ecosystem approach, precautionary principle and polluter-pays principle, to ensure sustainability of both the seas' resources and livelihoods and intergenerational equity.
- This would include setting aside sufficient marine reserves, with legislative support, for the conservation and restoration of the India's coastal and marine biodiversity and to serve as fish reserves. This would be done in consultation with, and participation of, local communities.
- Ensure local community participation in all aspects of decision making and implementation with regard to conservation and management of fishery resources and developmental activities. This should involve a Local Management Network (including community, civil society and governments), which should address social-security concerns such as compensa-

tion, sharing of benefits, education and employment.

- Should be in consonance with international instruments on conservation and management, for example, the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO) and the Convention on Biological Diversity (CBD).
- Should uphold the inalienable traditional and customary rights of fishing communities.
- Its implementation should be transparent, with provisions for social auditing and stringent penalties.
- Prevent, prohibit and regulate all destructive fishing practices. With regard to overcapacity, the process of phasing out should be from bigger to smaller craft and gear.
- All activities impacting the marine environment, such as ocean dumping and other land-based activities, should be strictly regulated under this legislation. Further, any intervention in the EEZ should be subjected to an environmental impact assessment with a clear, legally mandated mechanism to ensure impartiality and objectivity.
- Legislative support for aquarian reforms. In fisheries and other marine-related issues in existing laws)

And until such a legislation is in place, as an interim measure, the implementation authorities be equipped with adequate resources for the enforcement of existing rules and regulations. ¶

For more



www.mpaglobal.org
Searchable Database on the World's MPAs

www.fao.org/fi/website/FIRetrieveAction.do?dom=org&xml=mpas.xml
FAO's Site on MPAs as a Tool for Fisheries Management

Getting Their Act Together

Coastal communities in the Veraval-Mangrol coast of Saurashtra in the Indian State of Gujarat are pushing for fisheries and coastal-area co-management

There has been an interesting sharing of ideas in recent issues of *SAMUDRA Report* on the experiences and principles of co-management. All over the world, fisher communities are trying desperately to safeguard their access to fish resources, while, at the same time, being driven to catch more in order to keep afloat. The fishers of the Saurashtra coast of Gujarat, one of the foremost fish-producing States of India, are no exception, as we happened to realize through a study that we had undertaken on "The Impact of Development on Human Population Dynamics and the Ecosystem" in three locations of the west coast of India, with the help of a grant from the McArthur Foundation.

One of the study locations was the large fishing harbour town of Veraval in Gujarat. The findings of the study were rather revealing, not only regarding the nature of the decline of the over-capitalized trawl fishery, but also the poor environmental and social indicators in a place that had a booming fishery for over 25 years through the 1980s and 1990s. In the community feedback workshops held in 2005, people were also taken aback by the findings of the study for while they were aware that their fishery was on the downswing, they felt challenged to realize that a large number of the children of the community were not in school, that there was a fall in the female sex ratio, and that there was a rise in the levels of morbidity and demands for dowry at marriages. As a community that is basically business-oriented and with a desire to simultaneously claim progress, they found themselves in a prisoner's

dilemma. They threw us the challenge of seeking a way out. By doing so, they were actually inviting us to interact with them on a longer-term basis and, despite the fact that we had no earlier plans of doing so, we accepted to get involved.

The fishery in the area is a trawl fishery along a 40-km coastline between the two fishing harbours of Veraval and Mangrol, which account for a third of the fish catches of Gujarat. There is also a vibrant *hodi* fishery of fiberglass-reinforced plastic (FRP) beach-landing craft, interspersed with the trawlers. We decided to get intensively involved in the fishing harbour/community of Mangrol as the community has traditionally been well organized. We were

All over the world, fisher communities are trying desperately to safeguard their access to fish resources, while, at the same time, being driven to catch more in order to keep afloat.

also fortunate to get a local team that the local community agreed to host. In preparation for the work, we organized an intensive training programme for the team. There were also four representatives from Mangrol and Veraval, selected by the community, who participated in the programme. They actually represented the trawl fishery.

Initiating change

We did not initially mind this fact as it was this sector that we thought had to be involved in initiating any change in resource management. The

*This article is by **Nalini Nayak** (nalini.nayak@gmail.com), a Member of ICSF, and **A. J. Vijayan** (admin@protsahan.org) of Protsahan, an NGO based in Thiruvananthapuram, India*

boatowners were intensely involved in the training programme and, during the subsequent period, they turned out to be the main agents of change in the community. Besides developing an analysis of the fisheries crisis, they were most intrigued by the connections made to the fall in the female sex ratio, the number of school-age dropouts, the high morbidity rates, and the extensive

The fishery in the area has been kept afloat by, on the one hand, State subsidies on diesel and, on the other, by the opening up of export markets and the development of *surimi* plants.

pollution of water bodies, all in a context where the communities were well organized but totally in the hands of men. The inputs on gender analysis and the patriarchal development paradigm helped them to see the negative side of male-dominated communities, where women have no voice, and, as a consequence, the issues of potable water, sanitation and health receive no priority. In fact, the community organizations had seen to it that entry into the trawl fishery was limited to members of the same caste. Yet just as these caste organizations camouflaged disparities in the community, they were unable to manage the manner in which

investments were made in the fishery, which, in turn, aggravated the growing disparities.

The fishery in the area has been kept afloat by, on the one hand, State subsidies on diesel and, on the other, by the opening up of export markets and the development of *surimi* plants. It is otherwise an extremely inefficiently run trawl fishery, which has also contributed to the massive pollution in the harbours. But the government has gradually begun to be less lenient on the diesel subsidies, certain export consignments have been rejected by some importing countries, and the government has begun giving greater importance to developing coastal resources other than fisheries. The fishing communities, therefore, needed to get their act together and think differently about their fishery and its future if they did continue to consider the fishery as a means of livelihood.

Strategies to tackle this problem were developed at the training programme, and a plan was drawn up to set up a coastal area managing council in a year as well as push for co-management of the fisheries. The first step was to develop a general awareness in the community about the inter-relationships among the ocean, the land and the people so that people understand how these affect one another. This was done at several levels through all kinds of community programmes but the strategy in the first year was to:

- develop a forum for women where they could discuss and understand these issues and, at the same time, create a collective to gradually represent their cause and themselves in the community organization (*samaj*);
- create an awareness among the youth and children about the coast and oceans; and
- widen the understanding of the fishers themselves regarding coastal-area issues, and relate these to their fisheries-management possibilities. For this, efforts were made to also include the elected representatives of the municipality in discussions related to these issues so that they would be taken into consideration in town planning.

CHANDRIKA SHARMA/ICSF



A meeting on coastal and fisheries co-management, held in Veraval, Gujarat

Statement

We, representatives of fishing community organizations from the Veraval-Mangrol region, representatives of fisheries and other departments and institutions of the Government of Gujarat, fisheries scientists and NGO representatives, met in Ahmedabad, Gujarat, 3-4 August 2007, for the "Expert Consultation on Coastal Fisheries and Area Co-management".

We met to discuss the crisis facing our fisheries and coastal resources, and to find a way forward. We recognized that our fisheries resources, the very basis of our livelihoods, are showing signs of decline due to reasons that include excessive fishing pressure. For this, we recognize that we are jointly responsible.

This consultation is not an event by itself. It is the outcome of a long process of dialogue and discussion with the fishing communities in the Veraval-Mangrol region that started several years ago. As a result, we share trust and goodwill and a common commitment to move towards better management of our resources.

We recognize also that our fragile and unique coastal areas, the spaces we have inhabited and used for generations, are being polluted and taken over, and the coastal resources are being indiscriminately destroyed. This has implications for the health of the fisheries and resource base and our livelihoods.

As men and women representing fishing-community organizations and those supporting them, we consider it important to discuss the management of both coastal land and fisheries resources within the same framework. This calls for a new way of looking at development – not only in terms of economic growth but also in terms of well-being for all, with a focus on equity and sustainability.

In our view, it is essential to put in place co-management arrangements for the management of coastal and fisheries resources, based on discussion between community organizations and government representatives, to build a genuine partnership based on trust. We draw attention to the relevant provisions of the Gujarat Marine Fisheries Act (2003), the Coastal Regulation Zone Notification (1991) and the Panchayati Raj Act that recognize the customary rights of the fishing communities to fisheries resources and coastal habitats. We are of the view that these legal instruments can be used to put in place appropriate co-management arrangements.

Achieving co-management calls for a change in the mindset of the representatives of both community and government. A certain amount of preparedness is required for this. It calls for wider awareness of global issues, creative use of tools for participatory processes and human capacity building.

Fishing communities have lived along the coasts for generations, and used coastal areas for repairing nets, berthing boats, drying fish, and so on. Our communities are now faced with threats of displacement to make way for industrial and other infrastructure development. We consider it essential that the priority rights of coastal fishing communities to coastal areas and spaces traditionally used by them should be recognized and strengthened, including through appropriate legal measures.

While we assert the rights of those traditionally involved in fishing, we recognize the need to be mindful of the rights of those from other communities who work in the fishery sector.

We are aware that rights come with responsibilities and obligations, and we are willing to take up our share of the responsibility. We wish to express our commitment to all the above sentiments and values by taking concrete action in the following realms:

- * Initiate co-management experiments, starting with existing legal instruments.
- * Initiate a co-management council of all stakeholders in Mangrol to manage the harbour and fisheries and evolve a co-management framework through this process of learning by doing. The financial and administrative transactions of this committee will be transparent.
- * Community representation (men and women) in any co-management initiative should be at least 70 per cent.
- * Initiate measures to collect data and information on fishing operations in a participatory manner in order to assess the health of the fishery.
- * Take measures to reserve the coastal land and reassign unused land on a priority basis for fishing-community habitation, pre- and post-harvest activities and social infrastructure. Lands managed at present by the Gujarat Municipal Board (GMB) and the Gujarat Industrial Development Corporation (GIDC), but which are unutilized, could be earmarked for this purpose.
- * Initiate steps for the improvement of women's fish-market infrastructure, starting in Chorwad and expanding to other regions.
- * Set up good-quality health services in fishery areas, improve sanitation facilities for better hygiene, and develop ways to manage waste.
- * Start higher-education institutions in the proximity of fishery areas.

We commit ourselves to take this process forward in order to creating a more responsible and sustainable fisheries that will contribute to the total well-being of coastal communities.



Women in the fishing village of Mangrol, Gujarat, India, unloading the day's catch

The most interesting results were from an active group of women fish vendors who pressured the municipality and the fisheries department for a better fish market, while another group made a detailed study of the community's problems relating to water, sanitation and attendant infrastructure, which was presented to the members of the *samaj*. In both these cases, the community's men were very responsive and open to the idea that women could also be part of the co-management process.

The discussions on co-management were done separately for the fishing sectors, the community organizations and the women so that all of them could un-

We are aware that rights come with responsibilities and obligations, and we are willing to take up our share of the responsibility.

derstand the issues and felt free to raise doubts and make suggestions from the point of view of their own sectors. It was clear that there were several areas of conflict.

After the discussions, all the representatives got together to discuss the

possibility of a larger plan and who would finally meet the government and scientists to make the proposed presentation on co-management. Importantly, it was the first time that women and men from various sectors, caste and religious groupings had got together to discuss coastal and fisheries issues.

Between 2 and 3 August 2007, an Expert Consultation on Fisheries and Area Co-management was held in Ahmedabad, the capital of Gujarat, supported by the Fish

Code Programme of the Food and Agriculture Organization of the United Nations (FAO), where the State's entire fisheries department was present, together with scientists from the Central Marine Fisheries Institute (CMFRI), the Central Institute of Fisheries Technology (CIFT) and the Fisheries Survey of India (FSI), as well as trader, processor and non-governmental organizations (NGOs) and the Marine Products Export Development Authority (MPEDA).

The community leaders first presented their ideas on co-management, which included both the need for fisheries management and coastal-area management, and articulated why they thought that this was a viable option in their particular context.

They requested the government to create a framework of legislation for co-management, where both their rights to the coastal resources and the responsibilities of the government and the various stakeholders would be clearly defined. Subsequently, the experts responded, and a group discussion followed on the action that could be taken.

An interesting and heated discussion between the trawl-boat owners, the scientists and the government officials had even the women chipping in, but unfortunately the *hodi* owners remained silent.

At the end of the Consultation, a Statement was issued (see box on pg. 27).

The importance of this process has to do with the fact that co-management was proposed by the community representatives from a shore-based fisheries perspective and not a fishing perspective alone. This was possible because of the data available and the focus on the fishery as a means of livelihood that has to be sustained. But this is not an easy process and it still has to be operationalized. We bank on the tremendous amount of goodwill shown by all the stakeholders, which indicates that the stakes in actually managing the fisheries are high. ¶

For more



www.co-management.org/
**A Collaborative Research Project
 on Fisheries Co-management**

[www.idrc.ca/en/ev-92339-201-1-DO_](http://www.idrc.ca/en/ev-92339-201-1-DO_TOPIC.html)
 TOPIC.html
**Handbook of Fisheries
 Co-management from IDRC**

Correction

Some errors crept into “The Quota Conundrum” (*SAMUDRA Report* No.47, July 2007), as indicated by the author, Arthur Bogason: On pg. 22, “...while the rest are pelagic species that go for human consumption...” should have read “...the rest are pelagic species, which go more and more for human consumption...” On pg. 24, “...the big seafood companies bought 700 of the 1,043 small boats, transferred the quotas to their trawlers, destroyed the small boats or sold them off, some as leisure craft (to avoid them entering the fisheries again)...” should have been “...the big seafood companies bought 700 of these 1,043 boats, transferred the quotas to their trawlers, destroyed the boats (to avoid them to enter the fisheries again—they could not even be sold as pleasure boats)...” On pg. 25, “Boats using longlines and landing on a daily basis get a 13 per cent reduction of their quotas...” should have been “Boats using longline and landing on daily bases get a 13 per cent lesser reduction from their quotas...” The fish in the photograph on pg. 26 is a spotted catfish, not a cod. Our apologies for the errors.

Save the Coast, Save the Fishers

A campaign by the National Fishworkers' Forum of India focused on the problems with the proposed Coastal Management Zone Notification

Marine fishing communities in India, the traditional inhabitants of the approximately 8,000-km long coastline of the country, have fished for generations along the coast. For them, the coastal area is as much a lived space as an occupational space, encompassing both the land and the sea on which they live and work. The beach has been the space used for landing fish; selling, salting, smoking, curing and drying fish; and tying up boats and fishing implements and doing maintenance work on them, among other day-to-day activities, which makes the shore as much a working space as the sea.

According to the recently conducted Marine Fisheries Census, 2005, there are 3,202 marine fishing villages and 756,212 households—a total of 3.52 mn people—along mainland India's coastline of 6,002 km. (The total length of the country's coastline, including the islands of Andaman and Nicobar and Lakshadweep, is 8,118 km.). Nearly half of this population (over 1.6 mn people) are engaged in active fishing and fishery-related activities. The maximum number of marine fishing villages is in the State of Orissa (641), followed by Tamil Nadu (581), Andhra Pradesh (498), Maharashtra (406), West Bengal (346), Gujarat (263), Kerala (222), Karnataka (156), Goa (39), Puducherry (28) and Daman and Diu (7).

The inland and marine fisheries sector of India contributes enormously to employment, livelihoods, food security, and the rural and national economy, with comparatively little

support from the government. This contribution, unfortunately, remains highly undervalued. Given the present context of the global food crisis, the role of the fisheries sector in providing fish as food—essential and relatively inexpensive animal protein for millions of people in India, particularly the poor—must be recognized and supported. To cut off the hand that feeds, to make way for illusionary economic growth, would be nothing but foolhardy!

For the fishing communities of India, the coastal area is as much a lived space as an occupational space, encompassing both the land and the sea on which they live and work.

Yet, today fishing communities in India are under serious threat of being displaced from the coastal spaces they have occupied, to make way for tourism, ports, urban growth, industry, intensive aquaculture, airports, special economic zones (SEZs), and top-down conservation projects. These developments disrupt their access to the sea and water bodies, destroying their sources of livelihood. Traditional fishing communities are finding it difficult to survive, in a context where their rights to coastal lands and fishing grounds are not clearly recognized by the State.

Critical phase

The lives and livelihoods of millions of these marine fisher people have been passing through a critical phase

*This article is by **Harekrishna Debnath** (nffcal@cal3.vsnl.net.in), Chairperson, National Fishworkers' Forum (NFF), India*

in recent years. The steady increase in the price of fishing inputs, depletion of fish resources, growing tensions due to stiff competition over better fishing grounds, and declining incomes from fishing have combined to make fishing a failing occupation. The new era of globalization is further complicating the situation. With the entry of mightier forces into their traditional abodes, the fishing community has been engaged in continuous struggles to protect their traditional sources of livelihood.

In this context, the Ministry of Environment and Forests (MoEF) constituted the M.S. Swaminathan Committee to 'review' the Coastal Regulation Zone (CRZ) Notification of 1991, which was intended to protect India's coastal zone from destructive activities. In spite of several inadequacies in the CRZ Notification, the traditional fishing communities regard it as one of the very few 'good things' that has happened to them. The Swaminathan Committee submitted its report to the MoEF in 2005. The report reflected the naked bias of the committee towards accommodating the desire of global capital to exploit the country's coastal land and natural resources in the name of 'development'. The committee blatantly recommended measures to dilute the prohibitory character of

the CRZ Notification by introducing a Coastal Management Zone (CMZ) Notification. The fishing community of India, the largest stakeholder in the coastal zone, has, along with other coastal communities, voiced very strong protests against the report. Numerous environmental organizations, non-governmental organizations (NGOs) and civil society organizations (CSOs) have also expressed their reservations about the report. However, the MoEF has not heeded these protests and seems to have accepted it in toto.

In 2005 and 2006, the National Fishworkers' Forum (NFF) organized several mass protests against the Swaminathan Committee recommendations. Hundreds of mass petitions, fax messages and letters of protest were sent to the MoEF. In spite of such a large scale of protest, the MoEF came up with a draft CMZ Notification in May 2007, expressly based on the recommendations of the Swaminathan Committee, to replace the CRZ Notification of 1991. The draft Notification, which was leaked out, appeared to be the death warrant for India's fishing community and an open general licence for privatization and vandalism of the coastal zone in the name of investment and development. A fresh wave of protests began. All the concerned organizations came together under one umbrella, called the National Coastal Protection Campaign (NCPC), to challenge, in one voice, the MoEF's move. NFF spearheaded two massive national action programmes in 2007—on 9 August (Quit India Day) and 21 November (World Fisheries Day). The MoEF has refrained from notifying the CMZ draft for the time being.

National campaign

Although the Indian fishing community, together with their NGO and CSO allies, has unequivocally opposed the draft CMZ Notification, certain sections of the media, social elites, intellectuals and politicians—even in the coastal States—have remained lukewarm or indifferent to the proposed legislation. This is a matter of concern. The NFF General Body met in Visakhapatnam in December 2007 and decided to organize a national campaign in 2008 to press

PRADIP CHATTERJEE/DISHA



Protesting fishermen and their supporters in Orissa, India, symbolically burning the Coastal Management Zone (CMZ) Notification

for the realization of the outstanding demands of the fishing community. By early March 2008, indications were trickling down that the MoEF, under pressure from the big business lobby and also allegedly from an international agency, was gearing up to issue the CMZ Notification officially. The NFF Executive Committee met in Kolkata on 28 March 2008 and decided to launch the 'Machhimar Adhikar Rashtriya Abhiyan' (National Campaign for Fisher Peoples' Rights) from Jakhau, Kachchh, Gujarat, on 1 May (International Workers' Day), with the motto "Save the coast—save the fishers". The campaign was conducted along the coastline of all the maritime States of mainland India and culminated in Kolkata on 27 June 2008.

The campaign provided an opportunity to gain valuable experience and insight about the realities prevailing on the ground in the coastal fishing communities of India. The traditional fishing communities have been living a life of agony and fear. In the overwhelming majority of fishing villages, there are no roads, schools, primary healthcare facilities or drinking water.

Women have to fetch water from long distances, sometimes walking up to five km on foot. In the absence of transportation, they have to walk five to 10 km to sell their fish in the market. In many places, they live in shanties. They do not have legal rights or title deeds to the land on which they live.

Many tourism projects, commercial harbours, chemical plants, SEZs and various other industrial estates are coming up in the coastal zone. These projects not only occupy coastal lands but also pollute the coastal waters and jeopardize the marine ecology and fish resources on which the fishers depend to make a living.

Many fishing villages have had their residents evicted and many others are waiting for their turn to make way for these projects. There is an unbelievable race among the coastal State governments to attract more and more investment in the coastal zone. The CRZ Notification of 1991 is an impediment to these investment intentions, and hence the urgency

of sending it to oblivion. The CMZ Notification of the MoEF is a move in that direction.

The most important dimension about these two Notifications is the intention that lies behind them. Neither the CRZ nor the CMZ Notification is a complete piece of legislation. As Notifications, they comprise subordinate law made under the Environment Protection Act (EPA), 1986. Though there are inadequacies in the CRZ Notification, there has never been any doubt about its intent—to protect the coastal zone from destructive activities by prohibition of a varied number of activities. The CRZ Notification recognized the traditional and customary rights of the fishing community. It hampered the interests of the moneyed and powerful

The impending threat of displacement is looming large over the populations in the coastal zone. A state of uncertainty and anguish prevails almost everywhere.

elites, especially those in the tourism, industrial and real-estate sectors. These are the forces that have engineered the annulment of the CRZ Notification by changing the regime from one of regulation to one of management. The very intent of the CMZ Notification is distinctly different and clearly against the purpose of the principal EPA. It deserves nothing less than complete rejection. Hence the NFF demands the withdrawal of the CMZ Notification and implementation of the CRZ Notification of 1991 in its original form until complete legislation is enacted for the coastal zone, by which the fishing community will be recognized as the rightful custodians of the coastal zone.

State of uncertainty

The impending threat of displacement is looming large over the populations in the coastal zone. A state of uncertainty and anguish prevails almost everywhere. The fisher people have found the NFF campaign to be an opportunity to voice their grievances at the national level and press for



Children from the fishing community flocking around the National Fishworkers' Forum campaign vehicle in the State of Orissa, India

their rights. Fisher people rallied around the campaign unitedly, cutting across sectoral, regional, political, religious and gender barriers. During the two-month long campaign, the fisher people demonstrated a total rejection of the CMZ Notification, and expressed unequivocal support for the NFF demands through public meetings, rallies, seminars, village meetings, group discussions, street plays, and so on. There was hardly any opposition to the campaign from anywhere.

Now the biggest challenge before the NFF is to live up to the expectations of the fisher people and strive to achieve their demands through sustained struggles. Another important challenge is to sustain, with a long-term perspective, the fighting spirit and enthusiasm created by the campaign among the fishing community.

The campaign has succeeded in making the draft CMZ Notification an issue in the coastal States. It sent out a loud and clear message that the fishing community of India does not want the CMZ Notification.

The younger generation in the fishing community is as concerned about these issues as the rest of the community. There is a growing consciousness about the community's

rights over the resources on which they depend for their livelihoods. Having witnessed the plight of traditional peoples caused by the intrusion of big businesses in the coastal zone, they want a strict regulation regime in the coastal zone. In many places along the coast, youth and students from outside the fishing community too participated in the national campaign and collaborated with NFF.

The campaign has succeeded in making the draft CMZ Notification an issue in the coastal States. It sent out a loud and clear message that the fishing community of India does not want the CMZ Notification. At least four State governments, namely, Kerala, Tamil Nadu, Puducherry and Maharashtra, have now raised the matter with the Central government, asking for further discussions on the draft Notification. Politicians in coastal States are taking more interest in the CMZ issue. The campaign has also been fairly successful in building up awareness among civil society actors about the issues involved. The campaigners have built fairly satisfactory linkages with all potential allies and have managed to get the environmental groups to also back their stand on the withdrawal of the CMZ Notification.

The social history of coastal India is replete with incidents of traditional fishers' struggles against coastal encroachment, pollution and destructive fishing gear and methods. We know harvesting nature's bounty can only be sustained if the resource base is conserved. Hence, the traditional fishers' struggles for the right to fish have always been intertwined with attempts to conserve resources. That is why Indian fishers, under the aegis of NFF, conducted the historic 'Kanyakumari March' in 1989, with the famous slogan "Protect waters—protect life".

Kanyakumari March

In a way, the Machhimar Adhikar Rashtriya Abhiyan 2008 was an extension of the Kanyakumari March of 1989. Whatever was achieved by the Kanyakumari March is facing catastrophic reversal today. Our coasts, our waters and our livelihoods are

seriously threatened. That is why NFF reinvented the spirit of the Kanyakumari March and extended it to the present-day context. We started the Abhiyan with the slogan “Save the coast—save the fishers” on the same date (1 May) on which the Kanyakumari March ended exactly 19 years ago.

This time, however, only one core group campaigned along the whole mainland coastline, from Jakhau to Kolkata via Kanyakumari, for 58 days, without any rest or break. For the 1989 Kanyakumari March, two core groups campaigned simultaneously along the east and west coasts of India for 28 days, and converged at Kanyakumari. Together, they covered about three-fourths of the coastline. This time around, the core campaign team traversed more than 12,000 km and addressed 194 meetings at important fishing centres and fishing villages. It held 22 press meets and four State-level seminars, apart from many roadside receptions and briefings. Showing great resilience, the affiliate unions organized and conducted the campaign meets in their area; in 1989 most of the State-level unions were still in the formative stage.

As a trade union, NFF represents the aspirations of the fishing community of India and works to secure their traditional livelihoods. NFF has led many struggles in the past, with laudable success. Unfortunately, in recent times, many of our hard-earned achievements are being systematically sent to oblivion.

As a consequence of globalization, the proponents of ‘growth and development’ have started privatizing our rivers, coasts and seas, squeezing out the fishers from their traditional sources of livelihood. A sense of frustration has started creeping into the community and its organizations.

It was at such a crucial juncture, when the pressures of privatization, commercialization and globalization are undermining the livelihoods of traditional communities and destroying their natural resources, that the NFF campaign “Save the coast—save the fishers” focused on traditional livelihoods and rights of fishing communities, and brought

their grievances to the forefront. The campaign has rejuvenated the organization and galvanized the fishers along the entire coastline of India, from Kachchh to Kolkata. It has reinforced the trust of the community in NFF. **3**

The campaign has rejuvenated the organization and galvanized the fishers along the entire coastline of India, from Kachchh to Kolkata. It has reinforced the trust of the community in the National Fishworkers’ Forum.

For more

www.coastalcampaign.page.tl

Macchimar Adhikar Rashtriya Abhiyan (National Campaign for Fisher Peoples’ Rights)

keralafishworkers.org

Kerala Independent Fish Workers’ Federation

www.trinet.in

TRInet (The Resource and Information Network: for the coast)

Whose Waters Are These Anyway?

Transborder fishing by small-scale fishermen in the waters of other nations is a complex issue that calls for an equitable and humanitarian approach

At the recent Global Conference on Small-scale Fisheries, titled “Securing Sustainability in Small-scale Fisheries” (4SSF), organized by the Food and Agriculture Organization of the United Nations (FAO) and the Department of Fisheries, Thailand, and held in Bangkok in October 2008, an important talking point was the issue of transborder fishing by small-scale fishermen. For many participants at the plenary session group discussion reporting on the topic, it was revealing to learn that transborder fishing by small-scale fishermen is so widespread and complex a phenomenon that neither can it be ignored or just lumped together with the broader category of illegal, unreported and unregulated fishing, nor seen as merely an issue of enforcement of fisheries or maritime zones’ legislation.

There is enough anecdotal evidence to suggest that transborder fishing is an issue in different parts of the world. It seems to be most intractable on the India-Pakistan border. The maritime border between the provinces of Gujarat in India and Sindh in Pakistan remains unsettled, and fishermen on both sides are often caught for fishing in each other’s waters. They are then invariably imprisoned, and there are instances of fishermen having spent up to a decade in prison for being caught in foreign territorial waters.

The India-Sri Lanka border, especially in the narrow Palk Bay, is another hotspot. Historically, the fishermen on both sides of the Palk Bay

are ethnically linked and have freely fished all over the Bay. The Indo-Sri Lankan maritime border agreement of 1974 created a boundary, which was largely ignored by the fishermen on both sides. However, with the start of the civil war in Sri Lanka in 1983, the borders became a matter of concern for the governments of both India and Sri Lanka. Since then, there have been hundreds of incidents of arrests and detention of Indian fishermen by Sri

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Lankan authorities. At times, fishermen caught in the crossfire have been killed. Sri Lankan fishermen fishing for tuna on multi-day vessels within the Indian exclusive economic zone (EEZ) also face the possibility of arrest and detention by Indian authorities.

In the case of Bangladeshi fishermen, their crossings into India’s territorial waters seem to be motivated more by the higher prices obtained in Indian markets than by the desire to poach on fish resources.

Turning to Southeast Asia—an intricate mosaic of countries with many borders within easy reach of small-scale fishermen—we find it is common for small-scale fishermen in the region to engage in transborder fishing. However, most governments of Southeast Asian

*This is a summary of a paper by **V. Vivekanandan** (vivek.siffs@gmail.com), Convenor, Association for Release of Innocent Fishermen (ARIF), and Adviser, South Indian Federation of Fishermen Societies (SIFFS). The full version of the paper will be soon available on the ICSF site (www.icsf.net)*

ANTONY BENCHILAS/SIFFS



Sri Lankan boats seized in India. Boats confiscated for transborder fishing are sometimes returned after months, often beyond salvage

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countries seem to prefer to turn a blind eye to the presence of small-scale artisanal boats in national waters.

The artisanal fishing boats of Indonesia and Papua New Guinea, however, have a serious problem with Australia, while the small motorized boats of Aceh province of Indonesia regularly get into trouble in Indian waters. The Aceh coast is just a three-hour distance from India's Nicobar Islands, and fishermen from Aceh have been fishing in these waters long before India declared its EEZ.

As fish shoals move across borders, the natural tendency of fishermen who depend on these shoals and have specialized in catching them, is to follow them without regard for national boundaries.

The Eritrea-Yemen border on the Red Sea also witnesses transboundary crossings by fishermen. Yemeni fishermen have long followed the fish shoals, and camped in Eritrea for some time of the year as part of their fishing voyages. The civil war and the formation of the modern Eritrean State have, however, created conditions whereby Yemeni fishermen are no longer welcome and are often arrested and treated harshly. Yemen has since closed its border

to Eritrean fishermen in retaliation for the harassment of their fishermen.

West Africa is another area where fishermen chasing rich shoals of pelagic fish have traditionally crossed borders regularly and routinely. Gabon, which does not have an indigenous fishing tradition, used to be hospitable to fishermen from neighbouring Ghana, but now the Ghanaian fishers' camps are being burnt and they are chased away from Gabon's shores. Mauritania, which has fishing agreements with the European Union, can be very harsh with fishing vessels from neighbouring countries caught in its waters.

These examples give us some insight into why small-scale fishermen cross borders to fish in the waters of neighbouring States. Where borders are close by and small-scale fishing boats are not equipped with global positioning system (GPS) or other navigation equipment, it is but natural that the borders are crossed accidentally. It is also common for engines to fail and boats to drift into neighbouring waters. However, most coast guard vessels can distinguish between such accidental crossings and deliberate illegal fishing.

Much of today's transborder fishing continue practices set well before the 1982 United Nations Convention on the Law of the Sea (UNCLOS). As fish shoals move across borders, the natural tendency of fishermen who depend on these shoals and have specialized in catching them, is to follow them without regard for national boundaries. Such movement is likely to be seasonal and even predictable.

The introduction of powerful outboard motors for fishing vessels has dramatically increased the range of small boats. Small boats can nowadays be found covering considerable distances. The availability of hand-held GPS units and cheap communication devices like mobile phones also encourages such movement.

Multi-day fishing

The coming of 'multi-day' fishing boats has revolutionized fishing in many countries. Depending on a combination of modern technologies and the innate

skills of the traditional fishermen, these boats are difficult to contain within the marine spaces of countries. The enhanced capacity of the artisanal sector, as a result of these changes, is an important cause for transborder fishing.

In many countries, poor fisheries management—the failure to protect small-scale fisheries from larger vessels and the failure to manage capacity in the small-scale sector itself—has made fishing within national waters unprofitable. In some cases, fishermen cross borders to sell their catches for a better price or to acquire inputs (nets, fuel) of better quality or lower price.

Unfortunately, it is also true that, in some cases, fishermen get mixed up with nefarious activities like smuggling and trafficking of humans. Authorities are often harsher with fishermen who are suspected of involvement in such illegal activities. As a result, innocent fishermen also suffer for the misdeeds of a few.

The response of authorities to transborder fishing by small-scale artisanal boats varies. Where the local fishermen do not object, many a government is willing to ignore transborder fishing by fishermen from neighbouring countries. In many instances, the coast guard or navy just chases away the vessels that cross the borders and send them back home without attempting to arrest or detain them.

The next level of action is to put the arrested fishermen through the legal process. The periods of detention can vary considerably, depending on the commencement of legal action. If the fishermen are found guilty, they are fined. However, they are normally placed on remand until the court case is over, which can take months, if not years. The provision for bail is not very useful as fishermen caught in a foreign nation cannot be let loose.

Long spells in prison

Thus, legal action inevitably means long spells in prison, loss of livelihood, and great distress for the families involved. Many countries confiscate the boats, and the fishermen may lose their entire savings. Some of the boats

that are returned after months are often beyond salvage. In countries like the Maldives, the fine for recovery of a boat can be so prohibitively high that the fishermen may just opt to leave the boat behind. Repatriation has its own problems associated with the issue of temporary passports and flight tickets.

While many of the actions taken against transborder fishermen may be justified in terms of protecting fish resources and national sovereignty, there are several human-rights issues

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involved. Many of the actions are in violation of the spirit of Article 73 of UNCLOS, which states that no fisherman may be punished with imprisonment for fishing in the EEZ of another country. Specifically, it notes:

1. The Coastal State may, in the exercise of its sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zone, take such measures, including boarding, inspection, arrest and



Pakistani fishers released from an Indian jail arriving in Karachi. Fishermen on both sides of the Indo-Pak maritime border are often caught for fishing in each other's waters

Countries need to enter into bilateral agreements that address the root causes of transborder fishing...

- judicial proceedings, as may be necessary to ensure compliance with the laws and regulations adopted by it in conformity with this Convention.
2. Arrested vessels and their crews shall be promptly released upon the posting of reasonable bond or other security.
 3. Coastal State penalties for violation of fisheries laws and regulations in the exclusive economic zone may not include imprisonment in the absence of agreements to the contrary by the States concerned or any other form of corporal punishment.
 4. In cases of arrest or detention of foreign vessels, the coastal State shall promptly notify the flag State through appropriate channels, of the action and of any penalties subsequently imposed.


Many a time, the families of the arrested fishermen do not get timely information on their whereabouts, and so undergo severe stress. Arrested fishermen have little local support, as a result of which very little accountability is demanded of enforcement agencies. To strengthen their case against the fishermen, law enforcement authorities often hoist on them a variety of other charges, in addition to the charge of illegal fishing, which is normally dealt with leniently by courts.

Ways and means should be found to protect fishermen from long periods of detention; there should also be a lenient approach to small-scale fishermen who are arrested in territorial waters rather than in the EEZ. National laws dealing with illegal fishing need to be reviewed to see if issues pertaining to small-scale fishermen are dealt with specifically and fairly. The United Nations (UN) needs to consider the possibility of some international supervision to establish the fairness of treatment of fishermen

arrested for transborder fishing within the territorial waters as well as the EEZs of non-flag States.

Countries need to enter into bilateral agreements that address the root causes of transborder fishing, and resolve the issue with an emphasis on equity and humanitarian considerations, and taking into account the traditional fishing practices of small-scale and indigenous fishers from adjacent maritime States. Countries need to improve fisheries management within their own borders to reduce pressure on small boats to fish beyond borders.

Administratively, mechanisms should be set up for the timely provision of information to families of arrested families. Also needed are channels for direct communication at lower levels of administration across borders. Mechanisms to distinguish genuine, bona fide fishermen from others—like identity cards and boat registers—are needed, as is legal assistance for arrested fishermen. Fishermen should also be educated about the consequences of undertaking illegal fishing in the waters of other States.

Organizations like the UN and FAO ought to document transborder fishing by small-scale fishermen to flag the key issues and suggest context-specific solutions. Regional consultations and workshops involving key stakeholders can sensitize officials and fishermen about transborder small-scale fishing. 

For more



arrest-fishers.icsf.net

Arrest and Detention of Fishers

icsf.net/icsf2006/jspFiles/forgingUnity/docs/presentation/vivek.pdf

Indian Ocean Conference paper

www.icsf.net/icsf2006/uploads/publications/proceeding/pdf/english/issue_11/ALL.pdf

Indian Ocean Conference Proceedings

Managing to Benefit

A workshop on marine protected areas in India suggested ways to achieve livelihood-sensitive conservation and management of coastal and fisheries resources

A two-day workshop, titled ‘Social Dimensions of Marine Protected Area (MPA) Implementation in India: Do Fishing Communities Benefit?’, was organized by the International Collective in Support of Fishworkers (ICSF), from 21-22 January 2009 in Chennai, India. The principal objective of the workshop was to discuss the findings of five case studies undertaken by ICSF on marine and coastal protected areas—on the Gulf of Mannar National Park and Biosphere Reserve, the Malvan (Marine) Wildlife Sanctuary, the Gahirmatha (Marine) Wildlife Sanctuary, the Sundarban Tiger Reserve, and the Gulf of Kutch National Park and Wildlife Sanctuary. Apart from documenting the fishing communities’ perspective on MPAs, the workshop was also meant to be a forum to discuss legal, institutional and other relevant aspects of MPA implementation in India, and to put forward proposals for achieving livelihood-sensitive conservation and management of coastal and fisheries resources.

Over 70 persons—including representatives from the Ministry of Agriculture, Government of India, the Forest Departments of the States of Orissa, West Bengal and Tamil Nadu; the Fisheries Departments of West Bengal and Tamil Nadu the Wildlife Institute of India (WII) and the Indian Institute of Science (IISc), environmental groups, fishworker organizations and independent researchers—participated in the workshop. The first of its kind to be organized in India, the workshop was supported by the Ministry of Agriculture and the National Fisheries Development Board (NFDB).

Elaborating on marine and coastal protected areas in her introduction to the workshop, Chandrika Sharma, Executive Secretary, ICSF, highlighted that within the Indian context, the term refers to National Parks and Wildlife Sanctuaries declared in coastal and marine area, under the Wild Life (Protection) Act (WLPA), 1972.

The case studies, she said, highlighted that large numbers of men and women in fishing communities—an estimated 10 per cent of marine fishers in India—are facing loss of livelihoods due to restrictions on fisheries in coastal

...large numbers of men and women in fishing communities—an estimated 10 per cent of marine fishers in India—are facing loss of livelihoods due to restrictions on fisheries in coastal and marine protected areas.

and marine protected areas. Moreover, feelings of victimization and alienation due to the manner in which regulations are implemented are common, while efforts at creating alternative livelihood opportunities have remained limited. Also, there has hardly been any systematic effort to improve access to basic services for enhancing long-term livelihood options.

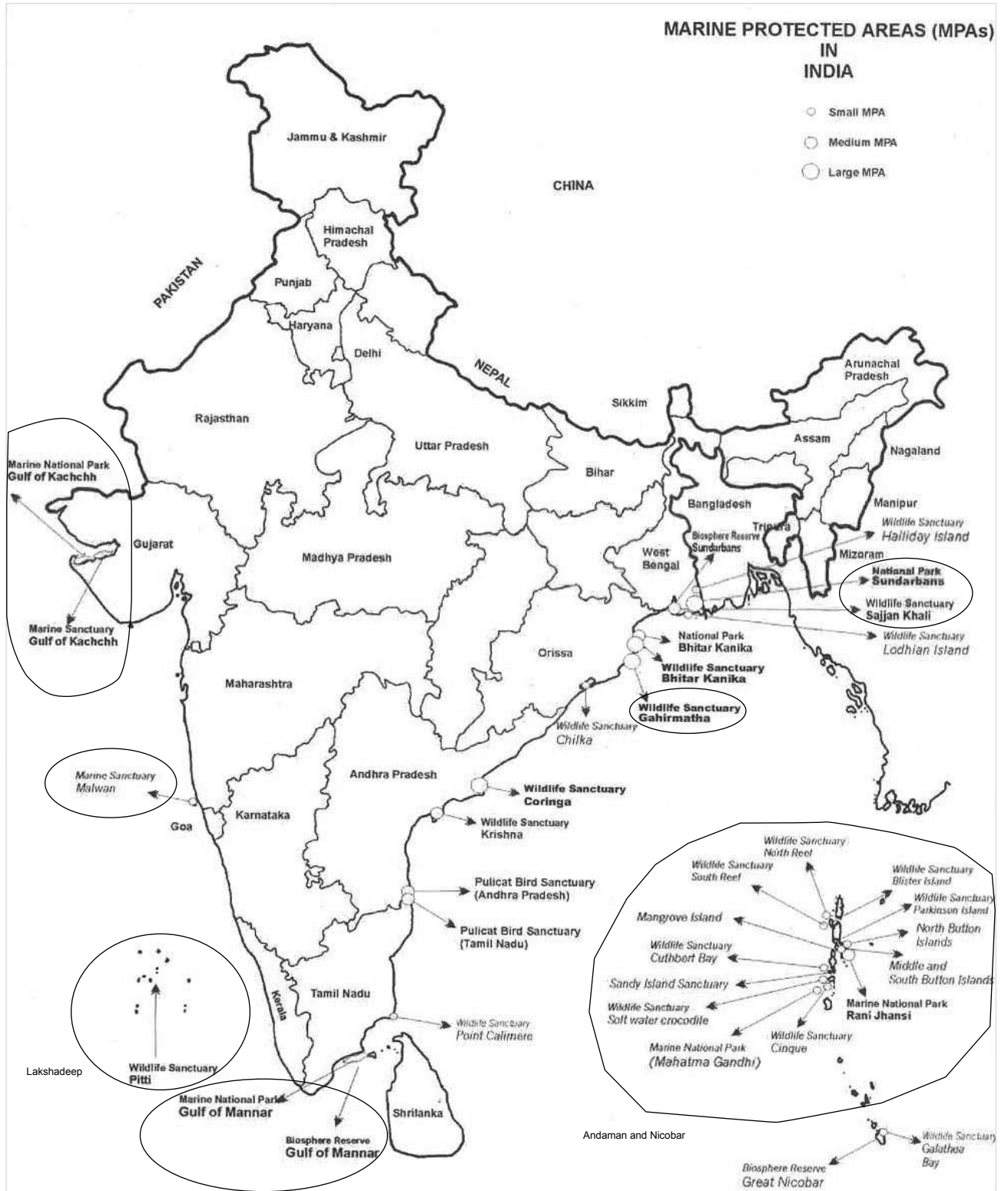
Degradation and pollution

The focus has been mainly on regulating fisheries, while serious issues of degradation and pollution by non-fisheries factors have not been dealt with, which compromises the very objectives for which the protected areas (PAs) were set up. In his opening address to the workshop, M.K.R. Nair, Fisheries Development Commissioner,

*This report has been written by **Ramya Rajagopalan** (ramya.rajagopalan@gmail.com), Consultant, ICSF, and **Varsha Patel** (icsf@icsf.net), Programme Associate, ICSF*

MARINE PROTECTED AREAS (MPAs) IN INDIA

- Small MPA
- Medium MPA
- Large MPA



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Source: Singh, H.S. 2002. Marine Protected Areas in India: Status of Coastal Wetlands and Their Conservation. Ahmedabad, Gujarat Ecological Education and Research Foundation (GEER)

There are 31 marine and coastal protected areas and two biosphere reserves in India

Department of Animal Husbandry, Dairying and Fisheries (DADF), Ministry of Agriculture, Government of India, said that fishers residing along the coastline of India are the traditional owners of the resources in those areas. While there is consensus on the need for environmental restrictions and regulations, the impact of marine and coastal protected areas on fishers who are already below the poverty line, is severe. Nair proposed a system of co-management for PAs that is located within a balanced “seascape” approach.

In their presentation on the Gulf of Mannar National Park and Biosphere Reserve, Ramya Rajagopalan, Consultant, ICSF, and S. Arulanandam, Legal Advisor to the Ramnad District Fishworkers’ Trade Union (RDFTU) highlighted that the designation of the National Park has denied fishers access to the fishing grounds surrounding the 21 islands, where no extractive activity is allowed. This has affected 35,000 active fishers, including 5,000 women seaweed collectors, and 25,000 fishermen who dive for sea cucumbers. Highlighting the socioeconomic problems facing fishing communities, RDFTU has demanded long-term, alternative livelihood options for future generations and short-term alternate livelihood options for the present generation. The union has also demanded that traditional fishers who use non-motorized vessels be allowed to fish near the islands, and that existing community initiatives, including those for regulating seaweed extraction, be recognized.

Pradip Chatterjee of Direct Initiative for Social and Health Action (DISHA) said that the Sundarbans, which has a multiplicity of PA designations—as Tiger Reserve, Wildlife Sanctuary, National Park, Biosphere Reserve and Heritage Site—provides for only non-motorized vessels to fish in the Buffer Area of the Tiger Reserve. Some of the livelihood concerns that fishworkers face arise from the limited number of licences and the complexities involved in their transfer, and the arbitrary imposition of fines for violations. The two fishworker organizations in the area have opposing positions: while



M.K.R. Nair of the Ministry of Agriculture, Government of India, and Nalini Nayak, Member, ICSF, at the opening session of the workshop

one demands restriction with a human face and a legitimate role for fishers in managing PAs, the other calls for the removal of all restrictions on fishing within the Reserve.

Narayan Halder and Giridhari Giri of the Orissa Traditional Fishworkers’ Union (OTFWU) pointed out that in the Gahirmatha (Marine) Wildlife Sanctuary, nearly 30,000 active fishers are affected by turtle protection measures, 43 per cent of whom are below the poverty line. OTFWU has put forward several proposals to protect

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the fishers’ livelihood interests while simultaneously meeting conservation objectives.

Self-regulation

These include reducing the area of the Sanctuary, particularly of the Core Area; allowing small motorized vessels to fish in the Core Area in a sustainable manner; supporting self-regulation initiatives of fishing communities; and implementing the five-km ‘trawl-free’ zone under the Orissa Marine Fishing Regulation Act (OMFRA). OTFWU has also been demanding the

implementation of provisions in the WLPA (as amended in 2002 and 2006) for protecting innocent passage of fishers and their occupational interests, through clear guidelines and rules. The union has also called for participatory enforcement and monitoring measures to reduce conflicts; scientific studies on turtle mortality; and regulation of other non-fishery-related activities that have an impact on turtle mortality.

In their presentation on the Gulf of Kutch (Marine) National Park and Sanctuary, Nilanjana Biswas, an independent researcher, and Bharat Patel of SETU Information Centre, pointed out how the restrictions in place are affecting the *pagadiya* fishers, who wade into the waters with stake-nets to fish, as well as those using plank-built boats (*hodis*). They expanded on the severe threats confronting the area from industrial activities, especially from the petrochemical industries, oil pipelines passing through the PA, cement and coral mining, fertilizer plants, ports, shipbreaking units and special economic zones (SEZs). They stressed that the current legal regime for PAs is not adequate to address the specific needs of marine protection, especially to combat the threats from the non-fisheries activities taking place adjacent to PAs. Fishworker organizations are, therefore, demanding a comprehensive—not piecemeal—

On the issue of alternative and alternate livelihoods, it was said that these should benefit the local fishers who are worst affected, and should be a way to reduce pressure on fishery resources, not to take away the rights of fishers to the resource.

approach to the management of the marine environment, which addresses the root causes of habitat destruction and depletion of resources.

Ramesh Dhuri from the Malvan Taluka Shramik Machhimar Sangh said that the Malvan (Marine) Wildlife Sanctuary, designated to protect coral reefs, mangroves and rocky shores, has a fisherfolk population of 9,000. While fishers in Malvan recognize the importance of conservation, it is the lack of consultation and transparency

in the declaration and management of the sanctuary that they are against. At the local level, there is a great deal of resistance to the sanctuary.

One workshop participant questioned the use of the word 'protection' instead of 'conservation', as it does not imply options for the sustainable use of resources. Several participants queried the very rationale for setting up marine and coastal protected areas, noting that there was no clear evidence of their benefits. One participant wondered whether it is a classic 'lose-lose' situation in which thousands lose their livelihoods, even as there is no clear indicator that conservation objectives, such as reduction of turtle mortality, are being met. On the issue of alternative and alternate livelihoods, it was said that these should benefit the local fishers who are worst affected, and should be a way to reduce pressure on fishery resources, not to take away the rights of fishers to the resource. Several participants highlighted the need for gender-segregated socioeconomic data.

Deepak Apte of the Bombay Natural History Society (BNHS) described the initiative by local communities to conserve marine resources in the Lakshadweep islands. A proposal for declaring a Conservation Reserve under the WLPA has met with the approval of local communities. Whether this is the most suitable option and whether it would reduce the role and power of local communities in decisionmaking, and, in effect, hand over management powers to Forest Department officials, is a moot point.

Manish Chandi, Researcher, Andaman and Nicobar Islands Environmental Team (ANET) and Research Affiliate, Nature Conservation Foundation (NCF), provided an overview of the coastal and marine protected areas in the Andaman and Nicobar Islands.

Holistic approach

In a session on legal issues, Chandrika Sharma of ICSF drew attention to the need for putting in place a holistic and comprehensive management framework for protecting coastal and marine resources, which addresses



Panel discussion on "The Way Forward" at the end of the ICSF workshop on Social Dimensions of Marine Protected Area Implementation in India

both fishery and non-fishery management concerns, and draws on international and national legal and policy frameworks.

In the fisheries context, there is need to move the focus from production to management, and develop an environmental plan for fisheries. Existing artisanal fishing zones could be seen as one of form of PA, given that they enjoy a higher level of protection than their surroundings, it was pointed out.

Sanjay Upadhyay, Advocate, Supreme Court of India, provided an overview of PA categories under the WLPA. He also drew attention to options, under other legislation, for designating specified areas that could meet both livelihood and conservation objectives. Upadhyay also stressed the need to elaborate, in operational terms, what is meant by the reference in the WLPA to "protect the occupational interests of fishermen". There are also provisions for "innocent passage" that need to be operationalized and applied, to prevent the arrest of those passing

through, but not fishing in, Sanctuary waters, he stressed. Upadhyay further underscored the need for demystified information on various aspects of designating and implementing PAs, which can be understood by lay persons.

Several workshop participants noted that the conflict between conservation and livelihoods is relatively minor—the larger fight is really against environmentally destructive development, particularly in a post-liberalization context. In the absence of the right to say no to destructive development in PAs, talk of 'people's participation' becomes merely ritualistic.

Positive developments

Yet some recent developments have been positive, and spaces for genuine participation by the people have been created. A recent judgement of the Andhra Pradesh High Court, for example, interpreted 'consultation' to mean 'consent', under the Panchayat (Extension to Schedule Areas) Act, 1996.

NEENA KOSHY/ICSF



Member of Parliament and former Minister, Suresh Prabhu, stressed the importance of co-management approaches for the conservation of coastal and marine resources

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In his presentation on the role of fishing community institutions in conserving marine living resources, V. Vivekanandan of the South Indian Federation of Fishermen Societies (SIFFS) drew attention to several traditional systems and institutions such as the *kadakodi* system of northern Kerala, and the federated structure of governance of the *pattanavars* of Tamil Nadu and Andhra Pradesh.

These communities have, over time, put in place rules to regulate fishing activities and reduce conflicts. In recent years, several new institutional forms have emerged such as the boatowner's associations in Tamil Nadu and Maharashtra, trade unions, co-operatives, women's self-help groups, and federations and trade associations.

Vivekanandan said that a co-management approach would do well to adopt local traditional structures that are already embedded with social capital. In the absence of a level playing field among the various stakeholders, there is need for caution in propagating co-management, it was pointed out.

The group discussions at the workshop focused on the benefits from marine and coastal protected areas, and how they could be enhanced. All the group presentations highlighted that while some form of protection is needed for coastal and marine resources, on the whole, marine and coastal protected areas have had few

Management plans must be placed in the public domain to ensure greater transparency and accountability.

beneficial impacts, particularly for local communities. All the presentations highlighted the need for community participation, good governance, transparency, accountability, and reliable data. It was suggested that traditional knowledge systems should be integrated with conventional science for PA management, and there is need to regulate non-fishery activities and threats that pose a danger to biodiversity.

In the last session of the workshop, which was a panel discussion on the way forward, B.C. Chowdhury of the Wildlife Institute of India pointed out that management of existing MPAs is weak, and fishers and managers need to get together to review management approaches, and define practical win-win strategies. Establishing marine and coastal protected areas, he said, is not an end in itself; there are other ways in which marine and coastal areas can be protected, which need to be considered. Management plans must be placed in the public domain to ensure greater transparency and accountability.

Harekrishna Debnath of the National Fishworkers' Forum (NFF) drew attention to the various struggles of NFF for better management and conservation of resources, stressing the importance of a comprehensive and integrated approach. Conservation efforts should start with regulating the high-impact activities of the larger players in the fisheries and non-fisheries sectors, not the relatively lower-impact activities of the weakest. Since the entire society at large benefits from conservation efforts, the costs of conservation should be borne by all, and not just by fishers; should there be livelihood costs for fishers, they should be fairly compensated, Debnath said.

Kartik Shanker of the Indian Institute of Science and Dakshin Foundation said that it is important to recognize the concept of 'sustainable use', particularly in a marine context, and to adopt frameworks, such as marine conservation areas, rather than PAs, that do not exclude people. The process of setting up marine and coastal protected areas should recognize power differences between stakeholders, he stressed.

Better co-ordination

The importance of conservation is indisputable, said Nalini Nayak, Member, ICSF. The need is to focus on managing ecosystems as a whole, as waters are interlinked, which calls for better co-ordination and collaboration between different departments, ministries, politicians and other stakeholders. A workable

co-management framework needs to be devised, with a substantial representation for women as members of co-management committees, she stressed.


Fisheries Departments should be seen as partners in the marine and coastal protected area management process, said Madhumita Mukherjee, Joint Director of Fisheries, West Bengal State Fisheries Department. Processes for designating PAs must take into account regional and species specificities, she stressed.

Bijoy Ketan Patnaik, Principal Chief Conservator of Forests (PCCF), and Chief Wildlife Warden, Orissa Forest and Environment Department, highlighted the importance of quantifying benefits from PAs, and, using a comprehensive socio-economic database, monitoring changes in fish catches and the incomes of fishing communities in the area. Where it is clear that livelihoods are being negatively affected, adequate compensation should be given to communities, he said. Patnaik also stressed the importance of periodic evaluations of marine and coastal protected areas, to determine whether they were meeting the objectives for which they were set up. Further, consultative processes should be started at the beginning

of any effort to declare a PA, and PA categories such as Conservation Reserves and Community Reserves, which protect the rights of local people and meet conservation objectives, should be explored.

In his concluding address, Suresh Prabhu, Member of

Parliament, and former Minister for Environment, Government of India, reiterated the need for a holistic approach to the conservation of coastal and marine resources. He stressed the importance of co-management approaches that integrate the traditional knowledge of fishers into a model of sustainable conservation.

The consensus Statement finalized by the participants of the workshop (see page 24) highlighted the need to integrate the fundamental principles of participation, environmental and social justice, and human rights in the implementation of marine and coastal protected areas. 

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For more 

mpa.icsf.net/icsf2006/jspFiles/mpa/indiaWorkshop.jsp

India MPA Workshop Site

www.icsf.net/SU/stmt/C/

India MPA Workshop Statement

mpa.icsf.net/icsf2006/jspFiles/mpa/casestudies.jsp

India MPA Case Studies

Starry, Starry Night

An innate knowledge of astronomy among the traditional fishers of the southwest coast of India has, for generations, helped them in their fishing activities

Coming from a fishing family in Kerala, in the southwest coast of India, I have naturally been attached to the sea and the folklore of fishers, which is now on the brink of extinction. For the past six years, I have been collecting examples of such folklore, with the help of student friends from 'Friends of Marine Life', a group based in Kerala.

Although labouring from *kattumarams* (the traditional three-log catamarans used by small-scale artisanal fishers of south India—

The traditional fishers of southern Kerala have relied on planets, stars and constellations to tell time, to navigate, fish and locate offshore reefs. While fishing at sea, the non-motorized traditional fishers of the region, who employ hooks-and-line or driftnet fishing gear, still rely mainly on observation of planets and stellar positions to tell time at night.

The setting of *Chottu-velli* (Venus), the rise of *Vidia-veli* (also Venus) and the position of *Mulakka-meen* (Belt of Orion), for instance, are all markers of time. The fishers believe the rise of *Malaya-meen* (Spica) or the setting of *Ara-meen* (Pleiades) influences the movement of fish, and is an important determinant in the deployment of fishing gear. Traditional fishers still rely on *Kappal-veli* (Ursa Major), *Kurisu-veli* (Southern Crux) or *Mulakka-meen* (Belt of Orion) to navigate. Further, they rely on *Kania-veli* (Pole Star) to determine the position of reefs.

In southern Kerala, soon after sunset, *Chottu-veli*, or Venus, is visible for two to three hours on the western horizon from May to August. Fishers believe fish migrate, and forage, in the bright light of this 'white giant'; hence the brief hours, when *Chottu-veli* is up in the sky, are deemed favourable for fishing. The setting of *Chottu-veli* (which literally means 'dinner star') also marks the fishers' dinner time at sea.

Morning star

Vidia-veli ('morning star') is also Venus, but this time, visible in the east before daybreak during the same season. The time between the sighting of this planet and sunrise is also considered

The traditional fishers of southern Kerala have relied on planets, stars and constellations to tell time, to navigate, fish and locate offshore reefs.

Ed.), traditional fishers of southwest India have detailed knowledge about sea-bottom topography, and have developed techniques to accurately return to fishing reefs, again and again. The traditional knowledge of fishers encompasses knowledge about the sea, its turbidity, currents, waves and the movement of fish. It also extends to interesting facets of astronomy.

The United Nations General Assembly has declared the year 2009 as the International Year of Astronomy. What do traditional fishing communities of southwest India know about astronomy, and how has this knowledge been used in their fishing activities? What are their beliefs about astronomy?

This article, written by **P. Robert** (admin@protsahan.org) of the Friends of Marine Life, Valiathura, Trivandrum, Kerala, India, has been translated from the Malayalam by **Sebastian Mathew**

conducive for a type of fishing called *kavar-achil* especially for *kannan para* (*Alectis indicus* or Indian threadfish).

In the traditional knowledge of the fishers, *chottu-velli* and *vidia-velli*, although they refer to the same planet, Venus, are considered separate stars, also called *sandhya nakshatram* ('evening star') and *prabhata nakshatram* ('morning star'), respectively, in Malayalam, the language of Kerala.

Lift-net fishers of southern Kerala believe the position of *ara-meen* or Pleiades (visible to them during October to February) has a significant influence on tides, and on the availability of *mada-meen*, or reef fish such as *kora* (*Protonibea diacanthus* or black-spotted croaker), *parava* (*Alectis indicus* or Indian threadfish), *chilavu* (*Sphyaena jello* or banded barracuda) and *mural* (*Hemiramphus far* or blackbarred halfbeak). They time their fishing trips in such a manner as to reach fishing reefs when Pleiades is visible just overhead. Fishers believe the light emitted from Pleiades, which is 630

light-years from Earth, does influence the movement of fish.

Malaya-meen, the star Spica, visible from January to March, has the most unique influence on fishing, according to the fishers of southern Kerala. It also assists in sailing because the rise of *Malaya-meen* coincides with the onset of the land breeze. It helps hook-and-line fishers launch their sail-based *kattumarams* to reach their fishing grounds. When *Malaya-meen* rises, fishes migrate landward, and *vice versa* when it sets in the west, the fishers believe. Ray fish, in particular, take the bait during the rise of *Malaya-meen*. Similarly, net fishers find *kiri-meen* (*Amblygaster clupeioides* or sharpnose sardine) available during this time.

The traditional fishers of Kerala imagine the sky to be a gigantic dial, with certain stars functioning as the moving hands of the clock, indicating the time at night. The fishers have a keen visual sense of the distance between stars, and their positions, which are used to tell time more or less accurately while they work at night under a clear sky.

P. ROBERT



Artisanal fishermen in a *kattumaram*, a traditional craft, off the coast of Trivandrum, Kerala, India. The traditional knowledge of south Indian fishers extends to interesting facets of celestial astronomy

SIFFS



Small-scale artisanal fishermen with a four-log *kattumaram* at Valiyathura, Kerala, India. Fishermen like these rely on the position of stars for navigation and determining time

The position of *Uli-uli-kol* (which literally means a 'measuring rod') or *Mulakka-meen*, the Belt of Orion, in the middle sky (from November to March) plays an important role in navigating between offshore reefs and the shore, as well as for determining time while fishing at sea. Fishers also rely on *Kappal-velli* (literally, 'ship star'), Ursa Major, seen in the northern sky during the months of March to September, and *Kurisu-velli*, Southern Crux, seen in the southern sky, again during March to September, and *Erana-velli*, Sirius, for navigation during November to March.

Kania-velli, or the Pole Star, sited in the far north throughout the year, has an entirely different role for the reef fishers of southwest India. The star is visible to the naked eye only from the shore or beyond in the seaward direction. Reef fishers triangulate the position of different fishing reefs in relation to *Kania-velli* and landmarks. This traditional system of locating reefs using the triangulation technique is called *kanicham*.

Spring tide

Finally, how do the southwest fishers using *kattumaram* view Earth's moon? The spring tide evokes mixed feelings since bigger waves during the spring tide make it difficult to launch *kattumarams*. Moreover, in the moonlight, migratory fish avoid fishing gear, the fishers believe.

However, the story is different as far as *koru-kanava*, or squid, and different

species of reef fish are concerned. Different species of squid are believed to aggregate in offshore reefs to lay eggs during the days just before the full moon, and to remain there for a fortnight until the eggs are hatched. During moonlit nights, fishers catch squid from such reefs.

Apart from squid, other different species of fish that forage in reefs are also caught during moonlit nights. Fishers would, during that time, stay overnight, fishing in these reefs. This fishing practice is called *thangal* or 'stay' fishing. The fishers expect a good catch in lunar months, when the moon is tilted towards the south at the beginning of the lunar phase. Also, crabs, cuttlefish and clams, the fishers believe, are meaty during the waning phase of the moon, and lean during the waxing phase of the moon.

How should we regard these astronomical beliefs of the traditional fishers of southern Kerala? Do stars, planets and the earth's moon really influence the movement of fish and fish catches? Such knowledge exists not only in Kerala, but also wherever there is traditional fishing. It is up to the community of astronomers to examine the scientific basis of these beliefs of traditional fishing communities, and to gauge their relevance for a better understanding of fish migration, and conservation and management of marine fish stocks. 3

For more



http://en.wikipedia.org/wiki/Celestial_navigation

Celestial Navigation

http://en.wikipedia.org/wiki/Navigational_stars

Navigational Stars

www.cbd.int/tk

Traditional Knowledge Information Portal

Organizer, Communicator

Harekrishna Debnath (1949 - 2009)

Harekrishna Debnath, who was born on 16 October 1949 and died on 30 December 2009, was not only a brilliant organizer, but also a humane communicator and strategist

The year 2010 commenced on a sad note for the fishworkers of India with the departure of Harekrishna Debnath, the chairperson of the National Fishworkers' Forum (NFF). In 1989, he joined the struggle for the rights of India's coastal communities to "Protect Waters, Protect Life" (the theme of the march organized by NFF along the coast of India). Harekrishna very soon demonstrated his political commitment, analytical acumen and strategic skills in organizing the dispersed and marginalized fishworkers of West Bengal into the Paschim Bengal Matsyajibi Forum.

It was in these initial years that I got to know Harekrishna closely. He took me through the Sunderbans to see the plight of the fishers, and during that trip two things became very obvious: Harekrishna was determined to see that the community of fishworkers should find its rightful place on the development agenda of the State; he was also able to endear himself to the local people who were awaiting a leader to articulate their demands and bring them to the attention of society at large. Harekrishna was able to do that brilliantly, not only through the respect he commanded with the State Fisheries Department but also by building up a support network in the State. As a result, several issues that would have gone unnoticed, like the banning of the age-old winter fishery in Jambudwip or the installation of a nuclear plant at Haripur, which are affecting the fishing community, have been brought to the attention of the nation.

The support Harekrishna garnered was visible in the variety of people from all classes who visited him and wrote about him in the nine months that he battled the cancer that was devouring him. And battle he did, because even towards the very end, when he was short of breath and could hardly speak, he made it clear that the struggle had to continue and for this it was important that all friends should carry the task forward.

As the chairperson of NFF, he had the difficult task of maintaining a national movement of federated members. He handled that too with the skills of a master craftsman,

Harekrishna was determined to see that the community of fishworkers should find its rightful place on the development agenda of the State...

accommodating different perspectives while simultaneously focusing on the national agenda of the movement. The coastal march that he led in 2008, "Save the Coast, Save the Fishers", focused on the impact of global politics on local communities, and highlighted the need to consolidate the base of the fishworkers' movement, which had got eroded over the years. For Harekrishna, these were all huge challenges that needed attention, notwithstanding any fatal disease.

In 1994, Harekrishna addressed a session of the United Nations Fish Stocks Conference, drawing attention to the fate of millions of coastal

*This remembrance is by **Nalini Nayak** (nalini.nayak@gmail.com), Member, ICSF*

An Amicable Leader

Harekrishna Debnath, who was born on 16 October 1949 and died on 30 December 2009, was not only a brilliant organizer, but also a humane communicator and strategist

Harekrishna Debnath was born on 16 October 1949 at Charfasson in the Bhola district of erstwhile East Pakistan, the largest offshore island region of present-day Bangladesh. The son of a school teacher, Harekrishna had a postgraduate degree in physics from the University of Dhaka. He was a student leader of the Awami League, before relocating to India in 1973 where he assiduously worked for the rights of Bangladeshi refugees.

Harekrishna began his association with the Indian fishworkers' movement two decades ago through the National Fishworkers' Forum (NFF) during its coastal march under the theme "Protect Waters, Protect Life". That was the first campaign in India to draw attention to

the degradation of the coastal zone from pollution and habitat degradation.

Throughout his working life, Harekrishna tirelessly fought for the rights of fishing communities. In 1996, as a leader of NFF, he actively campaigned to rescind the joint-venture policy of the Government of India, which liberalized foreign fishing in the Indian exclusive economic zone. He fought against the displacement of traditional fishing communities in the name of industrial development and coastal aquaculture. He also campaigned against the denial of the livelihood rights of traditional fishers in the name of turtle conservation, and wildlife and forest protection. He fought for the humane treatment of fishers in India, Pakistan and Sri Lanka who are jailed for transboundary crossings and fishing in adjacent territorial waters.

The national campaign that Harekrishna led against the draft Coastal

people worldwide who were being marginalized by official development policies. Harekrishna was an orator par excellence, able to mix solid content with the literary sentiment so typical of the Bengali language.

At our last meeting, he embraced me tearfully and said, "I have made several mistakes, but I have given my all to the fishworkers' movement. Now my days are numbered, but the movement has to go on and we need all of you to be with us in the struggle".

Yes, it was painful to see Harekrishna go. He felt he still had so much to say and do. Based on the difficulties he faced in organizing fishers, he felt strongly that the State has a responsibility to help the unorganized sector. Unfortunately, Harekrishna did not put down any of his reflections in writing. That is a loss, for I am sure his accounts would have been a useful historical and literary reflection on fisheries from a community perspective.

Harekrishna dedicated his life to the struggle of marginalized fishworkers.

I can only salute his everlasting commitment. I feel honoured to have known him closely. 3

Zone Management Notification in 2008 was responsible for its withdrawal by the government. The Notification was opposed by traditional fishing communities, whose campaign subsequently led to consultations with all stakeholders on an appropriate regime for coastal zone management in India.

While active in mobilizing fishing communities to protect their rights to life and livelihood at the national level, Harekrishna was involved, along with Thomas Kocherry, in the formation of the World Forum of Fishworkers and Fish Harvesters in 1997.

Harekrishna was keen to employ the provisions of international legal instruments to benefit traditional, small-scale fishing communities worldwide. In the process, he engaged with the United Nations and its agencies.

Harekrishna upheld a vision of sustainable development of traditional, small-scale fishing communities, a vision that transcended national boundaries.

His concerns extended to the social issues that affect tribal, indigenous and internally displaced peoples and refugees.

Among other things, Harekrishna was a national leader of traditional fishers. He was the Chairperson of NFF when he breathed his last on 30 December 2009. Even after being diagnosed with lung cancer, he worked hard on several issues of concern to fishworkers.

In his demise, Indian fishing communities and other disadvantaged groups have lost not only a brilliant organizer and thinker, but also a communicator and strategist. In Harekrishna's sad demise, the world of small-scale fisheries has lost an amicable leader who could connect ideas, spaces and action, all with a human touch and always for the benefit of all affected parties.

—*This tribute is by Sebastian Mathew (icsf@icsf.net), Programme Adviser, ICSF*

ICSF



Harekrishna Debnath dedicated his life to the struggle of marginalized fishworkers. He believed that the movement in support of fishworkers should go on

For more



www.coastalcampaign.page.tl/Home.htm
Save the Coast, Save the Fishers

Small but Nutritious

Small indigenous freshwater fish species can help meet the nutritional needs of the rural poor in developing countries, as a recent ICSF workshop noted

In much of the developing world, the rural poor have traditionally depended on various varieties of small indigenous freshwater fish species (SIFFS) to meet their nutritional needs. SIFFS—defined as those fish species that grow to a maximum length of 25 cm—are easily available and accessible from nearby water bodies. In India, for instance, they contribute to a significant share of the freshwater fish production in the eastern and northeastern States. Yet they have received insufficient attention in inland water fisheries policies and programmes, both at the national and State levels.

To address this anomaly, the International Collective in Support of Fishworkers (ICSF) Trust, in collaboration with the Inland Fisheries Society of India (IFSI), organized a national workshop titled “Small Indigenous Species of Freshwater Fish: Their Role in Poverty Alleviation, Food Security and Conservation of Biodiversity”, during 23-25 February 2010 at the Central Inland Fisheries Research Institute (CIFRI), Kolkata, West Bengal.

The workshop was meant to be a forum for people working in freshwater fisheries and aquaculture to exchange views on the role of SIFFS in enhancing rural food and livelihood security and in conserving biodiversity. It was also meant to discuss the socioeconomic and cultural context for culture and capture of SIFFS with a view to enhancing access, especially of women, to better income, livelihood and nutritional security, and to propose policy spaces for sustainable SIFFS.

The workshop was attended by 58 participants, including scientists, researchers, policymakers, fish farmers, members of civil society and representatives of multilateral agencies.

In her introductory speech, Chandrika Sharma, Executive Secretary, ICSF, highlighted the importance of SIFFS as a unique source of nutrition, especially for the disadvantaged populations in the eastern and northeastern States of India. She pointed to the need for retaining and strengthening access of discriminated groups, particularly

Considered as trash fish until the 1980s, SIFFS are slowly being recognized as highly valuable from economic, livelihood, nutritional and environmental perspectives.

women, to such species, both for nutrition and livelihoods. Pointing out that the workshop was the result of extensive collaboration, Chandrika Sharma concluded by thanking all who were instrumental in making it possible.

Contemporary relevance

A. P. Sharma, Director, CIFRI, and President, IFSI, pointed to the contemporary relevance of the workshop. Considered as trash fish until the 1980s, SIFFS are slowly being recognized as highly valuable from economic, livelihood, nutritional and environmental perspectives. Studies by CIFRI indicate that traditional fishers of

*This article is by **Sebastian Mathew** (icsf@icsf.net), Programme Adviser, ICSF, and **Neena Koshy** (icsf@icsf.net), Programme Associate, ICSF*

river basins depend, to a large extent, on fishing of SIFFS for their daily earnings, especially during lean seasons and fishing holidays. No amount of progress in the aquaculture of large and fast-growing fish and prawn can replace the utility, free accessibility and benefits of SIFFS. Debates at the workshop should pave the way for strong policy guidelines for the

conservation and rational exploitation of these species, he concluded.

P. Das, former Director, National Bureau of Fish Genetic Resources (NBFGR), highlighted the need for a culture protocol for SIFFS and wider adoption of these species in aquaculture.

In his keynote address, V. V. Sugunan, the Assistant Director-

The Barrackpore Declaration

We, scientists, researchers, policymakers, fish farmers and members of civil society, having participated in the workshop on "Small Indigenous Freshwater Fish Species: Their Role in Poverty Alleviation, Food Security and Conservation of Biodiversity", organized jointly by the International Collective in Support of Fishworkers (ICSF) and the Inland Fisheries Society of India (IFSI), from 23 to 25 February, 2010 at the Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata;

Being aware that the 61st Session of the United Nations General Assembly has declared 2010 as the International Year of Biodiversity;

Recognizing the importance of conserving biodiversity of small indigenous freshwater fish species in the context of climate change, sustainable development and aquatic biodiversity;

Taking note of the significant but invisible contribution of small indigenous freshwater fish species to culture and capture fishery production in India;

Being aware of the importance of small indigenous freshwater fish species as an affordable source of nutrition, particularly of micronutrients, to the rural poor;

Taking note of research and good practices in relation to small indigenous freshwater fish species, aquatic biodiversity and poverty alleviation, by national and international agencies;

Recommend the Department of Animal Husbandry and Dairying and Indian Council of Agricultural Research, Ministry of Agriculture, Government of India; Ministry of Environment and Forests, Government of India; State fisheries ministries and departments, and State environment and forest ministries and departments, civil society organizations and other relevant and interested parties to:

Conserve small indigenous freshwater fish species by protecting their natural habitat;

Promote sustainable use of small indigenous freshwater fish species in both capture and culture fishery systems for enhancing nutritional security of the rural poor, providing greater employment opportunities;

Actively examine the feasibility of incorporating small indigenous freshwater fish species into existing polyculture practices through research, development and extension programmes;

Target studies on contribution of small indigenous freshwater fish species from different aquatic resources and farming systems;

Evaluate the role of small indigenous freshwater fish species in nutritional security of vulnerable groups, such as pregnant and lactating women and children;

Ensure that policy and legislation at different levels on capture fisheries, aquaculture and biodiversity conservation addresses the development needs and conservation requirements of small indigenous freshwater fish species;

Protect access rights of local communities, especially women, to small indigenous freshwater fish species, particularly through appropriate policies and legislation that take into consideration the local socioeconomic, cultural and institutional context; and

Document and protect traditional knowledge and farmers' innovation with regard to use of small indigenous freshwater fish species resources.

General, Indian Council of Agricultural Research (ICAR), said that SIFFS are relevant in the context of diversification of species in aquaculture. He added that estimates of the contribution of fish to the country's gross domestic product (GDP) are off the mark, due to poor valuation techniques. The importance of fish as a source of nutrition for the poor should be recognized since variously priced fish are available for different income groups. Sugunan also emphasized the need for an enabling policy environment, proper governance and a co-management platform.

In his presidential address, G. Mohan Kumar, Principal Secretary, Fisheries and Animal Resources Development Department, Government of Orissa, stressed the need for policy packages to protect SIFFS, considering their nutritional significance for the rural poor.

The presentation on nutrition highlighted the importance of SIFFS as a source of micronutrients, vitamins and fatty acids. SIFFS offers a better bioavailability of calcium than milk and could thus be a good dietary supplement for expectant and lactating mothers. SIFFS' bioavailability can be improved with more attention to cleaning and cooking practices. Even a minimal production of 10 kg per pond per year of *mola* (*Amblypharyngodon mola*) can make a large difference to the nutritional needs of the rural poor, it was pointed out.

Mola is a self-recruiting species, and perennial ponds can produce enough seeds. Experiments in Bangladesh have proved that a flow-through circulation system would facilitate continuous production and harvest of *mola* in polyculture. Improving habitat itself will enhance the production of SIFFS. Therefore, it is all the more important to raise awareness about the dangers of using piscicides (chemical substances that are poisonous to fish) in ponds. The Bangladesh government, it was pointed out, has issued an order that forbids the use of poisons for cleaning ponds prior to the introduction of scientific aquaculture.

India has around 450 species of SIFFS, of which 62 are highly important



The workshop was attended by 58 participants, including scientists, policymakers, fish farmers, members of civil society and representatives of multilateral agencies

as food species and another 42 species as food and ornamental fish. Nonetheless, despite this diversity, SIFFS are invisible in official statistics, it was pointed out. There is a need to develop a legislative framework, as well as criteria, for the conservation of SIFFS in the larger context of biodiversity and inland fisheries conservation, keeping in mind the need to ensure local food security.

The importance of fish as a source of nutrition for the poor should be recognized since variously priced fish are available for different income groups.

SIFFS, however, should not be allowed to feed the fishmeal industry, it was cautioned.

The workshop session on livelihood emphasized the contribution of SIFFS from river systems. There is significant demand for SIFFS in the eastern and northeastern States of India. Unlike in the case of Indian major carps, SIFFS contribute a greater share of the consumer rupee to the fisher. A shift in focus from promoting the culture of exotic fish to culturing commonly consumed fishes such as SIFFS and other indigenous varieties is greatly needed. Polyculture of SIFFS and carps

need not have a negative impact on carp production, it was noted.

During the session on capture fisheries, Mohan Kumar said that the feasibility of SIFFS in the State of Orissa, where two-thirds of the population were below poverty line and are dependent on fish as the principal source of animal protein will be looked into. It was suggested that the Central Institute of Freshwater Aquaculture (CIFA) and CIFRI should undertake assessment of the economic and nutritional value of different species of SIFFS.

In the northeastern States of India, there is no concept of 'trash fish', and all non-poisonous fish, especially SIFFS, have a ready market and fetch high prices, ranging from Rs300 to Rs600 (US\$7-14) per kg.

Traditional community fishing has been sustained by SIFFS, which are available all year round, and provide income to fishers dependent on wetlands.

The workshop session on culture fisheries focused on the 'aquaplosion' (the vertical and horizontal expansion in aquaculture) happening in India. The possibilities of including SIFFS, now largely ignored, in culture

yield good farmgate prices through the year, and are a ready source of essential nutrition for the family.

Any threat to biodiversity and the ecosystem is a threat to SIFFS and *vice versa*, it was pointed out. The lack of policy on maintaining rivers and the environment—and the resulting pollution—has largely contributed to the decline in biodiversity of SIFFS. Current licensing and leasing rules lack coherence, and are largely focused on raising revenue. Due to exorbitant lease fees, common-property water resources are increasingly getting shifted into the hands of private lease holders, to the detriment of fishers.

The first right of access to inland water bodies should be reserved for co-operatives of traditional fishers, as in Madhya Pradesh, it was suggested. Improved collection and collation of baseline data on inland fishery resources production and consumption was sought by the participants.

The last session of the workshop on community knowledge and intellectual property rights focused on the objectives of promoting SIFFS—nutritional security (especially for women), livelihood security, conservation of biodiversity, or a combination of all three. It was suggested that the Honey Bee network be requested to document innovations and traditional knowledge regarding native fish species, while the ICAR network could focus on the nutritional profile of these species. A State-wise list of endemic and endangered SIFFS was sought.

The potential for culture of these species should be evaluated, considering their nutritional and therapeutic value. Technology for polyculture using SIFFS should be developed only after careful thought, it was suggested. Unless a package of practices is offered, farmers may not be interested in culture of SIFFS.

Best practices

The best practices of farmers need to be employed to promote integration of SIFFS into composite aquaculture or polyculture systems. Rather than opting for a readymade package of

The first right of access to inland water bodies should be reserved for co-operatives of traditional fishers...

fisheries need to be considered. CIFA was requested to develop a package for fish farmers for culture of SIFFS. Such schemes could be implemented under the Rashtriya Krishi Vikas Yojana (RKVY), and under the National Rural Employment Guarantee Scheme (NREGS).

During the session on policy and social dimensions, it was pointed out that large farmers, guided mostly by the extension services provided by the fisheries departments, are largely disinclined to include SIFFS in culture unless they are proved profitable. Small farmers with homestead ponds prefer to rear SIFFS, which, according to them,

practices, the focus should be on promoting SIFFS by incrementally improving existing practices, said one of the participants. To view aquafarmers as only being interested in income is regressive, it was opined.

Group Discussions: The group discussions focused on three themes: biodiversity, poverty alleviation and nutrition. The groups discussed and suggested policy interventions that could better integrate SIFFS into different perspectives.

The nutrition group suggested studies on intra-household consumption of fish, prioritizing species to be cultured in consultation with stakeholders; and popularizing the consumption of nutrient-dense fish species through awareness programmes. Ensuring access rights of local communities to SIFFS was also emphasized.

The poverty alleviation group called for recognition of SIFFS' role in poverty alleviation; assessing their contribution to the economy and nutrition of disadvantaged populations, particularly women and children; ensuring protection and management of aquatic habitats, while securing the access rights of disadvantaged groups to aquatic resources; promoting SIFFS in culture-based fisheries and aquaculture systems through research and policymaking; and strengthening appropriate community institutions to protect access rights, and to ensure responsible ecosystem management and equitable economic benefits.

The biodiversity group recommended assessment of freshwater habitats, species richness, endemism and the causes of environmental degradation. This would help develop priorities for SIFFS conservation. Existing policies should be reviewed for their adequacy and shortcomings, and community awareness should be developed. Management models and recovery programmes should be developed with the participation of local communities, it was suggested.


The group also drew attention to the lack of recognition of wetlands as a multiple-use system. It stressed the need to find a balance between

conservation measures and livelihood and nutrition needs. Traditional knowledge and practices ought to be recognized and rewarded; and wetland commons should be protected from being taken over by powerful interests. The group also pointed to

Conservation of SIFFS in open water bodies needs to be prioritized as a way of addressing starvation, food insecurity and poverty alleviation.

the lack of representation of fishery interests in the various bodies governing wetland habitats.

The session on "The Way Forward: Integrating Small Indigenous Freshwater Fish Species into Fisheries and Aquaculture Development Policies and Programmes" had inputs from various State governments. The Department of Fisheries, West Bengal, expressed interest in a thorough study of the breeding biology of SIFFS and in profiling their nutritional value, stressing the need for collaboration between different agencies. Conservation of SIFFS in open water bodies needs to be prioritized as a way of addressing starvation, food insecurity and poverty alleviation. There is need to consider the introduction of SIFFS in paddy fields and open water bodies. People for whom policies are made should be involved in these processes, it was noted.

At the end of the workshop, a declaration was finalized based on inputs from all the participants. In his concluding remarks, A. P. Sharma, Director, CIFRI, pointed out that it was for the first time that the issue of SIFFS was being highlighted in India. He hoped that such workshops will help generate different ways of thinking about how India can meet some of the Millennium Development Goals by 2015, namely, enhancing food security, raising nutritional security, and halving poverty. 

For more



[www.eseap.cipotato.org/UPWARD/Publications/Agrobiodiversity/pages%20439-447%20\(Paper%2055\).pdf](http://www.eseap.cipotato.org/UPWARD/Publications/Agrobiodiversity/pages%20439-447%20(Paper%2055).pdf)

Conserving Fish Biodiversity in Sundarbans Villages in India

fish-and-nutrition.net

The Role of Fish in Food and Nutrition Security in Developing Countries

www.fao.org/fileadmin/templates/biodiversity/pdf/Halwart.pdf

Biodiversity: Journal of Life on Earth

Marginalized Histories

This book under review focuses on recovering the politics of the Mukkuvar fishers of Kanyakumari District in the south Indian State of Tamil Nadu

The Mukkuvar fishers of the erstwhile kingdom of Travancore on India's southwestern coast have found themselves implicated, over the centuries, in ongoing and interlocked battles over territory and trade, religion and rule, economics and ecology, caste and class, as this work by Ajantha Subramanian points out. In the early 21st century, they emerge as a complex and dynamic society, actively negotiating structures such as caste discrimination, State-sponsored technological transformation, class formations and regulations on their livelihood systems.

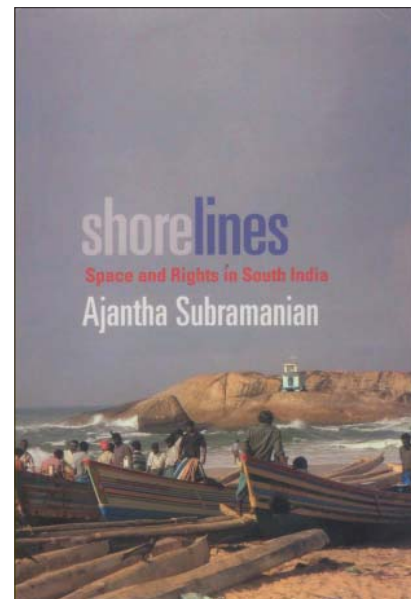
Predominantly artisanal fishers, the Mukkuvars also comprise a powerful subsection of wealthy merchant trawler-owners, with the two groups chronically at loggerheads over fishing methods and access to marine resources. A mainly Catholic population governed by church authority in economic and political as well as social and religious matters, the Mukkuvars have periodically risen to confront clerical dictates. In doing so, they have turned to Protestant missionary societies, State/legal authorities and political party patrons, including, more recently, the Hindu nationalist Bharatiya Janata Party, to bolster their demands. A low-caste fisher community, the Mukkuvars have demanded and won positions within the church hierarchy, inserted themselves into national debates and campaigns over development, and participated in the anti-globalization battles of the late 1990s. And, in an incident which opens and closes Ajantha Subramanian's book, the fishers took their church to court,

tellingly demonstrating their capacity to manoeuvre between various institutions and agencies of authority to enforce their rights.

Yet, interestingly enough, as this book points out, this fisher community has been consistently portrayed over the centuries and into the present, as an odd, isolated and static fringe society. Their coastal habitat is portrayed as a liminal space suspended between rough oceans and cultivated inlands, and their culture as closed, opaque and unpredictable, not amenable to mainstream norms of law and policing, and stubbornly mired in caste backwardness. Their livelihoods are perceived as stunted by their propensity to cling to archaic production techniques, and their politics as primitive and entrenched in church patronage. Subramanian's book seeks to explain the surprising tenacity of this representational matrix and, simultaneously, to dismantle it. She marshals a rich body of historical and ethnographic material to show how these images have been reproduced and reinforced by a range of actors over time, from Dutch traders and Portuguese conquerors to Protestant missionaries, Travancore's princely rulers, colonial administrators, postcolonial fisheries officials, and inland agrarian castes.

Stereotypes

Why do these contending representations matter? Whom do these stereotypes of Mukkuvar marginality and backwardness serve, and how? The book demonstrates how images, representations and stereotypes are systematically



SHORELINES: SPACE AND RIGHTS IN SOUTH INDIA
By Ajantha Subramanian
Stanford, California: Stanford University Press, 2009.
ISBN 978-0-8047-6146-8. pp.301.

*This review is by **Karen Coelho** (karen.coelho@gmail.com), an anthropologist and Assistant Professor at the Madras Institute of Development Studies, Chennai, India*

deployed to achieve specific effects of power. For example, Protestant missionary organizations in the nineteenth century, in efforts to discredit the rule of Hindu princes of Travancore, argued that their conversions liberated lower castes from the latter's oppressive prohibitions. In making this case to the colonial administrators of Madras Presidency, they contrasted their emancipated converts with native low-caste Catholics such as the Mukkuvars, whom they portrayed as "cowed by clerical authority and living in state of ignorant submission".

Caricatures of Mukkuvar political backwardness also provided a useful foil for inland agrarian castes who, in the late 19th and early 20th centuries, launched spectacularly successful struggles for caste emancipation and democratization, shaping the landscape of politics in Travancore. These histories established the political dominance of low-caste Nadars and high-caste Vellalas, the Tamil-speaking castes of southern Travancore, in the newly established Kanyakumari District after 1956. As these processes unfolded in the agrarian interior, they drew substantially on invocations of the 'other': the Mukkuvar Catholics, who did not participate in these

of social organization and fishing methods permitted the State, both before and after independence, to intervene aggressively in their livelihood practices under the rubric of 'fisheries development'. This pattern has endured across various paradigms of development, from the Community Development Programme in the 1950s to the State's vigorous promotion of trawling from the 1960s, to its neoliberal facilitation of international deep-sea fishing in the 1990s. Tropes of Mukkuvar social and technical backwardness allowed the State to disregard the sustained opposition of artisanal fishers to the imposition of new paradigms of development which undermined their autonomy, threatened their access to marine resources, and exacerbated economic and social tensions within their community. Any setbacks or failures in the State's ongoing efforts at capitalist transformation of fisheries could conveniently be reattributed to the Mukkuvar culture's resistance to progress. This closed circuit of reasoning, as Subramanian lucidly demonstrates, also allowed the State to resolutely ignore the ecological and resource conservation aspects of artisanal fishers' demands for restriction and regulation of trawling. As struggles between artisanal and trawling sectors intensified, periodically erupting into violent clashes in the 1990s, stereotypes of rough and lawless primitives were mobilized to characterize these conflicts as problems of law and order rather than as assertions of resource conservation ethics and environmental rights.

Mukkuvar society, profoundly shaped by the patronage of the Catholic church, was believed incapable of mobilizing and participating in a politics of rights.

struggles, remained within the caste configurations authorized by the Catholic church, and were, therefore, "consigned to the space of primitivism". The dominant caste composition of the new district of Kanyakumari rendered the Mukkuvars more invisible than before, a status reflected in their poor access to State services and weak integration into the development mainstream.

Most significantly, however, the portrayals of Mukkuvar artisanal fishers as caught in archaic forms

Dichotomy challenged

In a treatise spanning 500 years of archival and oral histories, the book reveals the unfolding of Mukkuvar political agency, through their affiliations, negotiations and contestations with the various powers that impinged upon their spaces and livelihoods. In the process, Subramanian challenges the dichotomy etched into academic writings as well as popular discourse,

between relations of patronage and democratic politics of rights. Mukkuvar society, profoundly shaped by the patronage of the Catholic church, was believed incapable of mobilizing and participating in a politics of rights. Subramanian's careful analysis of the content of the fishers' negotiations with various echelons of church, State and political authorities provides a much richer and less condescending understanding of how patronage works on the ground. It reveals how fishers strategically calculate and balance their interests against their norms of allegiance, so that "loyalty is conditional on the granting of specific rights and privileges".


Subramanian also shows how the politics of rights, rather than drawing on abstract principles of Western political theory, were fashioned from local struggles over caste and religious identity, expressed through such strategies as mass conversion and demands for caste-based representation in clerical as well as State bodies. Notions of political sovereignty and rights, thus, acquired "a collective, culturally embedded character distinct from the modular form of the individual rights-bearing subject".

Space is a key actor in this book: spatial arrangements and relationships play crucial roles in shaping identities and determining the parameters of citizenship. The fishers' spatial marginality on the coast has historically encoded a variety of other margin-making meanings, painting them as a rough, archaic and subjugated fringe society. After independence, Subramanian shows, another "shoreline" appears across the coast, dividing artisanal fishers and merchant trawler-operators, marking not only a class divide within Mukkuvar society, but also a "sectoral" divide within fishing. The latter became closely integrated into the State's visions of national development, and enjoyed privileged access to credit, subsidies, technological inputs and other benefits. But the artisanal fishers also deployed spatial categories and

boundaries to counter the onslaught of mechanized trawlers, by carving out their domain of sovereignty, the 3-mile zone. Interestingly, as Subramanian points out, conflicts between these sectors have produced peculiar overlaps of class and "sector", wherein labourers on trawler boats align

Space is a key actor in this book: spatial arrangements and relationships play crucial roles in shaping identities and determining the parameters of citizenship.

themselves with trawler owners in confrontations with artisanal fishers.

The Mukkuvars have been spoken for over the centuries, their own histories of struggle and social formation submerged under the weight of outside characterizations. In the process of recovering their histories, Subramanian also provides a panoramic profile of the fisheries politics of the region since the beginning of 'fisheries development' in India. The book also carries compelling photographs of the social and physical landscapes of fishing in coastal Kanyakumari. 

For more



www.indiaenvironmentportal.org.in/node/4039

Gender Roles among the Mukkuvar Fisherfolk

ignca.nic.in/cd_08015.htm

The Mukkuvar: A Fishing Community

indianfisheries.icsf.net

Fisheries and Fishing Communities in India

Trawl Brawl

Indian and Sri Lankan fishermen have evolved a formula for co-existence in the Palk Bay, which has long been the arena of conflicts over transborder fishing

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Stop trawling within one year. This was the ultimatum that fishermen from the Northern Province of Sri Lanka gave their counterparts in the Indian State of Tamil Nadu, when representatives from both countries met in Chennai during 22 - 24 August 2010 to evolve a formula that would enable them to fish together peaceably in the Palk Bay and Palk Straits.

In an 'agreement', the Indian fishermen consented—albeit reluctantly—to this one-year deadline and also to the following restrictions until trawling is finally stopped in the

nearly three decades. Since the start of the civil war in Sri Lanka in 1983, Tamil Nadu fishermen from the four districts adjoining the Palk Bay and Palk Straits—Ramnad, Pudukottai, Tanjavur and Nagapattinam—have braved arrests, detention and even bullets to fish in Sri Lankan waters. Over a hundred have lost their lives, caught in the cross-fire between the Tamil Tigers and the Sri Lankan Navy, while a few thousand have been arrested and spent weeks and months in Sri Lankan jails and detention camps. Hundreds of boats have been damaged or seized, forcing many a boatowner into bankruptcy. Yet, transborder fishing by Tamil Nadu boats continues unabated.

The present reality is the existence of a large fleet, severely constrained by several factors like declining catches, reduced profitability and limited number of fishing days, going into a frenzy on the 70 to 100 days it gets a chance to fish. Given that fishing grounds are limited (and depleted) on the Indian side, this fleet goes right up to the Sri Lankan shore where the shallow waters are extremely rich in fish resources. They do in Sri Lankan waters what may be unacceptable in Indian waters. This is clearly a failure of fisheries management.

The ARIF network

It is in this context that a goodwill mission of Indian fishermen was organized in May 2004 by the Alliance for Release of Innocent Fishermen (ARIF), a network of Indian trade unions, fishermen's associations and non-governmental organizations

Transborder fishing in the Palk Bay has been a major headache for Sri Lanka and India for nearly three decades.

Palk Bay: (i) reduction of fishing days to twice a week, with an overall cap of 70 days in a year; (ii) maintaining a distance of three nautical miles from the Sri Lankan shore to avoid destruction of small fishing nets and corals; (iii) reduction of fishing time in Sri Lankan waters to 12 hours per trip; and (iv) establishing a monitoring and enforcement system on the Indian side that will punish violations. The agreement will be reviewed and further steps taken when Indian fishermen go to Sri Lanka for a 'return' visit in a few weeks time.

Transborder fishing by Tamil Nadu fishermen in the Palk Bay has been a major headache for both countries for

This article is by **V Vivekanandan** (vivek.siffs@gmail.com), Adviser, South Indian Federation of Fishermen Societies (SIFFS), and Member, ICSF

(NGOs) that works to help fishermen of both countries who are arrested for crossing the maritime border. ARIF is supported by the South Indian Federation of Fishermen Societies (SIFFS). The mission also had the collaboration of NGOs in Sri Lanka, including the National Fisheries Solidarity Movement (NAFSO) and the Social and Economic Development Centre (SEDEC).

The May 2004 dialogue was significant in that it brought the trawl issue to the forefront and forced the Tamil Nadu trawlers to acknowledge that they have to think of a future in which trawling will be severely curbed or replaced with more ecofriendly fishing methods. It was also understood that the trawl fleet needed downsizing to survive in Indian waters. This led to the proposal of a 'buy-back' scheme, and many owners said they were willing to give up their trawlers for adequate compensation.

However, the follow-up of the May 2004 agreement was weak due to the Indian Ocean tsunami of December 2004 and the rehabilitation work in both countries. With the escalation of the civil war in Sri Lanka in 2006, many fishermen of the Northern Province became internally displaced persons (IDPs).

The end of the civil war in May 2009 signalled the start of a new phase—no longer could the transborder fishing issue be treated as a mere by-product of the war. As the fishermen of Sri Lanka's Northern Province gradually began reviving their fishing operations, conflicts with Indian trawlers surfaced once more. In mid-2010, two Indian trawlers were sunk by irate Sri Lankan fishermen off the Mannar coast.

Soon strong signals came from both sides that the 2004 dialogue should be resumed. This time, it would be the turn of the Sri Lankan fishermen to visit India. The Fisheries Minister of Sri Lanka himself strongly supported the idea of a dialogue and agreed to send observers along with the fishermen. The Tamil Nadu Fisheries Department also agreed to

send observers for the meeting.

A 24-member Sri Lankan delegation of fishermen leaders from three districts (Jaffna, Killinochi and Mannar), NGO representatives, government observers and media persons arrived on 16 August 2010 at Trichy airport in Tamil Nadu. They visited Rameswaram, Jagadapattinam, Kottaipattinam and Nagapattinam over a four-day period, conducted a series of interactions

with local fishermen's associations and visited major fish landing centres in the Palk Bay. The field visits created great enthusiasm among the fishing communities in Tamil Nadu and also generated unprecedented media coverage. The leader of the Sri Lankan delegation, Soorya Kumar, a fisherman from Wadamarachi in Jaffna, stressed the strong bonds that linked the fishermen of both countries, even as he pointed out the unacceptable nature of the operations of Indian trawlers.

These meetings highlighted the Sri Lankan fishermen's plight and countered the one-dimensional impression of Tamil Nadu fishermen being the only victims. The responses of the Indian fishermen were encouraging. The Rameswaram fishermen openly acknowledged the harm done to Sri Lankan fishermen by Indian trawlers. While acknowledging that it was their duty to find a fair solution, they also stressed the need for government support, compensation or alternative sources of livelihoods to compensate for abandoning trawling.

Workshop

Following the field visits, a three-day workshop entitled "Fishing Together in the Palk Bay" began at



Sri Lanka - India maritime boundary and zones. Fishermen have braved arrests to fish in these waters

the International Centre at St.Thomas Mount in Chennai on 20 August. Around 30 fishermen leaders from the four Palk Bay districts of Tamil Nadu attended the workshop.

The opening statements from representatives of both sides repeated some of the issues already highlighted at the field meetings, in some cases adding more nuances to the problem of transborder fishing. The second day was entirely devoted to evolving a formula for solving the problem. Both sides met separately to formulate their ideas. The Indian side was banking upon reviving the 2004 formula of continuing trawl operations in Sri Lankan waters under stringent restrictions while simultaneously working with the Government of India/Tamil Nadu to find a long-term solution to the trawl issue. The Indian fishermen were even prepared to reduce the number of fishing days a week from three to two. However, the Sri Lankan fishermen wanted trawling to be stopped completely in three months.

The Indian fishermen felt that the three-month deadline was an impossible one to meet. The Sri Lankans, on their part, maintained that in the absence of a reasonable deadline, there would be no pressure

manner without harming the Sri Lankan fishermen.

Once the deadline issue was settled, the details of the regulations on trawling for the one-year period were negotiated. This proved to be much tougher than anticipated. The first Sri Lankan offer was for Indian trawlers to continue fishing for three days a week but not beyond four nautical miles from the Indo-Sri Lankan maritime border. The Indian fishermen found this unacceptable as it would effectively shut them out from their usual fishing grounds closer to the Sri Lankan shore. They preferred an operational boundary of three nautical miles from the Sri Lankan shoreline, which would give them some catches and also ensure that the small fishing nets of the Sri Lankan fishermen were not damaged by trawl operations. In turn, they would reduce their fishing days.

After prolonged negotiations on the third day of the workshop, an 'agreement' was finalized and presented to the two groups in a plenary for signed approval. The chief guest for the final session was S.W. Pathirana, Sri Lanka's Director General of Fisheries. The Indian side was represented by K. Sellamuthu, Director of Fisheries of Tamil Nadu, who was present only as an 'observer'. Pathirana received the agreement on behalf of the Sri Lankan government and agreed to consider it within the framework of Sri Lankan law. The agreement itself was clear that the proposals "will be placed before the two governments for their consideration. The government decision will be final".

The Indian fishermen finally agreed to a one-year deadline...

on Indian fishermen to approach their government for a solution. Indian fishermen had been asked to stop trawling as far back as May 2004 and six years have gone by without any change, it was pointed out. The Indian fishermen finally agreed to a one-year deadline, though without much clarity on how that would be met. More discussions would be held when the two groups meet next in Colombo. It was also hoped that the one-year grace period could be used to demonstrate that the Indian trawlers could operate in a responsible

Careful package

Clearly, for the agreement to work, the support of the two governments is needed. The Sri Lankan Navy will need to be vigilant but should not interfere with the operations of Indian trawlers as long as they keep to their side of the bargain. The Indian and Tamil Nadu governments will have to help Indian fishermen with a carefully developed package to resolve the trawler issue. The non-trawl fisheries may also need to be properly

EPHREM/SIFFS



The Sri Lankan delegation of fishermen leaders called for the cessation of trawling within three months. An agreement was finally approved with the Indian fishermen agreeing to a one-year deadline at the Chennai dialogue

managed to ensure equitable distribution of the Palk Bay resources between the fishermen of both countries. Only if both Indian and Sri Lankan fishermen co-operate can proper management of fisheries in the Palk Bay be ensured. 3

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For more



arrest-fishers.icsf.net

Arrest and Detention of Fishers

nafsoonline.blogspot.com/2010/08/sri-lankan-tn-fishermen-talks.html

NAFSO Blogspot

www.siffs.org/%5CBooks%5Cfishing_for_favour.pdf

Fishing for a Favour, Netting a Lesson: Report of the Goodwill Mission

www.himalmag.com/read.php?id=4707
Fishing for Solutions

A Bottom-up, Pro-fisher Policy

A recent workshop and symposium in Kolkata, India, highlighted issues and concerns in the run-up to the proposed international guidelines on marine and inland small-scale fisheries

A National Workshop and Symposium on Sustainable Small-scale Fisheries, organized by the National Fishworkers' Forum (NFF), in collaboration with the International Collective in Support of Fishworkers (ICSF), was held in Kolkata, India, between 19 and 21 September 2011, to draw attention to fishery and non-fishery threats facing

Secretary, ICSF, said small-scale fisheries (SSF) mainly contribute towards direct human consumption, and are known for seasonality of operations, and low energy use. Small-scale fisheries are more equitable and sustainable, she said, and are part of the culture of coastal and inland communities, besides being a way of life. Women often are an integral part of small-scale fish processing and marketing, she pointed out. There is, however, need to be clear on what constitutes small-scale fisheries, she stressed. The workshop, she hoped, could develop proposals on policy and action needed to support inland and marine small-scale fisheries at the local and national levels.

Sharma provided a brief background to the decision of FAO to develop voluntary guidelines on sustainable small-scale fisheries (VG-SSF). Civil society groups across the world had mobilized prior to, and around, the FAO conference on "Securing Sustainable Small-scale Fisheries: Bringing Together Responsible Fisheries and Social Development", in October 2008, in Bangkok, seeking greater support for small-scale fisheries and, specifically, for an international instrument on SSF. Following FAO's subsequent decision to develop such an instrument, civil society organizations had formed a joint co-ordination group.

National workshops

National workshops were being organized in Asia, Africa, Central America, Latin America, Oceania and Europe during the period 2011-2012. The output of these workshops

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Small-scale fisheries are more equitable and sustainable, and are part of the culture of coastal and inland communities, besides being a way of life.

inland and marine small-scale fishing communities and to contribute to the proposed international guidelines on marine and inland small-scale fisheries being developed by the Food and Agriculture Organization of the United Nations (FAO).

Matanhy Saldanha, Chairperson, NFF, welcomed the participants and said that this was the first time NFF was inviting representatives of inland fisheries to one of its meetings. Speaking at the workshop, Madan Mitra, the Minister of State for Fisheries, West Bengal, spoke of plans being formulated by the State government to support fisheries. He invited two representatives from the workshop to present the workshop proposals at a State-level meeting on fisheries. Pradip Chatterjee, Secretary, NFF then read out a message of support and solidarity from an eminent Bengali author, Mahasweta Devi.

Introducing the workshop, Chandrika Sharma, Executive

This report has been prepared by the ICSF Secretariat (icsf@icsf.net)

will be synthesized, consolidated and used to influence the content of the VG-SSF, Sharma said. The current workshop is the first in the series, she observed.

Presentations from inland fisheries groups followed in the next session of the meeting, chaired by V Vivekanandan, a Member of ICSF. Sriram, an inland fisherman from Tikamgarh district, Madhya Pradesh, spoke about fishing and fish farming in leased irrigation tanks, originally built by the Chandela dynasty in the 10th century AD. The traditional fishers got organized to challenge a 1996 provincial policy defining anyone who fished as a 'fisherman'; they had the support of a local non-governmental organization (NGO), Vikalp. They wanted only traditional fishers to be legally recognized to fish in inland water bodies. After a struggle lasting nearly ten years, the fishers got their demand met by the provincial government in 2008. The inland fisheries policy of Madhya Pradesh is now based on the recommendations of inland fishers. Likewise, the lease amount is also fixed in consultation with fishers. Sriram sought a national campaign to address issues such as rights of traditional inland fishers, enhancing fish stocks in inland waters, and increasing budget allocations for inland fisheries development. He proposed setting up a national network of those working in inland fisheries.

Three types of inland fisheries and aquaculture operations were presented from West Bengal to highlight the rights demanded by, or denied to, inland fishing communities. Rabin Soren from the *Santhal* community of Birbhum district talked about a campaign to stop destructive stone quarrying, and about stocking fingerlings in abandoned *khadans* (stone quarries), managed and fished by women's groups. There are many illegal quarries in the region, which tribal communities are trying to convert into fish ponds, and get their rights secured to fish in them, he said. Gobinda Das from the Sunderbans narrated problems encountered in fishing in the vicinity of a tiger reserve

(a protected area), and how the community is constantly under the threat of fishing artefacts being confiscated by the West Bengal Forest Department. He sought the implementation of the Forest Rights Act, which recognizes the right to livelihood of local communities, including in national parks, reserves and sanctuaries. Beg, an employee of the Mudiali fisheries co-operative, talked about how large quantities of industrial and domestic waste water of Kolkata are being recycled to successfully rear different carp species. Although their co-operative is a good example of nutrient recycling, low-impact aquaculture and low-external-input sewage/fish system combining the need to increase fish production by decreasing pollution, it still operates under the threat of eviction by the Kolkata Port Trust Authority, which owns the land where the fish-rearing activities are located.

Suman Singh from Sakhi, an NGO in Bihar, narrated the struggle waged by women of traditional fishing communities for fishing rights over ponds and water bodies. Women of traditional fishing communities are now organized into self-help groups and co-operatives, and are undertaking fishing in ponds and tanks in northern Bihar, employing local material and local indigenous knowledge. In spite of the difficulty in getting recognition

RINA ROY



Participants at the group discussions reflected on key issues of concern to their lives and livelihoods, and also made specific proposals to address them

for women's right to fish, 50 per cent of the ponds in Bihar are now being allocated to women for fishing. Since 2010, a new inland fisheries policy has been implemented in Bihar. Singh drew attention to the extremely poor socioeconomic status of traditional fishing communities in Bihar, and the high rate of illiteracy in the State. With girls often getting married at a very young age, the situation of women is even more precarious. Urgent attention is needed to improve the socioeconomic situation of fishing communities, she said. Singh welcomed the proposal to form a national network. Manju Devi, a landless fisherwoman from Bihar, said she and her husband had received a pond on a ten-year lease to undertake fish farming; this, she added, is an illustration of how fish ponds on lease can be an effective tool for redressing the poverty of landless people.

Prakash Malgave of the Vidarbha Federation of Fishermen's Co-operatives, Maharashtra,

production, he said. Subsidies should be extended for the conservation of natural seed production areas. The rights of inland fishers are not recorded anywhere. The provincial government should properly identify and record the historic rights of inland fishers. A comprehensive policy on inland fisheries is needed, Malgave concluded.

Raja Rao from Srikakulam, Andhra Pradesh, described the campaign undertaken by local fishing communities against the location of a power plant in the productive wetlands that have been their traditional fishing grounds. The fishermen of Chilika Lake of Orissa—the largest lagoon in India—described the negative impact of illegal prawn farms that had come up in the lagoon, an issue they have been agitating against for the past couple of decades, including through legal means. Even as many of the farms continue to operate illegally, the opening of a new outlet in the lake has affected the water exchange and productivity of the lagoon. The livelihoods of local fishing communities have been badly affected, and they have even been forced to migrate to work on board multi-day fishing vessels in Gujarat.

On the second day of the meeting, participants were divided into three groups. While two of the groups comprised participants from marine fisheries, one group focused on inland fisheries. Participants were asked to reflect on key issues of concern to their lives and livelihood, as well as to make specific proposals to address these issues. They were also expected to reflect on how small-scale fisheries can be defined or characterized in the Indian context. The discussions in all the groups were extremely animated and lively. The resulting statement from the workshop (see box...) is based on the reports of the working groups.

Hotly debated topic

How to define small-scale fisheries and small-scale fishers in the Indian context was a topic hotly debated in one of the marine fisheries groups. According to fishers of southern Maharashtra, traditional fishing employing non-

How to define small-scale fisheries and small-scale fishers in the Indian context was a topic hotly debated...

highlighted the basic contradiction between rearing fish in irrigation tanks and agriculture. While the farmers are keen to take the water out, the fishers are interested in keeping the water in the tank. Fishermen's co-operatives have to pay the full lease amount to the *zilla parishad* even if there is no water in the irrigation tank, he said. Fishing co-operatives have water to undertake fish culture only during the months of July to September—about 100 days in a year. Fishers have to seek other forms of livelihood for the rest of the year. Instead of granting subsidies for construction of fishing vessels and setting up fish-processing facilities, subsidies should be granted for water conservation in rivers, tanks and ponds, as well as for fish seed

mechanized and non-motorized fishing craft within 10 fathoms from the shoreline should be considered small-scale fishing. For mechanized fishing vessel owners in Karnataka, small-scale fishing would include only vessels with engines up to 10 hp, or without engines. Mumbai fishers said non-mechanized vessels or those with engines up to 32 hp undertaking any territorial-water fishing operations other than trawling could be considered small-scale fishing vessels. For the Tamil Nadu fishers, all fishing vessels up to 37 hp undertaking fishing operations, except trawling and purse-seining in territorial waters, could be considered small-scale. Small-scale fishers would include owner-operators of the above categories, workers engaged in fishing operations in these vessels, and allied workers and processing workers, especially women. It was agreed to consider non-trawl 20 hp fishing vessels below 20m in length, with manually operated gear, especially with no mechanized towing and hauling power, and whose owners regularly go out to sea, as small-scale fishing in the national context. It was also agreed that small-scale fishers in India would include: owner-operators from fishing communities, and workers on board, and allied to, small-scale fishing, including resident and migrant workers as well as women fish processing workers. Traditional fisheries can be divided into traditional small-scale and traditional large-scale, it was suggested; the latter would fish in waters beyond the territorial limits. The traditional large-scale should be licensed to fish in the exclusive economic zone (EEZ) and the Central government should facilitate this, it was held.

On fisheries subsidies, the group was of the view that these should be discontinued for building new fishing vessels. It was proposed that tax rebates on diesel fuel for purse-seiners and trawlers should be withdrawn considering their destructive impact on fishery resources. The group debated, inconclusively, whether or not it is better to consider a one-time



Madan Mitra, the Honourable Minister of State for Fisheries, Government of West Bengal, addressing the Inaugural Session of the national workshop on small-scale fisheries

subsidy to shift to more fuel-efficient engines, instead of continuing with the current regime of recurring fuel subsidies. The group also discussed the desirability of re-targeting existing fuel subsidies towards better health and education programmes for fishing communities.

Discussing the equity dimension of ownership, the group was of the view that each fishing family should not own more than one or two vessels. It is ideal to restrict the number of fishing vessels to one per ration card (a card issued by the provincial government for a family to obtain food or other essential commodities, which is treated like a family identity card in India). It was also suggested that community consent should be obtained before registering new fishing vessels.

While discussing bottom-up processes for fisheries management, several questions were raised for consideration, such as how far self-regulation is effective; how far existing traditional arrangements could be useful; the relevance of traditional knowledge in a fast-changing fishery scenario; and the role of government in fisheries management. The group was keen that the government should have an oversight role in all fisheries-management arrangements.

In the second marine group, which included the fishworkers' groups from India's eastern seaboard, attention

THE KOLKATA STATEMENT

National Workshop on Sustainable Small-scale Fisheries: Towards FAO Guidelines on Marine & Inland Small-scale Fisheries

Organized by the National Fishworkers' Forum (NFF) in collaboration with
the International Collective in Support of Fishworkers (ICSF)

19 – 21 September 2011
Kolkata, India

We, 62 participants representing the inland and marine fishing communities, fishworker organizations, and non-governmental organizations, having gathered at the National Workshop on Sustainable Small-scale Fisheries: Towards FAO Guidelines on Marine and Inland Small-scale Fisheries, from 19 to 21 September 2011 in Kolkata, West Bengal, India;

Welcoming the decision of the 29th Session of the Committee on Fisheries (COFI) of the Food and Agriculture Organization (FAO) of the United Nations to develop a set of voluntary guidelines addressing both inland and marine small-scale fisheries that would draw on relevant existing instruments, and would complement the FAO Code of Conduct for Responsible Fisheries;

Noting that about 14 million people are directly dependent on fisheries in India for their lives and livelihoods, and that the vast majority of them are dependent on small-scale fisheries;

Recognizing that fishing has a long tradition in India, and that social development issues are common to all fishers from traditional fishing communities;

Further noting that small-scale inland and marine fisheries provide employment, income and nutritional security, especially to the poor;

Drawing attention to the critical role played by women within fisheries and fishing communities and the need for specific focus on supporting and empowering women;

Call upon the Government of India, the States, the Union Territories, and the *panchayats*, as appropriate, to address our concerns and to recognize and defend the rights of small-scale fishing communities, as mentioned below:

Small-scale Fisheries

1. In the Indian inland sector, both freshwater capture fisheries and sustainable forms of culture-based capture fisheries, primarily dependent on indigenous species, are small-scale fisheries for us. In the Indian marine fisheries sector, however, only fishing operations by vessels below 20m length that do not operate trawl, employ no mechanized towing or hauling power, where owners are full-time fishers and where fishing gear is manually operated, are considered small-scale fishing operations by us. Small-scale fishers would include: owner-operators from traditional fishing communities, fishworkers, allied workers in the above fishing operations, as well as women engaged in post-harvest activities.

Resource Management

2. Respect, protect and secure the rights of traditional fishing communities to fishing grounds and resources, considering the importance of fishery resources to their life, culture and livelihood.
3. Recognize and protect the traditional rights of small-scale fishing communities to fish, including in national parks and sanctuaries. The provisions of the Forest Rights Act, 2006, and those of the Wildlife (Protection) Amendment Act, 2006, that protect the rights and occupational interests of traditional fishing communities should be implemented in this context.
4. Facilitate bottom-up processes for managing marine and inland fisheries by revitalizing traditional institutions and by employing the traditional knowledge of fishers, within an appropriate policy and legal framework.
5. Make appropriate arrangements to facilitate utilization of water bodies such as ponds, lakes, wetlands, reservoirs and canals for the purpose of fishing.
6. Develop a uniform inland fisheries policy through a participatory process.
7. Protect or grant the right to fish, and to manage fisheries, in inland public water bodies to traditional inland fishing communities.
8. Vest fishing communities with the right to manage resources, including in national parks and sanctuaries.
9. Implement the marine fishing regulation act (MFRA). The MFRA and related instruments should be amended to facilitate participatory management of fishery resources.
10. Adopt measures to phase out bottom trawling from territorial waters over a period of five years, considering its negative impact on marine ecology, biodiversity and the distribution of marine fishery resources.
11. Promote selective and location-specific fishing gear. Prohibit destructive fishing gear such as purse-seine and fine-meshed gear in shrimp seed collection, considering their negative impact on biodiversity.
12. Prohibit the construction of new trawlers and purse-seiners under the National Co-operative Development Corporation (NCDC) schemes for fisheries development, with immediate effect.
13. Restrict the ownership of fishing vessels to one vessel per fishing family. Community-based organizations may

be involved in regulating the number of fishing vessels at the local level. Community consent may be taken before registering a new fishing vessel.

14. Cancel fishing vessels under the Letter of Permission (LOP) facility and promote vessels fully owned and operated by Indian fishing communities that have the capacity to safely harvest fishery resources such as tuna and tuna-like species in the Indian exclusive economic zone (EEZ).
15. Guarantee preferential access to small-scale fisheries in the Indian maritime zones, also upholding the spirit of the Murari Committee (1996) observations and updating its recommendations.
16. Urgently enact legislation for managing fisheries in the Indian EEZ, also taking into consideration the recommendations of the Majumdar Committee (1978).

Coastal and Marine Environment Protection

17. Protect inland, coastal and marine ecosystems from pollution and habitat destruction.
18. Do not permit nuclear and thermal power plants, chemical and other polluting industries to be set up near the coast and water bodies, including wetlands.
19. Consider all factors, including ecological ones, and the threat of coastal erosion, while designing ports and harbours.
20. Establish an inter-departmental co-ordination mechanism to address coastal, marine and inland pollution, encroachment and other issues, with all concerned ministries and departments on behalf of small-scale fishers. The State fisheries departments should take up this responsibility.

Rights to Land and Housing

21. Secure the rights of fishing communities to land for housing and for fishery-related activities. Land titles (*pattas*) should be issued for housing, and space used for fishery-related activities should be protected as common property.
22. Protect the rights of fishing communities to housing in urban and tourist areas. Land, as required, should be acquired to assure decent housing for fishing communities.
23. Recognize and secure the land rights of fishers and fishing communities (in relation to both private and common property) in land revenue records.

Rights to Social and Economic Development

24. Guarantee specific forms of protection to traditional fishing communities to enable them to improve their socioeconomic status.
25. Equip fishing villages with basic services, such as healthcare, potable water, sanitation and electricity.
26. Extend primary healthcare to all fishing communities. The Yeshasvini Health Insurance Scheme of the Karnataka government could be a good practice to be followed by other States.
27. Deliver nutritional support to pregnant women and children in food-insecure fishing communities.
28. Ensure access to education in fishing villages. Education up to matriculation, including residential facilities at educational institutions, should be made freely available.

29. Provide access roads to fishing villages where they are lacking, as in States on the east coast of India.
30. Develop hygienic landing centres and all-weather approach roads in fishing villages. Basic facilities such as ice boxes, storage facilities for fishing gear, and toilets for women should be provided at the landing centres.
31. Undertake a census of inland fisher/fishing communities.
32. Enumerate women's work in both inland and marine fisheries.
33. Revive and strengthen fisheries co-operative societies, and support appropriate forms of economic organizations, including self-help groups (SHGs), and fully respect their autonomy.
34. Ensure that access to credit and government schemes, and other economic benefits, are not restricted to the members of co-operative societies.
35. Guarantee credit at reasonable rates of interest to enable all fishworkers to attain economic empowerment and to free themselves from unscrupulous moneylenders.
36. Consider production-enhancing subsidies in small-scale fisheries, subject to the status of fishery resources.
37. Provide adequate compensation to fishers whose livelihood activities are affected due to activities such as oil spills, oil and gas exploration and exploitation, conservation programmes and maritime transport.
38. Ensure diversified livelihoods and appropriate training to fishing communities to reduce pressure on the fishery sector. In this context, fishing community-based tourism, production of value-added products, and employment of local fisher youth in marine and coastal police, and as lifeguards, should be promoted.

Post-harvest Activities

39. Provide hygienic fish markets, basic amenities, transport facilities and assistance to maintain cold chains.
40. Redevelop/upgrade existing fish markets, to ensure hygiene and access to basic facilities such as water, sanitation, and storage.
41. Issue identity cards to fish vendors, including women fish vendors.
42. Protect access of women of fishing communities to fish resources for processing, marketing and food.
43. Provide transport facilities to fish vendors, particularly if they lack access to public transport, or are denied access to it.
44. Take steps to eliminate harassment faced by women in fish markets, in particular, and ensure safe workplace for women.

Labour, Working and Living Conditions

45. Ratify and implement the ILO's Work in Fishing Convention, 2007, and extend its provisions to all fishers, to improve their working and living conditions.
46. Implement uniform social security for all fishers and fishworkers across all States and Union Territories and reduce the minimum age for their old age pension to 50 years.

contd...

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47. Guarantee access to social security for all those who are engaged in fishery-related activities.
48. Enhance the contribution of the Centre and State governments to the Saving-cum-Relief Scheme to ensure higher monthly payment during closed season. The scheme should be inclusive of inland fisheries and women fish vendors of all States, as well as fish sorters, driers and vendors.
49. Provide toilets on board fishing vessels, considering that many fishers meet with accidents while using the gunwale as toilet or while using portable toilets on board trawlers and purse-seiners.
50. Prevent child labour in fisheries and fishing communities, and protect the right of the child to education. Schools for child workers below the age of 14 years should be set up in coastal areas. In this context, the school for child workers in brick kilns of Orissa may be considered a model.
51. Provide training in, and access to, diversified livelihoods to fishing communities to prevent distress migration.
56. Develop, in a participatory way, the adaptive capacity of fishing communities to meet challenges of climate variability and change, such as floods and cyclones, and shift or extension in distribution of fishery resources.
57. Introduce fuel-efficient engines and promote biodegradable fishing gear, towards mitigation, employing financial incentives. Training programmes should be developed to facilitate improved navigation and fishing methods to reduce fuel consumption, as well as to facilitate fishing community initiatives to protect and develop coastal vegetation and features.
58. Create a special fund for cyclone relief, especially to ensure speedy response. Cyclone shelters should be provided in all cyclone-prone States, especially on the east coast of India.

Climate Change and Disaster Preparedness

52. Utilize effectively the financial resources earmarked for disaster preparedness in the context of natural or man-made calamities of concern to fishing communities.
53. Take steps to prepare both inland and marine fishing communities for disasters such as flood, sea surge and drought, and other unexpected forms of natural or man-made calamities.
54. Train traditional fishers in disaster preparedness. Periodic drills should be conducted to prepare coastal communities to speedily evacuate from affected areas in the event of an industrial or nuclear accident, or catastrophe.
55. Take steps to ensure that incidents of old ships being accidentally or deliberately sunk in coastal waters are minimized, given the devastating impact of such incidents on fishing activities.

Capacity-building

59. Strengthen capacity-building programmes among fishing communities to enhance their awareness of rights, government schemes and resource management.
60. Establish systems to ensure that fishing communities are consulted during the process of formulating legislation or policy that could have an impact on their lives and livelihoods, and to enhance their capacity to engage meaningfully in such processes.

Keeping in mind the above, we urge the Government of India to develop a national policy on small-scale fisheries to protect the rights and interests of small-scale fishing communities.

The States, the Union Territories and the panchayats may also draw upon this Statement in their policies and programmes for sustainable small-scale fisheries.

We also call upon FAO to draw elements from this Statement in its preparation of voluntary guidelines on sustainable small-scale fisheries.

was drawn to a gamut of problems that continue to face fishworkers and their communities. Several proposals were mooted, with priority being given to the need to recognize the rights of fishworkers to the coastal lands customarily used by them, as well as their rights to access and manage fishing grounds and water bodies. This was particularly in the context of ongoing developments, such as those related to tourism, ports, industrial development and conservation initiatives, which were leading to the displacement of fishing communities from their lands and waters, and causing widespread pollution and destruction of habitats and resources.

The group stressed the need for equipping landing centres with basic infrastructure and facilities at markets, and access to healthcare. It highlighted the importance of decent housing, sanitation, education and roads. Specific attention was drawn to the need to recognize women fish processors and vendors, including through issuing identity cards and ensuring their coverage under various government social-security schemes. The problems faced by women vendors related to transport and harassment at market places needed to be specifically addressed, it was noted. Attention was also drawn to the persistence of child labour in some

poor coastal regions. Many of the participants in the group highlighted the continuing hold of moneylenders and traders, and the need for well-functioning co-operative societies that also provided access to credit at affordable rates.

The inland fisheries group observed that the right over water bodies for fishing should be granted to fishery co-operatives comprising exclusively of fishing communities and traditional fishers. To facilitate this process, the group said, a census of inland fishing communities should be held. The group sought a uniform fishing policy for all inland water bodies. It further wanted the responsibility for dealing with fishing rights in water bodies to be handed over to the Fishery Department. The group upheld the importance of recognizing the role of fisherwomen in inland fisheries and aquaculture, and their right to a secure workplace and dignified treatment. The women fish vendors were sometimes evicted from local market places without prior notice. The group sought an end to harassment and exploitation of women in the name of paying a tax for using the market space.

Lack of education was identified as the main problem behind the exploitation of fishing communities. The group urged that a targeted educational programme should be implemented for fishing communities. They pointed out that inland fishers are regularly exposed to disasters such as floods and droughts, and to climate-change-related processes. Steps should be taken to prepare them for these disasters, it was suggested. The group sought establishing and strengthening a network of community organizations within the inland sector, with the support of the State.

In the symposium that followed the workshop, the draft statement drawn from the group reports was presented. Speaking at the symposium, Yugraj Yadava, Director, the Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO), said the Central government should circulate a model inland fisheries bill for all

States and finalize it through a participatory process. He said it is important to plan fishing capacity according to the potential of harvestable resources. Instead of building fishing harbours, it would make better sense to build smaller fish-landing centres, he said. He suggested that school curricula should include lessons on climate change, hygiene and sanitation. The allowance for closed fishing seasons, currently disbursed to marine fishing and a few inland fishing States, should be disbursed to all inland fishers, he proposed. A small-scale fisheries policy can form the subset of a revised comprehensive marine fishing policy, he added.

Pradip Chatterjee, Secretary, NFF, stressed the need for fishing communities to be recognized as the natural custodians of water bodies, with a role in their management. There is urgent need to effectively control activities that lead to pollution and habitat destruction, he said. This message was strongly reinforced by Ram Bhau Patil, an NFF leader from Maharashtra. Suman Singh from Sakhi, Bihar, spoke of the high levels of corruption that deprive communities of access to government schemes and welfare programmes. She also highlighted the importance of capacity building, particularly for strengthening community institutions, to enable them to manage and benefit from inland fisheries. Ujjaini Halim of the World Forum of Fish Harvesters and Fishworkers (WFF) said it is important to consider how to move forward through a bottom-up, pro-fisher policy, and participation of fishers in decision-making processes. International human-rights law would assist in holding States accountable, she said. Civil society can assert the rights of fishing communities, and the State can create an environment conducive for respecting their rights, she added. She hoped the Government of India would support the VG-SSF, especially by drawing elements from the Kolkata Workshop Statement. ❧

For more



sites.google.com/site/smallscalefisheries/
Small-scale Fisheries: Civil Society Process

www.fao.org/fishery/ssf/guidelines/en
Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries [VG-SSF]

www.icsf.net/SU/stmt/0
Kolkata Workshop Statement

Community Concerns

A recent workshop in New Delhi, India, discussed about how a balance may be achieved between conservation and fisheries-dependent livelihoods

A two-day workshop, titled “Fishery-dependent Livelihoods, Conservation and Sustainable Use of Biodiversity: The Case of Marine and Coastal Protected Areas in India”, was held in New Delhi during 1-2 March 2012. The workshop was a follow-up to the one held in Chennai in 2009, which was titled “Social Dimensions of Marine Protected Area (MPA) Implementation in India: Do Fishing Communities Benefit?”.

The 2009 Chennai workshop had discussed the findings of five

recent Delhi workshop attempted to review existing legal and institutional mechanisms for implementation and monitoring of MCPAs, seeking coherence across agencies, discussing the impact of MCPAs from an environmental-justice and human-rights perspective, and making specific proposals for better conservation while securing the livelihoods of small-scale fishers. The Delhi workshop also served to underscore these issues in light of the upcoming Conference of Parties (COP) of the Convention on Biological Diversity (CBD), to be held at Hyderabad in October 2012.

Participants at the Delhi workshop comprised fishing-community representatives from five MCPAs—the Gulf of Mannar (Marine) National Park and Biosphere Reserve in Tamil Nadu, the Malvan (Marine) Wildlife Sanctuary in Maharashtra, the Gahirmatha (Marine) Wildlife Sanctuary in Odisha, the Sundarbans Tiger Reserve in West Bengal, and the Gulf of Kutch (Marine) National Park and Wildlife Sanctuary in Gujarat—several non-governmental organizations working on biodiversity conservation and on securing people’s customary rights to natural resources, as well as government officials from the Central government’s ministries of environment, forests, and agriculture, and from the five State governments’ departments of environment, forest and fisheries.

Difficulties faced

The difficulties faced by fishers due to the implementation of MCPAs were briefly discussed. Fishworker unions had been requested to hold regional

case studies, of marine and coastal protected areas (MCPAs) in India, from a fishing-community perspective and had looked at the extent to which fishers are involved in MCPA governance. Legal and institutional issues, the workshop had concluded, were some of the obstacles to effective governance of MCPAs. The workshop had also called for better MCPA implementation that recognized community rights to participation in management as well as rights to the sustainable use of resources. The 2009 workshop had asked the government to consider fishing communities as allies, and recognize and support community-led initiatives for management and conservation.

Keeping in mind the themes identified at the 2009 workshop, the

The recent Delhi workshop attempted to review existing legal and institutional mechanisms for implementation and monitoring of MCPAs...

*This report has been written by **Sumana Narayanan** (icsf@icsf.net) of ICSF*

meetings to agree upon not just what demands to present to the government, but also what measures the community feels it can take to contribute to better conservation and sustainable use of biodiversity.

Bharat Patel of Machimar Adhikar Sangharsh Sangathan (MASS) from Gujarat spoke of how the majority of violations in the Gulf of Kutch National Park and Wildlife Sanctuary are by industries but, at the end of the day, it is the fishing community which is affected by the pollution. He called for restriction and regulation of industries in the area and a study to analyze industries' impacts on the ecosystem. He also called for recognition of the traditional rights of fishers to fishing grounds, and urged a ban on trawlers and other destructive fishing methods. Patel hoped that fishers would be given the chance to actively participate in planning and implementation of protected areas.

Pradip Chatterjee from the National Fishworkers' Forum (NFF) spoke of the restrictions on fishing and the limited number of boat licence certificates (BLCs) issued for fishing in parts of the Sundarbans Tiger Reserve (STR). He spoke of the fact that innocent passage through the protected area is not recognized. He called for the implementation of the relevant provisions of the Forest Right Act and the 2006 amendment to the WLPA, to protect the rights of traditional fishing communities dependent on the forest areas for their livelihood needs. He also mentioned that community participation in protected area management is limited to eco-development committees (EDCs).

Speaking of the problems faced by thousands of fishers along the Odisha coast, Narayan Haldar of the Orissa Traditional Fish Worker's Union (OTFWU), said that though the turtle breeding season is only for a few months, fishing is banned in certain areas throughout the year. Haldar asked for the size of the Gahirmata (Marine) Wildlife Sanctuary to be reduced to facilitate access to fishing grounds.

From the Gulf of Mannar area, A. Palsamy of the Ramnad District

Fishworkers' Trade Union (RFTU) spoke of the restrictions on seaweed collection, a traditional livelihood activity for several thousand women. The impact of industries and burgeoning tourism was mentioned. Palsamy also highlighted community initiatives to conserve resources, such as the ban on coral collection from the islands, a two-month holiday on seaweed collection, a ban on capture of juvenile fish and juvenile sea cucumbers (before the listing of sea cucumbers in Schedule 1 of the Wild Life (Protection) Act of 1972, WLPA). He called for the restoration of the right of access to traditional fishing grounds, a recognition of the rights of fishing communities to manage resources, and the development of a sustainable harvest plan for sea cucumbers.

Dilip Hari Ghare of Sindhudurg Schrajeevi Rampan Machhimar Utapada Co-operative Society from Maharashtra spoke of how communities remain unaware about the declaration of the Malvan sanctuary and its associated regulations. Ghare expressed concern over the uncontrolled mechanized fishing, especially by purse-seiners. He said unless there is better sharing of information on the sanctuary and involvement of the community in all decision-making processes, there will be resistance to conservation efforts.

ROHIT GUSAIN/ICSF



Chandrika Sharma of ICSF, Tarun Shridhar of MoA, Y S Yadava of BOBP-IGO, Hem Pande of MoEF and V Vivekanandan of ICSF at the inaugural session of the Delhi MPA workshop

In their presentations, community representatives repeatedly spoke of being excluded from decision making by the government. In his inaugural address, Hem Pande, Joint Secretary in the Ministry of Environment and Forests (MoEF), said that sustainable development has three pillars—economic, social and environmental. However, a focus confined to the first two was inadequate. The challenge for a country of India's size—which accounts for 2.5 per cent of the world's land mass and 18 per cent of the world's population, leading to great pressure on biodiversity—is to balance the requirements of all three pillars. The answer lies in people's participation in the management of biodiversity (or fisheries, in this case). Such a model, he said, might be a better one, despite the conflicts that are likely to arise.

In his keynote address, Tarun Shridhar, Joint Secretary, Department of Animal Husbandry, Dairying and Fisheries (DADF), Ministry of Agriculture (MoA), pointed out that though India is amongst the largest producers of fish in the world, there

of the maximum sustainable yield (MSY) concept in a tropical-fisheries context.

Shridhar, noting that small-scale fishers are hard hit by conservation measures, underscored the need for dialogue between environment and fisheries policymakers. He also highlighted the need to strengthen laws governing fishing vessels in India's exclusive economic zone (EEZ).

The other focal point of the Delhi workshop was to explore spaces within the existing legislative framework to see how fishers' rights can be protected while promoting sustainable use of resources. Towards this end, several resource people spoke on different legislation, from the WLPA to the Panchayati Raj Act of 1992. With this in mind, ICSF had commissioned a legal analysis of the WLPA by two advocates, V Suresh and D Nagasaila, who have worked extensively on human-rights issues.

Nagasaila's presentation focused on the clauses in the WLPA that relate to fishing communities and their rights. She dwelt on how different clauses could possibly be used by a community to defend its rights to continue fishing within protected areas established under the WLPA. In the discussion that followed it was noted that restrictions on fishing in protected areas were not uniformly applied—while fishing was allowed in some of them, in others fishers faced severe restriction.

C R Bijoy of the Campaign for Survival and Dignity (CSD) wondered whether it was time to move from community participation to community control (of resources), and from management to governance.

Kanchi Kohli of Kalpavriksh spoke about the Environment (Protection) Act (EPA) of 1986. The coast is a fragile ecosystem supporting diverse livelihoods, yet it is seen as a wasteland, ideal for power plants and special economic zones (SEZs). Hence this is where there is maximum resistance from communities.

Ecologically sensitive areas

The EPA, enacted after the Bhopal tragedy, seeks, among other things, to regulate industries by demarcating

The issue of who is responsible for depleting marine resources and how fish stocks are estimated came up.

is not enough attention on fisheries; he called for all involved to work towards raising the profile of the sector, bringing fisheries to the attention of the political establishment.

Shridhar said that while, according to the Food and Agriculture Organization of the United Nations (FAO), 82 per cent of fisheries globally are fully exploited or depleting, recent stock assessments undertaken in India indicate that stocks here are not fished to potential.

This, he noted, provides the advantage of planning sustainable use of the resource instead of resorting to *post facto* measures. This led to some debate on the science behind fish-stock assessments, especially the suitability

ecologically sensitive areas (ESAs) and requiring environment impact assessments (EIA) for every infrastructure project, along with a social assessment. The EIA notification talks of public participation in the process and lays down a long list of requirements from the project proponents. More work is needed to ensure effective implementation, Kohli said.

She also spoke of the Biological Diversity Act (BDA) of 2002, which deals with conservation, sustainable use, and access and benefit sharing (ABS). The BDA regulates access to bioresources and traditional knowledge of communities. Some of the clauses in the act, such as the one restricting activities detrimental to biodiversity and the option to declare biodiversity heritage sites, must be harnessed, she felt.

Another new legal route, said Kohli, is the National Green Tribunal, which has replaced the National Environment Appellate Authority. Orders given under the EPA and the BDA can be challenged at the Tribunal, which also looks at compensation and damages. She concluded that when we talk of law and MCPAs, there is a disconnect between the intent of the law and its design. Conservation is retrofitted, while the main framework remains access.

An overview of the Coastal Regulation Zone (CRZ) Notification of 1991 was provided by Aarthi Sridhar of Dakshin Foundation. CRZ, under the EPA, is a zonation law, which has been poorly implemented. The MoEF reviewed the notification in 2008, but the resultant version was strongly opposed by fishing communities concerned about the rampant development of the coast and the shrinking spaces for their livelihood activities. After a protracted struggle, the government cleared the final 2011 version of the Notification, which mentions the customary rights of fishers. There is a provision for designation of critically vulnerable coastal areas (CVCAs). Whether this is positive for local communities will depend on its implementation.



69 participants at the workshop on "Fishery-dependent Livelihoods, Conservation and Sustainable Use of Biodiversity: The Case of Marine and Coastal Protected Areas in India"

Sebastian Mathew, Programme Adviser of ICSF, spoke of how all the State Marine Fishing Regulation Acts mention conserving resources, regulating fishing, and wildlife protection. Many of the State acts also prohibit certain fishing methods and gear deemed harmful to wildlife, such as the use of explosives and stake nets. He also highlighted how effective implementation of some of the existing provisions can contribute to conservation of fishery resources.

During the discussion sessions, K B Thampi, (Retired) Principal Chief Conservator of Forests (PCCF), Kerala, pointed out that several of the laws discussed do not have a clear institutional mechanism for their implementation. This hampers effective implementation, with departments working at cross purposes. He also pointed out that the progressive National Forest Policy was formulated in 1988 but was not followed by an act incorporating ideas expressed in the policy; instead, the Indian Forest Act of 1927 is still valid. J R Bhatt, director, MoEF, concurred that the acts are silent on forward-looking ideas introduced in policies.

Political economy

Shalini Bhutani, an independent researcher who works on agriculture and trade issues, stressed the need to locate all legislation in the context of

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Advocate Nagasaila, Deepak Apte of BNHS, V Vivekanandan of ICSF, B C Choudhury of WII, Ashish Kothari of Kalpavriksh and Shekhar Kumar Niraj of Govt. of Tamil Nadu at the close

the political economy. Implementation will be coloured by this political economy; we need to analyze, for example, how trade and trade policies are interacting with the environment laws.

J R Bhatt spoke of the difficulties faced by policymakers. He mentioned that there is a lot of pressure at the international stage to meet the obligations of multilateral agreements, which may be in contradiction with conservation or fishers' needs. He commented that conservation without sustainable use and equitable sharing will have no meaning.

Chandrika Sharma, Executive Secretary of ICSF, flagged the importance of having a co-ordination mechanism between government ministries and departments, particularly those dealing with fisheries and the environment. Y S Yadava of the Bay of Bengal Programme Inter-governmental Organization (BOBP-IGO) stressed that while such co-ordination is important at the central level, it is perhaps even more important at the state and local levels. Fisheries departments need to play a much greater role in fisheries management.

Sebastian Mathew of ICSF spoke of the need for fisheries departments to move towards greater conservation of marine-fishery resources, and protection of marine habitats. He also drew attention to the need to recognize

the rights to fish in marine internal waters consistent with such rights in territorial waters.

Ashish Kothari of Kalpavriksh stressed on the need for participatory and equitable governance of protected areas. He highlighted the role of local communities in governance, not only in management. The implementation of protected-areas worldwide has led to conflicts because the livelihood rights of communities have been ignored, rendering conservation itself unsustainable. Protected-area governance should be gauged by its quality—whether basic human rights have been respected, he said.

Speakers at the workshop also provided examples of community-managed conservation areas from across the world. Kothari spoke of the Programme of Work on Protected Areas (PoWPA) under the CBD, which emphasizes the importance of governance, participation, equity and benefit sharing. He drew attention to the many examples of community-led conservation that have been documented through the Indigenous and Community Conserved Areas (ICCA) network, such as the Annapurna Conserved Area, Nepal, French Region National Parks, Galapagos National Park in Ecuador and the Kaa-ya del Gran Chaco National Park in Bolivia.

Ramya Rajagopalan, Consultant, ICSF, drew attention to successful community-led efforts for conservation of coastal and marine biodiversity from around the world. She spoke of traditional taboos on access, on irresponsible resource use, and spatio-temporal restrictions imposed by different communities.

Prakriti Srivastava, Deputy Inspector General (DIG), Wildlife, MoEF, spoke of the community-led turtle conservation that she had supported as the Divisional Forest Officer, Calicut (Kozhikode), Kerala.

Turtle nesting

With forest-department support, turtle-nesting numbers went up over the years, a plan for a resort was successfully fought, and other problems such as water scarcity were addressed. She said that when the

forest department associates with the community, it can benefit the community and conservation, and that when groups work in isolation, there is no progress.

V Vivekanandan, Member, ICSF, spoke about the self-governance systems prevalent among fishing communities across the coast. He mentioned some of the self-imposed restrictions observed by the fishers to manage resources and resolve conflicts, such as local bans on ring-and-purse-seines. He emphasized that no management or conservation initiative can afford to ignore the self-governance institutions among fishing communities.

R K Patil of the NFF said that though as a fisherman he was a “killer of fish”, he understood the importance of conservation. The NFF has, over the years, undertaken several campaigns and struggles seeking conservation of marine and coastal biodiversity. He reiterated that fishers are ready to work with the government to manage resources, but that the government has to recognize the rights of communities. He added that if communities are not part of the decisionmaking, they will have no choice but to oppose MCPAs, as they have done in Malvan.

The Delhi workshop saw a consensus on the need for better co-ordination and understanding among stakeholders. Speakers spoke of how underutilized legal options, such as conservation and community reserves, biodiversity heritage sites, and ESAs, which provide greater opportunities for community participation in conservation and management, including opportunities that enable them to regulate developmental activities detrimental to the coastal and marine ecosystem, must be explored. Several speakers also named the commercial fishing interests as contributors to depleting fish stocks.

Vishnu Bhat, Fisheries Development Commissioner, DADF, reiterated the need to spotlight fisheries. He pointed to the need to augment capacity at various levels for

proper implementation of fisheries management.

J R Bhatt underscored the lack of capacity within the ministry when it came to the marine environment. He also concurred with Kothari that the protected-area system required a review. Tarun Shridhar, Joint Secretary, MoA, commented that whether fishing rights could be enshrined in separate legislation needs to be looked into. He also underscored the necessity for co-ordination between the MoA and MoEF through an appropriate institutional mechanism.

Commenting on the unimaginative alternative-livelihood programmes that often have no connection at all to traditional livelihoods pursued by the community, B C Choudhury of the Wildlife Institute of India (WII), said such programmes are about the three Ps—*papads*, *petticoats* and *pickles*! WII, he said, had identified 350 marine and coastal high-biodiversity areas, which would benefit from conservation; but, he felt, the catch is in the name—protected area. He suggested calling them instead conservation areas. WII had recommended that 102 sites of the 350 should be designated for conservation. Many of these have

The Delhi workshop saw a consensus on the need for better co-ordination and understanding among stakeholders.

traditional resource-management practices that need to be documented. He also called for a network of community-managed areas. He reiterated the need to re-evaluate our terrestrial approach to marine conservation.

Deepak Apte, of the Bombay Natural History Society (BNHS), noted that in his experience small-scale fishing communities are supportive of conservation, if their access rights to sustainably use the resource are not jeopardized. The challenge is to

Matanhy Saldanha (1948–2012)

Matanhy Saldanha, Chairperson, National Fishworkers' Forum (NFF), India, died of a heart attack early morning, Wednesday, 21 March 2012, in Panaji, Goa.

As the founding Chairperson of the NFF in the late 1970s, he led many struggles of non-trawl fishers against bottom trawling. These struggles eventually led to the demarcation of maritime zones where trawling was prohibited, and to the implementation of a uniform seasonal monsoon fishery ban in India.

Matanhy was re-elected for another term, as Chairperson of NFF, in 2009. During his second tenure, in the face



of indiscriminate industrialization of the coast, he fought tirelessly for the protection of India's coastal zone, and for the right of fishing communities to live peacefully along the coast and to fish

in its nearshore waters.

Matanhy's demise is a big loss to Goa and to the fishworker movement of India.

In the words of Pradip Chatterjee, Secretary, NFF: "A person of immaculate honesty and integrity, a great orator, a true friend and able leader of traditional fishing communities, a diehard fighter and a very sensitive and gentle person, Matanhy Saldanha will be remembered for years to come."

use provisions in environmental and fisheries legislation that allow for communities to participate equally in conservation and management. This will also go a long way in regulating the mad rush for 'development' along the coast.

Ashish Kothari, of Kalpavriksh, reiterating the need for legislation to protect the interests of the fishing community, along the lines of the Forest Rights Act of 2006, called on the MoEF to undertake a review of all MCPAs in India prior to COP11 of the CBD, especially to see if MCPA practices, including governance aspects, were consistent with CBD's PoWPA. Based on the review, the MoEF should take a series of steps to improve governance of MCPAs, he suggested. 3

For more

[sites.google.com/
site/2012mpaindiaworkshop](http://sites.google.com/site/2012mpaindiaworkshop)

Delhi MPA Workshop Website

icsf.net/icsf2006/jspFiles/mpa/index.jsp
**MPAs: Local and Traditional Fishing-
community Perspectives**

www.cbd.int

Convention on Biological Diversity

Matanhy Saldanha 1948 - 2012

Matanhy Saldanha, who died on 21 March 2012, was a genuine, charismatic leader and a true crusader for the cause of fishworkers

Over three decades ago, in 1978, fishworkers in the Indian State of Goa hit the headlines when they took over the streets of the capital city, Panjim, in a campaign to “Save Goa, Save Our Fish”. Contrary to the stereotypical image of fun-loving Goans, the 1978 protest was no carnival, but an impassioned crusade for a ban on the destructive fishing technique of trawling, which was depleting the catches of the traditional *rampons*, the large shore-seines owned by *ramponkars*.

The person at the forefront of that show of strength, which paralyzed life in Goa's capital city, was a fiery school teacher in no mood to give up, backed as he was by a large group of advocates and environmentalists who had just succeeded in closing down the polluting Zuari Agro Chemicals plant.

Matanhy Saldanha—the charismatic leader of that landmark protest—knew little about fisheries and fishworkers when he joined the fight against pollution of the coast by the Zuari plant. But the instinctive activist in him realized the imperative of gaining the support of fisherfolk, who were the ones most affected by the factory's operations. Once the anti-Zuari campaign succeeded, the fishworkers approached Matanhy to solicit his support for their proposed agitation against the introduction of purse-seiners and trawlers, which were depleting catches in their fishing zones.

Matanhy, who had a background of activism in the student movement, responded positively, realizing that the traditional fishing communities were the ones who brought home the

fish that was such an integral part of the Goan diet. He also realized that with no other source of livelihood, the traditional fishers had to keep at bay the purse-seiners and trawlers owned by corporate interests.

As a result of that initial engagement with Goan fishworkers, Matanhy began to mobilize the traditional coastal communities, travelling along the coast with Xavier Pinto to get a first-hand understanding of the problems confronting fishers. He then organized a meeting in

...a fiery school teacher in no mood to give up, backed as he was by a large group of advocates and environmentalists...

Chennai that resulted in the formation of the National Forum of Country Boat and Kattumaran Fishermen, which later grew into the National Fishworkers' Forum (NFF). It was with the formation of NFF in 1978 that the coastal fishing communities began to get a distinct identity in India.

NFF's main demand was for marine regulation to demarcate fishing zones to keep purse-seiners and trawlers away from the coastal waters. NFF gradually transformed itself from a movement against trawlers and purse-seiners into a trade union that represented the broad interests of India's fishing communities.

Matanhy also led the Indian fishworkers' delegation to the first International Conference of Fishworkers and their Supporters in Rome in 1984, held in parallel

*This article has been written by **Nalini Nayak** (nalini.nayak@gmail.com), Member, ICSF*

Crusader Extraordinary

Way back in 1980, when I was a Master of Business Administration (MBA) student, one of the first studies given us was "The case of the dying fish". It was about the fertilizer factory of Zuari Agrochemicals in Goa, which became, in the mid-1970s, the first factory to be closed down in India due to the harm it was causing the environment. A strong local movement led to that drastic action and it was the relentless struggle of the fishermen that tilted the scales. That was not only a landmark event in the history of modern India's environmental movement but it also signalled the start of a movement among marine fishermen that would eventually embrace the entire Indian coast. Little did I realize that I would be privileged to meet, and eventually become a friend of, the main architect of the struggle against Zuari Agro: Matanhy Saldanha.

Matanhy, a young school teacher, had rallied the local fishermen, all users of giant shore-seines called *rampons*, to form the Goencha Ramponkar Ekvott (GRE), the first truly modern fishermen's association in India. Formed to fight Zuari Agro, GRE went on to take up the issue of trawlers that were making life miserable for the traditional fishermen. As it was not a purely local problem, mobilization on a national scale was required. Thus was born the National Forum of Country Boat and Kattumaram Fishermen (later, the National Fishworkers' Forum or NFF), with Matanhy as its founder chairman.

I first met Matanhy at the NFF General Body meeting at Bangalore in December 1983. We met again in November 1986 when John Kurien organized an international workshop in Trivandrum that led to the formation of ICSF. Matanhy was one of the founder Members of ICSF, but his innings at ICSF was short as he was more comfortable leading fishermen in struggles against the establishment rather than write reports or attend workshops.

Subsequent sightings of Matanhy were rare. After NFF's initial success in getting the Indian government to circulate a model bill on marine fishing regulation, the struggles shifted to the State level, and NFF became a national platform for sharing ideas and providing inspiration. Matanhy soon withdrew from the national scene to focus on local issues in Goa.

My close association with Matanhy started with his 'second coming' in NFF. The large-scale mobilization by NFF against the proposed coastal management zone notification in 2008 drew him back into the fold as Goa was one of the States facing serious problems with coastal regulations. When the

NFF chairperson Harekrishna Debnath fell terminally ill soon after, senior leaders approached Matanhy to step in as acting chairperson. That he had retired from his job as a teacher and was in the political wilderness made it possible for him to accept, though reluctantly, the job of leading NFF once again.

In my capacity as an NFF 'resource person' I was able to interact closely with Matanhy during the period 2009-2011. Though he could resolve only some of the organizational problems facing NFF, Matanhy ensured that the issues facing fishing communities and the coast remained in focus, and NFF continued to play its historical role as the champion of the interests of the traditional fishing communities of India. The negotiation of a new Coastal Regulation Zone 2011 notification, which included several provisions to protect the interests of fishing communities, was the highlight of Matanhy's tenure as chairperson of NFF.

In early 2012, Matanhy won in the elections to the Goa legislative assembly. He was given charge of key portfolios, namely, tourism and environment and forests, which reflected his interests. These included ending the environmental destruction of Goa, arresting deforestation and uncontrolled mining, and making sure that tourism—the most important sector of the State's economy—developed in a manner that was compatible with both environmental concerns and economic goals.

In Matanhy's untimely death, Goa has lost a social activist-cum-political leader, while India's fishing communities have lost a great champion of their causes. Matanhy was a pioneer in the fishworkers' movement even if he was a mix of interesting contrasts. Though he founded GRE and NFF, which have remained relevant and active for over three decades, he was not really an institution builder. He was not the type to manage or administer organizations. Issues interested him. He sought political power merely to implement many of the demands that he had been making over the years in favour of communities and the environment.

Despite his aggressive stands on many issues, he was always courteous in all his interactions. As a crusader, Matanhy fought hard on issues that were mostly related to survival of communities, protection of natural resources, and the preservation of his beloved Goa's rich culture and heritage.

—These thoughts come from V Vivekanandan
(vivek.siffs@gmail.com), Member, ICSF



to the World Fisheries Conference organized by the Food and Agriculture Organization of the United Nations (FAO). As the fishworkers' struggles grew, and there appeared a need to monitor other developmental activities and their impacts, Matanhy, with the help of other

friends, set up the Goa Research Institute for Development (GRID). The documentation centre of this institute was the home for studies on controversial industrial and naval projects.

Matanhy's focus in public life went far beyond fisheries. He launched

the *Goan Weekly*, which campaigned for declaring Konkani as the official language of Goa and sought a ban on censorship. He was also involved in the formation of the All-Goa Trade Unions and Traditional Workers' Co-ordination Committee.

Matanhy embodied the mix-and-match approach of the intellectual-cum-activist, lending a visionary edge to campaigns and strategies. He quickly recognized that the issues confronting the country's poor and marginalized were essentially political, a realization that made him seek out an active role in State and national politics. As a politician, his career was chequered and he shifted between parties and even tried to create a regional Goan party. As Minister for Tourism for a brief period in 2002 he took radical positions on social and environmental issues.

Matanhy was clearly not cut out for the manoeuvres of power politics since he regarded issues on their individual merit, and took stands that often hurt the power elite. In a similar vein, Matanhy did not waste time on organizations that had preconceived, clear-cut agendas. Nonetheless, as a man of action and a leader with fresh ideas, Matanhy understood the need for organizations, and even helped create them. He would, however, choose to weave himself in and out of different roles. For instance, when Harekrishna Debnath, former Chairperson of NFF, who was battling cancer and realized he had a short time to live, requested Matanhy to return to the helm of NFF, he willingly accepted, although on the condition that it would be only until the next State elections as he intended to compete as a candidate.

When Matanhy did stand for State elections in 2011, he won and was sworn in as Minister for Environment and Forests, and for Tourism, shortly after which he passed away. In Matanhy's sudden death of a heart attack on 21 March 2012, we have lost a truly genuine leader and a good human being who put social issues and people before his personal needs and life. For those of us who knew him personally, we have lost a good



Matanhy Saldanha, a truly genuine leader and a good human being who put social issues and people before his personal needs

friend and a decent human being. For the fishing communities of India and the population of Goa, they have lost an extraordinary crusader. 🙏

For more



www.thehindu.com/news/national/article3019497.ece

Goa Minister Matanhy Saldanha Passes Away

articles.timesofindia.indiatimes.com/2012-03-21/goa/31219833_1_chief-minister-manohar-parrikar-tourism-minister-assembly-session

Goa Tourism Minister Dies of Cardiac Arrest

www.facebook.com/MatanhySaldanhaTributes

Remembering Matanhy Saldanha (1948-2012)

Tug-of-War

***Shifting Undercurrents*, a 20-minute documentary directed by Rita Banerji and produced in 2012 by ICSF, reveals the problems of women seaweed harvesters**

In the genre of social-issue-based documentaries, *Shifting Undercurrents*, a 20-minute film, produced in 2012 by the International Collective in Support of Fishworkers (ICSF), is a welcome addition, dealing with the little-known aspects of life on the margins of development and landscapes. The film seeks to sensitize viewers to the conditions of women seaweed harvesters in the coastal villages alongside the Gulf of Mannar National Park (GoMNP) in Ramanathapuram district of the south Indian State of Tamil Nadu.

The subject of the film is fascinating, dealing as it does with how the politics of livelihood and conservation shifts between the logic of marine and terrestrial landscapes. The subtext that I read into the film was even more intriguing—the challenges, freedoms and ingenuity that the underwater world extracted from the women seaweed extractors of the region. Despite poor underwater visuals, the film provides a first-time glimpse into the form and materiality of seaweed harvesting. The mask and flippers, and the training, knowledge and technologies employed by these women stand in stark contrast to popular images of underwater diving and divers.

The film begins with an established format of tracking the everyday life of its protagonists, instantly taking the viewer into the intimate space of the home and the community through stunning visuals of the coastal space. M. Laxmi, a woman seaweed harvester, sets the context of the fragility of eking a livelihood out of seaweed collection in the waters of

a globally recognized biodiversity area—the Gulf of Mannar.

The film's crisp commentary reveals certain interesting facts: The GoMNP was declared in 1989; around 5,000 seaweed collectors from 25 villages in the Gulf of Mannar depend on seaweed extraction for their livelihoods; and in 2000, the women were expressly forbidden from entering the park and extracting seaweed. Normally, large quantities of seaweed are sent to distant processing centres from where they go to units in

The subject of the film is fascinating, dealing as it does with how the politics of livelihood and conservation shifts between the logic of marine and terrestrial landscapes.

the food-processing industry, which uses the carrageenan extracted from seaweed as a vegetarian alternative to animal-based gelatin.

In the film, the fragility of the women's profession is introduced to the viewer at multiple stages. Working underwater, which involves daily hazards, the women have to deal with two fundamental conditions to draw wages from the seaweed traders who are their paymasters—access to the resource, and a market for it.

Corporate whims

The lives of these women appear to be firmly wedged between the whims of corporate entities like Nestle, Coca-Cola and the Himalaya Drug Company, who are the principal buyers of carrageenan, and those

*This review is by **Aarthi Sridhar** (aarthi77@gmail.com), a PhD student at the Centre for Studies in Science Policy, Jawaharlal Nehru University, New Delhi, and a Trustee of Dakshin Foundation, Bangalore, India*

RITA BANERJI



The film focuses on the problems of the seaweed collectors of the Gulf of Mannar after the declaration of a national park

of a conservation regime. The film focuses mainly on the latter theme, drawing attention to a legal conservation framework that alienates the women divers from the waters of the GoMNP.

Created under the Wild Life (Protection) Act, the GoMNP is now under the custodianship of the Wildlife Wing of the Tamil Nadu Forest Department, which appears, at best, duty-bound to implement a

draconian and unimaginative conservation law. The GoMNP could be said to be geographically unhappy in its location adjacent to the coastline of the Gulf of Mannar, which is today dotted with numerous industrial units, commercial ports, harbours and thermal power plants. The pollution caused by these industries, overfishing by mechanized vessels, and the damaging effects of coral mining are now part of the local legend of the environmental degradation of the area. *Shifting Undercurrents* points to the irony of governmental environmental agencies turning a blind eye to the misdeeds of powerful external agencies, even as they unjustly harass the marginalized women seaweed divers.

The film highlights the contrasting narratives that mark all conflict and actors in the area, who occupy opposing poles and have contravening rationales. Laxmi, the seaweed collector first introduced to viewers of the film, points out that the law is oblivious to the realities of the marine life she is familiar with—seaweeds do not grow on live corals; they can indeed be harvested carefully, for which the women have the requisite skills; sustainable harvest of seaweed in a protected area is, therefore, possible; and marine boundaries defy logic.

Shekhar Kumar Niraj, the Director of the Gulf of Mannar Biosphere Reserve, says that seaweed harvesting is not a “foolproof system”, and is faced with another kind of uncertainty—the impacts of a thriving business on coral biodiversity. Such uncertainty and the absence of sufficient scientific evidence is reason enough to restrict seaweed harvest in the GoMNP. Though the film does not offer statements of government officials about the certainty of environmental damage to the area from polluting industries, the implicit message comes through.

The film suffers from some shortcomings. I longed for greater detail on the historicity and political economy of the profession of seaweed harvesting, and the views of the two important sets of actors involved in the GoMNP management process—conservation organizations and scientists. Nonetheless, *Shifting Undercurrents* allows us to explore many of those facets in a fuller fashion. More importantly, it begins many important conversations. Those interested in the tug-of-war between the intractability of the world of legislation and the contest for control over nature's terrain must add this film to their collection. ❧

For more

mpa.icsf.net

Marine Protected Areas: Local and Traditional Fishing Community Perspective

www.sunday-guardian.com/artbeat/mannars-notes-from-the-underground

Mannar: Notes from the Underground

Ecological Sense

The issue of ecologically and biologically significant marine and coastal areas was a key focus at the recent COP11

The 11th meeting of the Conference of the Parties (COP11) to the Convention on Biological Diversity (CBD) was held during 8-19 October 2012, in Hyderabad, India. Over 10,000 people, including delegates from 173 countries, United Nations agencies, intergovernmental, non-governmental, indigenous and local community organizations, academia and the private sector, participated.

The high-level segment of COP11, held during 16-19 October, focused on four key issues: implementation

the main goals of the Strategic Plan for Biodiversity 2011-2020.

COP11 adopted 33 decisions. Apart from agenda items related to the status of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS), implementation of the Strategic Plan for Biodiversity 2011-2020, progress towards the Aichi Targets, and implementation of the Strategy for Resource Mobilization, other issues on the agenda included ecosystem restoration, review of the programme of work on island biodiversity, biological diversity of inland water ecosystems, protected areas, Article 8(j) on traditional knowledge, marine and coastal biodiversity, biodiversity and climate change, and biodiversity for poverty eradication and development.

Agenda Item 10 on marine and coastal biodiversity discussed ecologically and biologically significant marine and coastal areas (EBSAs); sustainable fisheries and the adverse impacts of human activities on marine and coastal biodiversity; marine spatial planning; and voluntary guidelines for the consideration of biodiversity in environmental impact assessments and strategic environmental assessments in marine and coastal areas. Most of the discussions revolved around the issue of EBSAs.

SBSTTA

Parties discussed how to take forward the summary reports prepared by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at its 16th meeting, setting out details of

...the most important focus at COP11 was on how to meet the Aichi Targets by 2020 and how to raise the resources needed to do so.

of the Strategic Plan for Biodiversity 2011-2020; biodiversity for livelihoods and poverty reduction; coastal and marine biodiversity; and implementation of the Nagoya Protocol on Access to Genetic Resources and Benefit Sharing.

Following on the Aichi Biodiversity Targets reached at COP10, held at Nagoya, Japan, the most important focus at COP11 was on how to meet the Aichi Targets by 2020 and how to raise the resources needed to do so. The negotiations on financial issues were perhaps the most contentious, as developing countries sought greater financial support. Consensus was eventually reached at the eleventh hour, with developed countries agreeing to double funding to support efforts in developing States towards meeting the Aichi Targets and

This report has been written by **Ramya Rajagopalan** (ramya.rajagopalan@gmail.com), Consultant, ICSF

areas that meet the agreed criteria for EBSAs, based on scientific and technical evaluation of information from regional workshops that had been organized to facilitate the description of EBSAs. Parties debated whether to “endorse” the reports or to “take note of” them.

In the end, the compromise text proposed by the Chair, which avoided use of either term, was adopted. The Executive Secretary was requested to include the summary reports on the description of areas that meet the criteria for EBSAs in the repository, and to submit them to the United Nations General Assembly (UNGA) and particularly its Ad Hoc Open-ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction, as well as to Parties, other governments and relevant international organizations. However, the Russian Federation, Iceland and China pointed out that this was not in accordance with the procedure set out in Decision X/29,

which required the reports to be endorsed before submission.

The final decision that was adopted was welcomed by many, including environmental groups. It was felt that while the wording of the decision may not have been strong enough, as many had hoped for a more widespread endorsement of the EBSAs described at regional workshops, there was still enough in it for pressure to be put on UNGA to develop a legal mechanism for defining the management and/or protection of these sites in the high seas.

Several aspects are worth flagging in the decision that was adopted. It has been highlighted that the identification of EBSAs and the selection of conservation and management measures is a matter for States and competent intergovernmental organizations, in accordance with international law. It has been further affirmed that the scientific description of areas meeting scientific criteria for EBSAs and other relevant criteria is an open



Ryu Matsumoto, former Minister of Environment, Japan, and Hoshino Kazuaki, Representative of the Minister of Environment, Japan, hand over the gavel and COP Presidency to Jayanthi Natarajan, Minister of Environment and Forests, India

Box 1

World Forum of Fisher Peoples (WFFP) and International Collective in Support of Fishworkers (ICSF)

11th Conference of Parties to the CBD
8-19 October 2012

Statement On Agenda Item 10: Marine and Coastal Biodiversity

Thank you, Chair,


The World Forum of Fisher Peoples (WFFP) and the International Collective in Support of Fishworkers (ICSF) would like to highlight the concerns of small-scale and artisanal fishers from different parts of the world on this agenda item.

The need to integrate the traditional knowledge of indigenous peoples and local communities and to ensure their full and effective participation in the implementation of the Convention is well recognized, including in the various decisions of the Conference of Parties to the CBD. However it is unfortunate that these foundational principles have not been taken into account in the various processes initiated for the description of Ecologically or Biologically Significant Marine and Coastal Areas (EBSAs).

We ask Parties to ensure that all work related to the description of EBSAs integrates the traditional, scientific, technical and technological knowledge of indigenous peoples and local communities, consistent with Article 8 (j) and 10 (c). We further request Parties to ensure that there is full and effective participation of indigenous

peoples and local communities, particularly fishing communities, in future regional and national workshops on EBSAs.

In this context we welcome the recommendations from the study on Identifying specific elements for integrating the traditional, scientific, technical and technological knowledge of indigenous and local communities, and social and cultural criteria and other aspects for the application of scientific criteria for identification of EBSAs as well as the establishment and management of marine protected areas (UNEP/CBD/SBSTTA/16/INF/10).

We urge Parties to take note of recommendations of this study and to develop socio-cultural criteria for EBSAs to be used alongside the existing scientific criteria, particularly in areas with pre-existing human populations/ uses, recognizing that the eventual management of the identified areas will be dependent on social, economic and cultural factors. Such an approach, which also takes cognizance of existing rights of indigenous peoples and local communities and their systems of governance, will have benefits for both biodiversity and livelihoods. 

and evolving process that should be continued to allow ongoing improvement and updating as improved scientific and technical information becomes available in each region.

The discussion also saw some Parties stressing the importance

of traditional knowledge and the participation of indigenous peoples and local communities (IPLCs) in the EBSA process. The Philippines highlighted the importance of ensuring the participation of IPLCs in the EBSA process and in identifying conservation and

management measures. This was supported by Mexico and El Salvador. Morocco called for paying attention to traditional knowledge to be used to overcome the impediment of insufficient data and absence of information. Brazil called for indigenous peoples and local communities to be involved in developing appropriate management practices.

The International Indigenous Forum on Biodiversity (IIFB) emphasized the need to ensure full and effective participation of IPLCs in the programme of work on coastal and marine biodiversity, including in expert and regional workshops, and in the description, identification and management of EBSAs. IIFB further urged Parties to ensure that description of EBSAs is based on the traditional knowledge of indigenous peoples.

The World Forum of Fisher Peoples (WFFP) and the International Collective in Support of Fishworkers (ICSF), in their joint statement, welcomed the recommendations from the study on “Identifying specific elements for integrating the traditional, scientific, technical and technological knowledge of indigenous and local communities, and social and cultural criteria and other aspects for the application of scientific criteria for identification of

EBSAs as well as the establishment and management of marine protected areas (MPAs)” (see Box 1). They called for the development of socio-cultural criteria for EBSAs that are to be used along with scientific criteria, particularly in areas with pre-existing human populations/uses.

In relation to IPLCs, the following directions in the decision (XI/17) adopted are important:

- Facilitate, as appropriate, the participation of indigenous and local communities in additional regional or sub-regional workshops for description of areas that meet the criteria for EBSAs for the remaining regions or sub-regions where Parties wish workshops to be held, and for the further description of the areas already described where new information becomes available.
- Further refine the EBSA training manual and modules, including through more consultation with Parties and indigenous and local communities, and develop training materials on the use of traditional knowledge.
- Make use of the best available scientific and technical knowledge, including relevant traditional knowledge, as the basis for the description of areas that meet the criteria for EBSAs.
- Make use of, as appropriate and relevant, additional social and

BONA BEDING



In deciding how to take forward the summary reports prepared by the SBTTA on criteria for EBSAs, a compromise text proposed by the Chair was finally adopted at COP11

Box 2

Solving the Puzzle

Aside event organized by ICSF and WFFP, titled “Solving the Puzzle: Social and Cultural Dimensions of Marine and Coastal Protected Areas, was held on 11 October 2012. It opened with the award-winning documentary directed by Rita Banerji, “Shifting Undercurrents—Seaweed Collectors of the Gulf of Mannar”.

The film tracks the issues face by the seaweed collectors of the Mannar region due to the declaration of the area as a marine national park. Following the film screening, Lakshmi, a seaweed collector from Ramanathapuram district of Tamil Nadu, spoke eloquently about the problems they face. “The central government has handed over the area to the forest department for conservation, and have denied us permission to enter the area. But why will we ever destroy something that is the source of our livelihoods?”, she wondered. Lakshmi pointed out another popular misconception: “Seaweeds do not grow on live corals; they only grow on dead ones. Moreover, we get injured if we go near live corals, and even our boats get damaged. We are not responsible for their decline.” Lakshmi’s statement puts paid to accusations that seaweed collectors are harming the biodiversity of the region.


Lakshmi’s experience was echoed in the narratives of speakers from around the world. An exposition of an ICSF study on Costa Rica, Nicaragua, Panama and Honduras, shed light on the process, and social impact, of marine conservation in these four countries. Vivienne Solis Rivera, who conducted the study, said, “The cost of conservation has fallen on the shoulders of local communities, coastal fishers and indigenous peoples.”

Riza Damanik of the Indonesia-based non-governmental organization (NGO) KIARA, which works among coastal

communities, said: “The Indonesian government has set a target of bringing 20 mn ha of marine area under conservation by 2020. It has already covered 15 mn ha since 2009.” Fishing communities in the country are regularly subject to harassment for entering national parks, he added. Damanik listed the names of 13 fishermen who have been shot dead by guards since 1980.

Donovan van der Heyden from South Africa painted a similar picture. He likened the present form of marine conservation to the apartheid regime and called it “the second wave of dispossession” that has displaced communities and robbed them of their livelihoods. The Director of Coastal Biodiversity Conservation in the South African government, Xola Mkefe, who attended the side event, clarified: “All new MPAs strictly involve consultation processes with the local communities. We have worked with organizations like Coastal Links to know what the reality on the ground is, as the government does not have field-level resources.”

All speakers agreed that top-down marine conservation efforts have often led to displacement of communities, and, ironically enough, have had few conservation benefits. Solis said: “These State institutions and authorities lack the instruments to work with communities, and have sometimes chosen the wrong approach towards participation.”

All speakers at the side event had positive stories of struggle to share. Van der Heyden from South Africa drew attention to an ongoing legal case that has established a community’s customary rights over marine resources. Seaweed collector Lakshmi’s mere presence at the side event was testimony to her belief in the power of protest, even as it was a call for support. 

cultural information, developed with the full and effective participation of indigenous and local communities, in any subsequent step of selecting conservation and management measures, and include indigenous and local communities in the process, particularly in areas with human populations and pre-existing uses.

- Consider the use of the guidance on integration of traditional knowledge in the study prepared by the Secretariat, with the approval and involvement of the holders of such knowledge, in any future description of areas that meet the criteria for EBSAs and for the development of conservation and management measures, and to report on progress in this regard to COP12.

The above provisions are undoubtedly important for small-scale fisheries groups, given the existing shortcomings in the EBSA process. However, they do not appear

strong enough as they do not call for the development of socio-cultural criteria for EBSAs to be used alongside the existing scientific criteria, particularly in areas with pre-existing human populations/uses.

As with the previous COP meets, COP11 too saw a plethora of side events. ICSF, in collaboration with other organizations, held one on the social dimensions of MPAs and another on traditional knowledge (see Boxes 2 and 3). ³



View of the closing plenary in session, presided by COP11 President, Jayanthi Natarajan, Minister of Environment and Forests, India

Box 3

Traditional Knowledge

The side event on “Traditional Knowledge and Area-based Management Measures in Marine and Coastal Ecosystems” was organized by ICSF, the Indigenous Peoples' and Community Conserved Areas and Territories (ICCA) Consortium and the United Nations University.

The panelists at the session brought to the table an astounding variety of indigenous knowledge and practices. Grazia Borrini-Feyerabend of the ICCA Consortium shared the example of the Casamance region of Senegal, Africa. The indigenous Djola community considers the mangrove-rich estuarine ecosystem as a sacred grove and has set in place a system for its protection. No-take zones, as well as zones where fishing is permitted for sale in local markets, have been demarcated. As a result, fish stocks have increased, and species that were previously scarce have begun to reappear. Participants at the session pointed out the need to share such experiences widely.

Robert Panipilla from Kerala, India, spoke of the local fishers' rich knowledge of coastal and marine ecosystems. He described how their knowledge of undersea habitats has been used to map the intricate topography of the sea bottom. Such mappings, captured by artists, were on display at the side event. Panipilla said that the method used by local fishers to locate underwater reefs, known as *kanicham*, was akin to sophisticated global positioning systems (GPS). He also explained how local communities had co-operated to establish artificial reefs, in response to the degradation of reef areas by trawlers in the 1980s.

Bona Beding from the Lamalera community of Indonesia took the stage with a video about his village, which featured a local song as its soundtrack. The video captured the philosophy of the famous whalers of his community, who live as one with nature, taking only what is needed, and not abusing resources. As an example of this nature-sensitive philosophy, he pointed to how the villagers catch only male whales, not female ones, which are left to breed.

“The government needs to take into account what indigenous peoples are saying,” said Jorge Andreve, a researcher from the indigenous Kuna peoples in Panama.

The Kuna peoples believe that everything in nature is interconnected. Panama is a unique example of indigenous peoples governing their territories based on their traditional knowledge and community laws and rules. Western scientific knowledge is being used in conjunction with traditional knowledge to preserve land, coastal and marine ecological biodiversity, said Andreve.

Emphasizing the need to bring together traditional and scientific knowledge, panelist Ron Vave from the University of South Pacific, Fiji, provided information about locally managed marine areas (LMMAs) in the South Pacific, which empower local communities to manage natural resources. As with most other indigenous communities, the local populations of Fiji also have a spiritual connection with the environment. Turtles and sharks are considered as totem species, and local people have intimate knowledge about these and other species. There is need to build on local knowledge, culture and governance systems, Ron Vave concluded.

Anne McDonald of Sophia University, Japan, made a presentation on women *ama* free-divers in Japan, who are part of a matriarchal system. Women have traditionally governed their resources, passing down skills and knowledge from generation to generation. Over the years, advances in technology, such as the use of goggles, diving suits and oxygen tanks, have been carefully examined for their implications for resource health and exploitation, before being accepted or rejected. However, with climate-change-induced changes the *amas* are struggling to cope. “This is where scientific knowledge needs to come in, when local communities are hitting the limits of traditional knowledge,” said McDonald.

When the floor was thrown open to questions, many in the audience shared their frustration at the fact that traditional knowledge of IPLCs continues to be marginally recognized in CBD's programme of work on marine and coastal biodiversity, as in the EBSA process. Questions were also raised about the very local nature of traditional knowledge, and the fact that it is, at times, difficult to separate such indigenous knowledge from traditional beliefs and superstitions.

For more

www.cbd.int

Convention on Biological Diversity

mpa.icsf.net

Marine Protected Areas, and Local and Traditional Fishing Community Perspectives

www.cbdalliance.org

CBD NGO Alliance

A Collective Voice

The National Tripartite Workshop on the ILO Work in Fishing Convention, No. 188 was held in Goa, India, during 8-9 February 2013

A National Tripartite Workshop on the International Labour Organization (ILO) Work in Fishing Convention, 2007 (No.188—hereafter, C.188) was held in Goa, India, during 8-9 February 2013, in collaboration with India's Ministry of Labour and Employment (MOLE) and the Department of Animal Husbandry, Dairying and Fisheries (DADF) of the Ministry of Agriculture. The workshop was attended by representatives of federal and State governments, the Directorate General of Shipping, trade unions, organizations of vessel owners and employers, non-governmental organizations (NGOs), the media and the International Labour Office.

The workshop discussed the gaps between existing Indian legislation and C.188, and took inputs from governments of coastal States, social partners and other stakeholders regarding their views on ratifying C.188. Panudda Boonpala, Deputy Director, ILO Country Office, New Delhi, made introductory remarks. Speaking at the opening session, Anup C Pandey, Joint Secretary, MOLE, said the Goa meeting was a follow-up to the October 2010 and January 2011 consultations with stakeholders held in Kochi and Visakhapatnam. India will ratify C.188 only after ensuring that existing laws are in full conformity with the Convention, he said.

Brandt Wagner, Senior Maritime Specialist, Sectoral Activities Department of ILO, Geneva, introduced the provisions of C.188. Several questions were raised by participants concerning the Convention. These included: Would it be possible to have a higher minimum age for

fishers engaged in certain types of hazardous fishing operations? How would the Convention deal with crew change at sea? How does the Convention help in repatriation of fishers if they are arrested and detained in the name of maritime boundary infringements?

It was observed that fishers migrating between States within India often do not benefit from social-security schemes in the State where they work if they originate from another State. The importance of adopting provisions for

The importance of adopting provisions for transferability of social-security schemes across States was highlighted...

transferability of social-security schemes across States was highlighted in this context. Attention was also drawn to labour protection of fishers on board Indian-flagged fishing vessels under joint ventures that do not land their catches in Indian ports.

Since most provisions of C.188 were addressing the labour dimension of fishing, it was suggested by the majority of the participants at the workshop that MOLE, instead of the fisheries authority, should exercise effective jurisdiction in relation to the implementation of the work-in-fishing legislation at the national and State levels.

Standards

Coen Kompier, Senior Specialist, International Labour Standards,

*This article has been written by **Sebastian Mathew** (sebastian1957@gmail.com), Programme Adviser, ICSF*

ILO Decent Work Team for South Asia, drew attention to the Child Labour (Prohibition and Regulation) Amendment Bill that was introduced in the Rajya Sabha, the Indian upper house of Parliament, on 4 December 2012. The bill was aimed at prohibiting the employment of children, up to the age of 18, in hazardous occupations and processes, including mechanized fishing.

Kompier also drew attention to new labour legislation that would have relevance to fishers and

...the Convention did recognize the need for flexibility with respect to its application to the differing situations of countries and to limited categories of fishers and fishing vessels...

fishworkers, such as the legislation on employment agency, and the recent changes to the Rashtriya Swasthya Bima Yojana (the National Health Insurance Programme) to provide health-insurance coverage to even those above the poverty line. Labour legislation is becoming more and more progressive, and the Indian government intended to bring all informal workers within the ambit of the Unorganized Workers' Social Security Act, 2008, by 2021, he added.

R V Anuradha of Clarus Law Associates, a consultative legal firm, presented the results of the gap analysis between C.188 and Indian fisheries, shipping and labour legislation, which was prepared in consultation with MOLE and DADF, with ILO's technical and financial support. The existing legislation is fragmented, she said.

Significant gaps were identified and a new legislation was the best way forward, she recommended. Subsistence fishing and recreational fishing are not within the purview of C.188, she observed. Based on the discussion on fisheries subsidies at the World Trade Organization (WTO), and India's position during those negotiations, she held that 'subsistence fishing' could mean

fishing for livelihood security through small-profit trade.

Brandt Wagner noted that in the preparatory work leading to the adoption of the Convention, when the term 'subsistence fishing' was defined and discussed, it referred to fish caught only for subsistence or for exchange with family and friends, which did not result in any economic gain. Therefore, 'subsistence fishing' should be considered rather narrowly. This said, the Convention did recognize the need for flexibility with respect to its application to the differing situations of countries and to limited categories of fishers and fishing vessels, and it provided for the possibility to make use of such flexibility following consultations at the national level.

If it was decided to exclude certain limited fishers or vessels from certain provisions of the Convention, it was also important to discuss how to provide such protection over time (the concept of 'progressive implementation') to such excluded fishers or vessels. The general aim of C.188 was to provide protection to the greatest number of fishers, and it should be recalled that it is so structured as to provide less stringent requirements for smaller vessels and those at sea for short periods.

R V Anuradha also cited examples of acts dealing with dock workers, miners, plantation labour, and motor transport workers, where the labour ministry, and not the respective sectoral ministries, took the initiative to protect workers in specific sectors.

The representative of the Directorate General of Shipping sought vessel- and voyage-neutral standards for Indian fishing vessels. The Commissioner of Fisheries, Andhra Pradesh, said public hearings should be organized in fishing villages to discuss the need for a work-in-fishing legislation.

Certificates

The representative of the Directorate of Fisheries, Odisha, said seaworthiness certificates and life-saving and communication

equipment should be made mandatory for all sea-going vessels undertaking fishing. He sought to insure all fishers on board fishing vessels and to make 20 years as the minimum age for fishers and 60 years as their retirement age.

The majority of fishing vessels in Odisha are below 15 m length overall, he said. Fishers currently work 15 to 18 hours per day. Working hours should be brought down to under 10 hours per day, he said. Fishers frequently change their vessel of employment. Conditions of service of fishers should be covered by the new legislation.

It is important to have common minimum standards for all fishers and processing workers across the States, he said. He also pointed out how 60 per cent of Odisha seaboard is off-limits to fishing due to wildlife sanctuaries and national parks and turtle-protection programmes.

The Director of Fisheries, Kerala, said 'fishers', as envisaged in a work-in-fishing legislation, should also include wives of fishers and women workers in allied fishing activities.

The Director of Fisheries, Goa, said 95 per cent of workers in the Goan fishing sector originated from other States. Fishers are provided with life jackets, identity cards, and registration certificates. They are paid good salaries, provided with free food on board, and given incentives based on fish catch. There are cases of workers taking money in advance and not reporting for work, he said.

He added that the provisions of C.188, including accommodation standards and hours of work, should not be made mandatory for vessels below 20 m length. There should be discussions between organizations of boatowners and workers before ratifying C.188. Twenty per cent of the Goan fishing fleet is non-operational due to the nonviability of the sector, the Director of Fisheries, Goa said.

The representative of the Associated Chambers of Commerce and Industry of India (ASSOCHAM) said health and safety requirements of workers are important, and

ASSOCHAM was in agreement with international labour standards. He sought adopting a national labour legislation before ratifying C.188, and establishing one nodal agency to deal with this legislation.

Y G K Murthy, President, Federation of Indian Fishery Industries (FIFI), said medical examination to work on board vessels as fishers was neither practical nor feasible. Accommodation, food and occupational safety should be as per national standards. It was impractical to adopt hours of work in fishing since fish had to be caught when it was available. Fishing could not be treated on par with land-based industry. Current provisions under the Merchant Shipping Act, 1958, would suffice to ensure safe navigation and communication of fishing vessels, Murthy added.

The certificate of inspection and registration of fishing vessels under this Act was adequate to ensure their seaworthiness. There was no need to adopt new provisions, he said. Fishers receive wages and shares as well as incentives for fishing. Fishers on board vessels never complain about their owners, Murthy said. The best available space on board the vessels was provided to fishers.

The boatowners were capable of ensuring decent work of fishers. C.188 was developed without any idea about Indian fishing vessels. Rather than promoting international law, existing national legislation should be implemented at the Central and State levels for vessels below 24 m length. The vessels already have to register under the Marine Products Export Development Authority Act, 1972, the Marine Fishing Regulation Act and the Merchant Shipping Act, 1958, Murthy added. C.188 is irrelevant, he argued, for vessels below 24 m length and it would do serious damage to the Indian fishing industry by making it operationally non-viable. Better catches can lead to better livelihoods, he said. The problems facing the sector had nothing to do with low wages but with low catches.

Thampan Thomas, Vice-President, Hind Mazdoor Sabha (HMS), said apprehensions of the employers

should be removed. The employers are yet to understand the importance of C.188, which was to bring a social change by safeguarding the interests of the working class in fishing. It was important to accept five mn fishers with rights as part of the labour movement in India. He sought an immediate ratification of C.188, without waiting to develop a national work-in-fishing legislation.

S P Tiwary of the Trade Union Co-ordination Committee (TUCC) said safety, health and the social security of fishers, as well as their food and accommodation, are important. All fishers, both marine and inland, should be covered by a fishing labour law. Tiwary sought a new piece of legislation with flexibility for both exclusion as well as inclusion. He said owners of fishing vessels and fishers have similar concerns. Both parties are seeking economic viability and generation of revenue from fishing.

The representative of the United Trade Union Congress (UTUC) said provisions for exclusion and progressive implementation should not be invoked, and sought broadening the scope of the work in-fishing legislation to include the inland fishing sector.

Hanumantha Rao, the representative of the Bhartiya Mazdoor Sangh (BMS), said local-language workshops should be held to further discuss C.188.

Josevimalraj of the Indian National Trade Union Congress (INTUC) sought training to improve deep-sea fishing skills, regulation of import of fish that adversely impacts the income of fishers, providing better safety and security for the fishing community in light of the killing of two Kerala fishermen in the Indian contiguous zone by Italian marines who mistook them for Somali pirates, and granting rights to fishing grounds to fishers. He sought a time frame from the Government of India for ratifying C.188.

Shankar Dasgupta of the All India United Trade Union Centre (AIUTUC) and Subbu Raman of the Labour Progressive Federation (LPF), supported a comprehensive national legislation for work in fishing that

stipulated, among other things, minimum age and minimum wage for fishing, including all fishing vessels. Ratification of C.188 was of utmost importance, said Dasgupta.

Christopher Fonseca, General Secretary, All India Trade Union Congress (AITUC), Goa, welcomed C.188. It is a normative convention, he said. All fishers should be brought within the scope of the convention. He referred to the large number of migrant fishers in Goa from all over India. They should be brought within the scope of the migrant labour act. Everyone should back C.188, he said, which can help the fishing industry to be better organized in future.

Speaking on behalf of the National Fishworkers' Forum (NFF), Pradip Chatterjee said he recalled a series of consultations on C.188 that the NFF, in collaboration with the Centre for Education and Communication (CEC) and the International Collective in Support of Fishworkers (ICSF), had organized in 2008 in different parts of India. Indian small-scale fishers could be found from the estuarine waters of the Sundarbans to the exclusive economic zone (EEZ). Currently, there are few laws to protect workers in fishing in India, he said.

The coverage of social security of fishers is poor. NFF was keen to see C.188 ratified and a comprehensive national work-in-fishing legislation developed to promote decent work in fishing. The scope of such legislation should include all types of fishing vessels and allied activities in fishing. There is considerable scope for improving work agreements in fishing, as well as occupational safety and social security.

A national legislation should be enacted and implemented, he said. MOLE should take the lead to mother the Act in consultation with DAHDF, and labour departments at the State level through a participatory process. A set of rules also needs to be developed to operationalize the act, said Chatterjee.

Road map

Discussing the road map to ratifying C.188, Anup C Pandey, Joint

ASSOCIATION OF DEEP-SEA GOING ARTISANAL FISHERMEN (ADSGAF)

Secretary, MOLE, said the concerns of the employers should be effectively addressed. Tripartite consultations at the State level would be organized over the next six months in local languages. Whether or not ratifying C.188 would affect the viability of the fishing industry will be examined.

Who should be implementing a work-in-fishing legislation will be decided in consultation with the State governments. The consultations will be time-bound and not open-ended, he said. A cabinet note will be prepared at the end of all the consultations.

Summarizing the two-day workshop, Coen Kompier of ILO said the issue of jurisdiction was raised—whether or not it should be the fisheries authority or the labour or shipping authority that should be giving effect to the provisions of C.188. Several implementation gaps were identified. While workers' organizations were unanimously in favour of C.188, the employers were not in favour of ratification. The purpose of C.188 would be defeated if only large vessels were brought within its purview, said Kompier. There was sufficient flexibility offered by the Convention in regard to medical examination, crew list, work agreement, social security and minimum age. While national standards were sought for national vessels, international standards were sought for foreign fishing vessels in the Indian EEZ. It will be good to have one set of standards that would apply to both foreign and domestic vessels, he said. Fishers do not often complain even if they were victims of forced labour, he added.

There are two types of ratification of ILO Conventions, Kompier explained. While countries such as the Russian Federation, India and Brazil see ratification essentially as mandating legal requirements, many other ILO Member States see ratification as expressing an aspirational statement with the idea of conforming to the ratified Convention. ILO has no particular view on what ratification approach should be adopted. ILO stood for a collective voice and for collective



A shark fisherman in Thootoor, India. Sufficient flexibility has been offered by the ILO Work in Fishing Convention with regard to medical examination, crew list, work agreement, etc.

agreement arrangements for fair competition. ILO cannot impose any sanctions, he said; it can only stimulate a dialogue to arrive at a consensus.

It would be better to move away from adopting a welfare approach in fishing towards a rights-based approach. Granting entitlements to workers and honouring them should be deemed more important than doling out benefits. Indian labour legislation is already moving in that direction, said Kompier, citing the example of the Unorganized Workers' Social Security Act, 2008.

As a way forward, it was proposed that ILO, in collaboration with relevant stakeholders, would bring out promotional material in local Indian languages. All organizations who wished to comment on aspects related to work in fishing would be afforded an opportunity to do so. States were requested to organize another tripartite consultative meeting to move towards developing a consensus on ratifying C.188. ILO would further liaise with the fisheries authorities, in collaboration with MOLE. The forthcoming Global Dialogue Forum for the promotion of C.188, from 15 to 17 May 2013 in Geneva, would be a possible opportunity to do so, it was hoped. 3

For more



www.ilo.org/global/industries-and-sectors/shipping-ports-fisheries-inland-waterways/lang-en/index.htm

Shipping, Ports, Fisheries and Inland Waterways Sector

labour.icsf.net

Comprehensive Standard of Work in the Fishing Sector

A Dam Good Option

Small-scale fishing in the reservoir of the Dimbhe dam in Maharashtra, India, has been a boon for displaced families

In 2000, the Dimbhe dam in the Indian State of Maharashtra became operational, flooding 2,202 ha of tribal land and displacing 1,253 families. Eleven villages were submerged and 13 partially affected to irrigate 36,552 ha of land through the Right Bank and Left Bank canals and produce five mw of power. The remaining water is supplied to the Yedgaon dam. The families who have had to shift to the hill upstream have little livelihood options on the stony slopes. Twenty-five to 40 of the families took to fishing in the reservoir, using rubber tubes of truck tyres. But their meagre catch was inadequate for their own nutrition, let alone as a source of livelihood.

Enter the non-profit, Shashwat. The organization worked to help local communities develop small-scale fishing activities in the reservoir and improve agricultural production while conserving forests. Shashwat's holistic development plan for the area includes enabling communities to not only start small-scale livelihood activities such as fishing in the reservoir, but also enabling them to manage resources sustainably. Shashwat was awarded the Equator Prize as well as the prestigious Special Recognition Award for Freshwater Resource Management by the Equator Initiative of the United Nations Development Programme (UNDP) at the RIO+20 United Nations Conference on Sustainable Development at Rio de Janeiro, Brazil, on 20 June 2012.

Shashwat helped the tribals of 19 villages living around the dam organize themselves and develop fishing in the reservoir. In 2003,

with advice from fishers of the Bargi Dam Displaced and Affected People's Association, some 900 km away in the neighbouring State of Madhya Pradesh, the Dimbhe community formed an association, which was later registered as a co-operative society in 2006, with 157 members, including 15 women. Membership to the Dimbhe Jalashay Shramik Adivasi Machhimar Sahakari Society Maryadit was based on payment of a token fee. The co-operative has members from all 19 villages

The families who have had to shift to the hill upstream have little livelihood options on the stony slopes.

around the reservoir. Soon after the formation of the association, three boats made of galvanized iron sheets fixed over wooden frames were introduced in 2003. These were a hit. Today there are some 150 such boats plying the reservoir waters.

Training programme

The next step was to get the State agencies on board. The revenue, fisheries, co-operation, irrigation, tribal and forest departments needed to be involved. The Tribal Development Department provided funds for the training-cum-production programme of making boats and purchasing fishing nets, while the Fisheries Department subsidized the boats made by the co-operative's members, and helped the women get trained in ornamental fish culture. The

*This article has been compiled by **Sumana Narayanan** (sumananarayanan@gmail.com), Programme Associate, ICSF, based on inputs from **Anand Kapoor** (anandk3001@gmail.com) of Shashwat*

Revenue Department pitched in by giving ration cards to access food subsidies, and the Irrigation Department reduced its charges for draw-down irrigation permits, among others.

In the first two years of the dam's existence, the Irrigation Department emptied the dam twice, leading to the death of all the fish in the reservoir. Then, in 2003, the reservoir was given to a private contractor for fishing, for a period of five years. The contractor did not stock the reservoir adequately and when it was time to harvest the fish, he brought

...on the ground, experience has found that such small fingerlings have a survival rate of just 10-15 per cent once released into such a large reservoir (average area: 1,278 ha).

In the first year, 2006-2007, the catch was 3,670 kg of *catla* (Indian carp) and 16,860 kg of *chela* (Indian glass barb) in 72 fishing days. The catch has seen ups and downs, including a low total catch of 6,625 kg in 2010. In 2012-2013, the catch had increased to 31,117 kg while the fishing days had gone up to 290 days.

Indian major carps form the bulk of the catch as a result of the aggressive stocking of these, as recommended by the Central Institute of Fisheries Education (CIFE). In 2007, the community also undertook cage culture of carps. CIFE again came to the aid of the co-operative, providing them with floating cages as well as the necessary technical advice and training. The contract required the co-operative to stock the reservoir with 900,000 fingerlings (25-35 mm in size) annually.

However, on the ground, experience has found that such small fingerlings have a survival rate of just 10-15 per cent once released into such a large reservoir (average area: 1,278 ha). The cage culture meant the co-operative could fulfil this condition, in spite of setbacks ranging from loss of fish seed to breakage of equipment and lack of training and proper equipment. Later, CIFE provided 16 more cages. Most of the stocking done in Dimbhe since then has been with advanced fingerlings of size 100-150 mm, which increases the survival rate to 85-90 per cent.

Self-help groups

The tribal women, having formed 32 self-help groups (SHGs), were looking for a means to enhance their livelihood. They approached CIFE which suggested ornamental fish culture. The women were trained in such culture and began to rear goldfish. The National Fisheries Development Board (NFDB) has recently sanctioned 16 cages for a two-year project through CIFE in which the women are given training in ornamental fish rearing. NFDB has also provided 32 cages for the fishers to rear fingerlings for stocking the reservoir.

in fishers from outside the State. The Dimbhe tribals protested against that step. In addition, the private contractor, it was found, had violated contractual conditions. This led to the Fisheries Department cancelling his contract in June 2006.

Following the protest against the private contractor, the Fisheries Department offered the co-operative the fishing contract. The co-operative, with difficulty, collected about two-thirds of the money required, from the entrance fee of Rs201 (1 US\$ = Rs61.6) and the fee for extra shares (Rs800) collected from members.

The contract was valued at Rs157,360, which included a security deposit of Rs36,360. For the rest, with Shashwat's help, a zero-interest loan of Rs50,000 was secured. Once the contract was awarded, the co-operative tackled the problem of stocking the reservoir.

Using grants from the tribal development department and SWISSAID, the reservoir was stocked with 909,000 fingerlings. This first attempt by the co-operative at stocking the reservoir was, however, a long-drawn affair as the Fisheries Department took three years to supply all the fish seed.

By 2008, the women had formed a federation of 29 SHGs named Ghod Bubra Mahila Sangh.

Between 2009 and 2012, the community and Shashwat also tried their hand at pen culture but with mixed results. In 2009, Bendharwadi village was the site of this experiment where a four-m-high nylon net was tied across a depression in the fields at the reservoir's edge. The net was supported by bamboo and wooden poles. When the water level rose, and water entered the penned area, 33,000 fish seed were released. Unfortunately, that year the dam did not fill to capacity so the water level in the pen was just two to three feet. The water level then dipped further as water was released for irrigation, giving the fish seed hardly 21 days to grow. The slightly larger fish seed of up to 70 mm size were then released into the reservoir. In the next year, the dam water overtopped the pen at Savarli by about 30 cm for two to three days. The community has, thus, found that though pen culture is cheaper than cage culture, there is an element of uncertainty since the water levels are unpredictable.

The co-operative reserves 25 per cent of the catch sales for local vendors as a means to ensure the local community's nutrition needs are met. The rest is sold to the wholesale buyer who now comes to the dam site to buy the catch. Payment to the fishers is made weekly on Sundays. To ensure transparency, fishers from the villages share the responsibility of checking accounts, and someone is always present when financial transactions are made. The co-operative also has regulations on mesh size and closed seasons, which are zealously enforced. There have been cases of nets being confiscated and fines imposed on erring fishers. The members of the co-operative also made a resolution way back in 2003 not to use poisons or explosives for fishing.

In Maharashtra, the offset price for fishing lease of a reservoir is decided by the estimated annual fish production, the market rate of fish (Rs25/kg, according to the

government), and a percentage of the total value of fish production (one per cent, as decided by the State). In 2005-06, the offset price for Dimbhe was fixed at Rs54,000. The next year it had jumped to Rs121,000. But this offset price of Rs121,000 was based on the highest earlier bid and not on the production level. Shashwat and the co-operative suggested that the offset price for Dimbhe be fixed according to the 2002 circular of the government, which would make it Rs54,000 annually, and that the formula be revised. They suggested that the price be based on the actual fish production in nearby, similarly sized reservoirs. After three years of multiple representations, the government, in 2009, resorted to old lease amounts but the formula revision was not taken up.

Thanks to CIFE, the co-operative took steps to improve the aquatic productivity of the dam. In 2006, CIFE conducted a preliminary survey of the dam and found that aquatic productivity was just 50 per cent. It noted that zooplanktons were scanty. In consultation with CIFE, Shashwat and the co-operative took up planting of the green manure crop, *taag/dhencha* in the draw-down land. As the water levels rose and the crop was submerged, they formed feed for

BUDHAI DAMSE



Fishermen with their catch at Dimbhe reservoir in the Indian State of Maharashtra. They have resolved not to use poisons or explosives for fishing

TIFFANY FRANKE



Tribal women engaged in rearing ornamental fish in floating cages in the Dimbhe reservoir in Maharashtra, India

the carp. Later, when the water level dropped, farmers sowed wheat in this draw-down land. The farmers found their yield to be substantially higher than before the planting of *dhencha*. With NFDB support, *dhencha* planting was taken up in a larger area.

In spite of several setbacks, the community has persevered; in the rainy season of 2008, a pest attack caused teak trees around the reservoir to shed their leaves. The green leaves got washed down in the reservoir water with the rains, forming a sticky mass that glued the nets when deployed. Undoing this damage would take a few hours of hard scrubbing with detergent. In addition, in 2009 and 2012 the dam did not fill to capacity, reducing the water volume available for fish growth. In 2011, due to heavy rains, the five gates of the dam were opened for a day and a half. The next day, Shashwat reports that one could see people lined up downstream collecting the fish which had died from the 72-m fall down the spillway. Similarly, in August 2013, four to five truckloads of large fish were lost on the first day of opening the dam gates.

However, with the support of Shashwat and the government's fisheries and tribal development departments, and institutions like CIFE and NFDB, the community has overcome these problems. The

catchment area being well-forested, and with hardly any chemical fertilizers being used, a high price for the fish caught in Dimbhe was expected. Yet this is not the case since the quantity of fish caught is not enough to justify a separate market and the co-operative does not have access to markets in the cities.

Unfortunately, the focus on carps has led to decline in 16 local species. These have also slowly lost their market value. In spite of these drawbacks, the fishers are looking forward to ensuring self-sufficiency in managing the fishery; in 2012-13, the co-operative recorded a profit. Some of its future plans include building an ice plant, acquiring another motor boat for transporting the catch, providing boats to less fortunate members, and raising working capital for the women's ornamental fish business. The ice plant has been approved by CIFE, which has also helped the co-operative to install a mini-hatchery from which the first fish seed of *rohu* was produced in August 2013. 3

For more



www.undp.org/content/india/en/home/presscenter/pressreleases/2013/05/10/shashwat-congratulated-for-winning-undps-prestigious-global-equator-prize/
Shashwat Congratulated for Winning UNDP's Prestigious Global Equator Prize

www.equatorinitiative.org/index.php?option=com_winners&view=winner_detail&id=137&Itemid=683

Shashwat: Building Sustainable Livelihoods for Tribal Communities

Ocean's Bounty

The fishers of India's Gulf of Mannar are getting together to ensure sustainable management of the area's resources

The fishing community in the Gulf of Mannar (GOM), in the southern Indian State of Tamil Nadu, has been at odds with the government over access to marine resources after the declaration of about 560 sq km as the Gulf of Mannar (Marine) National Park in 1986 under the Wildlife Protection Act (WLPA) of 1972. As a result, entry into the National Park and use of any natural resource from the area is prohibited. However, strict implementation of regulations began only in 2000. The National Park lies off two districts (Ramanathapuram and Thoothukudi) where the density of fishing village is high.

The GOM fishing community has earlier called for more community involvement in decisionmaking, and has been engaged with the government agencies at different forums, such as the workshops organized by the International Collective in Support of Fishworkers (ICSF) in 2009 and 2012. However, there has not been much progress in working on community-led management systems until now. Resource management continues to be a government-led process.

With this in mind, the ICSF, with support from the Bay of Bengal Large Marine Ecosystem Project (BOBLME), organized training programmes at two locations (Pamban and Ramanathapuram) in the GOM in October 2013. The objectives were to enhance the capacity of the community, drawing on their traditional and experiential knowledge and institutions, to relate their knowledge systems with an ecosystem approach to fisheries; explore and propose ways of enhancing sustainable and

equitable resource use, and the role that communities can play; and engage with the functionaries responsible for fisheries and the environment, towards developing a common vision and convergence in perspectives for achieving conservation and sustainable use of resources.

In the GOM, the ICSF has been working for several years with the Ramnad district Fishworker's Trade Union (RFTU), and People's Action for Development (PAD), a civil society organization, on resource management. The fishing community

The fishing community in the area, despite being scattered geographically, is politically and socially cohesive.

in the area, despite being scattered geographically, is politically and socially cohesive; the issues and problems were thus quite well-known to all the participants. The focus of the programme was on developing community-led proposals for resource management.

Rich biodiversity

The GOM is a shallow bay with coral reefs and seagrass beds, and includes coastal waters and 21 uninhabited islands. The Gulf is a biodiversity-rich area and is estimated to have the largest dugong population in Indian waters. It is also home to sea turtles and sea cucumbers. The waters around the islands support several species of seaweed, some of which are collected by women from the fishing community and sold to

*This report has been written by **Sumana Narayanan, Ramya Rajagopalan and Vishnu Narendran** (icsf@icsf.net), ICSF*

local traders and thence to factories where agar is extracted.

There are about 125 fishing villages (31 villages in Thoothukudi District and 94 villages in Ramanathapuram District) and 35,000 active fishers (including women seaweed collectors) and some 4,500 divers in the GOM. The fishing community here, as in the other maritime States of India, is not homogenous; members belong to various castes. These

Each group used the framework questions as a basis for their brainstorming sessions and discussions on various issues...

communities have distinct social and cultural governance structures and traditional practices. Community institutions are mostly organized along caste, kinship or religious lines and play an important role in resolving conflicts, regulating and allocating resource use, enabling equitable access to resources and providing some form of social insurance. Besides the traditional organization of fishing communities, members are also organized into craft and gear groups.

The two training programmes attracted 187 participants. They were divided into groups according to their livelihood activities. In the first location, the groups were fishers and seaweed collectors and in the second, sea cucumber divers, in addition to the other two categories.

Participants were provided with a set of framework questions on their desires for the area's resources; the kind of regulations required; how these can be communicated, monitored, evaluated, and complied with; and the type of dispute-resolution mechanism needed. At the outset, Robert Panipilla, an independent researcher who is currently preparing the first marine biodiversity register for the Kerala State Biodiversity Board, made a presentation on his research documenting the traditional knowledge of fishing communities in

the south Indian State of Kerala. B Johnson, a fisheries scientist from the State-run Central Marine Fisheries Research Institute (CMFRI) spoke on the concept of an ecosystem approach to fisheries. A third presentation on sea cucumbers was made in Ramnad by P S Asha of the same institute.

Following the presentations, discussions within the three groups—fishers, sea cucumber and seaweed—began. The fisheries group consisted of those who do not collect/harvest seaweed or sea cucumbers. Each group used the framework questions as a basis for their brainstorming sessions and discussions on various issues like access to the islands, duration of the fishing ban, the kinds of fishing gear used, protection for endangered species, and the value of community regulations. Discussions culminated in each group presenting its management proposals. The resolutions/proposals from the communities were grouped under various subheads such as 'regulations', 'compliance', 'monitoring', 'conflict resolution' and 'review of plans'.

The fishers group had intense discussions on the variety of gear currently used and their impact on marine resources. There was a general acceptance that some gear, such as *kedai valai* (a set net, with no mesh size regulation, left overnight in the sea), adversely impact the marine ecosystem. There was a great deal of discussion on why such gear is used even though their negative impacts are widely known. One participant said that it was one thing to point fingers at the government but quite another to get the community to look inward for self-analysis; so many things are 'easy' to do, which is why *rettai madi* (pair trawl) and *surukku madi* (ring seine) are common. But do they actually help the community?

Self-enforcement

An outright ban on such gear is difficult as it would affect the community's livelihood. Therefore, it was agreed that, to start with, the use of such gear must be reduced in a

self-enforced manner (that is, by the community). The fishers group also listed the various bans imposed by the State and wondered whether they are required or not. The consensus was that some bans, like those related to accessing the islands and collecting sea cucumbers, need to be lifted.

The fishers group hastened to add that access to these resources must be regulated. The community has always protected the resources in and around the islands as the importance of these spaces is recognized. Non-fishery threats to the marine and coastal ecosystems, such as industrial pollution (in Thoothukudi district), were also highlighted, and the government was called upon to counter these.

The sea cucumber divers group wanted three species—*Holothuria atra*, *H. scabra* and *Bohadschia marmorata*—to be delisted from Schedule 1 of the WLPA, and some system of regulated collection (licensing) with government support, similar to *chank* collection was done in colonial times, be permitted. Under the WLPA, species can be listed in one of several Schedules, which provide a range of protection for the species. Schedule 1 species have the highest level of protection and include sea cucumbers. Sea cucumber does not have a local market in India, and is meant for export.

Seaweed collection, a livelihood opportunity introduced by the State that the women of the GOM have been following for a few decades, is not illegal but the islands where the seaweed grow are now off-limits. However, the women continue to collect seaweed, running the risk of encountering Forest Department patrols. The women seaweed collectors noted that, for the past five years, they have had in place several self-regulation measures; nonetheless, they admit to being amenable to discussing how they can ensure more sustainable collection of seaweed.

Over the years, the women said, the number of families collecting seaweed has increased, which is reason enough for regulation. The

number of collection days has been reduced from 30 to 12 per month, allowing time for the seaweed to regenerate.

Sometimes the women miss a day or two in the designated 12 days because of illness or other family-related matters; yet, they do not compensate for such missed days. In addition, they do not use metal scrapers to collect seaweed. They use their hands.

The flipside of this is that the dead corals cut the women's hands, said a participant pointing to old scars on her fingers. So the women now tie rags around their fingers before collecting the seaweed.

The seaweed group also discussed at length the feasibility of setting up infrastructure for adding value to the seaweed by producing agar. A resource person detailed what this would entail—a shed, large containers for the seaweed, electricity, water and labour. After much discussion, the women decided that this was not a doable option as freshwater is a limiting factor.

All the groups highlighted the existing community regulations such as the ban on use of dynamite and poisons, and the initiative of the women of Chinnapalam village to collect seaweed only 12 days a month (instead of almost every day, as was the norm earlier). They also noted

VISHNU NARENDRA / ICSF



Women seaweed collectors at ICSF-BOBLME training programme at Ramanathapuram, Tamil Nadu, India

N VENUGOPALAN / ICSF



Women seaweed collectors of Bharathi Nagar fishing village in Ramanathapuram, Tamil Nadu, India

designated persons within the village. However, for scientific inputs, they would approach researchers. It was felt, for instance, that it would be useful to monitor fish catches, for which research organizations could devise a simple protocol that the community can follow. The women seaweed collectors were also willing to discuss with scientists how to modify collection so as to ensure regeneration. Officials from the Forest and Fisheries Departments also attended the final session of the training programme and responded positively to the demands and management plans proposed by the community.

The GOM fishing community now plans to enter into a dialogue with the State, armed with the proposals for resource management and governance that were suggested at the training programmes. In preparation for discussions with the State, the community is currently holding intensive, village level discussions on the outcomes of the training programme so as to ensure that the proposals are truly community-led—namely, that all members of the community support the proposals and are aware of them. 3

that new regulations must come from within the community, particularly at the hamlet level (and not at the revenue village level) as the community's traditional governance systems can enforce these regulations effectively. For monitoring, implementation and evaluation of regulations, committees at various levels—hamlet, *panchayat*, district, etc.—need to be formed.

There was much debate on whether the union, the RFTU, should spearhead these moves. It was, however, decided that the union was not the appropriate platform as not everyone in the community are members. The hamlet and its traditional institutions would be ideal, participants felt. The groups noted that in case of inter-village problems, a dialogue would be entered into, and for larger issues, the State would be called on to intervene, if needed. For all the groups, a common complaint was the lack of access to the 21 islands. Records indicate that the community has been using the islands at least since the early 20th century. Participants shared memories and stories of families camping and fishing off the islands. Mention was also made of leases given to community members to harvest coconuts or other produce.

The groups decided that monitoring too would be done by

For more

mpa.icsf.net/en/page/633-India.html

Social Dimensions of Marine Protected Area Implementation in India: Do Fishing Communities Benefit?, Chennai, 2009

mpa.icsf.net/en/page/989-India%202012.html

Fishery-dependent Livelihoods, Conservation and Sustainable Use of Biodiversity: The Case of Marine and Coastal Protected Areas in India, New Delhi, 2012

www.icsf.net/en/cds-videos/EN/article/20-women-seaweed-c.html?limitstart=0

Shifting Undercurrents: Women Seaweed Collectors of Gulf of Mannar, India

No Clamming Up

The certification by the Marine Stewardship Council of the fishery for short-necked clams from the Ashtamudi estuary is a first for India

The Ashtamudi estuary is the second-largest estuarine system in the south Indian State of Kerala. It is a Ramsar site designated as a “wetland of importance”. The commercially exploited bivalve species from the estuary are represented by short-neck clam (*Paphia malabarica*), yellow clam (*Meritrix meritrix*), black clam (*Villorita cyprinoides*) and blood clam (*Anadara granosa*).

It is estimated that around 20,000 tonnes of clams are exploited regularly for commercial purposes of which short-neck clams contribute 12,000 to 15,000 tonnes. The meat of the clams fetches Rs 100 million (US\$ 1.6 mn) as foreign exchange for India. The landed value of the short-neck clam is Rs80-100 per kg (US\$1.3 - 1.6), while its export value is around US\$3.

Short-neck clams are harvested from an area of 60 – 80 ha in the Ashtamudi estuary by approximately 1,000 fishers—all male—while another 3,000 are involved in cleaning, processing and trading of the clams.

Before the MSC certification, there were six companies based in Kollam and Kochi that exported the clams, but this number is expected to increase post-certification. Before certification, the markets for the clams were Malaysia, Indonesia and Vietnam. Post-certification, exporters expect to see an expansion of the markets to Europe and Japan.

Fishers in the Ashtamudi estuary paddle dug-out canoes from nearby villages to the shellfish beds. Divers dislodge the clams from the seabed with their hands and feet; sometimes a team of two or three fishermen

will employ a hand-dredge from the canoe.

On a good day, a fisherman can gather as much as 200 kg over a period of four to five hours. There is no mechanized gear involved in collecting the clams.

The short-neck clam fishery contributes a share of 90 per cent of clam exports from India. The clams grow in size to 30 mm in one year and 42 mm in three years. The peak spawning period is during December to February.

In terms of weight and calorific value, the clams are best during the

Post-certification, exporters expect to see an expansion of the markets to Europe and Japan.

pre monsoon months, between March and November.

During the late 1980s and early 1990s there was an unexpected depletion in the clam resources, mainly due to overexploitation by indiscriminate fishing for the clam shells, which had a niche market.

Fishery band

A combined effort by the Central Marine Fisheries Research Institute (CMFRI), the district administration and clam pickers of the region put in place a management measure to regulate the fishery by using nets with mesh size of 30 mm and more and imposing a fishery ban from December to February, which is the peak breeding season of clams. Since then, for the past 20 years or so, the

*This article has been written by **Vinod Malayilethu** (vinodm@wwfindia.net), Senior Co-ordinator, Marine Conservation Programme, WWF-India*

stocks of short-necked clams have revived.

The introduction of a closed season and mesh-size restrictions for nets, along with the stipulation of a minimum size of clams for export and a prohibition on mechanized fishing methods led to immediate gains, and the Ashtamudi estuary clam fishery has sustained landings of around 10,000 tonnes a year for the past decade.

The MSC pre-assessment for the short-neck clam fishery began in 2011, and was facilitated by the World Wide Fund for Nature (WWF). The certification addresses issues related to the sustainability of the resource, the environmental impacts of the fishery, and the laws and regulations governing the fishery.

The pre-assessment results indicated a need to monitor the environmental impact of the fishery, periodical stock assessment for subscribing harvest-control rules and a governing council for managing the resources sustainably.

Any resource assessment study would strengthen the scope of the fishery to move towards full certification. The costs for the pre-certification and certification were borne by WWF-US and Sustainable Legacy Fund, an organization

District Collector as Chairman and the Deputy Director of Fisheries as Convenor, with 10 clam fishers as members. The council has 20 members who meet once in every quarter of the year. While reviewing the clam fishery, the council will also address issues faced by the clam fishers and take decision in their meetings, including those related to the implementation of the mesh-size regulation and the minimum size of the clams that can be harvested. The council is responsible for fixing a minimum price for the meat of the clams. It also issues identity cards for fishers, and restricts new entrants into the fishery.

In order to monitor the impact of the fishery on the ecosystem, CMFRI has included in its annual research programme a project on management and monitoring of possible effects of the Ashtamudi short-clam fishery on habitats and ecosystems.

The project will be undertaken by the Molluscan Fisheries Department (MFD) and the Fishery Environment Management Division (FEMD) of CMFRI. Regular monitoring of the clam resources and stock assessments would be carried out before and after the fishery season, taking into account the self-imposed fishing holiday during the spawning period from December to February.

The project is also expected to prescribe a total allowable catch (TAC) for the fishery. The statistics of stock assessment and the maximum sustainable yield (MSY) determined by CMFRI are also presented to the council on a yearly basis, and are used to control entry into the fishery.

MSC's scoring system puts the Ashtamudi short-clam fishery in the best-practice category on 29 of the 31 performance indicators, with scores of greater than 80 out of 100. The fishery has conditions for improvements to maintain certification on two performance indicators related to recording information on bycatch.

Insufficient data

The Risk-based Framework (RBF) was used to assess some performance indicators where there was insufficient data to allow the

The pre-assessment results indicated a need to monitor the environmental impact of the fishery...

dedicated to fisheries moving towards MSC certification.

The MSC assessment team considered the low-impact method of fishing in the Ashtamudi estuary and the extent of the seabed that is fished. Due to the fishing methods employed, clams in the deeper parts of the entrance to the estuary cannot be fished because the water is too deep or the tidal currents are too strong to allow diving or raking of clams.

The Ashtamudi Clam Governing council was constituted with the



Short-neck clams are harvested from an area of 60 – 80 ha in the Ashtamudi estuary of Kerala, India, by approximately 1,000 fishers. This is the first fishery in India to be accorded certification by the Marine Stewardship Council

conventional assessment process to be used. The RBF was developed by the MSC to improve access to fisheries that are data-limited, and is often used for small-scale artisanal fisheries in the developing world.

The Ashtamudi short-clam fishery underwent MSC's full assessment in September 2014 and was certified in November 2014 as the first MSC-certified fishery in India and the second in South and Southeast Asia.

Over the years, there has been an increase in demand for clams in the local market, and prices have ruled high. The MSC label is now expected to increase purchase by buyers from Europe and Japan.

The Ashtamudi Clam Governing Council will bear the cost for re-certification, which will be minimal compared to the price realized by fishers for the certified clams.

It is planned to have qualified third-party auditors in India by the time of re-certification in 2019, which will considerably reduce audit costs.

Among the key management structures that helped the Ashtamudi short-neck clam fishery obtain MSC certification was the three-tier system of village, district and state councils, which helped in the implementation of the fishery-management regulations.

The MSC certification of the Ashtamudi short-neck clam fishery can prove to be an example for other similar small-scale fisheries around the world to get certified to ensure better prices and a more sustainable exploitation of the resource. ♣

For more



www.msc.org/newsroom/news/indian-clam-fishery-pioneers-sustainability?fromsearch=1&isnewssearch=1&set_language=en&categories=fisheries-in-the-program

MSC

www.icsf.net/en/samudra/article/EN/58-3565-Get-Out-of-the-.html

**Get Out of the Spotlight,
SAMUDRA Report No. 58,
March 2011**

A Just Victory

A recent landmark judgement by India's National Green Tribunal has awarded compensation to the traditional fishers of Mumbai for the loss of livelihoods caused by coastal development

In what is seen as a landmark judgement, the Western Zone Bench of the National Green Tribunal of India has criticized the Jawaharlal Nehru Port Trust (JNPT) for continuing to reclaim land in violation of the Coastal Regulation Zone (CRZ) Notification, and has ordered the City and Industrial Development Corporation (CIDCO), JNPT and the Oil and Natural Gas Corporation (ONGC) to pay US\$15.3 mn to 1,630 fishermen families affected by JNPT's project of creating an additional berth at the port in Navi Mumbai.

In its ruling of 27 February 2015, the Tribunal labelled the case a "classic example of civil action brought by traditional fishermen"

affected from four such traditional localities of fishermen due to development projects undertaken by the Respondents, particularly by CIDCO, JNPT, ONGC and the Navi Mumbai Special Economic Zone (NMSEZ).

The claim for compensation and right for rehabilitation was based mainly on the fishermen's traditional right to catch fish from areas in the sea that are being reclaimed for project activities. These impair regular tidal water exchanges, egress and ingress of fishermen's boats to the sea through the creek near the JNPT. They are thus deprived of daily earnings from their traditional rights of access to the resources of the sea.

The petition further alleged that the reclamation of land, and removal of mangroves in the area, has caused large-scale destruction of all surrounding mangrove forests, which has, in turn, substantially reduced or obliterated the breeding of fish and narrowed the navigational route of the traditional fishing craft, which has also added to the misery of the fishing communities.

Mangrove destruction

The Tribunal noted that all past activities of reclamation in Mumbai (formerly Bombay) have not only altered the urban topography of the area and could lie at the root of the present urban situation but have also contributed to the changes in the configuration, underwater topography and underwater circulation in the area's harbours and bays. This was followed by reclamation and destruction of mangroves alongside beaches and the seashore.

The claim for compensation and right for rehabilitation was based mainly on the fishermen's traditional right to catch fish from the sea area...

living in *koliwadas* (habitats of the Koli fishermen of Maharashtra), who were seeking compensation under Section 15 of the National Green Tribunal Act, 2010, for loss of livelihood due to project activities of the Respondents, as well as implementation of rehabilitation of their families, who are unsettled on account of the projects in question.

The principal Apellant, a fisherman named Ramdas Janardan Koli, on behalf of the Paramparik Macchimar Bachao Kruti Samiti, a fishers' organization, argued the case himself. He claimed that 1,630 families of traditional fishermen have been

This is a summary of the ruling of the National Green Tribunal (Western Zone) Bench in Pune, on 27 February 2015, in response to Application No. 19/2013

The Tribunal stated: “We have no hesitation in holding that JNPT caused destruction of mangroves and degraded the environment in the area of the port by reclamation of land as well as contemplated effect on tidal exchanges and obstruction in natural water navigation routes available to the traditional fishermen.”

While refraining from entering the thicket of government policy, in a situation like the present one, the Tribunal noted that the financial facet of the dispute relates to the ‘social cause’ of which the ‘environmental cause’ is the main component. “Social cause involves as to how in future the Applicants may sustain financial loss and their culture as fishermen would be obliterated due to degradation of environmental destruction by the acts of the contesting Respondents.”

The rehabilitation programme envisaged for the traditional fishermen does not include relocation of their hamlets/localities in the nearby areas, which could be of identical use for earning a livelihood, the Tribunal noted.

The Tribunal Bench found it obvious that “there are specific species and functional groups that play critical roles in important ecosystem processes, and the loss of these species may have significant influences on the whole ecosystem.”

“Primary and secondary productions are important mechanisms by which marine communities contribute to global processes. It has been estimated that half the primary production on earth is attributable to marine species. Without primary producers in surface waters, the oceans would quickly run out of food, but without planktonic and benthic organisms to facilitate nutrient cycling, the primary producers would quickly become nutrient-limited”, it added.

Under international law, States have a clear duty to protect people within their jurisdiction from having their human rights breached by non-state actors, including companies. Apart from being bound by international customary law, India has ratified, and is, therefore, a State party

to several international treaties that guarantee human rights, the Tribunal Bench elaborated.

When a government fails to protect human rights from abuse by non-state actors such as companies, it amounts to a violation of international law. However, the government’s failure to protect rights does not absolve non-state actors from responsibility for their actions and their impact on human rights, it explained.

Section 20 of the National Green Tribunal (NGT) Act, 2010, makes it clear that the Tribunal shall consider the ‘precautionary principle’ and it mandates the Tribunal, while passing any order or decision, to apply the principle of sustainable development, the ‘precautionary principle’ and the ‘polluter pays’ principle. The precautionary principle requires anticipatory action to be taken to prevent harm, the Tribunal Bench noted.

In the final analysis, Justice V R Kingaonkar, Judicial Member, and Ajay A Deshpande, Expert Member, of the Tribunal Bench, came to the conclusion that JNPT degraded the environment by destroying mangroves. JNPT also began work at the site even prior to environmental clearance and conducted the environmental impact assessment (EIA) without proper resettlement and rehabilitation (R&R) programmes, or auditing of the risks

SHUDDHAWATI PEKE / ICSE



Boats at the Karanja fish landing area, Maharashtra, India. The urban topography of Mumbai has been altered by reclamation

and benefits due to the implementation of the project.

The loss of ecology, livelihoods, homes, spawning grounds and fish species are significant issues that require due payment of compensation to the Applicants, though it is difficult to relocate them with adequate facilities, environment and culture, the Tribunal Bench noted.

ONGC, the Bench pointed out, also did not remove the outer covering of the pipeline, in order to restore the ecology and environment in the area. It appears that tidal exchanges of sea water are obstructed due to acts of the Respondents. In addition, JNPT, admittedly, has undertaken the work of narrowing the Nhava-Sheva creek, which will cause difficulty in re-routing the passage of the traditional boats of the Applicants. "Under these circumstances, it is manifest that their main source of living is being taken away. We are inclined to hold, therefore, that they are entitled to recover compensation as stated below," the Bench ruled.

The apportionment of compensation amount payable to the Applicants from CIDCO, JNPT and ONGC would be 10: 70:20 per cent, having regard to their contribution to the loss of mangroves, loss

...the Bench felt it is necessary to develop a system whereby such movement of the boats belonging to traditional fishermen or otherwise shall be regulated...

of spawning grounds, loss of livelihoods, etc.

It is an admitted fact that the Nhava-Sheva creek is used by the traditional fishermen to navigate from the creek to the open sea and return. It is an admitted fact that with the development of the fourth terminal, the available width of the creek would be further reduced. "During the course of argument", the Bench pointed out, "we specifically enquired about any defined navigation routes/channels for such local fishermen's boats, in the context of such development, and

whether such routes/channels have been appraised and approved by the competent authorities. It was informed that the Captain of the Ports has a mandate to regulate the movement of the boats in the port area.

While appreciating the concerns raised by the JNPT regarding safety and security while allowing such movement of ships/boats, the Bench felt it is necessary to develop a system whereby such movement of the boats belonging to traditional fishermen or otherwise shall be regulated by the competent authorities with necessary safety and security measures, including anti-collusion devices, GPS, separate registration, etc. Such a system will ameliorate conflicts of the local fishermen vis-a-vis commercial port activities, leading to sustainable development. "We, therefore direct JNPT to approach the competent authority and, if necessary, provide required support to implement such system," the Bench ordered.

Admitting that it is difficult to determine precisely the income derived by each fisherman and the total family income, the Bench said that any hypothetical exercise should have some rationale based on the normal period for which a family would lose earnings due to the activities of the Respondents in the case.

The Tribunal Bench held that ordinarily such a period will be at least of three years. The family may comprise four members, including two male and two women. All the four may be earning about Rs800 (US\$ 13) per day even if pro rata income is considered at Rs200 per day (US\$ 3). This is the normal income earned by any person of the lower income group, the Bench noted. Therefore, the yearly loss of income per family may be Rs2,92,000 (US\$ 4662) Considering mere subsistence as one-third of this amount, the gross loss per family per year turns out to be Rs1,94,666 (US\$ 3108) only.

Transition period

The Bench continued: "We may realistically assume that each of such family will need a period of about three years to switch over to some

other vocation to earn a livelihood. For example, some of them may be required to learn driving of transport vehicles, and get due experience and jobs in such businesses. The gap of three years is pragmatic, having regard to the sudden changeover in their daily source of earning. Therefore, the total loss for three years for 1,630 families is US\$ 15,303,877.

The Bench ruled the Application in the following manner:

i) The Applicants do recover Rs95,19,20,000 (US\$ 15,303,877), which shall be distributed equally to 1630 affected and identified fishermen's families as per the Collector's Report, named therein, to the extent of Rs5,84,000 (US\$ 9834) per family within three months by the Respondent Nos.7, 8 and 9 (that is, CIDCO, JNPT and ONGC) respectively, as per their shares mentioned above.

In case, such amount is not paid within the above period, then it will carry interest at 12 per cent per annum till it is realized by the concerned fishermen's families.

The Respondent Nos.7, 8 and 9 shall pay Rs50 lakhs (US\$ 80,385) and restoration cost for environmental damage, as per the above share which work, the Collector, Raigad, shall carry out under his supervision within eight months hereafter for activities of mangrove plantation, ensuring free passage of tidal currents, etc., in consultation with the Maharashtra Coastal Zone Management Authority (MCZMA).

The Respondent Nos.7, 8 and 9 shall pay costs of Rs5 lakhs (US\$ 8038) as litigation costs to the Applicants and bear their own costs.

The Respondent Nos.7, 8 and 9 shall deposit the amount shown in above para (i) and (iii) in the office of Collector, Raigad within the stipulated period, otherwise the Collector shall realize the said amount, as if it is Land Revenue dues from them. A compliance report on this behalf be submitted by the Collector, within four months to this Tribunal.

The MCZMA shall submit the compliance of directions issued by them to the Respondents in two months, the Tribunal Bench ruled.



A scene from Karanja village of Uran, Raigad District, Maharashtra, India. It is necessary to develop a system to allow for the movement of boats belonging to traditional fishermen

The above orders were passed by Justice V R Kingaonkar and Ajay A Deshpande of the National Green Tribunal (Western Zone) Bench in Pune, on 27 February 2015, in response to Application No. 19/2013. 3

For more



indianexpress.com/article/cities/mumbai/ngt-orders-jnpt-ongc-to-pay-affected-fishermen-families-95-cr/#sthash.VVwl30np.dpuf

Pay Rs 95 cr to 1,630 Fishermen Families: NGT to Port Trust, CIDCO, ONGC

Neobondage

In the Srikakulam district of the south Indian state of Andhra Pradesh, migration of fishers has several impacts on the families of coastal villages

It is noon, but despite the scorching sun, Varada Lakshamma is patiently waiting with her basket for the fishing boats to land in one of the remote coastal areas of the Bay of Bengal. She has to hurry to the neighbouring villages and towns to sell the fish. In the absence of public transport, she has to rely on auto-rickshaws. We spoke to her as she was busy buying fish at the auction. We learned that her husband is in Veraval in Gujarat and, like most of the husbands of fisherwomen of Srikakulam district, he has been going to Gujarat for the past 15 years.

Migration from these villages has been happening for the past 20 to 30 years. Normally, 'migration' refers to international movement of persons from country to country, usually in search of employment. In this case, the term migration is used because this district has already seen two waves of migration during which sizeable sections of the population moved mainly to Burma (Myanmar)—the first during the late 19th century and the second, during the Second World War. This third phase, which is actually an inter-state movement of persons, is still referred to as 'migration' in the literature.

More than 50 per cent of the men in the 30-40 age group have migrated, while 90 per cent of the men aged between 25 and 45 years have migrated. The majority have moved to Indian state of Gujarat (mainly Veraval and Porbandar) to work in big boats owned by *saits* (as boatowners in the region are called), most of whom have a fleet of five to 10 boats, while some may own up to 20 boats. A few of the fishermen have moved to Mangalore, Karnataka, to work on

such boats. The rest of the migrant workers go to Chennai, Hyderabad and Vishakapatnam as construction labourers.

In Gujarat, the moment the migrant fishermen take an advance from the *sait*, they are bound by an oral contract. The advance is used by the fisherman's family during his absence to run the household. Once in Gujarat, the fishermen will be on board the boats for 20 to 25 days at a stretch. They venture out as a group to help one another should any problem arise,

Migration from these villages has been happening for the past 20 to 30 years.

like a storm or an accident or illness. They suffer the inhumane conditions on the boat only out of dire poverty. The saving grace is that there is plenty of food on the mechanized boats. The reasons for migrating are surprising. Sociologically, they can be categorized as 'push factors' (those that leave one with no choice but to move out of one's current—especially parental—home) and 'pull factors' (the lure of another home, country or region).

No infrastructure

Prime among the push factors is the lack of proper infrastructure to fish in the district. There is no fishing harbour, so the fishermen cannot venture out in mechanized boats. There is no cold storage facility or an ice factory in the vicinity. So even if the fishermen land good catches, the chances are high that their perishable goods will get spoiled before they reach the market.

This article is by **Arulmozhi Varman** (arul.varman13@apu.edu.in) and **P Pranavi** (pranavi.p13@apu.edu.in) of Azim Premji University, Bengaluru, India

A second push factor is that the Srikakulam fishermen cannot compete with the large trawlers from Vishakapatnam and Ganjam. They believe that the operations of these trawlers have reduced fish stocks over the years, raising questions of right of access to the area's resource.

A third push factor is the rise in production costs over the years (especially for fibreglass boats and fishing gear) and the status quo in returns on their high investments; sometimes the returns have shrunk considerably, often leading to bankruptcy.

The primary pull factors for migration to Gujarat in search of jobs is the existence of a wage system. Irrespective of the catch, the fishermen are guaranteed a fixed pay. Sometimes, when the catch is good, they receive as bonus an additional, though often meagre, portion of the profit made by the *sait*. But when the catch is low, the *sait*s pay whatever has been fixed as the salary. This opportunity of earning a decent, steady wage has remained the main attraction for fishermen's migration over the years.

The second pull factor is that the wage payments are made as a lump sum, which they end up spending productively, rather than drinking and gambling on a daily wage. They usually build houses with the money they earn or buy ornaments for their daughter's wedding. This is evident from the large number of half-finished houses that can be found in Badevanipeta village in the district. The fishermen continue construction on the building each year with the money they earn by migrating to Gujarat. In one family, on an average, at least three persons migrate and they pool their earnings to construct the house.

The third pull factor relates to the recent advances in information technology, which allows the fishermen to easily transfer money electronically and also communicate with their families. In the past, many fishermen were looted of the large sums of money they were physically carrying home.

Migration, however, has had several negative impacts, especially on health and hygiene. Boys start to migrate with their fathers at the age of 12 (in some cases at the age of 10) and the girls in the village are married off at the earliest. The resultant neglect of education affects their health and sanitary practices. With unclean surroundings, no proper drainage system, stagnant pools of water that are breeding grounds for mosquitoes and flies, and no toilets at home, little wonder that most of the villagers fall sick frequently.

The Day and Night Junction in Srikakulam town has approximately 50 hospitals. The area is awash with hospitals and pharmacies. There are no primary health centres in the villages. The villagers tend to go to a hospital even if they have a mild fever. The doctors, who are often endorsed by politicians, exploit the villagers' ignorance and make them spend large sums of money for each hospital visit.

Cases have also been reported of exploitation of fishermen by the boatowners. But complaints fall on deaf ears. No government wants to accept responsibility for the migrant fishermen. The Gujarat government says they do not come under its jurisdiction. The Andhra Pradesh government, for its part, retaliates by pointing out that the cases of alleged exploitation have occurred in another state.

The case of migration of fishermen from Srikakulam to Gujarat can be called a 'neobondage' system, akin to traditional bonded labour. The fishermen's labour and skills are exploited by the capitalists of another part of the country. 3

For more



www.academia.edu/10610681/Inter-state_migration_of_fishers_from_Srikakulam_district_Andhra_Pradesh

Inter-state Migration of Fishers from Srikakulam District, Andhra Pradesh



RITA BANERJI

Fishermen setting out on a fishing trip
in Kakinada, Andhra Pradesh, India

Lost Communities

The ancient institution of community village life in Goa, India, known as *comunidade* (Portuguese for 'community'), plays an important role in fisheries regulation

The tiny Indian state of Goa (area: 3,701 sq km; coastline: 131 km; east-west breadth: 60 km) has a strong fishing community located along the coast and in the estuarine backwater basins. Fisheries are a dominant sector in Goa's economy and, along with tourism, is a major source of revenue for the state.

The 1960 Census for Goa, Daman and Diu enumerated 4,891 persons as fishermen and the total population dependent on fisheries was estimated at 14,000, located in 14 villages in the coastal areas of Bardez, Goa and Salcete. Traditional country canoes

In 1957, the Portuguese government had brought four mechanized trawlers and purse-seiners into Goa. As there was no separate Fisheries Department then, they were handed over to the Board of External Trade (Junta de Comercio Externo) so that locals could be trained in operating them but the vessels were damaged during military action and were pilfered.

According to the Goa government's Economic Survey for 2009-10, the annual fish catch in 2008 was 88,771 tonnes in the marine sector and 3,078 tonnes in the inland sector (up from 84,394 tonnes and 4,397 tonnes, respectively, in 2004, but down from a high of 103,087 tonnes and 4,194 tonnes, respectively, in 2005. See Table.)

Table: Annual Fish Catch (in tonnes)

Year	Marine	Inland
2004	84394	4397
2005	103087	4194
2006	96326	4131
2007	91185	3070
2008	88771	3078

Since ancient times, an institution of organizing community village life called *comunidade* (from the Portuguese for 'community') has existed in Goa. Locally, it is called *gaunkary* or *gaunponn*. The sui generis institution came into existence by its own volition, crafted by the first settlers much before the overlords or Rajas came on the scene.

Resources pooled

The early settlers pooled their resources to found villages with defined boundaries and each installed

The sui generis institution came into existence by its own volition, crafted by the first settlers much before the overlords or Rajas came on the scene.

called *rampons*, made of wooden planks and outriggers have been traditionally used by the local Goan fishermen.

Eventually, mechanized trawlers made inroads in Goa's fishing industry. The financially challenged traditional fishermen were unable to shift to mechanized trawler fishing and so there were prolonged confrontations between the mechanized and traditional sectors. In the early 1980s Mathany Saldanha, a school teacher from Cansaulim, Salcete, took up the cause of the traditional fishermen under the banner of 'Ramponkarancha Ekvot' and continued to fight for the cause of ramponkars (traditional fishermen on *rampons*) even as a Minister in the Goa cabinet—until his death in early 2012.

This article is by **Hector Fernandes** (hectorquitula@gmail.com), former president of *Comunidade Fraternal de Aldona*, Goa

with a presiding deity or *gram-dev*. The founding fathers of these villages were called Gaunkars, and the absolute ownership of the village came to be vested with the *comunidade*. The *comunidade*, which is the primary owner of the village, creates titles for land by grants of assignment to individuals.

The *comunidades* are regulated by laws of custom and usage which were compiled for the first time in 1526 into a charter, and subsequently codified in 1904, 1933 and 1961. Land management is a duty of the *comunidade* and some lands are given on short- or long-term assignments, as escheat to the *comunidade*. Therefore, the *comunidade* villages are non-government villages or non-revenue villages.

Hence, to make a village a functional and economically viable unit, the founding fathers had a scheme. They invited the artisans of various trades, occupations or crafts to become village staff. They included temple priests, weavers, cobblers, ironsmiths and goldsmiths, washermen, carpenters, barbers, tailors, potters, doctors, fishermen and so on, as per the need of the village and the district. Necessary land for their habitation was earmarked and allotted to them for their homesteads as long as the person with his family stayed there and his children continued the trade. He was also allotted a parcel of field to cultivate rice for his own sustenance. The *comunidade* would pay remuneration for these services. This scheme was known as 'nomoxim' grants. When the head of the family died, he was replaced by another one with the reverted nomoxim conferred on the new incumbent. Besides these nomoxim grants, there were other usufructary assignments as well.

Fishermen, though they are not Gaunkars, are also included in the fabric of the *comunidades*, under the profession of '*tari*' or *pescador* which in Portuguese means 'fisherman'. Fishermen are important for Goans, the majority of whom are fish-eaters. The fishermen community in Goa is

a sub-caste of Hindus who converted to Christianity and continued the profession and they are called '*kharvi*' in Konkani.

Rui Gomes Pereira in his *Goa Vol.II: Gaunkari—the old village associations* records: "The corporation of the Passo de Ambarim (Ambarim wharf) was an institution of three *passos* (wharves) of fishermen that existed at Naroa, Santetem and Ambarim. Its members had the duties of providing seamen to His Majesty's Navy and performing service therein. In return, they had the right to fish in the rivers within its jurisdiction. They used to pay the national treasury (the Foro) 25 *tangas brancas*. In the second half of the 19th century, the community of Choraó seized its properties. However, in the year 1861, the government restored to the members their properties with the old obligation of rendering service to the Portuguese Navy, which had been suspended."

The *comunidades* used to maintain the river crossings that connected the roads on either side. Before the advent of mechanized ferry boats, rivers could be crossed only on dugout canoes, two of which were joined for greater stability and passenger capacity. These canoe ferries are known in Konkani as '*tar*' (hence, the term *tari* or for fishermen).

HENRIQUE FERNANDES



Hector Fernandes at Quitula Casan. 'Casans' or 'khajans' lie below the high-tide level and are protected by levees known as "bunds" in the local Konkani language

Where *comunidades* exist, the ferry wharfs belong to them and the right to operate the canoe ferry for a year was auctioned by the *comunidade*. The ferry-man who won the right to operate the ferry could collect ferrying charges from travellers, except the Gaunkars who were to be ferried free in lieu of the auction money. The *taris* used to build huts near the wharves and stay there the whole year round, operating the ferries round the clock.

Apart from fishing in the rivers where the government has jurisdiction for issuing fishing rights, fishing is done in shallow tidal ponds and lakes where fishing rights are issued by the respective *comunidades* that own them. The *comunidades* have reclaimed the silted mud-flats to convert them into fertile fields by building levees or embankments locally called bunds. These vast tracks of low-lying fields called *casans* or *khajans* are below the high-tide level and are protected by the levees.

When these lands were reclaimed, the *comunidades* were actually creating what we today term 'special eco-fragile zones'. In the past, the brackish waters of the flood plains used to reach up to the hard-rock lateritic strata. Today, when there are breaches in the bunds, the water inundates the *casan* fields and makes the groundwater in the open-dug wells brackish and unpalatable. The reclamation of tidal mud-flats by construction of bunds has thus changed the ecological balance by preventing salt-water ingress into the groundwater.

The *casan* lands are not a mere stretch of flat, low-lying land but have an intricate system to take care of different natural events. Besides the levees or bunds, pathways were made so that even under situations of inundation, people could safely negotiate through the fields. There were also provisions for drainage to allow the runoff from hills and the upper reaches of the land to drain into the *poim* (a tidal brackishwater pond with an exit to the river) without causing undue flooding and water-logging of the fields,

which would have caused rice crops to rot.

The *poims* are also used for harvesting fish which is plentiful throughout the year. The right for catching the fish lies with the *comunidade* or with the owner of the particular *poim* and field. The right to catch fish is auctioned in two parts—the right to catch fish at the sluice gate and the right to catch in the *poim*. A funnel-shaped net is set up near the doors of the sluice-gate during the outflow of water when the sluice gates are opened. The fish that is expelled with this outflow is caught in the net. In larger *poims*, fishing rights are also auctioned separately with the condition that Gaunkars can also fish for personal consumption. However, each *comunidade* has its own regulations and outsiders have now begun bidding at auctions and fishing in the *poims*.

The changes in the demographic profile of Goa started over a century ago when the locals started migrating to foreign countries for better jobs and the local vacuum was filled by in-migration from neighbouring villages and states. In December 1964 a new law was created, The Goa, Daman and Diu Agricultural Tenancy Act and in June 1965, this Act was insidiously made applicable to the *comunidades*, thereby passing all community lands into private hands. The functioning of the *comunidades* was crippled and they began to lose revenues. Today, vast tracts of *casan* fields of the *comunidades* are lying fallow and uncultivated as the past tenants have either died or moved away. 3

For more

goaprintingpress.gov.in/uploads/Code%20of%20Comunidade.pdf

Code of Comunidades. 1961

saligaoserenade.com/2010/04/comunidades-de-go/

Comunidades of Goa

sites.google.com/site/comunidadesofgoa/
Goa Comunidades

Shelter from the Storm

A decade after the Indian Ocean tsunami of 2004, there are several lessons to be learnt from interventions in shelter in the south Indian state of Tamil Nadu

India was one of the countries most affected by the Indian Ocean tsunami of 26 December 2004. The three Indian states of Tamil Nadu, Kerala and Andhra Pradesh and the two Union Territories of Andaman and Nicobar Islands and Puducherry were affected. Though the Andaman Islands were closer to the epicentre of the undersea earthquake, it was Tamil Nadu that suffered the highest fatalities and an enormous loss of property and infrastructure along the coast. With a 1000-km coastline and home to India's largest marine fishing community, the story of Tamil Nadu's recovery from the tsunami has great significance from many points of view. In particular, it is of great interest to all those concerned with disaster preparedness and management and with coastal and fisheries development and management.

With fishing hamlets located mostly within 500 m of the shoreline, the houses of fishermen in Tamil Nadu were damaged / destroyed by the tsunami, on an unprecedented scale. The damaged houses were assessed at over 53,000, with around 45,000 of them fully damaged and the remaining partially damaged. Teams from the Indian Institute of Technology (IIT) Roorkee's Department of Earthquake Engineering, which visited the coastal regions of Tamil Nadu, Puducherry and Kerala in the first week of January 2005, found little evidence of damages due to direct shaking while the damage due to the tsunami was extensive. Both masonry and concrete structures were damaged, though the level of damage varied and a direct correlation was found between run-up height and extent of damage.

With more than one million people affected, and considering the fear factor, the number of people who had to be immediately transferred to relief camps crossed 1,400,000 in the first couple of weeks. Although there were cyclone shelters in some of the affected villages, these were not sufficient and the people were moved to marriage halls, schools, colleges, hostels and premises of temples, mosques and churches. As this happened during the Christmas vacation, schools and colleges were available for the setting up of relief camps. However, they had to reopen

With a 1000-km coastline and home to India's largest marine fishing community, the story of Tamil Nadu's recovery from the tsunami has great significance from many points of view.

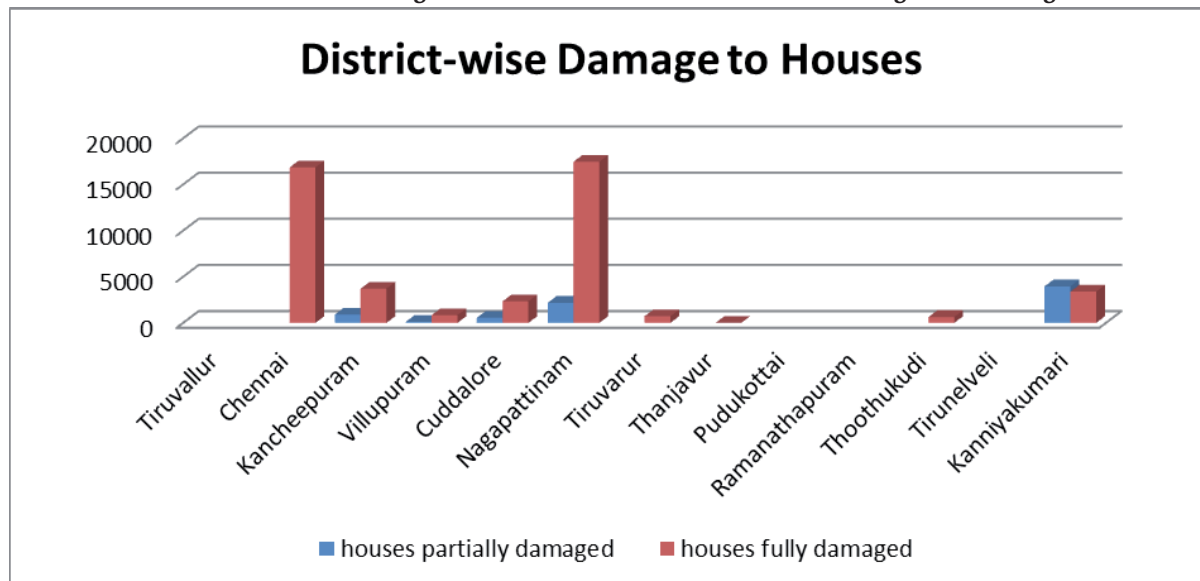
and life had to move on. Pongal, which is an important festival in Tamil Nadu, was during the second week of January and the state government felt that the best gift it could offer was a feeling of normalcy to the affected people through shifting them from their relief camps to temporary shelters.

Temporary shelters

Due to the scale of support that was pouring in, there was great confidence that the temporary shelters would be required for less than a year. It was estimated that about 100,000 families would have to be provided temporary shelters while awaiting repairs or reconstruction. As the design and the structure, including the maximum permissible

*This article has been written by **Annie George** (annie@bedroc.in) of Building and Enabling Disaster Resilience in Coastal Communities (Bedroc) and **Ahana Lakshmi** (ahana@trinet.in) of The Resource and Information Network for the Coast (TRINet). This is a summary of a larger report that included status of recovery of the fisheries sector a decade after the 2004 Indian Ocean Tsunami*

The district-wise damage to the houses due to the 2004 tsunami is given in the figure



Source: Tiding over Tsunami-I (GoTN 2005)

cost, was already stipulated by the state administration, the setting up of these temporary shelters did not take much time and the people were transferred to these new facilities well within the two weeks allotted. Common sanitation and water supply facilities were set up in the shelters provided and UNICEF trained youth volunteers to oversee the effective and hygienic utilization of these facilities.

However, these temporary shelters proved to be more of transit shelters as the time estimated to identify suitable sites and finish construction of permanent houses took much longer than estimated, resulting in cases where people had to stay in these shelters for two to four years. The bitumen sheets used as roofing proved hot and uncomfortable, and additional thatched roofing had to be provided. Heavy rains in 2005 also led to waterlogging of a number of sites requiring investments in redoing the flooring and roofs. All this raised the overall investment, which could have been reduced by better planning in the initial stages. However, the learnings from these have resulted in the formulation of guidelines for temporary shelters.

While the temporary shelters were being constructed, discussions were going on in parallel regarding

permanent housing. Considering that the old houses were mostly of the thatched '*kutch*' (rudimentary) type, new housing, rather than repairs, dominated the thinking. The policy for permanent shelters was clearly shaped by a number of influences. The first Government Order (GO), dated 13 January 2005, indicated the move towards a public-private partnership. The finalized policy was brought out in the GO No. 172 issued in April 2005. This allowed non-governmental organizations (NGOs) and corporate houses to build the housing units based on government specifications; the government would provide land and other infrastructure free of cost. The houses would be insured from multiple hazards for ten years and all houses would be given in joint ownership to husband and wife, ensuring that women have an equal right to a tsunami house.

Private assets

It is useful to look back at the events that led up to GO 172 to understand the influences that shaped it as they were largely over the location of the houses of fishermen. The World Bank had come forward to fund creation of private assets with one stipulation that the Coastal Regulation Zone (CRZ) norms be followed in construction of

habitations. According to the CRZ, new constructions would be permissible only beyond 500 m from the high-tide line (HTL). All districts affected had their own issues and problems when dealing with reconstruction of habitations. While Nagapattinam had to identify appropriate sites for 20,000 households in a terrain that was largely below mean sea level, Kanyakumari had to grapple with finding adequate spaces for relocation in a densely populated area, and all districts had to deal with the CRZ norms. Although life security was a major factor in deciding the sites for relocation, considering that more than 80 per cent of the people affected were working fisherfolk, their access to the sea and shore, for their livelihoods, was also a subject for heated debates during the first month after the tsunami. “To move or not to move” was taken up at all platforms right from the villages to the state level.

Though the first GO on permanent shelter would become obsolete soon, it served some important purposes. It sent out a clear signal to the affected community and the rest of the world that the Tamil Nadu government meant business. It also signalled its interest in exploring co-operation with NGOs and corporates. The fishing community, the main community affected by the tsunami, was re-assured by the GO. The uncertainties and deep vulnerabilities it might have felt were set at rest. This ensured good co-operation from the community for all relief and rehabilitation that followed, especially through the extensive time delays in some places. It also gave it the confidence to think beyond mere survival and start asserting its “rights” and expressing its “needs” more expansively.

Relocation of communities also had implications on the socioeconomic and cultural dynamics, which had to be respected. There were many NGOs willing to construct, but at different scales. Matching sites to communities as well as NGOs proved an exercise by itself and was handled in various

ways: either through a direct one-to-one dialoguing between the administration and the respective NGOs, through direct assignment or through participatory processes like the one in Nagapattinam facilitated by the NGO Co-ordination and Resource Centre (NCRC). However, the underlying principles followed were that the communities should be maintained intact wherever possible: a letter from NCRC to the District Collector, Nagapattinam emphasized that “a hamlet/village that has its own clear-cut identity and traditional system of internal governance like a caste *panchayat* should be considered indivisible”, and that every NGO, however big or small, should be given an opportunity for participating in the construction activities.

The implementation of the tsunami shelter programme was a huge affair that started in mid-2005 and ended around 2011—a period of over seven years and in two phases. In the first phase, 31,032 houses by NGOs and 22,257 by the government (largely in urban areas) in nine districts were taken up. Of these, by June 2008, 29,056 houses constructed by the NGOs and 7,204 houses constructed by the government had been handed over to beneficiaries. The houses completed by the government were only in the urban

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The building of the South Indian Federation of Fishermen Societies (SIFFS) at Nagapattinam, where some exceptional sites are being projected as models for others to emulate

areas (Chennai and Tiruvallur districts). They included 'NGO backed-out houses'. Later, with leftover funds, other vulnerable areas were identified and houses reconstructed for those inhabitants even if they had not been directly affected by the tsunami.

An analysis of the reconstruction efforts in Nagapattinam shows that 75 per cent of the construction was in relocated sites, with quite a large number of fishermen families (3,124) and all agricultural families, opting for or eligible (as in the case of agriculture-based families) for in-situ construction. The special care taken in assigning relocation sites ensured that 5,908 houses of the fishermen families were in safe sites identified within 500 m and an equal number well within a 1-km range. For the 1,073 families that had to be relocated beyond the 1-km range, it was with the explicit approval of the communities. The majority of the families who have been allotted sites beyond the 1-km range are from other communities, who have no imperative

20,000 houses were constructed in the district, this is a serious issue. The large scale of construction over a 190-km coastline, without a sound technical support system, has meant that the construction quality was not uniform. The low-lying nature of the Nagai coastal terrain, the poor soil quality that required strong foundations, and the lack of local construction expertise have all made achieving good quality of construction difficult in Nagapattinam. On the positive side, Nagapattinam also has some exceptional sites that are being projected as models for others to emulate, such as those by the South Indian Federation of Fishermen Societies (SIFFS) in Chinnangudi and Tarangambadi.

There is considerable variation in building upkeep and maintenance across the coast. The range is from houses that have been completely transformed through owner modifications to houses that are in a dilapidated condition. Most of investments for improvement have been in the following areas: addition of compound wall/fencing, doors/windows, kitchen/cooking area, thatched roof over yard/roof, replacement of flooring, internal additions/alterations and even addition of rooms.

Drinking water remains a problem in most settlements. Drinking water supply programmes had been implemented in most areas, but the actual availability of water is inadequate and water supply is erratic. Toilet usage is predictably low, with the exception of Kanyakumari where a culture of toilet use precedes the tsunami and there was a genuine demand for them.

Non-use reasons

Reasons quoted for non-use include lack of water for flushing and the low capacity of the leach pits that require regular removal of waste. Solid-waste management is also not satisfactory. Barring a few examples, most communities still dump all the waste in some nearby open space or burn it. Waste-water management is also weak in most

An analysis of the reconstruction efforts in Nagapattinam shows that 75 per cent of the construction was in relocated sites...

need for access to the seafront for their livelihoods.

A review of scattered reports and a whistlestop tour of affected areas revealed some answers regarding the current state of the tsunami houses. The occupancy rates are high, generally ranging from 80-100 per cent in settlements visited across the coast. The lower end of this spectrum is generally in sites that are a bit farther away from the sea.

Overall, the build quality as seen today, after five to eight years of construction, appears reasonably good. An important exception to this is the housing in Nagapattinam (Nagai), where there is considerable variation in quality. Given that over

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Community centre at Nagapattinam. The large scale of construction without a sound technical support system has meant that the construction quality was not uniform

places, with the drainage system getting clogged and waste water overflowing.

Good access roads are generally available in all settlements, though the quality and maintenance of the inner roads is variable. Common amenities like schools, public distribution system outlets (ration shops), general shops, fish-mending halls, auction platforms, community halls and playgrounds are all available in most settlements. However, the community halls in many places are not used and playgrounds are often badly sited and not useable. For the overall upkeep and maintenance of the new settlements, many new organizations—village development committees—had been constituted but most seem to have faded away after the initial enthusiasm. There is clearly a local gap in terms of management of the new facilities.

When looking at community satisfaction, it is important to say that most communities feel positive about the changes that have taken place and think that the tsunami rehabilitation has been helpful in improving their lot. However, a detailed study needs to be carried out to evaluate the present status of shelter, especially damages. A consultation process with technocrats, bureaucrats, field implementers, NGOs and communities is required

to understand the impacts on mass housing, especially in the coastal areas. Perhaps a major lacuna that requires to be addressed is the provision of clear guidelines and instructions to the beneficiary families on the periodic maintenance of housing as well as infrastructural facilities. Issues such as water, sanitation and solid waste disposal need special focus as do urban resettlement issues, especially when combined with the larger development process. ❧

For more



www.trinet.in/
TRINet: The Resource and Information Network for the Coast

www.tn.gov.in/tsunami/
Tsunami Rehabilitation Programme: Government of Tamil Nadu, Revenue Administration, Disaster Management and Mitigation Department

www.tn.gov.in/tsunami/Projects/GovernmentOrders.html
Government Orders – Tsunami

igssf.icsf.net/images/SSF%20India%20workshop/tsunami_study_v7.pdf
Tamil Nadu: Ten Years after the Tsunami - Learning from intervention in shelter and fisheries livelihoods

Strength in Unity

Small-scale fishermen in the Indian Ocean region are joining forces to claim their legitimate rights over fish resources and push for sustainable and responsible fisheries development

Best known for their so-called individualism, small-scale fishers from the countries of the Indian Ocean Commission (IOC) have embarked since early 2014 on a process to join their forces, claim their legitimate rights over fish resources, and demand better recognition of their role for sustainable and responsible fisheries development within their marine basin.

Small-scale fishers from the Union of Comoros, Seychelles, Madagascar, Mauritius and Reunion Island have been witnessing the opportunistic exploitation of fish resources and the failure of fisheries governance,

that is driving foreign industrial fleets. Tomorrow, fishing companies which are opportunistically plundering the Indian Ocean will undoubtedly move towards new or recovering stocks, somewhere else on Earth. Because of their local nature, small-scale fishers will not be able to follow the same path. They will have no other choice than staying in the marine basin they depend on.

For those fishers in the Union of Comoros, Seychelles, Madagascar, Mauritius and Reunion Island and their families, living within a hundred kilometers of the coast, the southwest Indian Ocean is where their fortune or decline will take place.

Artisanal fisheries in small island developing States (SIDS) are an important contributor to food security. In Seychelles, for example, fish consumption exceeds 60 kg per inhabitant per year. The main protein intake also comes from fish.

Artisanal fisheries create direct and indirect jobs. They are estimated at about 550,000 within the five IOC member States. They provide fair revenue for fishers and their families. The keystone of this regional initiative is the question of how to balance the interests of industrial and small-scale fisheries while ensuring prosperity for the people of the Indian Ocean. Industrial operators can no longer be the only stakeholders around the table. Small-scale, artisanal fishers must take part in the decisionmaking, if they are to offer their children a chance to sustain the livelihoods they love and defend.

Important advocacy

Advocacy is one of the most important missions that the regional platform

The keystone of this regional initiative is the question of how to balance the interests of industrial and small-scale fisheries while ensuring prosperity for the people of the Indian Ocean.

helplessly, for years now. In the last ocean to be exploited, long-distance fleets are gathering from all parts of the world. Some, governed by the diktat of globalization, are highly capitalistic in nature and on the lookout for highly valued pelagic species intended to be sold to sashimi markets or processed in fish-canning plants in Asia and the United States. Others, operating in a fairly dubious manner, are looking for promising stocks.

Beyond the choice of a particular economic model, or the promotion of a particular type of gear, it is the whole issue of fisheries governance that is at stake here. The sustainability potential shown by local fishers is in total contrast to the short-term vision

*This article is by **Christel Grimund** (cgrimaud.crpmem@orange.fr), Regional co-operation project manager, Reunion Island Regional Committee for Sea Fisheries and Aquaculture*

will have to undertake. The idea of setting up such an organization in the Indian Ocean region emerged from the necessity of making traditional fishers' voices heard. Strengthening fishers' rights as well as raising awareness of civil society, advocacy will become more and more accurate over time.

The limitation of the use of drifting fish aggregating devices (dFADs) by industrial factory boats in the Indian Ocean is the first fight small-scale fishermen want to win, supported by the Reunion Island Marine Fisheries and Aquaculture Committee (CRPMEM). Small-scale fishermen have already thought of different ways to address this issue: sustainability, profitability and the popularization of what a dFAD is, how it can be a useful tool and how it can be a destructive one too.

Among the Vezo people in Madagascar, fishing is a keystone of their identity. They are the only Malagasy people not to depend on lineage and territory: the ocean is their home (they are nomads). The

secular and traditional knowledge of small-scale fishermen values nothing compared to capture declarations provided by the tuna fish industry. Historical catches are the basis on which fishing rights are calculated. Promoting boats' registration, issuance of professional cards, catches' declarations associated with skills empowerment and transfers when needed are at stake in the Indian Ocean.

Food security relies on small scale fisheries. This strong argument finds an international echo since the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the context of Food Security and Poverty Eradication (SSF Guidelines) were adopted by the Food and Agriculture Organization of the United Nations (FAO) in 2014. The southeastern islands of the Indian Ocean consume almost 30 kg of fish per inhabitant per year, with a world record for Seychellois people who consume 65 kg. Fish is the first (Comoros, Seychelles) or the second source of protein after chicken

CHRISTEL GRIMAUD



The southeastern islands of the Indian Ocean consume almost 30 kg of fish per inhabitant per year, with a world record for Seychellois people who consume 65 kg

BRIAN O'RIORDAN / ICSF



Members of a fishing community at work in Madagascar.
Artisanal fisheries create direct and indirect jobs for fishers and their families

(Mauritius) and pork (Reunion Island and Madagascar). The regional platform follows two goals: on the one hand, putting the small-scale fisheries as a high-priority item in terms of food security within public policies and regional strategies, and, on the other, addressing fish consumers on the hygiene process needed for safe fish.

The diversity of situations obtaining in the Indian Ocean, associated with the provisions of the SSF Guidelines, has led the regional platform to ask itself what being an artisanal fisherman means. The various partnerships developed during this past year, especially with similar platforms like Low Impact Fishers of Europe (LIFE) for European small-scale fishermen, MedArtNet in the Mediterranean sea and Confédération Africaine des Organisations Professionnelles de la Pêche Artisanale or the African Confederation of Artisanal Fisheries Professional Organizations (CAOPA) in Africa, help us understand successful initiatives and develop a methodology for our actions.

A non-exclusionary definition of the small-scale fishery in the Indian Ocean is getting written, based on specificities like boat length, time spent at sea, maximum distance from the coast, ownership of the boat, etc.

Small-scale fishermen in the Indian Ocean live and fish at the very same place unlike foreign fishers. Resident fishermen depend on fishes for nutritional and income purposes. The very strong link they have with their territories, along with the use of traditional vessels such as *kwassa-kwassa* in Comoros, or dugout *Antanosy* pirogues in Madagascar, makes it impossible for them to go beyond 20 miles from the coast.

Small-scale fishermen in the Indian Ocean are experts on marine ecosystems. It is necessary to promote existing expertise. There should no longer be any development of inadequate infrastructure for small-scale fishermen. They should be encouraged to participate in project definition and planning. **3**

For more

www.crpmem.re

**Reunion Island Regional
Committee for Sea Fisheries and
Aquaculture**

www.sciencedirect.com/science/article/pii/S0308597X12001510

**The Effectiveness of
Community-Based Governance
of Small-scale Fisheries,
Ngazidja Island, Comoros**

A Huge Struggle

A recent workshop at New Delhi discussed capacity building for the implementation of the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries (SSF Guidelines)

A national workshop on 'Capacity Building for the Implementation of the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries (SSF Guidelines)' was held during 21–22 March 2016 at the India International Centre, New Delhi. While this was the first in a series of workshops supported by the International Fund for Agricultural Development (IFAD) to be organized in various countries and regions, for India it was the culmination of a series of workshops and consultations held across the country since early last year.

The national workshop was organized by the International Collective in Support of Fishworkers (ICSF), in collaboration with the World Forum of Fisher Peoples (WFFP) and the World Forum of Fish Harvesters and Fish Workers (WFF) to promote awareness about the SSF Guidelines and to mobilize support for their implementation. The workshop also aimed to highlight the small-scale fishery organizations' efforts at empowering the fishing communities and valorizing the subsector; and to discuss how Indian policies and legislation to protect the lives and livelihoods of small-scale fishers, fishworkers and fishing communities can benefit from the SSF Guidelines.

The New Delhi workshop was planned to coincide with the second anniversary of the disappearance of Malaysian Airlines flight MH370, which Chandrika Sharma, the former Executive Secretary of ICSF, was on board. At the workshop, representatives from WFFP, WFF and ICSF spoke about her support for the struggles of small-scale fishworkers

the world over, and how we need to carry on the fight in her honour.

In the spirit of the SSF Guidelines, the workshop brought together a range of actors of relevance to the small-scale fisheries sector, in an attempt at developing a coherent intersectoral response. Nearly 96 participants attended the workshop. There were distinguished participants not only from marine and inland fishing communities across India, but also from a cross-section of ministries, departments and agencies, both at the Union and state level, dealing with human rights, rural development, decentralization and local governance,

The workshop also aimed to highlight the small-scale fishery organizations' efforts at empowering the fishing communities and valorizing the subsector

labour and employment, disaster preparedness, finance, tribal affairs, planning, marine and inland fisheries as well as representatives of CSOs/NGOs, research institutions, FAO, IFAD and BOBP-IGO. Panel discussions focusing on each component of the SSF Guidelines brought forth a range of information, opinions and experiences from different stakeholders. Group discussions on the second day helped concretize recommendations towards action plans based on what emerged from the panel discussions.

Concerns raised

International small-scale fishworker forums, represented by their Indian members, raised their concerns plaguing the sector and what needed

*This article is by **Mariette Correa** (mariettec@gmail.com), Senior Programme Co-ordinator, ICSF*

to be done to protect their rights and promote their interests. These included the importance of securing access to tenure rights to coastal and inland land and water bodies and protection of customary rights; the need for measures to ensure their social development including decent housing, sanitation facilities, potable water, education and health infrastructure; ways in which decent

the imminent threat to coastal communities due to sea level rise, global warming and acidification of oceans adversely impacting marine life.

The plethora of challenges women faced was highlighted by several speakers. Fisherwomen had low access to government finances, were not recognized as 'fishers' and were therefore unable to lease inland water bodies without protracted struggles. As workers, they often received less than the minimum wage, and their lack of collateral also left them at the mercy of middlemen and moneylenders. They lacked facilities at landing centres, including access to drinking water, leave alone water for cleaning fish. Among the many issues raised were—the lack of marketing facilities, exploitation of women in markets, lack of security as well as facilities for women who travel intra - and inter-state to sell fish, work displacement of women caused by factors such as male-friendly technology development which decreased their access to fish, loss of access rights to traditional fish drying areas, and poor access to education, health, entitlements and property. Also, it was pointed out that the high levels of alcoholism among men in fishing communities were the cause of great suffering for the women.

Participants at the workshop condemned the practice of giving value to trash fish in the form of fishmeal for poultry. They also spoke out against the government incentivising the export sector, adversely affecting the domestic market and food security. They also condemned the dumping of toxic waste in oceans, large-scale destruction of mangroves for 'development' projects, flattening of sand dunes for sand mining, and the lack of a system of punishments for violations of environmental laws.

Framework

The workshop participants felt that the SSF Guidelines now provide a framework to address these issues. Government representatives from a wide range of ministries and research

Participants at the workshop explained how the tenure rights of both men and women were weak and not guaranteed...

work could be ensured for workers; how the role of women in small-scale fisheries needed to be valorized, their participation strengthened and capacities built for value addition, leadership and marketing; and, the need to address the implications of climate change and natural disasters on small-scale fisheries. They discussed the importance of pensions for fisherpeople, safety at sea, insurance policies against disasters, protection of fishers across territorial waters and the exclusive economic zone, and compensation during fish ban periods. Issues concerning migrant workers on fishing boats were highlighted, the need for facilities, insurance covers and registration in the places where they work and that interdepartmental coordination between fisheries and labour is needed at the national and state levels. Suggestions were made regarding zoning, including reserving areas for traditional small-scale fishers, and for different gear groups to reduce inter-gear conflicts.

Participants at the workshop explained how the tenure rights of both men and women were weak and not guaranteed, and pointed to their poor access to health, housing, water and sanitation facilities, and how fishing communities were especially affected by natural and man-made disasters and developments in the coastal and inland areas, including

institutions as well as international agencies welcomed the SSF Guidelines and highlighted its importance in a country like India where 95 per cent of its fisherfolk are in the small-scale subsector. They recognized the threats to small-scale fisheries and said that though some aspects of the SSF Guidelines were reflected in the 2004 Comprehensive Marine Fishing Policy, the draft 2015 National Marine Fisheries Policy and the Marine Fishing Regulation Acts at the state level, some issues like disaster risk reduction and climate-change mitigation were new to the fisheries authorities. They spoke about the role they could play and how the SSF Guidelines could provide guidance for legislation, policies and research of relevance to fisheries and fishing communities.

Attention was drawn to how existing policies and legislation deal with life and livelihood issues of both men and women and how gaps in legal and policy instruments as well as the gap between the research conducted and the realities confronting the communities could be meaningfully addressed by implementing the SSF Guidelines. The roles that local bodies or *panchayats* can play in economic, infrastructure and social development and the importance of fisheries cooperatives were highlighted. As the National Human Rights Commission (NHRC) has started monitoring flagship social protection programmes of the government, fishing communities can bring to the notice of NHRC their particular vulnerabilities or poor access to these flagship programmes.

At the New Delhi workshop, data and information gaps were pointed out, and participants expressed the need for baseline documentation of traditional rights on inland and marine fisheries in order to protect traditional rights from getting extinguished. They also discussed data on landings, a data bank of migrant-sending and receiving states, an inland fishery survey, and the need for gender-disaggregated data to make the role of women in fisheries more visible. There was also a call for a National Data Acquisition

Plan for Fisheries, with fishing licences accompanying a mandatory requirement of sharing catch data.

The workshop participants were given a glimpse of FAO's efforts towards implementation of the SSF Guidelines. There was recognition that the Indian Constitution and human-rights law place great value on the human rights principles reflected in the SSF Guidelines, but the reality is different and political will is needed to ensure that these principles are actually protected and promoted to ensure the human rights of small-scale fishing communities. It was acknowledged that the SSF Guidelines are unique in that they are developed within the framework of two main approaches—the human-rights-based approach as well as an ecosystem approach to fisheries—which, therefore, attempt to achieve better benefits for small-scale fisheries and fishworkers as well as sustainability of fishery resources. The participants of the workshop enumerated the positive steps taken, including key climate finance initiatives by the National Bank for Agriculture and Rural Development (NABARD), which have helped to build resilience and to improve efficiency, IFAD's post-tsunami livelihood programme, the aquarian reforms in Kerala where fishing is restricted to fishing

ICSF



David Brown, Ujjaini Halim, M Illango and V Vivekanandan at a panel discussion at the National Workshop on Capacity Building for the Implementation of the SSF Guidelines, New Delhi, India

communities, and NHRC's responses to safeguard the collective rights of communities.

What came across throughout the workshop was a concern about the future of small-scale fisheries, and how the sector has changed drastically over the years with changes in technology, depletion of fish stocks and exploitation of resources leading to a change in the livelihood patterns of SSF communities and their increasing vulnerabilities. SSF communities are the most vulnerable, exposed to the vagaries of nature, prone to the maximum number of natural calamities, and difficult to reach, both geographically and politically. Many communities have benefitted from advances in technology, but the SSF sector has actually worsened, while others, including trawl fisheries and tourism, are threatening the entitlements of SSF to coastal and marine resources.

At the New Delhi workshop, the importance of active participation of small-scale fishing communities in fisheries management, research, and in decision-making bodies as well as in community-based resource management systems for monitoring the implementation of the SSF Guidelines was underscored by both fishworker organizations and government representatives.

The timing of the workshop was appreciated as a new national legislation is taking shape for marine fisheries...

The New Delhi workshop helped to inform all the participants about the guiding principles of the SSF Guidelines, highlighting the small-scale fishery organizations' efforts at empowering the fishing communities and valorizing the subsector. The importance of SSF was recognized as a major contributor to poverty eradication and food security. Most importantly, the workshop provided a space for government representatives and

small-scale fishworker organizations to freely engage with one another and exchange views and recommend action plans on how to take the concerns of small-scale fisheries on board.

Small-scale fishing community representatives were exposed to policies and schemes of various ministries and how they can be applied to their communities; they were also told about the gaps that needed to be filled. Ministry representatives, on the other hand, heard the voices and concerns of small-scale fishworkers, and were made aware of the SSF Guidelines and the role that they can play in its implementation, including the possibility of developing policies and measures or implementing existing ones that protect the interests of the subsector.

The SSF Guidelines, in fact, can give guidance on how various national and state schemes offered by many different ministries can be extended to small-scale fishing communities and how each level of government up to the *panchayat* level has a role to play. The need for a plurality of agencies to address the needs of the small-scale fisheries sector was recognized as was the need for a concerted response. The importance of a National Plan of Action for implementing the VGSSF was acknowledged, with the lead taken by the Department of Animal Husbandry, Dairying and Fisheries (DADF) under the Ministry of Agriculture and with the active involvement of FWOs and CSOs. Capacity building of the various departments responsible for dealing with SSF would be a necessary prerequisite. The government expressed willingness to develop indicators, with the participation of FWOs, to monitor the progress of the implementation of the SSF Guidelines and to measure the outcome. The timing of the workshop was appreciated as a new national legislation is taking shape for marine fisheries and the recommendations supporting SSF could still be incorporated in the new marine



The New Delhi workshop provided a space for government representatives and small-scale fishworker organizations to freely engage with one another and exchange views and recommend action plans on how to take the concerns of small-scale fisheries on board

fisheries policy. The need for a National Inland Fisheries Policy was felt if one wanted to adopt the SSF Guidelines in the inland context. It was hoped that the workshop would provide avenues for cooperation and collaboration between FWOs, the government, civil society and research institutions.

Much more needs to be done to understand the inland fisheries sector which is very complex in India. While it was felt that semi-intensive or intensive aquaculture was negatively impacting the SSF, some other participants at the workshop pointed to the mariculture advantage, where the gender issue can be addressed by giving more rights to women. These issues need to be looked into further. The lack of private sector participation is also a matter of concern, particularly as the SSF Guidelines include them as one of the stakeholders and because their interests could clash with the SSF sector.

The New Delhi workshop was just one step towards the implementation of the SSF Guidelines. The challenges ahead are huge in a country as diverse as India where even the definition of what constitutes a small-scale fishery is difficult. Moving from awareness and capacity building to actual implementation

in terms of policy and legal changes with benefits reaching the small-scale fisheries sector is far from easy. Much more needs to be done to formulate ideas and action plans for implementation as well as to ensure that the multiple players work together for a coordinated response.

The federal system with its multi-layered governance structures can be a blessing and a challenge when it comes to converting the SSF Guidelines into practical measures for implementation. Action plans or interventions towards implementation need to be contextualised and developed at the national, state and local levels. Further, the SSF Guidelines place the responsibility for implementation on multiple stakeholders—government, civil society, private sector, fishworker organizations—leaving it to those with ‘greater’ stakes to push for its implementation. Though sustainability of lives, livelihoods and natural living resources are considered global and national priorities reflected in the Sustainable Development Goals and country plans, in reality, there is always a huge struggle to reflect these in action. ❧

For more



sites.google.com/site/ssfguidelines/home/india-national-workshop-on-capacity-building-for-the-implementation-of-ssf-guidelines

India National Workshop on Capacity-building for the Implementation of the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries

In One Voice

A public hearing of women fishworkers in the south Indian state of Kerala was held in the capital, Thiruvananthapuram, on 16 February 2016

The women fishworkers in the Self-Employed Women's Association (SEWA) in Kerala, India, have, for several years now, been complaining that life is getting increasingly difficult for them. While some of their issues are being taken up by the union, they still complain of the difficulty of surviving amidst increasing competition of all kinds and how the growing numbers of male vendors and male domination in markets were making life a daily struggle. SEWA then undertook a more detailed study of the vendors, their access to fish, and the issues they faced in the market.

The study revealed that there have been significant changes in the sector over the past six to seven years, and these have had a tremendous bearing not only on the work of women in the fisheries but also on the quality of fish that is reaching the market. The findings of the study were discussed in depth with the women in February 2015. The women highlighted the two major problems as (i) growing male domination in fish vending and in the markets, and (ii) competition from poor-quality frozen fish that prevented fresh fish from fetching its rightful price.

While both the women who sell fresh fish and those who sell frozen fish were present at these discussions, they all seemed to understand that they are together victims of similar processes of change taking place in fishing itself. As the boats get bigger and more capital-intensive, landings have become more centralized. Fish is frozen during long voyages and dumped in harbours. This fish then travels back to the seashore for sale to women vendors in the fishing communities, as the catches in the

small-scale fisheries sector have also been diminishing due to the large catches out at sea. The women who sell frozen fish said: "This is the only way we get fish for sale but we know it is not of good quality. Moreover, consumers do not have much money to buy, so they purchase this bad-quality fish".

In such discussions, women understood that this is the case with all food. Even vegetables today are of bad quality and so there are now organic shops where people can buy good-quality vegetables even if for a slightly higher price. Would they be willing to sit in separate markets so

They realized that they would have to reach a consensus among themselves and be willing to speak in one voice to convince the authorities and the consumers.

that consumers could have the choice to buy either fresh or frozen fish? Although they could not fathom this in the beginning, the women gradually began to understand and wondered how they could work towards such a process. They realized that they would have to reach a consensus among themselves and be willing to speak in one voice to convince the authorities and the consumers.

Public hearing

Hence it was decided to organize a 'Public Hearing' to ensure better publicity for the issue, after which negotiations could be undertaken at different levels to move towards greater food safety and decent working conditions for women. But

*This article is by **Nalini Nayak** (nalini.nayak@gmail.com), Member, ICSF*

this would be a long struggle and would women be willing to give the time for it? Several women were willing to put in the effort for this. They agreed to come for regular meetings, develop arguments and then prepare their testimonies to be ably communicated to the jury.

While it is normally very difficult to get women to free themselves for such activities, a group of around 20 women kept coming for the meetings on a regular basis for around nine Sundays over five months. They had to first understand what a public hearing is. Then they had to understand the logic and connection between the issues they were going to communicate, and afterwards think of alternatives. They also had to choose who would speak on which topic, and prepare themselves accordingly.

SEWA managed to get together an interesting jury for the public hearing, comprising the chairman of the Famine-cum-Relief Fisheries Welfare Fund who is a retired High Court judge, the Director of Fisheries, the Commissioner of Food Safety, the Chief Executive Officer of Matsyafed (the state fisheries co-operative federation), the Chairman of the Fisheries Development Corporation, the Chairperson of the Head Load Workers Welfare Board, a senior woman scientist from the Central Institute of Fisheries Technology, and an activist on fisheries and coastal issues.

At the hearing, Sonia, the secretary of SEWA Kerala, introduced the reason for conducting the hearing. She said that there are over 50,000 women in small-scale fisheries, mainly in three coastal districts in Kerala—Thiruvananthapuram, Kollam and Kasargod—and they face numerous issues in earning their livelihood. The hearing would only raise issues of the women who directly engage in fish vending. Subsequently, the women began with their testimonies.

Philomi spoke about the traditional knowledge of the small-scale fishers and how they managed to bring back large catches without any so-called

‘modern’ equipment, and how the communities lived off these resources. She said that this is due to the knowledge accumulated over generations of both the fishers and the women who sell, salt and dry fish. This knowledge is the source of livelihood for thousands of coastal people and since it is based on the rhythms of nature, it is also sustainable. This knowledge should be protected.

Mercy, a young woman, spoke about the debt she had fallen into as her husband tried to keep abreast of the new methods of catching fish with outboard engines, global positioning system (GPS), larger nets and powerful lights. As new equipment is introduced every week, all the fishers think they have to buy it. Mercy said they had borrowed Rs 3 lakhs (US\$ 4500) five years ago and now had a debt of Rs 10 lakhs (US\$ 15000). Their entire catch seems to go to the companies who produce the technology and the oil to run the engines. They are left in debt as they ended up fishing not to sustain themselves but to sustain the companies. “Why does the government not control this”, Mercy wondered.

Punitha, Carmel, Mary Varghese and Jaya then spoke of the problems they had in accessing fish. Punitha, who only procures fresh fish, spoke about the burden of travelling to different shores, starting in the wee hours of the morning, to get fresh fish after bearing the high transport costs. Carmel spoke about the competition at the Kollam harbor to buy fish at the auctions. Mary narrated how they are cheated on weights and quality by the wholesale merchants at the markets. Jaya spoke about the bad-quality frozen fish that comes to their seashore in insulated vans from distant harbours, and how they are cheated by the merchants again. They have no idea how old the fish is, but it is much cheaper than the locally caught fish, whose prices are thus driven down.

Reaching the market is another ordeal. Stella spoke about the problems she has had getting into

the state transport buses as they are not allowed to travel in them, and the bus conductors treat them very badly. She shared her painful experience of being literally thrown out of the bus with her container. Achamma spoke about the Matsyafed bus that takes them to the harbour at Kollam and brings them back to the market, which is a great service, but that there are only four such buses in the state. Kochu Thresia spoke about the costs of hiring private vehicles, which drains them of all their earnings. She demanded that Matsyafed provide a bus exclusively for the over 100 women vendors from her village.

Worse are the experiences of women in the market itself. Selvarani, Silvamma and Punitha spoke about the extortionist headload workers who demand large sums just to take out the fish baskets from the autorickshaws at the market and then demand festival allowances as well. There are other problems as well—high market taxes, lack of running water and toilets even in refurbished markets, lack of space for consumers, slippery tiled floors that dissuade consumers from venturing in, among others. They spoke about the poor drainage for water runoff. All the prime spots are occupied by male merchants who were earlier absent. Finally, Annamary, who had put up a big fight at the market where she sells fish, explained in detail how they, the members of SEWA, who had managed to get the *panchayat* to refurbish the market, were forced to sit out in the sun. When the *panchayat* finally did construct the market, the women were not allotted spaces to sit under the shelters—these were occupied by the men. This is because the municipal market is auctioned and the man who bid for it has been in control for decades. He makes the rules and treats the women with disrespect. He has now also become a big merchant of frozen fish himself and has engaged male vendors to sell the fish for him. These men do not pay any tax and they occupy the prime spots in the market. Shusheela and

Merina, women from Kollam, had similar stories to tell.

Alphonsa and Vimala spoke about the fate of the women who sell dry fish. They explained that the only fish they get to dry these days comes from the vehicles that bring frozen fish. Since this fish is of bad quality, disguised with ammonia or formalin, it has no shelf life even when it is dried. Hence they have to dispose of it fast and the price they get is very low. Moreover, they have to go to distant markets to sell the fish, to areas where no other fish reach.

To wind up, Amala spoke about the living conditions of the fishing community. In many areas there is no access to potable water and women have to buy water. There are no drainage and sanitation facilities, and many areas are water-logged, posing a major health hazard. Several villages face threats of coastal erosion, and houses are damaged during the rains. This is caused by the stone retention walls that are being built all along the coast, which is no way to save the coast from erosion. Amala claimed that the sea receives all the pollution from inland sources and nobody cares about the lives of the people who live on the coast.

Sita, who compered the hearing, wound it up by saying that the policy for modernizing the fishery had led to these effects on people's work and food, and that the government, while only thinking of increasing the fish catch through modernizing, does not pay heed to these aspects. This has led to a greater masculinization of the fishery, and the women bear the brunt of it. Hence it is important for the local and state governments to find ways to solve these issues to ensure that the fisherwomen get their legitimate rights to a decent livelihood.

After listening attentively, the jury gave its responses, which are summarized below:

- Maintaining the quality of fish is an important aspect of food safety. The Department of Food Safety will train fisherwomen in aspects of quality management. Such experiments are presently

being undertaken in north Kerala and the same can be adopted in Thiruvananthapuram as well. This must eventually be conducted through the entire value chain.

- If and when women are trained, means of branding the high-quality fish can also be undertaken.
- Women-only markets selling only good-quality fish should be developed in other districts to facilitate the process of informing the consumers of good-quality fish, so that the small-scale fishers also get better prices.
- Markets are developed by the Fisheries Department/Fisheries Corporation and handed over to the Municipal Corporation or local bodies. In future, criteria will be developed when handing over markets to local bodies so that the rights of women vendors are safeguarded, and maintaining infrastructure of sanitation, lighting and waste disposal will be made mandatory.
- Discussions should be held between the women vendors and the headload workers through their representative organizations, in which the Headload Workers Welfare Board will proactively help, to see that charges are made only as per rules and to sort out other disputes and reduce the harassment of the women.
- As the market is their workplace, any harassment of women should be dealt with according to the Harassment at the Workplace Act.
- While Matsyafed still runs a few buses for women vendors at great cost, efforts will be made to introduce buses on routes that will be viable, particularly from the Adimalathura area towards Neyyatinkara.
- All women should actively participate in *gram sabhas* so that they can demand their rights from the local government and stand united against the marginalization and harassment they now face.
- More comprehensive data is required regarding women who work in different aspects of fisheries. The Fisheries Department

should be able to find ways of collecting more authentic data so that planning and budgeting for this sector becomes more meaningful.

- Presently, there is a mismatch between the loan schemes of the various departments and the needs of the women. Efforts will be made to develop, in collaboration with SEWA, some creative participatory alternatives that can be of more beneficial to the women.
- All technical institutions should reach out more to women's groups to develop their capacities in financial management and quality control. Financial support through Corporate Social Responsibility (CSR) could also be sought for this.
- More attention should be given to the implementation of the Street Vendors Act so that the street vendors are not arbitrarily evicted and also to ensure that the various requirements of the Act—portable shelters, access to public toilets and water, garbage clearance—are also put in place, thereby serving both the vendors and the public. 3

For more

igssf.icsf.net/en/page/1064-Background%20Papers.html

Changes in the labour roles of women in the small-scale fishery in Kerala

m.dailyhunt.in/news/india/english/the-new-indian-express-epaper-newexpress/kerala-women-fisher-folk-raises-voice-about-their-woes-in-sewa-hearing-newsid-47400143

Kerala women fisherfolk raises voice about their woes in SEWA hearing

A Casual Approach

By taking on board the concerns of a fishing community in Hazira, India, regarding the construction of a port, the National Green Tribunal has set an important precedent

In 2013, a fishermen's group in Hazira—the Hazira Machimar Samiti—and three affected fishermen had filed a petition against the Adanis, the project proponent of the port at Hazira, in Surat district in the south-western Indian state of Gujarat, as well as against the governmental bodies that granted environmental clearance to the project proponent. The case was filed in the National Green Tribunal (NGT) as, since 2010, cases relating to environment protection are exclusively dealt with by this tribunal for 'effective and expeditious' disposal of cases. The Tribunal has the powers of any other civil court in the country

damages caused by the project proponent.

The key issues that were considered by the court in this case were whether the 2013 environment clearance itself "suffered from any illegality, impropriety or irregularities" and whether there is an actual threat of restriction of access due to expansion. While unravelling answers to these questions, the court also looked into the extent of environmental destruction that was caused due to the whole project. What started as an issue of the fishermen's access to the sea led to questions of the project's compliance to environmental clearance conditions, the process followed by the government in giving clearances to the project and the environmental impacts of the project. A fine of Rs 25 crores (3.7 mn US\$) was imposed on the project proponent to be used for restoration of the environment, and the environmental clearance that was given for the expansion of the project was set aside. The court also gave further orders to look into the compliance of forest-related conditions of the 2003 environment clearance.

The basic challenge that the petitioners put forth was on the environmental clearance given for the expansion of the port by the Ministry of Environment, Forest and Climate Change (MoEFCC)

and can provide for relief and compensation for damages to person and property. The case was heard by the NGT's western zone bench in Pune and on 8 January 2016, the judgment was finally delivered.

There are about 80 families in the village of Hazira engaged in fishing using traditional boats. These boats sailed into sea through a creek, at the opening of which now sits the Hazira port. The fishermen fear that if the port is expanded anymore, they will lose access to this creek. The port was developed in phases since 2003 after it was granted environmental clearance, and the petitioners claimed that this had already caused massive environmental damage to the surroundings. They demanded restoration costs for the environmental

Basic challenge

The basic challenge that the petitioners put forth was on the environmental clearance given for the expansion of the port by the Ministry of Environment, Forest and Climate Change (MoEFCC). The court, made it unambiguous that the question of legality of the environment clearance, the sole defendant is the MoEFCC. This is because while the project proponent put forth the necessary documents, the onus is on the Ministry to examine them carefully, ask for

This article is by **Krithika Dinesh** (krithikadinesh@namati.org), **Manju Menon** (manjumenon1975@gmail.com) and **Kanchi Kohli** (kanchikohli@gmail.com) are with the CPR-Namati Environment Justice Programme, India

verifications and impose necessary conditions. As a central ministry that examines high-impact projects whose environmental impacts are usually multiple and widespread, the Ministry's performance is not only a question for rule of law but for the wellbeing of the environment and citizens.

For the environment and Coastal Regulation Zone (CRZ) clearance granted in 2013, the procedural path taken was traced back by the court. Since clearances are granted on the basis of recommendations from an Expert Appraisal Committee (EAC) that is constituted by the Central government, the minutes of these meetings were looked at by the court. While the recommendations given by the EAC are not binding on the Ministry, the Court assessed the time spent by the Committee on discussing and understanding the impacts of the project, and on whether facts had been verified by the Committee. The court, after appraising the minutes, remarked on the 'casual approach' taken by the EAC on recommending the grant of clearance.

The arguments made in the case clearly bring to light the fact that the MoEFCC had not considered various factors while granting clearance. The necessary permissions that are required while handling hazardous materials were neither taken by the company nor sought by the MoEFCC. The discussions regarding the project also ignored examining the possible impact of the effluent pipeline of the project on the marine life in the area.

It is almost as if a pre-decided approach was taken by the government regarding this expansion, and the procedures were touched upon merely as a matter of formality. The Ministry, which should have prioritized the protection of environmental resources and minimising of the impacts of such projects, had gone easy on a large-scale infrastructural project which is more than capable of bearing the monetary cost of environmental compliance.

Regarding the issue of access, maps submitted by the petitioners were superimposed with earlier maps to understand the landscape changes caused by the project. This showed clear evidence that the creek had narrowed since the project construction began. Though it was contended that no public consultation held to discuss the impacts of re-alignment of a railway line undertaken for the project and there were at least two critically endangered species in the area—the white back vultures and long-billed vultures, these issues were not dealt by the court in detail.

While the compliance of the environment clearance of 2003 per se was not considered by the court, it looked at the issue of compliance of conditions regarding compensatory afforestation of mangroves. The court considered the evidence provided by the petitioners in the form of maps and compared it with the clearance conditions. It also accepted the affidavit of the Deputy Conservator of the Forests, stating that the area once had mangroves in abundance while

NILESH VASAVA



Fisherfolk protesting against the port project at Hazira, Gujarat, India.

The fishermen fear that if the port is expanded anymore, they will lose their access to the creek

there was no mangrove vegetation now.

The 2003 clearance had imposed the condition that the mandatory compensatory afforestation for an area of 450 ha would be taken up the project proponent. In 2007 this got modified to 200 ha, through 'official communication' to the company. This bypassing of conditions by diluting it later on without giving any 'substantial reasons' for such changes makes the entire process of grant of conditional approvals seem like a redundant exercise.

Though the legality of the environmental clearance given in 2003 was beyond the scope of this case, it does come into light that there were substantial changes that were made to the layout of the port in 2007. An affidavit that was given by the respondent company itself reveals this. It was found that the company had proceeded with expansion work after 2007 in the absence of necessary environment and coastal regulation clearance.

It also became clear from the records available to the court through the Ministry's affidavit dated 5 March 2015 that the MoEFCC did not monitor the compliance of the project nor did it evaluate its performance while considering the environment clearance of 2013. This raises a pertinent question of the past performance of the companies being an indicator of their future performance. How could the approval of expansion of a project not be based on the existing project details? While looking at granting an 'environment clearance', should not one of the basic criteria be compliance with previous conditions? Deterrence to environmental violations can come about only when the non-compliance to environmental conditions has adverse consequences.

While a standalone petition asking for access to fishing would have resulted in limited remedies, bringing together all the elements that affect the community and the environment ensured that the remedies given were more encompassing. Also substantiating the issues alongwith

reliable evidence strengthened the case. For example, the claims made by the fishermen on the restriction of access were supported by maps.

The hefty fine imposed by the court for restoration was due to the cumulative environmental impacts that have to be dealt with. A standalone petition asking for access to fishing would have resulted in limited remedies. Bringing together all the elements that affect the community and the environment ensured that the remedies given were more encompassing. It is also, however, important to show the relevance of each plea with respect to the remedy asked for, and ensure, as far as possible, that these claims are presented with reliable evidence. Claims made by the fishermen on the restriction of access were supported by maps. While the court did not examine in detail most conditions of the initial environmental clearance of 2003 that were raised, the destruction of mangroves was examined in detail.

Even though the case is now being heard at the apex court of the country due to an appeal, the judgment is an important precedent as the fishing community's voices were heard and the subject of environmental non-compliance by large projects and their consequences have been placed in the spotlight. Moreover, the project proponent has reportedly paid the fine amount of Rs 25 crore imposed by the National Green Tribunal, as per the apex court's orders. Large-scale land-use transformations usually leave certain sections of society more vulnerable to the effects of such changes, and their opinions are usually not heard, sometimes noted but mostly not accounted for. A robust and outcome-based environmental compliance and monitoring system can reduce or mitigate the impacts of land-use change. It needs to be built and upheld as a critical rule of law issue for these times. 3

For more



www.greentribunal.gov.in/

National Green Tribunal

Hemmed In by Development

A study of five fishing villages in Goa, India, shows how development in the region increasingly marginalizes local communities and deprives them of sources of livelihood

Odxel, Cacara, Nauxi, Bambolim and Siridao are small fishing villages running from north to south along the western coast of Tiswadi *taluka* (an administrative district for taxation purposes) of the Indian state of Goa. They lie on the banks of the Zuari river, which, at 92 km in length, is the largest river in the state. (The port city of Vasco da Gama lies on the mouth of the Zuari river.) Panjim, the state capital, is just 5-10 km away, and the Goa University, part of which was built on land acquired from the local community, was set up in 1984.

in the state a few km away, and the capital city so close, it would seem that these communities are poised for success. Unfortunately, this prime location has, over the years, been a coveted resource for other groups as well, forcing these communities to fight for their traditional rights, with their livelihoods and survival increasingly under threat.

In the early 1980s—by which time fishing had become the main source of income for the community—the University started buying the agricultural and farm lands on which these communities traditionally grew crops—paddy, ragi, vegetables—for four months of the year. Apart from this, there were cashew plantations that provided the famed ‘*feni*’ (local alcohol brew) of Goa. Taking advantage of the illiteracy of the Gaudas, the customary rights to these lands were gradually taken away by private owners, though the community continued cultivating the lands under lease agreements, without staking their claims as tenants.

Once the University started to acquire the lands, these owners sold some of their lands to the University. The University, spread over 427.49 acres, is built on what was earlier Cacara land, but is now called the Taleigao plateau. The University also got government land. The local people, not being registered as tenants, got no compensation but were promised jobs at the university instead.

Supplementary income

Today, several women from the fishing community supplement the family income by working as housemaids in the homes of the University staff. A few inhabitants have got jobs in the university. Following the

The community was traditionally involved in farming and toddy tapping, with fishing being a supplementary source of income until the 1970s.

These villages have a total population of about 3,300 inhabitants. The villages are mainly inhabited by the Gauda community, classified as Scheduled Tribe. The community was traditionally involved in farming and toddy tapping, with fishing being a supplementary source of income until the 1970s. After this period, with the introduction of ‘disco nets’ (synthetic gillnets) and the consequent increase in income, the communities started identifying themselves as fishers, with fishing contributing to a larger proportion of their income as compared to previous years. Agricultural lands being taken over in subsequent years further sealed their ‘identity’ as fishers.

With the Zuari river on one side, the state’s highest seat of learning on the other, the only tertiary care hospital

This article is by **Mariette Correa** (mariettec@gmail.com), Senior Programme Co-ordinator, ICSF

acquisition of the land by the university, one source of livelihood of these communities was destroyed forever. (Siridao, though, has been an exception since for over a generation there has been migration from the village to the UK and France, courtesy the Portuguese passports that Goans can use to migrate to the European region. Several people have bought trawlers, and fishing away from the Zuari river.)

In 1997, one of the big mining families of Goa, bought huge tracts of land adjoining Cacra with plans to start a project worth over Rs300 crore. This project involved the building of a large ramp, which would have blocked the canoes from going out into the river. The fishing communities protested and the project was stalled. Later, in 2008, the mega project entered into a fresh controversy over watering of the landscaping, which villagers stated was part of the project and which came under a no-development zone. However, the land is still owned by the Timblos and the community lives in the constant fear that permissions could be given at any time for them to 'restart' their project. Sanjay Pereira, the *panch* (village head) of Cacra ward for the Santa Cruz *panchayat*, says this project, if passed, will destroy the livelihoods of the community by preventing them from fishing.

There are also large residential houses and hotels which have come up in the area, despite constant protests by the villagers at the *Gram Sabha* meetings and at the relevant government offices. The increasing pressure on land has made the community feel insecure. While the fishing communities are not too worried about losing the land on which their houses are built being taken away (since they have documentation that guarantees security of tenure and since they belong to the Scheduled Tribes), they are unable to renovate or expand in accordance with their needs. Sanjay Pereira explains his own situation; being one of four brothers, they wanted to build two extra rooms adjoining their house, as the family is expanding. Two years ago

a case was filed against them alleging that the expansion violated Coastal Regulation Zone (CRZ) rules, even though the CRZ Notification of 2011 permits construction/reconstruction of dwelling units of traditional coastal communities, especially fisherfolk, within 100 to 200 m of the no-development buffer zone (NDZ).

Sanjay points out the permissions given for building bungalows and hotels that are even closer to the river banks and clearly in violation of CRZ rules. When complaints are made against these constructions, the authorities interpret the rules to show how these are within permissible limits. Recent developments may make it easier for the communities to renovate or expand their houses, with the Ministry for Environment, Forest and Climate Change (MoEFCC) planning to amend the CRZ Notification by reducing the NDZ to a mere 50 m, ostensibly in the interests of the traditional fishing communities. The latter are, however, strongly opposing this move, claiming that dilution of CRZ norms will pave the way for the hotel industry and building lobbies to capture even more of the coast than they already have. "This amendment is planned to protect and encourage the interest of the hotel mafia," Olencio Simoes, Secretary of the National Fishworkers' Forum (NFF) and the joint general secretary of Goenchea Ramponkarancha Ekvott (GRE), alleged in a press statement.

Further, even if the communities have rights to the land, if they are unable to sustain livelihoods due to pressures from all sides, they will be forced to look for alternatives, possibly finally having to move out of the area.

As a direct result of the restrictions on expanding their houses, one of the big problems faced

JOHN KURIEN



A dugout canoe fisherman from a tribal community in Cacra, India, inspecting his fishing net

mainly by women and girls is the lack of toilets in the area. The homes are too small to allow construction of toilets, though about 20 per cent of houses in all these villages have managed to build these. The community has been requesting the government to build public toilets and has also identified three sites for these. Prior to elections, promises are made by candidates, but nothing is done once the elections are over. With men going out fishing early

Fishing is a family occupation and, unlike in the larger fishing vessels, no migrant labour is employed in these villages.

in the mornings, it is very difficult for women to find private spaces to relieve themselves. Girls tend to use the public toilets in schools.

There are a total of about 70 canoes of 6 m length and about 100 canoes of 8 m length fitted with outboard motors (OBMs) owned by these five fishing villages. The smaller canoes are involved in hook-and-line fishing and make three-hour trips, while the larger canoes go out for about an hour-and-a-half and use gillnets.

Subsidies are available for the fishing communities—Rs.36,000 per year for petrol, Rs. 60,000 for five years for OBMs, Rs. 30,000 for five years for gillnets and Rs.60,000 for a new canoe if registered as a fisherman. Apart from these, the fishermen are entitled to insurance schemes, financial assistance for house renovation and interest subsidies on certain loans.

The fishing ban of two months in the year during the monsoon (1 June to 31 July) does not apply to these fishermen, as non-motorized canoes and motorized canoes fitted with up to 10HP OBMs and using gillnets are exempted from this ban. However, in any case, these communities do not fish much in this season, largely due to the weather.

Fishing is a family occupation and, unlike in the larger fishing vessels,

no migrant labour is employed in these villages. Once men come in with the catch, the women transport it via public buses to Panjim where they sell the catch to wholesalers. This is because they do not have space to sit in the Panjim fish market, as the spaces are allotted to women from different villages of Goa. Still, the women from these communities prefer this system as they are able to negotiate with the wholesalers and they are assured of selling their entire catch. They say that even though the price is lower than what they would get in the open market selling directly to consumers, they are comfortable with this system. A few women also sell fish locally at the Taleigao market.

There have been tremendous changes in the fish catch over the years. The post-tsunami period saw a massive drop in mussels and a reduction in oysters which are collected by women. It is not clear whether this was the effect of the 2004 tsunami or a trend of increasing deoxygenation in waters during the period just after the monsoons. Environmental activists also claim that higher levels of ferrous matter and other pollutants in the river, such as sewage, affects the life cycle of the molluscs through the year.

Policy measures

According to the local fisherfolk, one of the biggest reasons for the reduction in catch is the operations of trawlers and mini purseiners which come in from Vasco (a fairly prosperous town on the other side of the Zuari river). These vessels regularly violate the Marine Fishing Regulation Act (MFRA) 1980 which reserves the area up to 2.6 nm (5 km) for traditional crafts. Despite this, they come as close as possible to the banks for fishing. They have the technology to locate large shoals of fish and do not care whether they are collecting eggs or young ones. Owners of these large vessels are usually aware that this is going to damage their own business in the long run, but in the absence of policy measures or their strict implementation to preserve and

replenish fish stocks, they do not want to be left out. They also have the options of moving to greener/bluer pastures and do not have the stakes in sustainable fishing that the local community has.

After a trawler or purseiner comes into the area, it takes about 10-15 days for the small boats to get a 'normal' catch, which is usually an average of 10 kg. During these 10-15 days they get about 2-3 kg, most of which are the less-prized and cheaper varieties of fish.

The women also say that the big vessels keep an eye on the wholesale market. When they notice a good sale, they identify the village from where the women have come and within a day, several trawlers and mini purseiners come to the area and catch as much as they possibly can.

The Department of Fisheries has a full-fledged modern state-of-the-art control room. One key function is to monitor fishing vessels entering Goa's territorial waters. The Department has also acquired a high-speed patrol vessel to curb illegal activities. Members of these fishing communities regularly contact the control room to inform them whenever there are trawlers or mini purseiners in the area. They even contact the Director of Fisheries on their mobile phones. However, neither the marine police nor the patrol boat, which is under the Department of Fisheries, respond in time. Though it should take about 15 minutes for either of these departments to respond, they take over an hour, giving enough time for the vessels to leave the area. Not that it matters if the latter get caught. The fine for violating the rules is a handsome Rs.100 (about US\$1.5), hardly a deterrent for repeat offences. The mini purseiners earn anywhere between Rs 1-2 lakhs (about US\$1,500 – 3,000) per day, while trawlers earn Rs. 20,000 (US\$300) per day.

In response to the communities' demands that strict action against violators be taken, the Department of Fisheries says it cannot increase the fine and there are no notifications to that effect. It is clear that there

is collusion between the large vessel owners and the government departments.

Aqua-sports, particularly aqua-sail boats, have become common in the area over the past two years, mainly with the setting up of a five-star hotel over 28 acres in 2011. The noise and disturbance created by these boats (which come close to the banks) have severely affected the spawning grounds and the amount of fish available. In Nauxi and Bambolim, in particular, there has been a substantial decrease in *shevto* (mullet), mackerel, sardines, crabs and silver-fish. Fishermen had even in previous years protested against aqua-sports in other areas of the state, including in neighbouring communities, but to no avail.

Permission for these boats has been given by three departments—Ports, Tourism and Fisheries. The fishing community spoke to the Fisheries Minister and the Director of the Department of Fisheries regarding their reduced catch due to the sailboats. However, the Department said that it has given permission since these are non-motorized boats and, as such, are unlikely to affect the catch. "Neither of them have any experience with fishing. If they did, they would realize how disturbance in the water affects the fish", says Sanjay Pereira.

The gillnets used by the small-scale fishermen are often damaged by the trawlers or the tourist boats, with no possibility of compensation for the fishermen. The sewage from the hotel is also often released into the river, destroying the fish. This was also brought to the notice of the Department but no action has been taken.

Dwindling Catches

Until about 10 years ago, women used to dry about 25 per cent of the catch. Some of this would be sold, the rest used for domestic consumption, especially in the monsoon period. With the dwindling catches and the reduced space in the community (where some people have sold their lands), women now buy dried fish

from other vendors in the market. This dried fish comes from other parts of the state or the neighbouring state of Karnataka.

Hemmed in and harried as they are by pressures from all sides, the fisherfolk find that the secure rights to their homesteads and continued access to fishing become increasingly irrelevant, with their very livelihoods threatened, their fishing areas exploited by other actors, and their spaces for even minimal expansion limited.

The communities have been trying hard to follow up on promises made and broken, becoming increasingly aware of their rights but not having enough resources against the might of the state and its cronies. Recently, they have sent an appeal to the Governor and the Vice Chancellor of the University asking why three of the temporary posts given to people in their villages and reserved for Scheduled Tribes were given to people from faraway places in Goa once these posts became permanent.

The reason given to the three candidates was that they lacked experience. The communities demanded to know how these candidates were considered acceptable when the posts were temporary. The communities also strongly feel that it is their right to get jobs in the University since it is their lands on which the University has been built and they were promised jobs in the University as a kind of compensation.

Some people from the community of Nauxim have earned large sums of money from the sale of their land to hotels or private owners. However, this was also the result of their tenure rights being of uncertain status unlike in Cakra, resulting in some of them being cheated out of their lands or paid far lower than the market rates. The lack of security of their tenure did determine their bargaining capacity. All these people who have sold their lands no longer live in the villages and have moved to other areas. This is a pattern that may be repeated with other members of the community as well.

The 145-acre luxury coastal gated project, which came up instead of residences for which permissions were given is located near the Siridao-Bambolim bay, flouting CRZ and hill-cutting norms. Environmental organizations took the case to court and after seven years of struggle, the court declared some of the constructions illegal and fined the hotel Rs25 lakh. However, the illegal constructions have not been demolished, since the verdict was not specific enough.

The Gaudas have initiated the formation of an association which includes Other Backward Castes (OBCs). The Shri Shanta Durga Fishermen Association was established seven years ago and covers all of Tiswadi *taluka*. Apart from these five villages, it also includes inland waters in other parts of the *taluka*. Of the 160 members, 30 are women. The main issues taken up by the association are the problems they face due to the mini purseiners and water sports, and how to address these, and the issues regarding the proposed marinas on the Zuari river, which have been the centre of much controversy in recent years, with the government appearing determined to go ahead despite the opposition.

Livelihood protection

Many in these communities have been forced to look elsewhere for sources of income. Some have got government jobs, some are in the private sector or are self-employed. However, they see this as a lack of choice. The fishing community would want their children to continue in fishing if there is a possibility of conserving and responsibly managing the resource. Their struggle is to ensure that small-scale fisheries are protected and that there are stricter bans on letting other players (large vessels, tourism operations, and so on) into the area thereby affecting their livelihood and the environment. The increase in educational levels of the youth are enabling some of them to get jobs in the private sector. However, due to low salaries, they supplement their income with fishing. The communities

fear that if current trends continue with complete disregard for their traditional livelihoods, there will be no option for the coming generation but to look for alternative livelihood sources.

The concerns of the fishing community cannot be seen in isolation from what is going on across the state. The government, irrespective of which party is in power, has been selling land, water and mineral resources to the highest bidder with no thought for the environment or the local people who have lived off, and sustainably managed, these resources. The powerful and well-connected industrial, hotel and real-estate lobbies have the clout to get problems settled in their favour and do not shy away from the use of muscle power as in the famous case of Leading Hotels, which is involved in a very controversial effort to set up a massive golf course in Goa, in the teeth of opposition from locals and environmentalists. In another case, the Supreme Court ordered the demolition of a portion of a five-star resort at Dona Paula. In response, the government passed the Land Acquisition (Goa Amendment) Act, 2009, simply to validate and make legal an extended portion of the construction made by this hotel. The challenge to this amendment was dismissed by the Supreme Court in 2016, with the result that what was declared to be illegal has now become legal, to the immense benefit of the hotel. Ranged against the might of such powerful lobbies, local communities cannot fight the legal and other battles required to get their rights to prevail.

It is in this context that the fisherfolk are viewing many recent developments with trepidation. For example, the fishermen's organization Goencho Ramponkarancha Ekvott (Unity of Goan Fishermen) or GRE have been protesting the use of high-voltage light-emitting diode (LED) lights and bull trawling off the Goa coast, given that these practices are adversely affecting the livelihood of traditional fishermen. While the former was banned in May 2016 through

a government circular (perhaps to silence the fishermen's protests which have been escalating), it is left to be seen how the ban is implemented.

There are proposals in the pipeline to set up two marinas in Goa ostensibly to boost high-end tourism—one in Nauxim, Bambolim and the other in Chicalim, Sancoale. Due to protests by the fishing communities as well as others and the lack of all clearances, these proposals are currently being held at bay. Apart from public protests, joined in by the Environment Minister, *gram sabha* resolutions have been passed against the marinas. Villagers of Nauxim had opposed the proposal on 5 December 2010 at a *gram sabha* of Curca-Telaulim-Bambolim *panchayat* on 30 January 2011. They alleged that the project is like a declaration of war against indigenous peoples and a threat to food security. Despite all the opposition, the Goa Investment Promotion Board has given in-principle approval to these marinas and once other clearances are obtained, it may be just a matter of time before they are launched. If these projects succeed in getting passed, while they will be advantageous for large fishing vessels, they will completely destroy small-scale fisheries in the state.

It is no wonder that the communities of Oxel, Cakra, Nauxim and Bambolim are worried. They have every reason to be. They foresee a time when, deprived of all livelihood options, they may have to sell out and move away, giving up their traditional livelihoods as well as their homes where they have dwelt all their lives—and with no visible viable alternatives in sight. Modernization and development have come at a high cost for these communities, and it is in this context that one needs to view their struggles and demands. ❧

For more



crzgoa.org/mom/

Goa Coastal Zone Management Authority

goaprintingpress.gov.in/uploads/Land%20Acquisition%20GDD%20Amendment%20Act.pdf

Land Acquisition (Goa Amendment) Act, 2009

fisheries.goa.gov.in/

Directorate of Fisheries, Goa

Tempered Down

On temperaments, communities and conflicts in the river fisheries of Bihar, amidst rigidly persistent caste and class discrimination

Social and institutional interactions impinge significantly on how resource declines are experienced by fisherfolk, as local scarcity of resources can aggravate and transform historically entrenched conflicts over fishing rights, access and ownership. Owing to conflicts emerged from historical relations, or institutional changes, or state-driven policies, a dichotomous ‘fishing communities versus the rest of the world’ framing of the problem is commonplace.

The primary assumption in this outlook is that the heterogeneity of socio-cultural practices within these fishing communities could, or should,

to impoverished fisheries in terms of both quantity and quality in India’s Gangetic basin. In the lower Gangetic floodplains of Bihar, rigidly persistent caste and class discrimination has formed the proverbial backdrop against which river fishery conflicts have been emerging, changing, and continuing. Importantly, fishing rights, access to fishing grounds, and ownership conflicts cannot still be separated from floodplain systems of land ownership (for example, freehold tenure, tenancy, etc.) and control of riparian productivity by powerful and influential landowning people, locally called the ‘bosses’.

Fishing communities in Bihar, mostly landless and marginalized, eke out a difficult existence with no meaningful institutional structure to bind them together. The common district boundary of Bhagalpur in eastern Bihar, and a somewhat fluid political identity of being from the Nishad or Mallah castes are the only things that may be held as constant for these people. But otherwise nothing seems adequate to group them: the label of a homogeneous ‘fishing community’ risks undermining the complexity and diversity of fisherfolk that reside in the Barari, Kahalgaon, and Naugachhia towns of Bihar (See Map).

Fishing communities in Bihar, mostly landless and marginalized, eke out a difficult existence...

be glossed over to focus on broader inequalities and injustices meted by the state and other institutions. But often this leads only to a coarse-resolution awareness of fishing conflicts and their potential outcomes for human livelihoods.

Often there is a need to look deeper at the micro-scale, at what goes on not just between, but also within, conflict-ridden fishing communities. This becomes particularly necessary for a nuanced understanding of fisheries systems situated within highly stratified and unequal societies, and threatened ecological settings.

The basin-level alteration of river-flow regimes by dams, barrages, engineering developments and pollution has contributed significantly

Diversity of fishing

Differences in geographic locations and ecological specificities of ‘places’ they fish in also correlate with a diversity of fishing practices and seasonal movement patterns. Owing to these divergences, their interactions with different state and non-state institutions influence the variability of ways through which their local fishing grounds are

*This article is by **Nachiket Kelkar** (rainmaker.nsk@gmail.com) of Ashoka Trust for Research in Ecology and the Environment (ATREE), India and **Subhasis Dey** (subhasisvbrec98@gmail.com), Department of Botany, T.M. Bhagalpur University, Bhagalpur, India*

controlled. The settlements bear different ‘temperaments’, which also represent other fishing communities across the Gangetic floodplains, and which we attempt to sketch out, based on our long-term interactions, both formal and informal.

Table 1 compares the fishing practices, access to fishing grounds, movements, group associations and experiences of conflicts faced through interactions with fishers from the three settlements. We also describe their responses to resource declines and intergroup interactions, to dwell on the heterogeneous meanings of ‘fishing community’ for people, despite a common history.

The river fisheries of Bihar shifted from a private regime to an open-access regime in 1991, following the Ganga Mukti Andolan, a social movement that sprung up in the 1980s, demanding the overthrow of private control of rivers in Bihar called *Panidari* (water-lording). The fishers of Kagzi Tola in Kahalgaon were at the forefront of this movement and, in a sense, they represented the

whole fishing community of Bhagalpur district. The Andolan did succeed as private control was overthrown in 1991 by the state, but it failed on account of actually creating alternative systems of property rights or community management of river fisheries, landing up fishers in a ‘free-for-all’ open-access situation. It also did not do enough to resolve issues of caste identity that underlay the floodplain-dwelling groups that participated in it.

Kahalgaon fishers travel far and wide, and always have to fish, despite the primary drive and weakness for hunting and eating the flesh of soft-shelled river turtles. This drive takes them to the floodplains of the Gandak River in western Bihar and the Ghaghra in Uttar Pradesh, where turtles are still in relatively better numbers than in the Ganga. Some fishers have even travelled to the Yamuna and Chambal, and some even to Goa to help capture and kill sea turtles. These long travels are accompanied by double-faced actions: often these fishers pay rent

Map: Map showing the Barari, Naugachhia and Kahalgaon towns with Mallah fishing settlements in the Bhagalpur district of Bihar, India



to local bosses and criminal gangs to fish (whose practices they hate so much) to gain access to fish and hunt in their territories. However, the same Kagzi Tola fishers do not take kindly to other fisherfolk coming into, and fishing around, the rocky islands at Kahat, their fishing territory.

The river is perhaps the deepest at this point anywhere on the Ganga, has complex habitats, a stable channel, eddies, and counter-currents where several fish species reside in good numbers. The strong guard of this productive fishery itself goes against their demand for 'exclusive rights for fishing castes'.

The Naugachhia fishers are the other extreme of Kahalgaon but because Naugachhia is not located on the riverbank, fishing in small bands in the Ganga and Kosi rivers (in other fishers' grounds) is what they practise. They go out to Bhagalpur or somewhere along the Kosi coast for several days, only to return home during festivities or illnesses. Used to being 'floating outsiders', friendliness is an essential survival strategy, and applies to everyone they meet:—other fishers, conservationists, and criminal gangs as well.

The mood in the Barari fishing settlement near Bhagalpur city is one of general agreement, irrespective of discussions. There is no surplus anger or warmth, but rather there is a patient, measured behaviour maintained in interactions. Though these fishers too regularly fish in the river, they are relatively distracted and indifferent. Threat is a routine part of life, without question. They regularly see the local bosses, partake with their fish catch when threatened, and report these incidents as if these were norms and hence acceptable, "yeh to chalta hai (this keeps happening)".

The Ganga at Bhagalpur is a busy river: there is the long Vikramshila bridge over which vehicles keep moving noisily; there are waterway-dredger vessels digging up the river every now and then; there is a highly polluted side-channel that takes the sewage and garbage from Bhagalpur city, and pilgrims, motorboats, crowded ghats and markets make up for the other elements.

Three settlements that once shared a common history of oppression and poverty show divergent temperaments as they confront their gravely insecure livelihoods in a rapidly degrading river and dangerous fishery setting. With a

Table 1. A comparison of the characteristics of three Mallah fishing settlements in the Bhagalpur district indicates a gradient of differences in fishing practices and preferences

Name of Settlement	Sub-caste	Range of Influence	Grouping patterns	Fishing effort & practices	Propensity to exit from fishery	Role in resistance	Tolerance for other fishers
KagziTola (Kahalgaon)	Banpar	Ganga River and some tributaries in Bihar, Bengal and eastern UP	Mixed groups, corporate groups, bands	Main river, localized around Kahalgaon but widespread fishing across the region	Low, shift to labour and exit known only during extreme years	Led	Low
Makkhatakiya (Naugachhia)	Nishad	Kosi, Ganga rivers	Bands	Inlets and side-channels with vegetation, ponds and floodplain wetlands	Moderate to High, shift to pond fisheries and wage labour	Supported	Usually, they are the 'other' fishers, High
Barari (Bhagalpur)	Gorhi (Mahaldar)	Barari area	Family groups	Main river, highly localized	High, many have shifted to local alternative occupations	Passive	High



Fishing in River Ganges, India. Fishing communities in Bihar, mostly landless and marginalized, eke out a difficult existence with no meaningful institutional structure to bind them together

continuing exodus, the number of fishers actively fishing today might be less than 30 per cent of the number 10-15 years ago. For those who remain, importantly, the socio-ecological setting and lived experience have, at least partly, shaped their variable attitudes. What is striking is that these differences severely limit their ability to reflect critically on the open-access cage they are stuck in.

In this context, the uniform application of fisheries policies, schemes and community-wide extension programmes might achieve heterogeneous outcomes. A closer look at how temperaments are formed, maintained and expressed in response to conflicts appears essential in planning sustained dialogue with communities living on the edge of declining riverine fisherie. 3

For more



www.dukeupress.edu/where-the-river-ends/?viewby=title

Muehlmann, S. 2013. *Where the River Ends: Contested Indigeneity in the Mexican Colorado delta*. Duke University Press: USA, p. 220

www.cambridge.org/core/books/life-on-the-ganga/B8459012B50449DEB8807BB87F593241

Assa Doron, 2013. *Life on the Ganga Boatmen and the Ritual Economy of Banaras*. Cambridge University Press

Boon or Doom?

While cage culture in inland open waters can help increase fish production in India, there is a need to be wary of hasty and arbitrary policymaking

Cage aquaculture, though relatively new to the inland aquaculture scenario of India, brings in new opportunities for optimizing fish production from reservoirs and lakes, and also developing new skills among fishers and entrepreneurs to enhance their earnings. Generally perceived as a boon for increasing production, this mode of production can as well turn out to be a harbinger of doom, if allowed to grow unchecked. This article stresses the importance of (a) following the existing guidelines on cage culture, (b) the need for developing norms for better environmental impact assessments, and (c) the importance of exercising

receives in the form of unused feed and metabolic wastes of caged fishes. Equally important is the physical obstruction to the fishing activities of traditional fishers and the resultant conflicts. Exotic species, after escapement from cages, can play havoc with the ecosystem and its biodiversity. High input of feeds can lead to eutrophication and related damage to the ecosystem. Eutrophication upsets the nutrient cycles and the community metabolism of reservoirs, making them barren. It must be borne in mind that our reservoirs support fisheries on which the livelihoods of thousands depend.

After the recent introduction of pangas (*Pangasianodon hypophthalmus*), which is an air-breathing fish allowing high stocking density, 3-5 tonnes of fish are being produced from a small cage of 6m x 4m x 4m. Considering that at least 6 - 10 tonnes of feed go into the system per cage per production cycle, the staggering scale of artificial nutrient loading it can cause is mind boggling. A mad rush for cage culture in reservoirs has already started in the country and if continued unabated, the situation might go out of control, leading to a disaster, much greater in scale than the shrimp culture debacle of the 1990s.

Ecological disaster

Laguna de Bay is a living example of how uncontrolled growth of pen culture triggered off an ecological disaster in the Philippines. Cage culture is a relatively new area of fish production in India and its environmental impacts are not fully understood. There is a wealth of literature abroad on assessing the nutrient loading, which is directly

...culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production...

caution while aggressively pursuing cage culture in inland open waters of India.

Considering the ever-increasing and often conflicting cross-sectoral demands for water and land, there are limitations for growth in pond-based aquaculture. In this context, culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production, obviating the need for more land-based fish farms. However, mindless proliferation of this activity for increased production can lead to some very serious environmental and social problems. The first and foremost is the high nutrient input that the water body

This article is by **V V Sugunan** (vasu.sugunan@gmail.com), Senior Consultant, National Fisheries Development Board, Hyderabad, India

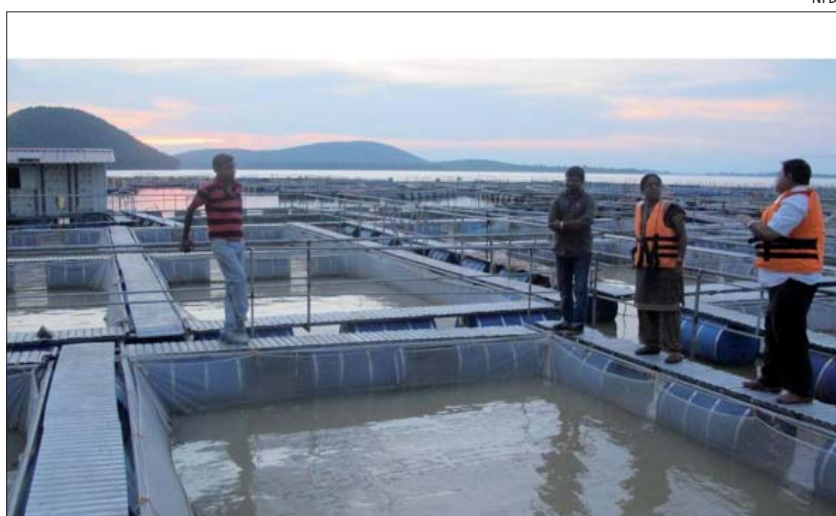
related to the feed input and feed conversion rate (FCR). But these models are not directly applicable in India due to the different environmental regimes under which these have been developed, especially the variations in temperature and trophic status. Efforts are on to develop such models in India, but the results will not be available for a while.

Research institutes in India that develop cage-culture technologies often neglect studies on its environmental impact, although such studies are essential and complementary. Our research institutes should pay attention to assessing the carrying capacity of reservoirs and inform the government and policy-makers how to proceed with developing cage culture in the country. Hasty and arbitrary policymaking at the state level to allow cages in large numbers in reservoirs without assessing the environmental impacts is a matter of deep concern, especially in the backdrop of our bad experience with coastal aquaculture in the 1980s and 1990s when unregulated growth without addressing environmental concerns resulted in disastrous consequences to ecosystems. Following the guidelines of the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO-CCRF) for dealing with data-deficient systems, our policy towards environmental impact assessment (EIA) of cage culture should be based on a precautionary approach.

Recognizing the importance of cage culture in inland open waters, a National Level Committee was set up on 25 April 2016 to develop guidelines with a mandate to (a) assess the potential of this culture system to contribute to increased production, employment, income generation and other benefits, (b) assess the possible environmental and socioeconomic impact, (c) suggest precautions to be taken, and (d) suggest the modes of propagating and scaling up this technology to optimize benefits in a sustainable manner. The committee

developed a set of guidelines that provide several recommendations covering many aspects on cage culture such as (1) the relevance and scope for cage culture in inland open waters, (2) definition of cage and cage culture, (3) cage size, shape and materials, (4) site selection, (5) cage maintenance, (6) species selection, (7) stocking density, (8) feed and feeding and FCR, (9) fish health monitoring, (10) safety measures, (11) market, post-harvest facilities and infrastructure, (12) environmental precautions and impact assessment, (13) carrying capacity, (14) ownership, (15) beneficiaries, (16) governance, (17) and (18) social relevance.

These guidelines are addressed to all stakeholders, including farmers, self-help groups (SHGs), co-operative societies, other community organizations, business process development facilitators (BDFs), farmer producer organizations (FPOs), Fisheries Departments of the Indian states, the Department of Animal Husbandry Dairying and Fisheries, Government of India, and its institutes, research organizations and environmentalists. But it is pertinent to note that at present, India does not have an umbrella agency that oversees/regulates freshwater aquaculture activities or implements guidelines/best management practices (BMPs). Equally glaring is the lack of a uniform policy across the country that governs freshwater



Cage culture in Chandi Reservoir, India. Generally perceived as a boon for increasing production, this mode of production can as well turn out to be a harbinger of doom

aquaculture. Thus, there is no scope for these guidelines to be readily implemented at this stage. Nevertheless, these can still (a) guide the departments/agencies of the state and central governments in formulating development plans based on cage culture, (b) inform policies to be framed in future, and (c) guide farmers and entrepreneurs for practising responsible cage culture in the country.

The following are the major highlights of the guidelines:

- Due to ecological reasons, cage culture in rivers needs to be discouraged.
- Subject to other conditions, it can be practised in estuaries, lagoons, lakes and large/medium reservoirs.
- Cage culture shall be allowed in water bodies having a surface area 1,000 ha or more at FRL. (Exception to this can be made only in case of 'very deep abandoned mines', which are less than 1,000 ha in area, but too deep for practising culture-based fisheries, subject to all other conditions prescribed).
- Cage culture shall be allowed in reservoirs with an average depth of 10 m (average depth is calculated as: area in hectares divided by water holding capacity in m³).
- The cage site at the reservoir should have at least 10 m depth round the year.
- Cage culture should not be attempted in any water body having total phosphorus and total nitrogen levels in the water exceeding 0.02 mg/l and 1.2 mg/l, respectively.
- Environmental impact assessment is necessary before clearing cage-culture projects. This will be done/facilitated by recognized organizations, following the standard procedure.
- The state governments should demarcate, list and notify water bodies that are suitable for cage culture on the basis of its trophic characteristics and other criteria of site selection, and upload the list of water bodies and their suitability on geographic information system (GIS) platform with the help concerned institutions.
- It will be mandatory for the cage-culture operators to record the water quality parameters like dissolved oxygen, pH, CO₂ and total alkalinity, inside and outside the cages, from day one of the operation, keeping in view the need for long-term environmental impact. Any increase in nutrients level away from the cage area should be taken as a warning.
- It will be mandatory for the cage-culture operators to collect data on the trophic status in and around the cages as well as the areas away from the cages periodically and report to the authorities to assess the impacts in terms of nutrient loading. Studies on other chemical and physical quality parameters of water and sediments also shall be collected as per the risk perception.
- NFDB and central organizations will build capacity at state governments to interpret such data and arrive at conclusion.
- *Pangasianodon hypophthalmus* and *Genetically Improved Farmed Tilapia* (GIFT tilapia) are allowed to be cultured, but all other exotic species (including illegally introduced fishes) are strictly prohibited for cage culture.
- As far as possible, use of antibiotics and chemicals should be avoided. However, in the event of it becoming necessary under exceptional circumstances, the use should be judicious and it must be clearly understood that only approved drugs/chemicals, permitted by government regulatory authorities at standard doses shall be used.

The carrying capacity of a water body to hold cages is the most vital input for decisionmaking in cage culture. But, unfortunately, we are not in a position to arrive at carrying capacity at decent precision levels due to paucity of data. Therefore, guidelines on carrying capacity have been based on a precautionary approach. Provisions of the FAO-CCRF clearly stipulate the need to follow

the 'precautionary approach' while dealing with data-deficient systems. Accordingly, taking into account the general trend of nutrients in Indian reservoirs and the possibility of nutrient loading from cage culture, the guidelines prescribe the following carrying capacity on a precautionary-approach basis (Table 1):

Table 1. Limits set for cage culture in reservoirs under the guidelines

Reservoir area (ha)	Maximum number of cages allowed (1 unit is 6m x 4m x 4m)
< 1000	Not allowed
1001 to 2000	500
2001 to 3000	1000
3001 to 4000	1500
4001 to 5000	1900
5001 to 10000	3000
> 10000	5000

As standalone or in in batteries (of 6, 12, or 24 units) as required

Large-scale production through cage culture can adversely impact prices, leading to a glut in the market, which can act as a major disincentive to present and potential entrepreneurs. A few cases of glut have been reported, especially with regard to problems in marketing of *pangas*. With many newer species such as tilapia, seabass, cobia, etc, lined up for cage culture, a careful strategy involving marketing plans, value addition and market infrastructure should be evolved.

Unlike land-based aquaculture undertaken on private land, cage culture is practised in common-property resources. Therefore, the question "who owns the cages installed in reservoirs" needs an important consideration. While answering the question, the following facts need to be considered:

- a. Almost all large and medium reservoirs in the country are owned by the government or government-controlled agencies, which are used by fishers as 'common-property resources' with 'free' or 'almost free' access.
- b. Fish produced from the reservoirs is essentially a natural resource in the form of 'ecosystem goods and

services', on which the traditional and local fish communities have the 'natural primary rights'.

- c. The livelihoods of many poor people depend on catching fish from reservoirs.
- d. Reservoir fishing is used sometimes as a means to rehabilitate people ousted from the dam projects.

Considering the above facts, it is essential to ensure that expansion of cage culture does not impair the livelihoods and income of fishers. Cage culture can adversely impact the interests of local fishers by denying them access to fishing grounds, obstructing their pathways, and by way of a decline in fish catch. Fish catch can be adversely affected in many ways such as by lowering the natural productivity, eutrophication, algal blooms or through the impact of exotic species. At the same time, it is equally important to utilize the additional fish production potential through cage culture. Considering the need to avoid conflicts, the best way to achieve the goal is to empower fishers to take up this activity collectively. Pursuing a purely revenue approach (as being followed by some of the state governments) by allowing individual investors and corporate houses to undertake cage culture will be against the spirit of inclusive growth and can create social tensions. Thus, the community (or a group of members of the community) should own the cages as a common property and they should be the beneficiaries of this technology.

Co-management principles

A strong governance platform based on co-management principles is essential for responsible cage-culture operations to be undertaken by the community. But the existing fishermen's co-operative societies have a poor track record of functioning responsibly to work as a group. This throws up a big challenge to the government on how to organize and empower the fisher communities and develop capacity among them to enable

NFDB



Preparation of a bamboo cage. Drafting hasty policies without delving deep into the areas such as ecosystem processes can cause irreversible damage to the sector and the ecosystem

Considering India's rich and varied open-water resources like reservoirs, lakes and floodplain wetlands, enormous scope exists to increase production through enclosure aquaculture. Utilizing a modest fraction of their surface area, large and medium reservoirs can contribute a substantial quantity of fish to the total inland fish production. Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace, giving hopes and also causing some concern. The reservoir ecosystem is complex and so are its problems. Concerted efforts by scientists, government agencies and policy-makers and, above all, the community organizations and NGOs, will be required to optimize the benefits from reservoirs and to keep off undesirable paths by learning lessons from our past ecological mistakes, including those of other countries. Evolving simplistic solutions to problems and drafting hasty policies without delving deep into the areas such as ecosystem processes, socioeconomic milieus and governance regimes, will not only be useless, but can also cause irreversible damage to the sector and the ecosystem. 3

them to take up cage culture. SHGs, co-operative societies or other such groups should be given licenses to undertake cage culture. Under any special circumstances, should a private entrepreneur or investor be brought to the scene, governments, through strong policies, should protect the interest of the local fishers and fisher communities, who have the primary rights to the natural resource. A Conflict Management Cell should be established to address complaints.

Cage culture in inland open waters is a fast-growing activity that could have many environmental and social impacts, which may not be predictable. But adequate precautions need to be taken. The ultimate goal should be increased fish production through environmentally sustainable and socially inclusive means.

The additional income generated from the reservoirs through the growth of cage culture should be shared by the fisher community rather than an investor walking away with all the benefits, while the fishers get only wages. Apart from an increase in fish production, a meaningful social impact should be in the form of generating additional income and improved standard of living for the fisher—the main stakeholder—who belongs to one of the weakest sections of society.

For more

[nfdb.gov.in/PDF/GUIDELINES/
Guidelines%20for%20Cage%20
Culture%20in%20Inland%20Open%20
Water%20Bodies%20of%20India.pdf](https://nfdb.gov.in/PDF/GUIDELINES/Guidelines%20for%20Cage%20Culture%20in%20Inland%20Open%20Water%20Bodies%20of%20India.pdf)
**Guidelines for cage culture in
inland open water bodies of India**

Following Fish

Since the late 1980s, thousands of men from the coastal villages of Andhra Pradesh, India, have travelled to Gujarat to work as skippers and crew on board mechanized fishing boats

On clear nights, when the fish are aplenty in the nets and he can take a break from steering, S Apparao thinks of his little house in Srikakulam on the northern coast of the south Indian state of Andhra Pradesh. Two lamps, one in the cabin and another on the mast of his 15-m boat, Parshuram, light up a tiny circle of the sea as it rolls under him. The first time he'd been out to sea as a boy, fishing near Visakhapatnam in his home state, this gentle motion that now rocks him to sleep had nearly thrown him overboard; he'd been sick for several hours afterwards.

That day, he'd set out before dawn, and the sun had risen ahead of the boat. These days, he looks toward the land

trade—which was losing out to modern shipping—and moved into fishing. Today, Gujarat's boats account for a quarter of the country's marine fish catch and over 8,000 registered boats pass through the state's busiest harbour, Veraval, alone.

Over the years, deep-sea fishermen from Andhra Pradesh have replaced those from Valsad and Kerala as workers on the boats. Though there is no official count, anecdotal estimates put the number of migrants at 25,000 every season. They earn up to three times as much in Gujarat as they do fishing in small traditional canoes back home. A *tandel* like Apparao, with over 10 years of experience, makes Rs 21,000 every month and a *khalasi* is paid about half that sum (one US\$ was equal to Rs. 68 in December 2016).

The highlight, they said, is the steady salary, paid in a lumpsum at the start of the fishing season. "Fishing is a gamble," Apparao told me in July, standing outside his home in Srikurmam Machilesam village. "You don't know if you'll catch anything on a given day." Apparao himself only studied till the fifth grade but he said that most of the migrants over 40 had never gone to school. After nearly a decade in Gujarat, Apparao was able to rebuild his mud house with brick and cement, and aims to complete another floor for his son by next year.

Punishing work

In Gujarat, the money is steady but the work is punishing: an average fishing trip is nearly 20 days long and the men—nine to a cabin the length of a small car—have no steady work and rest hours. The hunt for a big catch takes them as far south as Karnataka and Kerala, which doesn't win them any friends among local fishermen.

Today, Gujarat's boats account for a quarter of the country's marine fish catch and over 8,000 registered boats pass through the state's busiest harbour, Veraval, alone.

for the sunrise; on the small radio in the cabin, the voices of other fishermen in Marathi or Malayalam alert him to where he is on the Arabian Sea.

Since the late 1980s—when there were too many fishermen and too few fish in the water—thousands of men from Andhra Pradesh's coastal districts of Srikakulam, Vizianagaram and Visakhapatnam, have travelled to the busy fishing harbours of Gujarat, working as *tandels* (skippers) and *khalasis* (crewmen) on mechanized fishing boats owned by local *kharwa* merchants. Only a fraction of Gujaratis eat fish but in the 1960s the state's enterprising sea-faring castes had spotted the opportunity early and shifted from traditional maritime

This article is by **Manas Roshan** (manas.roshan@gmail.com), independent researcher

“We’re in trouble if we ever run out of fuel in these areas,” said M Sandiyya, a *khalasi* also from Machilesam. “The local fishermen don’t allow us to dock our boats on shore and sometimes they even confiscate our catch.”

Back at the Veraval harbour, the boats dock for just a day or two to restock fuel, ice and rations. During the eight months they spend in Gujarat, the men wake up every morning on a boat.

Veraval lies three hours south of Porbandar on Gujarat’s 1,600-km-long coastline. On streets that smell of fish and damp wood, almost everybody is employed in the fishing industry, but the town is better known on Gujarat’s cultural map for a few shabby hotels that house pilgrims to the Somnath temple 7 km away. Once every week, the Dwarka Express travels 52 hours and nearly 3,000 km from Puri—mostly ferrying migrant workers from Odisha and Andhra Pradesh to industrial centres in Gujarat—stopping at the Veraval railway station to drop off fishermen like Apparao. But in earlier times the port saw visitors from other places than Srikakulam. It’s now forgotten history to most of

its residents, but for a few old Muslim sailors, that its merchants traded in textiles, dates and—even earlier—in horses, from West Asia and the Arabian Peninsula.

A few old merchant buildings crumbling in the sea air—one houses the Customs Department—hint at this history. But the Gujarati business classes are not the nostalgic kind; there’s little time for anything but work and the *aartis* at the famous temple next door. Most conversations begin with the salutation “Jai Somnath”, even among the Andhra fishermen when they’re in Veraval. The closest movie theatre is nearly two hours away in Junagadh. (Srikakulam has at least seven theatres, all packed through the day.) In most cabins on the boats, the tiny 10-inch television-cum-DVD-player is equipment as essential to the men as Garmin GPS systems or fish-finders.

Besides being the country’s biggest fishing harbour, the town has a thriving boat-manufacturing industry, a large number of ice factories and over 100 fish-processing units, most of which export to Europe and China. One such

NIKHIL ROSHAN



Workers pack fish into crates to be unloaded from the fishing craft as it returns to the Veraval harbour, Gujarat, India. The boats dock for just a day or two to restock fuel, ice and rations. During the eight months they spend in Gujarat, the men wake up every morning on a boat

unit is managed by Kenny Thomas, whose company Jinny Marine is one of the larger exporters approved by the European Union (EU). Inside its sterilized factory, over 300 local women clean, sort and pack squid and shrimp into neat, impeccably labelled containers headed for supermarkets in Spain and Portugal. “Women are preferred because they can do this sort of work faster and more efficiently,” said Thomas. Nimble hands, he explained with a shrug, for customers that wouldn’t want any grazed calamari on their plates.

Thomas, though, is one of the responsible employers in a more regulated arm of the industry. Kenny’s father, K M Thomas, arrived in Bharuch as a fisheries officer in 1963 and was instrumental in introducing mechanized fishing in the area. He later became a fisherman and went into the export business himself. Jinny Marine has fair working conditions and even hostels for its migrant workers; labour inspectors and EU norms ensure greater labour protection in the processing units than on the boats.

...over 300 local women clean, sort and pack squid and shrimp into neat, impeccably labelled containers headed for supermarkets in Spain and Portugal.

Srikakulam is a bustling coastal town nearly three hours northeast of Vishakhapatnam. There, I met Mylapalli Trinada Rao, who has tried to draw the government’s attention to a darker side of the migrant’s experience. Last year, Rao, a stocky, affable director of the state Fishermen Co-operative’s Federation (APCOF), wrote to Prime Minister with a list of over 60 names, of fishermen from the district who had drowned in Gujarat, Goa and Odisha since 1990. The number may not seem alarming in a country where industrial accidents and farmer suicides are all too common, but Rao pointed out that not one body has been returned to the families, who have also not got

the compensation promised by state laws. He didn’t expect a reply from the Government but claimed that there’s been no action from the Fisheries Departments of any state.

In the Srikakulam villages I visited, some of the men spoke a little Hindi and Gujarati but the women only Telugu, and they’d never talked to their husbands’ employers in Veraval. Apparao remembered the time when one of his crewmen fell into the sea and was later found tangled in the nets. “It was too late when we brought him up. We packed the body with ice in the fish hold and turned back towards Veraval,” he said. But in that instance, the *seth* sent the body back to the village with another *khalasi*.

Apparao’s *seth*, Tulsibhai Gohel, is president of Veraval’s boat owners association, the Kharva Sanyukta Machhimar Boat Association. It’s the only grouping resembling a union but designed to service capital rather than labour. Gohel is a lean, light-eyed and respected president who, like several investors in the trade, owns about half a dozen boats. Apparao said his *seth* is a good man, one of the few who gives his crew a bonus every year and doesn’t grudge when they return with a meagre catch.

When I met him in Veraval in July, Gohel was finishing with a meeting with local officials to launch a *Swachh Bharat* (clean India) drive at the boat jetty. Dressed in a formal shirt and derby leather shoes, he was driven in his Toyota Innova to a modest association office, where, seated on a faded cushion on the floor, he oversaw the settlement of a few minor disputes. There was no mention of the workers in the matters that came up for discussion. Later, I asked Gohel how he dealt with cases of men drowning at sea. “There are very few because we don’t let the men carry alcohol on the boats,” he assured me. “All the accidents happen at the harbour when the boats are back. The men sometimes drink at night and fall into the water between the parked boats.”

Apparao agrees. (He stopped drinking a few years ago while on vacation in Srikakulam when he realized he was draining his savings.)



Migrant and local fishers always work separately to avoid fights. Labour inspectors and EU norms ensure greater labour protection in the processing units than on the boats

But others in his village denied that the deaths were caused by drinking alone. “How many deaths can you have at the harbour?” asked Sandiyya. Marine fishing laws require all boats to be equipped with lifejackets, buoys and even portable toilets. Few boats in Veraval have lifejackets and for toilets the men sit precariously on the narrow bulwark, hold on to the rigging and point their backsides outward as the sea pitches the boat from side to side.

In Veraval, the sun-bleached marine police station sits on a deserted beach outside the town. Inside, a Constable, thumbed through a large register to find me the information on deaths at sea this year. There were two: a Bhagwan-bhai from a village in Valsad and Ramlu Badi of Dagalu in Srikakulam, as they appeared in the careless handwriting of a station officer. There was no other information; when I tried to find Dagalu in Srikakulam, I was told there’s no such village.

One morning at the start of June, with the sun rising over Veraval *bundur*, the *Parashuram* set out on another long trip down the western coast, packed with over 7 tonnes of ice and enough ration for Apparao and

his crew. This was the last trip of the season. The radio crackled with greetings of “Jai Somnath” between the other boats sailing out, and through his cabin window Apparao could see the giant temple on the edge of the coastline. They’d pass Mumbai in a day or two. The sea was a lot rougher because of the strong monsoon winds, and the men held on to the ropes. Normally, they could stand on their feet as the sea tossed the boat and still haul in the nets and sort the fish, but the men hadn’t been home in eight months. No accidents on this last trip.

Apparao thought about the festivities in Machilesam the previous year. It had been his village’s turn to host the *panchayat* for the feast of their guardian deity, Polamambamata. Most of the other tandels did nothing but eat and drink for the four months they were home. Not him; there were debts to settle and work that needed to be done on that first-floor bedroom. He felt the engine roaring under him as he turned the boat southward in the direction of the other boats. The screen of his fish-finder glowed with numbers and broad strokes of blue. Somewhere in there was that prize catch. 3

For more



icsf.net/en/occasional-papers/article/EN/160-a-study-of-migr.html?limitstart=0

A Study of Migrant Fishers from Andhra Pradesh in the Gujarat Marine Fishing Industry

Linking Up

A workshop on enhancing the capacities of women fishworkers in India for the implementation of the SSF Guidelines led to clear and positive outcomes

Close to 60 women fishworkers from nine coastal states of India met over three days in November 2016 in Chennai, India, to learn about the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) and how it was relevant in their contexts, to understand how existing laws, schemes and provisions are being and can be used, and to develop a holistic framework to life and livelihood in the small-scale fisheries, with a critique on the existing forms of fisheries development.

This national workshop on “Enhancing capacities of women fishworkers in India for the implementation of the SSF Guidelines” was planned as a follow-up to another workshop held in 2010, titled “Enhancing Women’s Roles in Fisheries in India”, organized by the International Collective in Support of Fishworkers (ICSF) Trust, which discussed and analyzed the role of women in fisheries, and reflected on issues facing women in fishing communities in India. At the 2010 workshop, ICSF, along with representatives of fishworker organizations and civil society representatives, adopted the Global “Shared Gender Agenda for Sustaining Life and Livelihoods in Fishing Communities” (<http://wifworkshop.icsf.net/en/page/855-reports.html>). The action plans highlighted in the Shared Gender Agenda were further used for including the gender equality and equity sections of the SSF Guidelines adopted by the Food and Agriculture Organization of the United Nations (FAO) in June 2014.

The Chennai workshop was, therefore, proposed as a follow-up to the 2010 workshop, keeping in mind the opportunities presented with the Tenure and SSF Guidelines, changes in the last half decade for women in fisheries in India, the challenges they face in the current context of development and their attempts to overcome these. The workshop also took into account the gendered components of the subregional, regional and national-level consultations/meetings that have been held on the SSF Guidelines in the past couple of years.

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Several months prior to the workshop, participants were sent questionnaires regarding the situation of women in small-scale fisheries in their areas, their organization profiles, successful campaigns undertaken as well as their expectations of the workshop. The responses received were collated and informed the workshop content. Material was also collected from state governments, particularly the Fisheries Departments, regarding the schemes they had for small-scale fishworkers, focusing on different aspects of the SSF Guidelines (housing, education, social protection, social security aspects, fish-processing industries, work-in-fishing sector, human rights, discrimination issues, and rural and urban livelihood aspects). Information on legal frameworks that are relevant to

*This article is by **Mariette Correa** (mariettec@gmail.com), Senior Programme Co-ordinator, ICSF*

women in SSF in India, especially on social issues and within a human-rights-based approach was collected. All this material was compiled, translated into the various Indian languages used in the coastal states of India and distributed prior to the workshop.

These discussions drew on lessons and learnings from actions that women have initiated in their areas.

Participants at the workshop were given an overview of the situation of women in fisheries in India. Using national and state-level statistics and development indicators, it was clear that the situation in fishing communities was poor in terms of sex ratio as well access to health, education and housing. The myth that falls in fish catch were responsible for decreasing access of women to fish was dispelled, with national statistics showing how fish catches were actually increasing over the years in marine and inland fisheries and especially in aquaculture. The lack of access of women to fish was mainly the result of increasing exports, most often by large fish merchants from the same communities as the small-scale women vendors. Putting in perspective the weakening situation of women in small-scale fisheries, links were made to other marginalized and vulnerable sections of society, all of whom were facing threats to their lives and livelihoods with the heightening pressure on land and water resources through government policies favouring the powerful, the increasing privatization of resources, and the adverse affects of global warming and climate change.

Much of the workshop was devoted to discussing and highlighting the social dimensions of small-scale fisheries, with participants grouping together to discuss issues of health, education, violence, housing, water and sanitation, social security and human rights as well as access to

resources, markets. These discussions drew on lessons and learnings from actions that women have initiated in their areas. The groups shared their experiences, with facilitators for each session then supplementing the inputs with legal provisions and schemes on those specific topics.

Deploring the lack of facilities in fish markets—like drainage systems, storage systems, infrastructure, drinking water, electrical power and toilets, lack of regulation in the markets, increasing distances to travel to access fish, as well as direct or subtle displacement from markets spaces—participants suggested ways to address these problems. The suggestions included price fixation, co-management, establishment of retail outlets, education of women fishworkers, strengthening of market linkages, lobbying for policy changes, participating actively in the formulation of city development plans, and demanding that customary rights be upheld. Various Acts and schemes could be used to address these issues such as The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, which give street vendors the right against eviction; the Unorganized Workers Social Security Act, 2008, which protected rights of unorganized workers; schemes under NABARD, NFDB, NCDC and the Department of Animal Husbandry, Dairying and Fisheries (DADF), Ministry of Agriculture, which could be used for market development, including development of retail fish markets, assistance to artisanal fishermen, insulated box for ice holding, ice plant or cold storage, and fish outlets.

A focus on rights

At the workshop, the history of struggles to achieve human rights, the importance of customary rights in the Indian context, and the rights granted by the Indian constitution, were contextualized in terms of the SSF Guidelines. Gaps between the rights granted by the Indian constitution and what the SSF Guidelines proposed helped

participants identify areas in which further lobbying was necessary. Rights and opportunities presented by various Acts that could protect women and improve their situation included the Protection of Human Rights Act (1993), the National Food Security Act (2013), The Constitution (Seventy-Third Amendment) Act, 1992, and the Right to Information Act (2005).

Access to resources, the workshop participants noted, has been reducing for multiple reasons, with traditional lands and fishing rights taken away from communities, land diverted for industrial and other 'development' projects, urbanization processes divesting people of their traditional spaces for fisheries-related activities, establishment of National Parks and Sanctuaries limiting traditional rights of communities to resources, bureaucratic hurdles to get rights to these areas, mechanization of fishing, and lack of spaces for women in fisheries management discussions.

Demands to improve access to fish were made by various groups. These included giving women rights as first vendors, fishworkers determining the price for fish, banning foreign direct investment (FDI) in retail marketing and fish imports, levying higher taxes on large fishing vessels, the proceeds of which could be used for welfare schemes for, and implemented by, fisherwomen, and enacting a separate law where fishers have customary rights over fishing resources and coastal lands.

The 2002 and 2006 amendments to the Wildlife (Protection) Act, 1972, protected the basic occupational rights and livelihoods of communities traditionally living in National Parks and Sanctuaries, with opportunities for participation in discussions prior to notification of the areas as protected. The Biological Diversity Act of 2002, called for the conservation of resources and the equitable sharing of benefits arising out of the utilization of these resources. Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, recognize the traditional rights

to forest produce of tribals and forest dwellers who have been living there for generations.

Misuse of the Coastal Regulation Zone (CRZ) Notification, 2011, shrinking of spaces for fishing communities in development plans and lack of housing pattas (title deeds) given to coastal communities, were highlighted in terms of access to housing. Government schemes related to housing and funds are available under the National Housing Development Board, and states also have schemes but access often depended on political patronage, it was pointed out.

The various health problems faced by women vendors and those working in fish-processing units were largely due to the abysmal working conditions—lack of access to water and toilets, long hours in the sun, and poor access to healthcare facilities. Apart from suggestions to address these problems, several central and state schemes were discussed at the workshop, related to solid and biowaste management, health-insurance schemes, public-health schemes, and health-promotion schemes.

Violence against women, as participants at the workshop pointed out, starts from the womb with sex-selective abortion, and continues



Participants at the workshop. The groups shared their experiences, with facilitators for each session then supplementing the inputs with legal provisions and schemes on those topics

against the girl-child into adulthood, with new forms of dowry and heightened consumerism correlated to expenses on larger boats and fishing gear, making the girl-child a burden on families. Increasing violence and lack of safety in the workplace and discrimination

Increasing violence and lack of safety in the workplace and discrimination against women in society and caste panchayats were common across states.

against women in society and caste *panchayats* were common across states.

Opportunities to address these issues, apart from the campaigns launched by NGOs, presented themselves in the form of laws and mechanisms that protected women. These included the Protection of Women from Domestic Violence Act (2005), the Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013, the Criminal Law (Amendment) Act, which has increased penalties for sexual violence, and the Protection of Children from Sexual Offences Act (2012). Schemes to provide women survivors of violence and women in difficult circumstances food, shelter, clothing, medical care, legal aid and short-stay facilities were discussed.

The Right of Children to Free and Compulsory Education Act, 2009 (RTE Act), was poorly implemented across states, and with increased mechanization of fisheries, young boys were in demand as labour, resulting in drop-out before completion of schooling. Problems with government schools, including lack of infrastructure, constant transfer of teachers, and the lack of affordability of quality private education, resulted in poor educational levels among the fishing communities. Suggestions for improvement included a ban on certain types of fishing craft and gear; free, compulsory and quality education upto the age of 18 years for

all children; amendments made to the RTE Act and ensuring its implementation; stopping further privatization of education; and ensuring severe punishment to teachers involved in corporal punishment or sexual abuse.

It was also recommended that *panchayats* form—as they are supposed to—standing committees for education and allocate them funds appropriately. School management committees ought to function and professional guidance given to youth from fishing communities for vocations and employment. Quota systems should also be made available for these youth in fisheries-related jobs. According to RTE Act, 25 per cent of seats have to be reserved for the poor and other categories, no donations are allowed, no child can be held back until completion of elementary education, and special training needs to be given to school dropouts. Schemes to promote education among poor and marginalized sections included *Sarva Shiksha Abhiyan* (education for all movement) and its components, the mid-day meal scheme, the more recent *Swachh Vidyalaya* (clean schools) Initiative scheme from 2014 which provides toilets to all the schools, reducing dropouts, especially of girl children. Apart from this, most states have schemes under the various departments (fisheries, SC/ST department, etc) for scholarships, loans, and cash awards that can be accessed by fishing communities.

Relief schemes

Social-protection schemes were available in most states for housing, water and sanitation, roads, electricity and saving-cum-relief, while very few states had schemes for life insurance and natural disasters, the workshop was told. Most states had group accident insurance schemes, but only Kerala had rehabilitation schemes for sea erosion, eviction for port development, old-age pension for allied workers and insurance for allied workers. Overall, credit support system and debt relief were very weak and only three states

had schemes for skill development training, with Odisha spending large sums on non-conventional sources of energy.

Recommendations were made for schemes that could be taken up like natural disaster compensation/sea erosion/loss of coastal space due to changes in coastal landforms, payment to displaced fishers to find alternative employment due to development, compensation against loss of livelihood against oil spill and environmental hazards like pollution. Specifically, in the post-harvest sector, it was suggested that identity cards be given to bona fide fish vendors; potable water at fish-landing centres, harbours and fish markets; better sanitation facilities; schemes to have clean non-conventional energy sources; mobile banking facility at fish markets and at fish-landing centres could be developed; and, as in Tamil Nadu, other states could ask for legislative or policy support for fishers involved in post harvest activities. NFDB's climate change fund could support schemes for protection from extreme weather events at fish markets. Due to seasonal fluctuations in the market and fishing bans, allowances could be given to women vendors, alongside support schemes related to occupational hazards, as well as support schemes for traditional fish processors, women headload workers, bicycle fish vendors, petty sellers and those involved in ancillary activities like basket weaving. Additionally, nutritional support schemes for the children are needed, as well as assistance to families of fishers arrested (as in Tamil Nadu); coverage of insurance to houses due to sea erosion or cyclones; better scholarships for studying at maritime universities; and support schemes like pension for widows.

The groups at the workshop discussed their understanding of what constituted small-scale fisheries. Emerging from the discussions were the six criteria that could be used to determine small-scale fisheries, namely area of fishing, distance

from shore, depth, gear, craft and propulsion. It was clear that definitions would have to be area specific using a combination of criteria, and ideally codified, thus providing a list of contextual definitions of SSF at the national level.

Putting into perspective the various social issues raised by participants, links were made to the changes in fisheries practices and what was happening in the communities. Destruction of the fisheries and resources went hand in hand with destruction of social norms and values, abdicating all responsibility for future generations, it was pointed out. The relevance of what was happening in the fisheries to the changes in the social fabric were emphasized and participants were urged to reflect on what they wanted for the future and demand changes accordingly.

Presentations were made by participants with a history of organizing various types of organizations, who talked about how they dealt with issues faced by women in small-scale fisheries, as well as the challenges they faced within their structures, within their communities and at the political level. It was clear that patriarchal norms within the communities, the caste *panchayats*, fishworker organizations



Field visits to various fish markets in Chennai helped participants observe situations that were different from their states, raising issues that they could discuss with each other

ICSF



Participants decided on their action plans for the future, which included surveying of numbers of women in small-scale fisheries in different roles. A clear outcome of the workshop was the need expressed by several groups for a national platform for women in small-scale fisheries

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and the political system prevented them from voicing their concerns, leave alone actively participating in the fisheries management and in areas that affected their lives and livelihood. Despite this, successes had been achieved through protracted struggles, in cases where organizations were strong and united and had clearly defined perspectives and priorities. The importance of groups coming together, ideally linking to broader movements and trade unions, was clearly articulated.

Participants from several states decided on their action plans for the future, which included surveying and mapping their markets and numbers of women in small-scale fisheries in different roles; taking up social issues that they had learnt from the workshop through identification of schemes in their states and demanding their implementation, strengthening the membership base of their associations or organizations and disseminating information on laws and schemes relevant to them. A clear outcome of the workshop was the need expressed by several groups for a national platform for women in small-scale fisheries.

The diversity of languages posed a challenge at the workshop. That was

overcome largely through ensuring that each group had a person familiar with English and the local state language. Field visits to various fish markets in Chennai helped participants observe situations that were different from their states, raising issues that they could discuss with each other. Documentary films screened were eye-openers to the majority of the participants, most of whom were unfamiliar with issues in the National Parks and Sanctuaries. One was on the mangrove forests of Sunderbans in South 24 Parganas in West Bengal and the struggles of the local canoe fisherwomen; another was on women seaweed collectors in the Gulf of Mannar, Tamil Nadu. ❧

For more

sites.google.com/view/trainingwomenicsf/home

Website of the Training Programme "Enhancing Capacities of Women Fishworkers in India for The Implementation of The SSF Guidelines"

Development Refugees

Fishworker representatives from seven states of India converged at Kolkata to discuss the creation of a National Platform for Small-scale Fish Workers (Inland)

For the 20 mn strong population of small-scale fishing communities working on inland fisheries in India, 20-21 September 2016 proved to be days of immense importance. Fishworker representatives from seven states converged at Kolkata and pledged to fight jointly to end the marginalization and deprivation of small-scale fishing communities and also to end the destruction of water bodies and fish resources.

India is gifted with vast and varied inland water bodies that bear rich fish resources. Rivers and canals, reservoirs, ponds and tanks, oxbow lakes, wetlands, backwaters and estuaries yield 6.14 mn tonnes of fish which is more than 64 per cent of the total fish production of the country. The sector sustains about 4 mn fishworkers and a total population of around 20 mn.

Still, the potential of inland fishery resources is far from fully utilized. It is estimated that less than 10 per cent of the country's natural potential is used for freshwater aquaculture and for brackish water aquaculture, the area under cultivation is just above 13 per cent of the potential area available. In the case of flood-plain wetlands, the present fish production of around 50,000 tonnes can be increased six-fold to 3,00,000 tonnes and in the case of reservoirs, the present yield of 93,000 tonnes can be enhanced by more than ten times to 9,83,000 tonnes.

These huge resources are under severe stress. Rivers are poisoned with heavy pollution loads. Diversion of water from rivers for industry and agriculture is killing their ecological flow. Wetlands, lakes and ponds are being encroached and filled up by

industries and real estate projects. Poor watershed management in catchment areas is cutting down the sources of water for rivers, lakes and wetlands. Natural storm water drainage is intervened by construction of roads, railway tracks and buildings, thus subjecting large number of ponds to intermittent overflow. Run-off from chemical agriculture is destroying the fish resources of wetlands and paddy fields.

The first victims are the small-scale fishers and fish farmers whose livelihood is inseparably linked with the quality of the water bodies. These small-scale fishers and fish farmers

It is estimated that less than 10 per cent of the country's natural potential is used for freshwater aquaculture...

are, by far, the largest primary stakeholders and natural custodians of our water bodies. Losing their sources of livelihood, they are being turned into development refugees and have to migrate to other occupations and areas in search of a living.

Most ironically, thousands of these small-scale and traditional fisher people, who have been struggling to protect their livelihood and the water bodies, are being driven out of the aquatic areas falling within protected areas like reserve forests, wildlife sanctuaries and reserves.

Inland water bodies

Utilization of vast potentials of inland fisheries, as well as the protection of the inland water bodies, are issues that need to be addressed.

*This report is by **Pradip Chatterjee** (pradipdisha@gmail.com), Chief Co-ordinator of Direct Initiative for Social and Health Action (DISHA), West Bengal, India*

These issues include river, watershed and water body management, together with the rights and entitlements of the small-scale fishers and fish farmers to sustainably use and protect the fish resources and their habitats. The issues and the ways and means to address them cut across state boundaries and are truly national in nature.

Thus there is a clear need for a National Policy on Inland Fisheries and a National Platform for Inland Fisheries Groups and Organizations to discuss issues of concern to the inland fishing and fish-farming communities, and take appropriate action.

In view of the above concerns, Dakshinbanga Matsyajibi Forum (DMF), an organization of small-scale fishworkers in West Bengal, decided to organize a series of meetings in collaboration with concerned groups over the coming years. The first such meeting was held in Kolkata on 20 and 21 September 2016, with the participation of groups from the states of Odisha, West Bengal, Assam, Manipur, Madhya Pradesh, Andhra Pradesh, Jharkhand, Bihar and Maharashtra. The NGOs DISHA and ActionAid actively collaborated in holding the meeting and the International Collective in Support of Fishworkers (ICSF) facilitated the effort.

The meeting witnessed the agonies and desperations of small-scale fishing communities working in rivers, lakes, wetlands and ponds as their representatives, one by one, described how the rivers are polluted and dried up by townships, industries and chemical agriculture, how the lakes are shrinking, and how the ponds are being filled up and encroached. The fishing community representatives also narrated how, with the connivance of the government, subsistence fishers and fish farmers are being edged out from the sector by moneyed investors.

The meeting also witnessed the resolve and enthusiasm of the fishing community representatives to close their ranks and negotiate for better future.

Pradip Chatterjee welcomed all representatives of fishing communities, resource persons, government officials and other participants on behalf of Dakshinbanga Matsyajibi Forum (DMF). He was followed by Chittaranjan Mondal, Regional Manager of ActionAid, and Sasanka Dev, Secretary, DISHA, who wished the meeting all success.

Sebastian Mathew of ICSF presented the key note address. He indicated the non-consumptive use of water resources by the fishing communities and stressed the importance of human rights over the use of water. He narrated matters of state policy related to inland fisheries, commitments that our country bears to international conventions and also stressed the issues of governance.

Saptarshi Biswas, Deputy Director of Fisheries, Government of West Bengal, described the efforts of the government, along with their scopes and limitations. He stressed the need for fishing community organizations to emerge.

Archan Kumar Das, Principal Scientist, Central Inland Fisheries Research Institute (CIFRI), gave an overall picture of the inland fisheries and dwelt on its problems and prospects.

B K Mahapatra, Principal Scientist, Central Institute for Fisheries Education (CIFE), enlightened the participants with a short but significant discourse on the statutory directives on inland fisheries.

Fourteen different groups from seven states presented their respective situations, mentioning the problems they are facing and how they think they can overcome them. The groups hailed from Loktak Lake in Manipur; Madhubani in Bihar; Chandil Dam in Jharkhand; Chilika, Bhitarkanika, Mahanadi river basin and Brahmani river basin in Odisha; Godavari river basin in Andhra Pradesh; Bagri Dam and Tikamgarh in Madhya Pradesh; pond- and river-based groups in Hooghly and Howrah districts, Jangal Mahal fishers in Paschim Medinipur and mangrove

forest fishers in the Sundarbans of West Bengal.

Then the participants were regrouped, based on categories of water bodies like rivers, lakes, ponds and reservoirs they are attached with. The groups worked to identify the chief problems confronting fishworkers attached with each kind of water body, and explored how the problems could be dealt with. The groups also worked to indicate the government protections and schemes available to them. After the rigorous group work that continued for two hours, each group presented their findings to all the participants.

The group work and its presentations were followed by a panel discussion on policy elements for inland fisheries. The panellists were Sebastian Mathew, Nalini Nayak, Suman Singh, Mukut Roy Chaudhury, Neelkanth Mishra and Pradip Chatterjee.

It was reiterated that:

- the small-scale fishworkers are, by far, the largest primary (non-consumptive) stakeholders and natural custodians of our water bodies;
- the state policy on fisheries should aim at sustainable use of water and fish resources as well as the wellbeing of the small-scale fishing communities. It should not take enhancement of productivity or investment in the sector as its primary or overarching goal;
- the small-scale fishing communities have to be empowered with Tenure Rights that include sustainable access to, and use of, water and fish resources; Governance Rights to protect water and fish resources from pollution, encroachments and overfishing and destructive fishing; and Rights to finance, infrastructure, technology, market and social security. Further, there should be Residual Rights to access and utilize the resources for alternative livelihood generation.

The panellists also mentioned the need to connect with important fisheries hubs across the country and incorporate the issues of other categories of fisheries like sewage-



Participants at the workshop. The meeting witnessed the agonies and desperations of small-scale fishing communities working in rivers, lakes, wetlands and ponds

fed fisheries or cold-water fisheries to develop a comprehensive policy recommendation. It was also decided that while efforts would be taken to connect with fishworker communities in different states that are still not represented, representatives hailing from different states would strive to build up networks with fishing communities in their respective states.

It was further decided that a draft position paper would be prepared and circulated in one month's time, and the next meeting of the alliance would take place in six months. The name of the alliance was decided to be the National Platform for Small-scale Fish Workers (Inland). To take the work forward, a ten-member Preparatory Committee was constituted with the following activists: 1. K. S. Deben (Manipur), 2. Suman Singh (Bihar), 3. O. P. Rawat (Madhya Pradesh), 4. Munna Barman (Madhya Pradesh), 5. Milan Das (West Bengal), 6. Sannyasi Pradhan (Odisha), 7. Amulya Kumar Nayak (Odisha), 8. Dharam Pal Minj (Jharkhand), 9. Debasis Pal (Andhra Pradesh), and 10. Pradip Chatterjee (Convener, West Bengal). To advise and facilitate the Preparatory Committee, an eight-member Advisory Committee was constituted with the following members: 1. Nalini Nayak, 2. Sebastian Mathew, 3. Mukut Roy Chaudhury, 4. Neelkanth Mishra, 5. Chittaranjan Mondal, 6. Soumen Ray, 7. Neeraj Verma, and 8. Viren Lobo.

For more



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Centre to Roll Out Policy to Support Small-scale, Inland Fishermen

Muddy Waters

As mud banks along the southwest coast of India dwindle, several concerns and societal implications have been articulated regarding this unique oceanographic phenomenon

Decades back, at the Smithsonian Air and Space Museum in Washington D.C, there used to be a regular show in wide screen on 'Mud Banks of Kerala'—an awe-inspiring event which was given equal importance to the launch of a space mission or an expedition to the rain forests of the Amazon! Mud banks (locally called *Chakara*) appear in the south Indian state of Kerala in the littoral zones of the Arabian Sea during the summer southwest monsoon and remain calm with exceptional biological production and represent a unique oceanographic phenomenon.

early June, with raging seas and heavy rainstorms. This is the time when the mud banks intermittently appear as patches of calm and turbid seas with copious fish stocks. The news spreads like wildfire and immediately transforms the entire coastline to a festive mood. Makeshift townships emerge with gatherings of thousands and thousands of people, when numerous canoes and nets are transported over land to the adjacent beaches.

The hub of life and bustle is unimaginable, with huge baskets lined up to be filled to the brim with shrimps and fishes, and hundreds of refrigerated trucks to carry them to different parts of the country. A single cast of net during these days can yield a bumper harvest of mackerel, prawns, sardines and other fish species. Seafood processors and exporters queue up to buy the bumper crop and cash in on the abundance, and the whole crop is purchased in auction onshore itself.

Thus, the mud banks of Kerala have provided bountiful living resources to the needy, and helped to enhance their livelihoods for centuries. The mud banks of Kerala differ from mud banks reported from other muddy coasts worldwide, as they do not form a regular relief-forming feature. The huge abundance of the fishery makes the Kerala mud banks iconic.

God's own country

With a narrow strip of lush green land bounded on the east by high hills laced with rivers and on the west by the Arabian Sea, Kerala is hailed as 'God's own country' by admiring tourists. Kerala lies along the southwest corner of the Indian

Mud banks (locally called *Chakara*) appear in the south Indian state of Kerala in the littoral zones of the Arabian Sea during the summer southwest monsoon

They are tranquil marine areas hugging the coast, which develop during the roughest monsoon period. They have a special feature of dampening high waves due to the huge quantities of mud in suspension close to the bottom.

The mud banks appear as an undisturbed sheet of water, when blustery conditions prevail along the outer periphery. Towards the end of a hot, humid summer season, every citizen in the region, perspiring and sweating, looks eagerly towards the sky for the onset of the monsoon rains. When strong winds and high waves make it impossible to go out into the sea, the entire fisherfolk pray for the appearance of mud banks. The southwest monsoon arrives in Kerala with all its fury by

This article is by **P.K. Dinesh Kumar** (dineshku@nio.org) is Chief Scientist at CSIR-National Institute of Oceanography, Regional Centre, Kochi, Kerala, India

peninsula, between 8° 18' and 12° 48' N and 74°52' and 77° 22' E. The coastline has been subjected to severe alterations over a geological timescale due to a variety of factors, including the changing weather and climate, particularly the Indian monsoon. The region receives about 300 cm of annual rainfall, as the 44 rivers and numerous creeks of Kerala remain connected with lakes, lagoons and channels. A major part of the rains flows through rivers and creeks to eventually reach the Arabian Sea.

This particular extent of 40,000 sq km of the continental shelf of Kerala is considered as the most productive zone in the Arabian Sea. Coastal upwelling enhances the biological activity, leading to high fish production in the region. Since time immemorial, fish and fisheries have played a crucial role in the economic growth of the country. Although Kerala has a coastline of only about one-tenth of the Indian coastline, the fish landing from the state has contributed more than one-fourth of the country's total marine fish production. The sustainable fish yield from the southwest coast is estimated to be between 0.8 - 1.2 mn tonnes per year, of which only about half is currently exploited. The coastal and nearshore waters are most important as they sustain a large population of traditional fishermen. The sector provides the source of income for hundreds of thousands of active fishermen and others engaged in allied activities. Therefore, a decline in the fishery potential can be a major concern to the state and the coastal community. The situation is precarious now, following a dwindling trend in the total fish landings, surprisingly due to the reduction in the appearance of mud banks along the southwest coast of India.

The mud banks and fishery are, in fact, interdependent, as when the former occurs, the latter should follow. To many residents, a good mud bank means a good fishery. Since the calmness of the sea and mud accumulation are not significant,

all mud banks need not be productive. Therefore, the success or failure of mud banks is judged from the quantity of fish caught during the season. Studies have shown that the mud banks sustain a high fishery potential, since the pelagic fishes and prawns move from deeper waters to closer to shore during the southwest monsoon, following upwelling.

The general tendency of fish being to swim against the prevailing current (which is southerly), it is possible that they move in shoals northward and some of the fish, on passing through the mud bank area, are easily caught by the numerous canoes operating in, and outside, the mud banks. If so, it is also possible that a shoal of a particular composition, after its passing, is followed by another of entirely different composition. It is, therefore, likely that the monsoon catches from the mud bank area are from the moving shoals as they are caught from this region because fishing is possible only from this region.

Another argument is that upwelling causes the development of hypoxia over the shelf, which creates stress on the fishes and prawns, as they move either shoreward or to deeper waters. Such a condition occurs throughout the coast where upwelling is intense. During this migration, these shoals may also cross the mud bank zones.

P.K. DINESH KUMAR




Sheer monsoon fishery magic! Mud banks are tranquil marine areas hugging the coast, which develop during the roughest monsoon period

With the onset of the southwest monsoon, fishing activities come to a standstill, and operations are possible only at locations where calm zones prevail. The monsoon fishery enjoys legal protection from the government, which provides exclusive operational rights to traditional crafts and has banned large mechanized vessels from fishing during the season. During this time of idling and poverty, only the calm zones brought in by mud banks can support fishermen as centres of intense fishing activity. Almost the entire fish landings during the monsoon season take place at these mud bank sites.

History tells us that the ships of Vasco da Gama anchored in the open sea off Kozhikode (erstwhile Calicut) from 20 May to 26 August during the southwest monsoon of 1498. It was probably due to the mud banks prevalent in those regions, where the calm sea enabled the navigators a safe anchorage. Consequently, the big vessels could remain in the sea, and canoes and small boats were used to reach the shore during the monsoon season.

Documented records on the mud banks of Kerala are available from the 1840s. At least a dozen mud banks were known to have existed in the region for several centuries. Of these, some were sited either at, or near to, the outlets of rivers and lagoons. From the shore, the mud banks can be easily distinguished as zones with total absence of waves, while high swells break outside their periphery. In recent times, over 20 locations along the coast are found to have developed mud banks at some time or the other. Prominent mud banks documented in the 1980s have now vanished, and the remaining reported great characteristic changes in appearance and sustenance. Since 2010, mud banks have been isolated in appearance along the coast at only two or three locations, and concerns have been raised about the total disappearance.

Looking into the factors leading to the dwindling of the mud banks, we may have to consider the geographical features of the areas surrounding

them (including the lagoons and rivers emptying into them) and the transformations that have taken place there. There have been significant changes in the land-use pattern in the hinterlands. These changes have dramatically altered the fertility, soil erosion, groundwater resources and surface water flow. There are about 15 built dams in the rivers of Kerala, where a large part of water is retained. The silt and clay brought from the catchment areas of these dams are completely settled inside the dams. Once, the entire watersheds and lagoons were spread from the south end to the north end of the state, to make the region a dense cover for mangroves. However, an explosive growth in the population and urbanization have adversely affected the ecological stability of mangroves. The formation of mud banks along the coast of Kerala and the seasonal windfall fishery associated with them are interesting. A phenomenon like this has not been reported from anywhere else. Therefore, the dwindling and the worst-case scenarios of the extinction risk associated with these very specialized ecosystems in this part of the world raise serious societal concerns about the future of the lifeline of this region. Therefore, the issues associated with the dwindling of mud banks need to be pushed to the centre of debate to facilitate an ecosystem-based approach to fisheries management. Serious environmental management strategies should be initiated immediately by involving researchers, economists, community people, fisherfolk and policy-makers. 

For more

eprints.cmfri.org.in/7309/1/315-IJMS_1974.pdf

Mud Banks of Kerala: Their Formation and Characteristics

drs.nio.org/drs/handle/2264/4940

Mud Banks of Kerala: Mystery Yet to be Unrevealed

Heading West

The difficult working conditions of migrant labourers in the fisheries of the Sindhudurg district of Maharashtra raise both social and human-rights issues that need to be solved

The sound of many voices harmonizing together in song filter across the courtyard of Shammi Kelaskar's house, near Vengurla in the Sindhudurg district of Maharashtra state, on the west coast of India. Shammi identifies himself as a fisherman, although he rarely goes fishing these days. The men singing folk songs in his yard are the real fishermen.

I meet them the next morning, sitting on a huge pile of red fishing nets, their fingers working at lightning speed to mend the nets, while they chat with each other in a language that seems extremely out of place. The fishermen speak Telugu, a language from the east coast of India. I wonder what they are doing in this remote part of the Konkan coast. "They have come here from the state of Andhra Pradesh", says Shammi. "I hire them to help with my purse-seine net". The fishers of Sindhudurg may be far removed from the bustling fish markets of Mumbai, yet individuals like Shammi need to employ a sizeable crew of 10-15 men to run their small purse-seine operations that supply sardines for export.

The migrant fishermen working on Shammi's net are not unique. During subsequent visits to the area, I have found that hiring migrant labour from Andhra Pradesh is a regular practice among purse-seine fishing boatowners in Sindhudurg. While migration is not unusual in marine fisheries, it is usually seen along the same coast, or at least within the bounds of recognition of fishing cultures or castes. To see such long-distance migration, to a region like Sindhudurg that is not well connected nor very well known for well-developed fisheries, is highly surprising.

Previous studies on migrant labour from Andhra Pradesh have focused on their contribution to fisheries in the state of Gujarat, particularly in the important fish-landing centres of Veraval and Porbandar. These studies have revealed the organized nature of this labour market, with a system of advance payment to the migrants, followed by a fixed monthly wage. In contrast, the migrant labour system in Sindhudurg is poorly organized, being much newer, and migrants often enter into direct verbal agreements with boatowners, rather than going through contractors.

...hiring migrant labour from Andhra Pradesh is a regular practice among purse-seine fishing boatowners in Sindhudurg.

Purse-seine operations in Sindhudurg are relatively recent, adapted by locals who had contact with fishermen from other states who use this fishing technology. A purse-seine boatowner from Sindhudurg says, "Purse-seines and mini purse-seines are new fishing gears in Maharashtra. We don't have a lot of experience using them. They have been using purse-seines in Andhra for a long time and so those fishermen are experienced with making and using these nets. That is why we prefer to hire crew members from Andhra". While this statement reveals one of the reasons for the migrants' presence in Sindhudurg, it is not the whole story.

Many Ghabhit fishermen, who make up the majority fishing caste in Sindhudurg district, have reservations

*This article is by **Divya Karnad** (ecodivs@gmail.com), a graduate student at Rutgers, the State University of New Jersey, US and a Senior Research Fellow with the Foundation for Ecological Research Advocacy and Learning, Puducherry, India*

about using the purse-seine. As in many other fishing villages across India, a big concern is that the use of mechanized fishing gear, like the purse seine, will threaten the livelihoods of artisanal fisherman, by hauling in disproportionately large fish catches. Therefore, many fishing villages in Sindhudurg have come together to ban the use of purse-seines. Not only do the village rules prevent village members from owning and operating purse-seines, the village members will also not tolerate purse-seine operations in their area, by outsiders. For migrant labourers in Sindhudurg's purse-seine fishery, this translates into a high degree of social ostracism. A migrant labourer from the Srikakulam district of Andhra Pradesh says, "We are usually not allowed to stay in the fishing villages during our time in Maharashtra. This means that we have to stay on board the fishing vessel for the entire fishing season [four months in his case, but it can extend to eight months for some migrants]. Because of this, we do not

negotiate the terms of employment, wages, living conditions and so on. This inability to communicate well, along with the social ostracism that they face, means both an inability and impossibility of the migrants' participation in village activities in Sindhudurg. The songs I heard that evening at Shammi Kelaskar's house were a symptom of that social isolation. These men come prepared to create their own entertainment to pass the evenings, travelling with musical instruments and armed with the knowledge of folk songs.

Working conditions for migrant labour in fisheries are notorious and Sindhudurg is no exception. The Srikakulam fisherman whom I interviewed reported: "There have been times when I have spent up to 20 days on a fishing trip. During this time, I dare not bathe or wash clothes, because I would have to use sea water and thereafter my skin would be chafed by the salt that remains on the dry clothes." While first-aid kits are available on the vessels, there is no concept of health insurance. "If we fall sick, we have to take care of ourselves. We go to the government hospital for free treatment, but our wages for those days are cut. The [boat] owner does not pay for our treatment", said the migrant.

Payment is often in the form of a lump sum given at the end of the fishing season, which the migrants sometimes prefer because they have no place to store the money during the fishing season. This is because the migrants do not have bank accounts or access to safe storage in Sindhudurg. The payment is supposed to take the form of a daily wage plus a share of the profit, but since it is paid in a lump sum, the migrants often find it difficult to calculate how the final amount was arrived at. The migrants perspective is expressed thus: "The fishing is so variable...one day we may have a bumper catch and then we may not get anything for weeks. At the end the [boat] owner will say that he is running at a loss, and we can't say anything. We have to take whatever he gives us." This lump-sum

Working conditions for migrant labour in fisheries are notorious and Sindhudurg is no exception.

have regular access to fresh water for bathing and washing clothes. We are often not served by the shopkeepers within the fishing village, and have to walk further [to the larger marketplace in the town] to use these facilities." Such migrants are completely dependent on the boatowners, being unfamiliar with the language, local culture, customs, and so on.

Many of the migrants that I came across in Sindhudurg travel together in groups. These men are related or are from the same village and can therefore look out for, and support, one another. In each of these groups there are one or two people who speak Hindi or a smattering of Marathi, and serve as the spokesperson(s) for the group. It is up to this person to

payment also means that if a migrant has to leave mid-season, he will have to forfeit his payment.

Given these difficult working conditions, it is hard to understand what drives the migrants to return to these fisheries year after year. In a study titled 'Inter-state migration of fishers from Srikakulam district', by Bhaskara Sarma and Venkatesh Salagrama report that among fishing communities there, working in mechanized fisheries is considered a respectable occupation, in comparison with participating in traditional or artisanal fisheries in Andhra Pradesh. These workers command higher rates of dowry and their lump-sum payments or advances are useful to clear loans or debts. Migrant labour is also related to lower rates of alcoholism. Being confined to the boat during the fishing season, the migrants have little access to alcohol. The wives of some of the migrant labourers say, "We prefer our husbands to work on the west coast, because the alternative would be to work on the trawlers of the Vishakapatnam harbour. At the gate of the harbour is a liquor shop, where most of the day's earnings are usually spent, before the men come home".

While there are clearly social and some health benefits to migration, the monetary and financial benefits to choosing to migrate are still difficult to quantify. Bhaskara Sarma and Venkatesh Salagrama judge the overall impact of migrant labour on the family income of the Srikakulam fishermen to be low, especially for the poorest families. While this is increasingly the case in the bigger fishing destinations, like Porbandar and Veraval, (Gujarat) where the fisheries are in decline, the problem is only exacerbated in destinations like Sindhudurg where migrant labour is not well organized. Many of the workers in Sindhudurg report having originally come looking for work in Goa's fisheries and upon not finding any, they wandered north into Sindhudurg. Now that news of this new destination for migrant labour has spread, fishermen from



DIVYA KARNAD

Mini purse-seine boats are docked at a fishing jetty in Sindhudurg district, Maharashtra, India. The owners of such boats are the main employers of migrant labour

Vizianagaram district of Andhra Pradesh have also begun to migrate to Sindhudurg. This glut of labour availability has potentially worsened the bargaining position of the migrants. Migrants to Sindhudurg and Goa report lower wages and overall earnings than those who find work in the big fishing harbours of Veraval or Mumbai.

In Sindhudurg, the migrants' presence has translated into ensuring the persistence of the purse-seine fishery. Despite protests by local fishermen, the purse-seine has been retained due to the easy availability of experienced crew from Andhra Pradesh. The escalating conflict between purse-seine boatowners and local artisanal fishermen once again sees migrants caught in the crossfire. They are often the targets of physical altercations at sea over purse-seine usage in artisanal fishing areas. An artisanal fisherman even reported having held a couple of migrant crew members hostage for a day in order to demand compensation from the boatowner. The migrants' situation not only results in their own exploitation but also exacerbates conflicts between users of different types of fishing technology in Sindhudurg. As a case of 'neobondage', migrant labour in Sindhudurg's fisheries is both a social and a human-rights issue that needs to be solved.

For more



thehindubusinessline.com/news/national/maharashtra-govt-to-stop-new-licenses-to-purse-seining-type-of-fishing/article8203512.ece

Maharashtra Government Stops Purse Seine New Licences

academia.edu/10610681/Inter-state_migration_of_fishers_from_Srikakulam_district_Andhra_Pradesh

Inter-state Migration of Fishers from Srikakulam District, Andhra Pradesh

Growth Blues

Coastal degradation, socioeconomic inequality and the rise of purse-seine fishing in India pose a set of problems that often end in a zero-sum game for fisher groups

The Millennium Ecosystem Assessment (2005) provides testimony to the degradation of the world's natural environment. In the lush, deltaic landscape of the Netherlands, such degradation is not immediately evident, but figures on the immense loss of biodiversity taking place in the country testify to its occurrence. Thus, according to the Natural Capital Index, the Netherlands now boasts only 18 per cent of its original biodiversity, down from 30 per cent in 1950 and 55 per cent in 1900. The same is probably true for India. As far as 25 years ago, the environmental historians M Gadgil and R Guha argued in *This Fissured Land*—

natural fishing grounds of the world, upon which fishers in the Netherlands rely, is emerging from a deep crisis. Major fish stocks that have been overfished for decades, are recovering slowly after very severe measures were taken. But this same marine region is suffering from land- and sea-based pollution, habitat destruction, and a variety of new economic activities gathered under the label of 'Blue Growth'. Fishermen themselves are becoming a threatened species.

Like the North Sea, the Indian coast has become a prime region for developmental activity, as is testified by the increasing number of ports and industrial areas. Marine pollution is a growing concern. Although the scientific evidence is still limited, the damming of rivers and cutting of mangroves are affecting the quality of inshore waters and spawning areas. Intense fishing activity is significantly reducing catches, and there is thus reason to believe that, certainly in inshore and offshore waters, overfishing is taking place. Government agencies in India are slowly acknowledging that inshore waters may be overcrowded and overfished, and that the scope for increasing catches in these regions is slim. In such waters, fishing seems to have largely become a zero-sum game: the gains of one fisher, or group of fishers, come at the expense of the catches/incomes of others. There are few new niches to exploit, and competition within existing niches has become more severe.

Government agencies in India are slowly acknowledging that inshore waters may be overcrowded and overfished, and that the scope for increasing catches in these regions is slim.

An Ecological History of India that "the country is living on borrowed time. It is eating, at an accelerating rate, into the capital stock of its renewable resources of soil, water, plant and animal life".

What is true for countries as a whole, is also true for coastal regions and for the resources on which capture fishers depend. The Millennium Ecosystem Assessment (*Ecosystems and Human Well-being: Synthesis*, 2005) makes the following assessment of global fisheries: "Over much of the world, the biomass of fish targeted in fisheries [...] has been reduced by 90 per cent relative to levels prior to the onset of industrial fishing." The North Sea, which is one of the richest

Inequality

So how does this relate to socioeconomic inequality? The first Blue Revolution instigated by Indian governments from the late 1950s

This article, by Maarten Bavinck (j.m.bavinck@uva.nl) of the Centre for Maritime Research (MARE), University of Amsterdam, is based on a presentation made for an ICSSR/NWO seminar in Bangalore, entitled 'Comparative perspectives on growing socioeconomic inequalities in India and Europe' (7-8 February 2017)

resulted in the establishment of a modern fishery sector, next to a large, small-scale fishery. This modern fishery was based on trawling, and the assumption was that this fishery would complement the small-scale fisheries, which possessed limited geographical range, by exploiting new, offshore grounds. Instead, all over India, the trawl fishery has been in severe competition with small-scale fisheries. This resulted—with a peak in the 1970s and 1980s—in violent conflicts between the two sub-sectors and in the establishment of a national fisher movement and organizations like the National Fishworkers' Forum.

My colleague Derek Johnson and I have argued, for the states of Gujarat and Tamil Nadu, that the Blue Revolution has enlarged socioeconomic inequalities in the marine fisheries sector of India, separating a richer class of trawler owners from trawl workers as well as from the mass of small-scale fishers working along the coasts. The evidence: trawlers now bring in three-quarters of total fish catches, leaving only one-quarter for the small-scale fisheries—and this while the fishing grounds on which trawlers operate can easily be covered by small-scale fishers. It is no surprise that small-scale fishers are angry about trawling.

Scientists now recognize that trawling is in itself also contributing to environmental deterioration, through habitat destruction and indiscriminate bycatches. As one fisher in Tamil Nadu explained: "Trawling ploughs the sea bottom, levels it, leaving nothing. Trawlers take even the smallest fish!" With this new knowledge, there is reason, in hindsight, to question the choices made by Indian policymakers at the start of the Blue Revolution. If environmental and socioeconomic aspects are taken along, was it actually the best choice? It is interesting in this regard to note that Sri Lanka had a different developmental trajectory, choosing not to introduce trawling but rather to intensify other fishing methods. The different choices made

by government authorities in India and Sri Lanka are now contributing to the Palk Bay fishing conflict, to which I shall return in a moment.

Socioeconomic inequality in fisheries is, therefore, not a direct result of environmental degradation, but an offshoot of the choices made in the fisheries development effort. This same development effort, however, has contributed, in important measure, to further degradation of the marine environment, and to reaching, and overreaching, the maximum sustainable yield (MSY). Just as in other parts of the world, like the

RAMYA / ICSF



"Trawling ploughs the sea bottom, levels it, leaving nothing. Trawlers take even the smallest fish!", says one fisherman

North Sea, there seems to be an imperative in India not only for conserving, but for restoration of, the marine habitat, and thereby for a rejuvenation of its fisheries.

Trawl fishers in India often resemble the 'roving bandits' described by Berkes et al. in their 2006 paper, *Globalisation, Roving*

The fisher *panchayats* are, however, seriously divided, with some in favour of purse-seines while others are against.

Bandits and Marine Resources 2006), as well as the 'biosphere people' of Gadgil and Guha. Not depending on any particular fishing grounds, trawl fishers move from one area to another, displacing local, small-scale fishers and causing them hardship. We have documented this process within Tamil Nadu (where big riots occurred in 1979 in Madras), as well as between Chennai trawl fishers and Andhra fishers. The latest manifestation of this same process can be seen in the Palk Bay, whereby Tamil Nadu trawl fishers are making extensive use of northern Sri Lankan fishing grounds and preventing local small-scale fishers from recovering their livelihoods. The benefits accruing to one party result in losses for the other.

The purse-seine fisheries I have been studying lately along the Coromandel coast of Tamil Nadu illustrate some of the trends and dilemmas mentioned above. Purse-seine fisher 'companies' target the migratory schools of small and large pelagics that seasonally travel up and down the Indian coast and have always also sustained the small-scale fisheries. Purse-seining is highly disputed, for two reasons: (i) fishers fear the absolute depletion of fish stocks, as these gears are so efficient; and (ii) fishers say that purse-seining results in some fishers gaining all, leaving nothing for others. For these reasons, purse-seining is prohibited by a large number

of informal fisher *panchayats* in Tamil Nadu.

What makes the case of purse-seining different from that of trawling, however, is that it is largely carried out by collectives of small-scale, village-based fishers. The members of these 'companies' pool capital and labour and are thereby able to compete with the trawling operations of harbour elites. Trawl owners dislike the purse-seining groups for a variety of reasons: (a) they compete with trawlers for the same schools of fish; (b) they compete for labour, which prefers to go purse-seining because the earnings are better; and (c) purse-seining catches cause fish prices to go down.

To recapitulate: purse-seining is taking place in a marine environment that is suffering from environmental degradation, and is pursued by small-scale fishers who see an unusual possibility here of making decent incomes. At the same time, some see purse-seining as contributing to further deterioration. In addition, not all small-scale fishers have the opportunity (money/labour) to participate in purse-seine fishing; in addition, many fisher *panchayats* have prohibited the use of purse-seines in their waters. The fisher *panchayats* are, however, seriously divided, with some in favour of purse-seines while others are against. Social struggle is, therefore, going on within the fisheries sector itself.

What does the government have to say about this matter? In response to fisher agitations, the government of Tamil Nadu prohibited the use of purse-seines in 2000, but does nothing to prevent them being used.

Environmental NGOs

This ambivalent attitude has contributed, for example, to the strange instance of the anchoring of a large fleet of purse-seine boats, for example, in Cuddalore town, which are not at all registered but go fishing nonetheless. Environmental NGOs have identified the problems of purse-seining in India and are

concerned, as one of their members said, that “purse-seining signals a race to the bottom.” Scientists of the Central Marine Fisheries Research Institute (CMFRI) are investigating the state of the large schools of oil sardine that travel the Indian coast. They do not seem to have reached consensus on whether there is something to worry about.

I am convinced that the social struggles taking place in the coastal realm of India deserve more of our attention, not only for academic reasons, but for societal ones too. I view the crisis occurring in fisheries as part of an otherwise stagnating agricultural economy, and a problem of employment and social mobility. Fishers, even the better-educated ones of the newest generation, will not join the information technology sector, nor will they find ready employment in other professional fields. They are largely stuck in fishing.

The environmental problems of the coast are diminishing the size of their ecological niche, and defining their continuing position at the bottom of the larger Indian socioeconomic pyramid. At the same time, they are struggling for a piece of the pie that is generated within fisheries. This struggle is being exacerbated by institutional fragmentation, indecisiveness, and uncertainties of knowledge.

Fisheries is only one of the livelihood opportunities practised along the Indian coasts, albeit an important one. We, as social scientists, have a role to play in resolving the struggles that occur, if only to bring to the public attention that: social struggles over livelihoods and natural resources continue, also along the coast; these struggles take place over a diminishing ecospace, positing stronger against weaker social parties; unequal access and opportunity are core features of such struggles, and revolve around conceptions of ‘fairness’; ‘technological change’ is a factor contributing to diminishing ecospace as well as to unequal opportunity, and restrictions on technology are urgently required; and

the government needs to collaborate with user groups to define long-term coastal management plans that include reference to precautionary ecological principles as well as to the importance of livelihoods and sustenance of poorer citizens.

A concerted effort in facilitating an understanding of social dynamics in India’s coastal zone is of tremendous importance. Social justice is one of the aspects deserving attention. **3**

For more

open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0103394

Government-led development of India’s marine fisheries since 1950: Catch and effort trends, and bioeconomic models for exploring Alternative policies

eprints.cmfri.org.in/10796/

Marine fish landings in India 2015

researchgate.net/publication/237674579_SOCIAL_JUSTICE_AND_FISHERIES_GOVERNANCE_THE_VIEW_FROM_INDIA

Johnson, D., and M. Bavinck (2010). Social justice and fisheries governance: the view from India

fao.org/docrep/013/i1788e/i1788e.pdf

Sharing the fish ‘06—allocation issues in fisheries management’ conference, Fremantle, Australia, FAO Fisheries and Aquaculture Proceedings, CD-Rom, Rome: FAO, 17pp.

A Stitch in Time

Cyclone Ockhi, which hit southern India late last year, brought out the need to empower communities to manage risks through locally owned and locally appropriate approaches

Historically, the western coast of India has always witnessed fewer cyclones than the eastern coast. While 58 per cent of the cyclones that developed over the Bay of Bengal crossed the east coast, only 25 per cent of the cyclones that developed over the Arabian Sea affected the west coast. A marked deviation from this status quo was observed on 30 November 2017, when Cyclone Ockhi killed 174 fishermen from the state of Kerala and 108 fishermen from the state of Tamil Nadu. The economic loss caused by Ockhi amounted to US\$5.07 bn.

Official sources put the number of missing fishermen as 527—300 from Kerala, and 227 from the Kanyakumari district of Tamil Nadu. However, the

The harbour at Thoothukudi in Tamil Nadu implements a simple token system for fishing boats venturing into the sea. Details like the boat number, name and telephone number of the boatowner, and the number of fishermen on board, as well as the expected date of return are registered online before issuing a token. After reaching the shore, the fishermen return the token. Similar systems have been introduced in the East Godavari District of Andhra Pradesh and in Maharashtra.

At Thoothukudi, Tamil Nadu, the Fisheries Department has also arranged a checkpost to regulate the number of fishing boats venturing into the sea at a given point of time, which helps avoid overcrowding. These are measures that Kerala could have followed.

The Indian Meteorological Department (IMD) is the nodal agency for tracking, monitoring and issuing early warnings to all designated authorities. Notwithstanding the increasing tendency for cyclones in the Arabian sea, the Area Cyclone Warning Centres (ACWCs) and the Cyclone Warning Centres (CWCs) of IMD cover only the eastern coast, leaving a visible gap on the western side. IMD has a detailed procedure for a four-stage warning, including a Pre-Cyclone Watch (issued 72 hours in advance), a Cyclone Alert (48 hours in advance), a Cyclone Warning (24 hours in advance, with high priority of telegrams twice a day) and a Post-Landfall Outlook (12 hrs in advance).

Timely advisories

Bulletins are also issued to the Public Relations Department (PRD) for distribution to the mass media and

A stitch in time can perhaps save not nine but millions of lives!

estimates put forward by fishermen's groups and the Catholic Church is double the official number. Failure of both the state and the central governments to even come up with the exact number of fishermen and fishing boats lost at sea, has come under severe criticism. Even two months after Ockhi the disaster-management agencies were groping in the dark about the number of casualties.

Despite stipulations in the Marine Fishing Regulation Act (1980), hundreds of fishing vessels still operate in Kerala waters without any registration or fishing licence. During exigencies such as cyclones or tsunamis, lack of knowledge of the actual numbers can prove fatal.

*This article is by **KG Thara** (thara.kg@rediffmail.com), Head, Disaster Management Centre, Government of Kerala, India*

for immediate broadcast by the radio and television stations. IMD also has an automatic telephone answering service (No: 1800 180 1717) and a facility for registering one's mobile number for receiving cyclone alerts vis-a-vis short messaging system (SMS) service. The language of such official warnings, however, remains archaic and too technical for the common man to decipher. On the contrary, weather warnings issued by the Hong Kong Observatory, for instance, give separate warnings for the local public, avoiding scientific jargon.

While controversies abound about whether the IMD and the Indian National Centre for Ocean Information Services (INCOIS) had sent out timely advisories, the most important fact remains that even the officials at the State Emergency Operation Centre failed to grasp the gravity of the situation from the 'technical' bulletin.

Emergency Position Indicating Radio Beacons (EPIRBs), also known as Search and Rescue Beacons, developed by the Vikram Sarabhai Space Centre (VSSC) of the Indian Space Research Organisation (ISRO) at Thiruvananthapuram, and manufactured by Keltron at its Karakulam complex, Kerala, have been distributed to fishermen on the Kerala coast over the last few years as a means to safeguard their lives during emergencies at sea. ISRO is also designing and developing the first indigenous, low-cost global positioning system (GPS)-fitted EPIRBs, from which distress signals can be picked up by the search-and-rescue vessels. These will only cost INR3,000, compared to the price of INR50,000-60,000 a piece for those imported from the United States, the United Kingdom or France.

In the aftermath of Ockhi, ISRO has also developed navigational equipment based on India's regional satellite navigation system, called NAVIC, to warn fishermen about adverse weather conditions. Initially, 250 boats will reportedly be fitted with these equipments on a trial basis. The specialty of these equipments is that the information will be transmitted in the local vernacular

language (Malayalam), up to a distance of 1,500 km from the coast.

While some of the fishermen, on a personal basis, use mobile phones that can operate up to 50 nautical miles (92.6 km), they complain that the wireless sets provided by the Fisheries Department work only up to 20 nautical miles (37.04 km). The major limitation of NAVIC devices is that they allow only receiving of information, with no provision for sending messages—they are fitted with only a receiver, not a transmitter.

Community radios can be established in cyclone-prone areas with the help of open universities such as the Indira Gandhi National University (IGNOU), NGOs and community-based organizations (CBOs), for timely dissemination of warnings. The first exclusive community radio initiative in India for fisherfolk, named Alakal, was initiated on 1 May 2006 in Thiruvananthapuram district of Kerala.

The problems resulting from corrosion of batteries and non-receipt of signals in transistors can be overcome by using battery-less, low-cost hand radios which can receive warning-broadcasts from All India Radio, the national station. Television and radio stations can also utilize the cell broadcast facility via the

K G THARA



A HAM Radio used in emergency communications is an immensely useful tool for cost-effective dissemination of information

GSM (Global System for Mobile communication) network operators, to broadcast emergency messages on a real-time basis.

Setting up of Village Information Centres (VICs), under the supervision of the state government, can provide information on cyclone warnings directly to the community and also empower the rural population. Around 50 such VICs are currently operational in the Cuddalore District of Tamil Nadu, where the dissemination is effected through very high frequency (VHF) wireless networks, integrated with a public address system (PAS).

The climate-integrated community-based early warning system implemented by the Adaptation Learning Programme (ALP) of Dakoro, Niger, is one of the best examples of integration of community-based adaptation for disaster risk reduction (DRR). This is a decentralized, participatory programme where volunteers are selected from a cluster of four or five villages for multi-level interventions at village, municipality, local, regional and national levels during different phases of a disaster.

The ham radio is an immensely useful tool for cost-effective dissemination of information, especially in times of natural disasters such as earthquakes, floods, cyclones or tsunamis (HAM is an acronym for Hertz-Armstrong-Marconi, from the first letters from the last names of three radio pioneers: Heinrich Rudolf Hertz, Edwin Armstrong and Guglielmo Marconi). While the conventional communication systems, like mobile and land phones, get destroyed or fail due to overloading, these equipments have stood the test of time by providing uninterrupted flow of information. A network of amateur radio licensees in Kerala can also serve as an alternative system, should the means of conventional communication fail.

Disaster risk reduction is best achieved by forming task forces at the community level. Apart from representatives from women's organizations, these teams should comprise retired personnel, youths from local NGOs, CBOs, residential

organizations, and volunteer organizations such as the Civil Defence, Nehru Yuva Kendra Sangathan, the National Cadet Corps, the National Social Services, the Indian Red Cross Society, Bharat Scouts and Guides, and St. John Ambulance Brigade. They should work towards building up the capacity and resilience of vulnerable communities.

Quick Response Teams for first aid and search-and-rescue at the community level can also play a vital role in disseminating warnings and render help during the relief, rescue, rehabilitation and reconstruction phases. The recently formed Rapid Response and Rescue Force (RRRF) of the Kerala Police, even after rigorous training in various aspects of rescue and casualty management, remains severely underutilized.

A prompt, well-co-ordinated and effective response will not only minimize the casualties and damage to property, but also will facilitate early recovery. Apart from institutional arrangements, a set of procedures (SOP) clearly delineating the roles and responsibilities of each stakeholder agency is also required. Written documents on specific actions to be taken in relation to preparedness, early warning, response, relief and recovery phases, can considerably reduce the risk levels from any disaster. The initial confusion and chaos noticed in the early hours of the management of Cyclone Ockhi show that a SOP, in whatever form, was clearly missing.

Mitigation

As climate change will continue to exacerbate both the impact on, and the number of casualties of, among fishing communities, there is an urgent need to take disaster-mitigation efforts beyond the award of compensation to the victims. Disaster-risk insurance is both a cost-saving and risk-management strategy, to increase the resilience of individuals and communities to external shocks. A comprehensive, indemnity-based (factoring the actual loss) insurance policy for climate-

related disasters, is on the anvil in Kerala. It is proposed that families below the poverty line (BPL) are completely exempted from paying the premiums.

Notwithstanding the long-term benefits of non-engineered measures such as planting of mangroves along the coast, risk-reduction measures have traditionally leaned more on structural interventions such as construction of sea walls, cyclone shelters, cyclone-resistant buildings, road links, culverts, bridges, and so on. The creation of green-belt buffer zones, also known as shelter belts or bio-shields, can significantly reduce the loss of coastal habitats, and protect human lives and property from cyclones and tsunamis.

However, the mangrove forest area in Kerala has been reduced to 1,750 ha from a historically high level of 70,000 ha. An awareness drive on the ecological significance of conservation of mangrove forests will help reduce disaster risks along the coastline.

Climate change and consequent warming of the oceans pose multiple threats to the fisheries sector, the most glaring impact being the decline in the availability of marine resources. Kerala's annual catch of mackerel, for example, was 399,000 tonnes in 2012, which drastically dipped to 45,000 tonnes in 2016. The concept of 'alternative livelihoods' or alternative income generating (AIG) activities has emerged from similar unsustainable exploitation of other marine resources and the increasing pressure on them by a burgeoning population.

While promoting both environment and natural resource (ENR)-based livelihood activities, such as agriculture and livestock, aquaculture, and bee-keeping, and non-ENR-based livelihood activities such as handicrafts, and carpentry, care should be taken not to confine women to gender-specific activities such as garment-making and cooking.

Despite significant advances in meteorology, hundreds of fishermen in Kerala still rely on the traditional wisdom handed down over generations for predicting weather

and sea currents. During Cyclone Ockhi, Marianad village reported zero casualty, thanks to the premonition of some of the traditional fishermen. Documentation of such traditional wisdom will augment mitigation measures to help face future challenges. Various Bureau of India Standard (BIS) codes have been developed for the construction of cyclone-resistant structures, such as shelters, roads, bridges, canals and transmission towers, which are seldom followed. Strict compliance should be ensured.

Realizing the need for empowering the younger generation, the Government of India had introduced disaster management in the school curriculum, but it is confined to Central Board of Secondary Education (CBSE) schools. Since educating a student is a sure way to build up community resilience, the State Education Boards should also be encouraged to follow suit. Empowering the communities to manage their risks through locally owned and locally appropriate approaches was the most important theme which emerged in the 2017 Global Platform for Disaster Risk Reduction, at Cancun, Mexico, in May 2017. The rationale behind promoting community-based disaster risk management is that communities are the first responders to a disaster, and hence they should be given necessary training to mitigate and manage their risks.

During cyclones fishermen have often drowned for want of timely help, especially since rescue agencies took a long time to spot those affected, as the precise whereabouts of the victims were not known. Recruitment of educated people from the fishing community to the Coastal Police and Marine Enforcement Wing can address this issue and ensure better co-ordination during such rescue operations. Proper representation and inclusion of local community members in various disaster-management bodies is also needed.

New initiatives

Lack of proper training and inept handling of specialized rescue devices



The Cyclone Warning Centres (CWCs) of IMD crowd only the eastern coast, leaving a visible gap on the western side

had often led to false alarms being sent out to rescue agencies, leading to wastage of time and resources. Sensitisation and awareness of fishermen about rescue operations should, therefore, become an integral part of any disaster risk reduction initiative.

According to the Global Climate Risk Index (2018) released at the 23rd Conference of the Parties (COP23) of the United Nations Framework Convention on Climate Change (UNFCCC), the Indian subcontinent is one of the most vulnerable countries to climate-related risks of rising sea levels, storms, floods, drought, heavy rainfall, landslides and heat waves. Kerala occupies a special place in the vulnerability atlas of India, owing to its geographical and geomorphological peculiarities. The coastal plains of Kerala have also earned the status of being among the most populated areas in the world, with a very high

population density of 2,168 persons per sq km. (In 2012 the state's total population was 34.8 mn.) The most significant vulnerability factor of the state, apart from the dense settlements, is the low altitude of the coastal plains, rising just 3-6 m above the mean sea level, making the communities extremely vulnerable to the vagaries of sea-level rise and other disasters.

A stitch in time can perhaps save not nine but millions of lives!

For more

<http://www.tn.gov.in/tsunami/index.html>

Tamil Nadu State Disaster Management Agency (TNSDMA)

<http://sdma.kerala.gov.in>

Kerala State Disaster Management Authority (KNSDMA)

In the Eye of the Storm

In the wake of tropical cyclone Ockhi, the focus now should be on improving at-sea cyclone preparedness and search-and-rescue co-ordination to save precious lives

As a low-pressure system in the Bay of Bengal, near the southeast coast of Sri Lanka, intensified into a depression in the early hours of 29 November 2017, as per its well-established protocol, the Indian Meteorological Department (IMD) issued its first bulletin warning of gusty winds and heavy rainfall over south Kerala and south Tamil Nadu. The bulletin was dispatched to the senior-most levels of the central and state governments, including the control room of the National Disaster Management Authority and the chief

crucial to the coastal villages in the region where the rough weather was expected. For fishermen along India's Arabian Sea coast, the October-December months are the busy period, and particularly so along the densely populated coasts of southern Kerala and Tamil Nadu. The post-monsoon Arabian Sea, where cyclones are relatively rare, is calm and the catch is plentiful. Fishing is as diverse as it is competitive in these parts. Shore seines dot the coasts of several villages; small non-motorized catamarans go out on short morning fishing trips near the shore; larger motorized plywood and fiberglass craft or *vallams* go out farther—at least 20 nautical miles—staying out at sea for anywhere between half a day to five days. Larger mechanized vessels (15-18 m overall length or OAL), leave from the harbours in Kochi and Kollam, some of them long-liners voyaging 800 nautical miles in search of shark and tuna. Each group presents a different set of challenges of fishermen at sea, but these groups as a whole had been neglected in official disaster planning.

Ultimately, any solution has to take into account fishers livelihood and working conditions. Fishworkers' safety has to become a priority now.

secretaries of the states of Kerala and Tamil Nadu. Fifteen per cent of all depressions develop into cyclones, and the bulletins are meant to forewarn the government's disaster managers, the shipping industry and coastal communities.

As the information reached the Kerala government, Alban Alphonse was preparing to go to sea for the day's fishing in Poonthura village, less than 10 km from the state capital, Thiruvananthapuram. Each day at least 600 fishermen from the village set out to fish at around 2 pm and return just after dawn the next day. Since they did not get any information from their state government warning them not to go out to sea, Alban and the others went fishing at the same time on that fateful November day.

The exact time when the bulletin was issued—1150 hrs IST—was

Early warning system

Thirty-seven-year-old Alban was accompanied by two other fishermen in a 30-ft-long plywood craft fitted with an outboard engine, the most common type of fishing vessel in the region. They navigated 19 nautical miles southwest of Poonthura and at sunset, they lowered anchor to start paying out the nets. "There were a few waves and some wind but this wasn't unusual in our work. But then it started to rain and it got foggy, and when we pulled in our nets at 3 the next morning, we noticed on our GPS (global positioning system) that the

This report is by **Manas Roshan** (manas.roshan@gmail.com), journalist and writer based in New Delhi, India

vallam had drifted another 12 miles.” The current had been too strong for the anchor and had pulled them down deeper. They decided to return to the shore but the winds buffeting the boat made the progress very slow. Then, suddenly, the waves started to crash against the boat from every direction.

Contrary to the IMD’s initial forecast, BOB 07—as the system was called—had rapidly strengthened into a cyclonic storm by the early morning of 30 November. The process took just 24 hours, as against the usual 72 hours or more. Meteorologists were calling it Ockhi—which means ‘eye’ in Bengali—and while its winds were between 45-65 kmph at the shore, Alban and other fishermen were caught in the cyclone’s cloud bands, which covered a radius of over 200 km. A 10-ft wave finally capsized their vessel and threw the three men overboard. “Normally, we can withstand fairly strong winds, though a careless operator could cause the vessel to flip even against a slight breeze,” said Alban, sitting in his house in Poonthura last month. “This time, there was no way to hold it steady even by riding with the wind.”

When they noticed the change in weather, the families on shore had expected their men to return before their usual time. But when many did not return later that morning, the women rushed to the local church, a pillar for the communities on the coast in southern Kerala and Tamil Nadu. “Only when Father made frantic calls to the local administration did we find out that there was a cyclone coming,” said Delby, who lost her 38-year-old husband in the cyclone. A month after the cyclone, the government informed the Lok Sabha (India’s lower house of Parliament) that 100 people were confirmed dead and nearly 500 were still missing, all of them fishermen caught in Ockhi’s devastating path. Over 260 fishermen were injured. Nearly 400 fishing vessels were either fully damaged or lost.

On that first day, 90 men had not returned to Poonthura. Several swam or floated to safety farther up north, even as far as Karnataka, or were rescued by other fishers, the Coast

Guard and the Indian Navy. Alban was rescued with five other men by a navy helicopter on the afternoon of 1 December. They had stayed afloat holding on to their capsized boat for over 30 hours. By end December, seven dead bodies had been recovered but 29 men were still missing from the village. Poonthura’s beaches are lined with loudspeakers for emergency announcements but these went unused on the 29th. “Bad weather warnings are rare in these parts but we did occasionally get them from the church during the monsoons. The Collector’s office usually alerts the church,” said Leon, Alban’s boatowner and a retired fisherman. “If we had been informed, no one would have gone to sea that day.”

The Kerala government has questioned the IMD’s delay in issuing a cyclone warning, which came only at 8:30 am on 30 November, by which time hundreds of boats were already in the storm’s path. “Normally, meteorologists get at least five to six days to track the progress of a cyclone from genesis to landfall,” said S Sudevan, director of IMD’s Thiruvanthapuram Met Centre. “But Ockhi intensified in just 24 hours, which is very rare. Even so, our very first bulletin warned fishermen not to venture into the

MANAS ROSHAN



Silveraj, 38, of Poonthura village in Kerala, India, died due to the cyclone on 30 November. His wife, Delbi, doesn’t want their son to be a fisherman

Interview with Sahayam, Vizhinjam survivor

Vizhinjam in Thiruvananthapuram's Nayanattinkara taluk is a busy fishing village just a few kilometres from the bustling tourist hub of Kovalam. The village of about 20,000 people has over 5,000 active fishermen. Most fishermen in Thiruvananthapuram coastal villages like Poonthura and Vizhinjam use 6-8m long non-mechanized boats made of plywood or fiberglass fitted with outboard engines (usually two, of 25 hp and 9 hp). They are mostly single-day fishers but in each village the timing of departure and return varies, depending on the topography of the coastline and the composition of the catch in their traditional fishing zones. In Vizhinjam, the fishermen set out between 2-3 am every morning and return by 11 am. Vizhinjam has its own harbour which allows the fishermen to venture out at night and not depend on the tide.

In the aftermath of cyclone Ockhi, seven bodies of fishermen have been identified but 30 are still missing (20 from non-mechanised and 10 from mechanized boats operating in other districts.) A majority of those dead/missing were young—under 35 years.

Q: How far do your boats go to fish and is there a particular type of fish that dominates your catch?

Sahayam: We travel about 20 nautical miles to begin with, because there's no catch closer to the shore. Then depending on what the conditions are like, we even go up to 60 nautical miles. There isn't any one type of fish we look for. We bring home whatever we catch but get a lot of *choora* (tunnies).



Sahayam, a fisherman from Vizhinjam, held on to his capsized *vallam* (motorized country craft) for nearly two days before he was rescued by the navy near the Kollam coast, India

Q: What are your costs per trip and how much do you catch on a good day?

A: To fish within 25 nautical miles, the cost is about INR3,000. To go deeper, it can go up to INR4,000 to 5,000. On a good day we can get even INR10-20,000 worth of fish. On bad days, we might even make a loss.

Q: So, this last month that you haven't been working, how much have you had to borrow?

A: In a month we need about INR20,000: children's school fees, food expenses, etc.

Q: When did you go to sea on the day of the cyclone and what was the weather like?

A: On the morning of 30th November. I had my own boat, *Sajitha-Sajith*, and there were four of us that day on board. Two of us returned but the others were lost. The weather was perfectly fine when we left. We were five boats travelling together and we lowered anchor at about 25 nautical miles. But our catch was negligible and one of the boatmen said that the wind was getting stronger and that we should go ashore. So, we started at around 7 am from that spot and when we were about 9 miles out, the storm struck. We'd been moving for over two hours when the wind and the rain came. It was so stormy after that; we couldn't look at our GPSs and we lost our bearings. We couldn't even see the other boats near us.

The boats were filling up with water and finally a big wave threw two of the men into the sea. We'd managed to hold on till about noon. We couldn't do anything when the men first fell overboard. The wind was pulling the boat away and if we didn't hold on, we'd also fall out of the boat. Then 20 minutes later, another wave overturned our boat but before we were thrown, Jose (*the other fisherman who remained with Sahayam*) and I had tied ourselves to the boat. The wind and the waves were terrifying through that evening and night. But we held on to the rope and were finally rescued by a navy vessel on Friday

afternoon (1st December). Not that we expected to live; we were certain that we'd drown, because even the previous day we thought some ship or fishing vessel would rescue us but then when there was no pause in the storm, we lost hope. But at least our bodies wouldn't be lost if we tied ourselves to the boat. Those back home would know it's us looking at the name of the boat because the corpses are unrecognizable after a few days at sea.

Q: Did your family expect to see you again?

A: They had gone from worry to despair before they saw us but while there was the joy at seeing us alive, their cries only got louder—tears of joy and relief. Others, whose husbands or sons had been with us at sea, were still grieving but they were happy at least some of us had returned.

Q: While you were floating with your boat, did you encounter any ships passing by?

A: On the evening of the 30th a big ship passed very close to our boat. We waved with our shirts and called out but they didn't see us. We saw another ship just about two hours before the navy arrived. We waved to that one too but they didn't come to save us. Then, when the navy rescued us, the personnel told us that they wouldn't normally venture that far but had been alerted about our location by a ship.

Q: Did the navy personnel tell you what your location was when you were rescued?

A: Yes, they said that we were found 54 nautical miles west of the Kollam coast (over 90 miles north of Vizhinjam). We were on the navy vessel for four days; they took very good care of us. They moved us to a smaller vessel which dropped us at Cochin. They were told to extend their search for seven days so they themselves couldn't bring us back.

Q: The IMD's alerts said that the wind speed that day was about 45-55 kmph, which many say is fairly common. Are your boats threatened by such strong winds or were the conditions that day very different?

A: If we'd got a warning that day, we wouldn't have gone. We don't go fishing when we know that the sea is rough. One can tell as soon the boat leaves the shore, so we don't go very deep into the sea and come back soon. I've never see such big waves as we experienced that day. A wall of water would tower over you.

Q: Why is it that the fishermen continue to go to sea without life jackets despite there being a rule to carry safety equipment?

A: Certainly, life jackets would have saved several lives, but they're not something you can buy in the market around here. The fisheries department had distributed a few life jackets to some boat owners years ago but there are over 2,000 boats going from this harbour and the surrounding areas. That is around 5-6,000 men.

Q: What would be a better way to warn fishermen about cyclones when they are already at sea? Would you be able to afford satellite phones or distress signals?

A: If the government can provide them to us, we can. Even an expense of INR10,000 is a big amount for us to afford. There might be a few well-to-do boat owners who can afford satellite phones but the most effective way to warn us is through the church.

Q: Will you continue to go fishing after this or would you like to do something else?

A: All I know is fishing; I've been doing it for 15 years. I left school after class 5. The government says it will help us and compensate us for our losses but what do we do till the money arrives? I need to repay the bank loan on my boat. I asked the bank for an extension but they didn't allow it. Nowadays, we mostly stay home, come here to the harbour in the evenings and return at night to our families. The mood at home is also changing; they were very happy when we returned but how long can we live on debt? So, the conversations at home are also getting tense.

sea. The IMD has a well-established standard operating procedure (SOP)."

"We convened an emergency meeting on 30 November, as soon as we saw the word 'cyclone' in the sixth bulletin that morning. The rescue operations began soon after," said P Kurien, Principal Secretary of Revenue and the Disaster Management State Relief Commissioner for Kerala. It is a fact that 45-65-kmph winds are common for the fishermen at sea, but contrary to what the Kerala government has said, the IMD bulletins are only issued in the case of a depression, along with a disclaimer about possible intensification. Next door, in Kanyakumari's fishing villages, the Tamil Nadu government used the churches on the coast to alert fishermen the previous day, a testament to the state's well-developed disaster management systems and infrastructure. "Our control room in Chennai got the IMD alert on 29 November and as per the SOP, we informed all coastal district collectors and fisheries directors through email, fax and text messages," said Rajendra Ratnoo, Tamil Nadu's Commissioner of Disaster Management. "One gazetted officer is posted on duty round the clock and during the October-December period, which is the cyclone season, it's an officer at the level of Deputy Collector," said Ratnoo, who claims to have personally informed the fisheries department at 1:30 pm on the 29th.

Despite the state's efforts, eight villages in Kanyakumari sustained the heaviest losses, with 24 dead and 237 still missing. This was because most fishermen of Thoothoor and its surrounding villages work on the mechanized vessels operating from Kochi. Their month-long fishing trips in search of shark and tuna completely cut them off from the government's warning systems and now their routes—west and northwest of the Kerala coast—put them directly in Ockhi's path. As Alban and other fishermen were tossed around and finally pushed north, the cyclone's real fury was headed towards the Lakshwadeep Islands, where gusting

winds of up to 180 kmph were recorded, according to the IMD's preliminary report on the cyclone.

Selvaraj, a 35-year-old boatowner from Vallavilai in Kanyakumari district, had left Kochi harbour with 13 workers on board his 18-m boat on the night of 26 November. After navigating west, they were fishing to the south of Lakshwadeep Islands on 1 December when the cyclone struck. "In that area, the navy usually informs us if we're in a restricted area, through our wireless radios (Very High Frequency or VHF sets). They could have warned us similarly about the cyclone," said Selvaraj, sitting on the beach sand outside his village church. His boat safely reached Lakshwadeep's Kavaratti Island on the morning of the 3rd after he and his men had weathered the storm for over two days. "The boat was heavily damaged. It'll cost us about INR2-2.5 mn (1 USD=INR 64) to replace the nets, VHF sets, repair the boats, etc," he said, adding that they were lucky to be alive.

"All our boats carry two VHF radio sets. One is always tuned to channel 16 (156.8 MHz, a marine VHF radio frequency used internationally for distress calls) but we communicate using channel 65 because otherwise our conversations would clutter up the airwaves used by the ships and the navy," said Dickson, another experienced fisherman from Vallavilai. "We frequently contact passing ships when our drift-nets are in their paths, and most of them respond. Our cellphones are unreachable that far inside the sea and we don't have satellite phones. Why couldn't the ships have alerted us?"

Kurien, Kerala's disaster relief commissioner, said that this was done but that it was impossible to save everyone. "On 1 December, the Chief Secretary informed the shipping director general and many lives were saved by the ships," said Kurien.

Coastline

Remarkably, the physical coastline of the two states bears no signs of the devastation caused by Ockhi because almost all the loss of life occurred at

sea rather than on land. There is little reliable data on previous cyclones and the number of fishers lost at sea—a United Nations study on the 1996 Andhra Pradesh cyclone lists 600 casualties, though the number of dead on land was much higher. But meteorologists agree that the disproportionate number makes Ockhi unique and points to an overlooked facet of cyclones: the safety of fishermen at sea. “The IMD has specialized bulletins for sea conditions and fishermen warnings but landfall is the main concern”, said Mrityunjay Mohapatra, a senior IMD scientist and head of the Regional Specialised Meteorological Centre (RSMC) of the World Meteorological Organization (WMO) in New Delhi. Perhaps the blind spot with regards to fishermen is because the efforts of most disaster-management programmes in the past have been on mitigating the damage caused by storm surges—unusually big waves caused by cyclonic winds, which account for 90 per cent of casualties during cyclones, according to the NDMA’s cyclone management guidelines.

“The failure of the state was on two levels,” said T Peter, Secretary of the National Fishworkers’ Forum (NFF) in Thiruvananthapuram. “First, IMD’s alert came too late and the message didn’t reach the fishermen. The second is a bigger problem: once the situation was assessed, why were the search-and-rescue measures so badly managed?” Throughout the coastal villages of Thiruvananthapuram and Kanyakumari districts, distressed fisher families complained of inadequate response. “They could have taken the fishermen along with them sooner. We know where our men go to fish,” said Benjamin Mammanus from Poonthura, who accompanied an Indian Navy vessel on 4 December. “With our help, they were able to find several large vessels but by then it was too late for the crew on smaller craft,” he said.

The centre and the state agencies are deliberating sophisticated technological solutions for emergency warnings, like VHF and satellite

radio sets, distress alert transmitters and the Indian Space Research Organization’s ‘NavIC’ (similar to the GPS). These will be necessary to address the needs of Thoothoor’s deep-sea fishermen. But closer to shore, the fishermen are now learning about simpler measures that had been overlooked: port warning systems, safety equipment like life jackets and buoys (mandatory according to the law but never enforced), and a registration system where all boats and crew lists are maintained on shore. “The fishermen will have to stop viewing sea-safety measures as a burden. The floatation devices could have saved several lives,” said Peter (NFF).

The authorities admit that the dissemination of weather warnings to the last mile remains a challenge; but here, too, it has overlooked a cheap and effective solution: community radio. Locally run stations in Odisha and Gujarat provide crucial lessons for a community-based disaster-management approach. During the 2013 Phailin cyclone in Odisha, the state government managed to evacuate over 800,000 people from coastal villages, albeit with the help of accurate IMD predictions issued six days in advance. But the dissemination of the warning was helped by the media, particularly community radio stations like Radio Namaskar, a Konark-based coastal station which broadcasts content developed by, and for, the fishing community, in Odiya and Telugu. “FM radio technology is cheap and if the towers are on the coast, boats as far as 50 km in the sea can listen to our bulletins,” said N A Ansari Shah, chairman of Radio Namaskar. “We don’t only broadcast weather forecasts, but also songs, discussions, market prices and other practical information that is crucial to fisherfolk.”

“Ultimately, any solution has to take into account fishers livelihood and working conditions,” said Peter. “This problem cannot be solved with another welfare scheme or state relief package. Fishworkers’ safety has to become a priority.”

For more



http://www.imd.gov.in/alerts/20171129_al_238.pdf

**IMD Bulletin 1
(29 November, 2017)**

http://www.imd.gov.in/alerts/20171130_al_245.pdf

**IMD Bulletin 6
(30 November, 2017)**

<http://www.rsmcnewdelhi.imd.gov.in/images/pdf/sop.pdf>

IMD Cyclone SOP

<http://www.rsmcnewdelhi.imd.gov.in/images/pdf/publications/preliminary-report/cs29nov-06dec.pdf>

IMD Ockhi Preliminary Report

<http://www.ndma.gov.in/images/guidelines/cyclones.pdf>

NDMA Cyclone Management Guidelines

<http://www.fao.org/docrep/012/al216e/al216e.pdf>

Baseline Study for training in sea safety development programme in East Godavari District, Andhra Pradesh, India

<https://www.researchgate.net>

A Description and Analysis of the Events Occurring at sea and Land on 6 and 7 November, 1996 in East Godavari Andhra Pradesh

Building Back Better

A workshop on Cyclone Ockhi, which swept through parts of south India, discussed ways to make coastal fishing communities more resilient to natural disasters

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On 29 November 2017, a deep depression, detected in the Indian Ocean southwest of Sri Lanka, rapidly intensified into a cyclonic storm off the coast of Tamil Nadu and Kerala and the Union Territory of Lakshadweep Islands in India. Cyclone Ockhi, as it was named, took the life of over 350 people – nearly all fishers from the southern states of Tamil Nadu and Kerala – injured many others and damaged fishing vessels

in the Context of Food Security and Poverty Eradication (SSF Guidelines).

On 29 and 30 May 2018, ICSF organized a national workshop, with the support of FAO, to share the findings of the study with the community, government agencies at all levels and other stakeholders, and to take their feedback. The workshop was also meant to examine the impacts of Cyclone Ockhi on the marine fishing community, especially from Kerala and Tamil Nadu. The workshop, on “Small-scale Fisheries, Cyclone Ockhi and Disaster Risk Management”, was held at Thiruvananthapuram, Kerala.

Participants at the workshop included fishworker organizations, government and multilateral agencies, academics, non-governmental and civil society organizations, as well as members of the disaster affected fishing communities, who had been interviewed for ICSF’s study. The workshop was contextualised in light of the SSF Guidelines and the United Nations International Strategy for Disaster Reduction (UNISDR), focusing on the organization, planning and application of measures preparing for, responding to, and recovering from, sudden-onset disasters. Concepts like ‘relief-development continuum’ and ‘build back better’ to strengthen resilience of small-scale fishing communities, including women and vulnerable and marginalized groups, were to be considered.

Introductory remarks

The workshop opened with introductory remarks by P H Kurian, Additional Chief Secretary, Revenue and Disaster Management, Government

The workshop was also meant to examine the impacts of Cyclone Ockhi on the marine fishing community, especially from Kerala and Tamil Nadu.

and gear. Unlike previous cyclones, Ockhi’s impact was felt almost entirely at sea.

Supported by the Food and Agriculture Organization of the United Nations (FAO), the International Collective in Support of Fishworkers (ICSF) Trust conducted a study on the impacts of the cyclone on small-scale fisheries and the policies and plans in place to manage disasters and disaster risks, at all levels. The study employed a human-rights-based approach to evaluate vulnerabilities, specifically of small-scale fishermen, and recommended improvements in safety of fishers; communication and collaboration between agencies and governments; and the integration of disaster-risk management and fisheries management, in line with the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries

*This article is by **Ahana lakshmi** (ahanalakshmi@gmail.com), Independent Researcher, Chennai, India*



Fishers catch a light moment before setting out to sea in Marianad, Kerala, India. The collection of information on fishing activity, particularly in the small-scale sector, is a challenge because most fishers directly leave from their villages each day, and not from harbours

of Kerala. A message from Shyam Khadka, FAO representative in India, was presented by C M Muralidharan, Consultant on Fisheries for FAO. Yugraj Singh Yadava, Director of the Bay of Bengal Programme Inter Governmental Organization (BOBP-IGO), Anthony Adimai, Chairman, South Indian Federation of Fishermen Societies (SIFFS), and John Kurien, Managing Trustee, ICSF Trust, spoke briefly. They drew from their diverse experience in fisheries and disaster management to highlight the importance of sea safety, collaboration between institutions and the community, and the need for timely warnings to fishers on cyclones and other natural disasters. P H Kurian said that because cyclone activity was so rare on the southern Arabian Sea coast of India, everyone was focused on the storm's landfall. But Ockhi's impact at sea was an eye-opener, which would definitely be a lesson while going forward.

The opening session was followed by the presentation of ICSF's study, Cyclone Ockhi: Disaster Risk Management and Sea Safety in the Marine Fisheries Sector, by Manas Roshan, an independent researcher and consultant with ICSF Trust. The sessions and group discussions over the two days explored various aspects of

disaster-risk management that emerged in the context of Ockhi: early warning systems and the communication of warnings; institutional collaboration and the role of various agencies; sea safety and fisheries management; and climate-change impacts on the environment and fishers' livelihoods.

In the first panel, fishermen and fisherwomen from the Ockhi-affected villages shared their experiences of the

It emerged that the nearshore fishers in Kerala could have been saved had the initial weather advisories of the Indian Meteorological Department (IMD) reached the coastal villages in time.

disaster. The speakers, representing both the nearshore short-haul fishing operations and the long-haul mechanized fishing vessels, described the socioeconomic and psychological impacts of the cyclone, not only on the men but also the women and families in the community. It emerged that the nearshore fishers in Kerala could have been saved had the initial weather advisories of the Indian Meteorological Department (IMD) reached the coastal villages in time. It was pointed out that although the government had

Saving Lives, Protecting Livelihoods

National Workshop on Small-scale Fisheries, Cyclone Ockhi and Disaster Risk Management

Thiruvananthapuram, India

29 and 30 May 2018

STATEMENT

We, participants at the National Workshop on Small-scale Fisheries, Cyclone Ockhi and Disaster Risk Management, held in Thiruvananthapuram, India, on 29th and 30th May 2018;

Concerned that Cyclone Ockhi brought unprecedented fatalities to fishers, including migrant fishers, all along the entire range of their fishing operations, both in inshore and offshore waters;

Further concerned about the impact of Cyclone Ockhi on the women and children of the affected families of fishers;

Mindful that natural disasters have differential impacts and therefore need a differentiated approach at all levels;

Recognizing the need for a national perspective, legal and policy framework that integrate on-land and at-sea disaster management and disaster risk management;

Fearing that climate change impacts can enhance the intensity of cyclones in future in the Arabian Sea, in addition to the Bay of Bengal, and would have disastrous consequences for coastal communities and fishing communities;

Being aware that better disaster management and disaster risk management can contribute to mitigating new disaster risk and associated economic, environmental and social consequences;

Recognizing that the quality and success of disaster management and disaster risk management can be greatly enhanced through consultation and participation, applying a human rights-based approach within the Sendai Framework for Disaster Reduction 2015-2030, and the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines);

Further recognizing that coastal fishing communities often have their own mechanisms, processes and institutions relevant for disaster preparedness that can effectively complement governance mechanisms under the jurisdiction of the State; and

Taking note of the Sustainable Development Goal (SDG) target 1.5 “[B]y 2030 build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters”,

Recommend the following measures to the appropriate authorities at various levels and other relevant stakeholders:

I. Disaster management authorities

1. Reduce the number of deaths and number of people affected, including migrant fishers, and reduce the direct economic losses caused by disasters;
2. Integrate fishers’ knowledge into search and rescue operations at sea at all levels;
3. Ensure that emergency relief and rehabilitation measures are expeditiously delivered without further aggravating economic, social and psychological distress of affected families;
4. Take care that relief and rehabilitation measures in a post-disaster scenario are proportional to the needs of affected men and women in fishing and post-harvest activities, including of those directly and indirectly affected;
5. Safeguard maternal health and education for children of affected families;
6. Develop, in consultation with fishing communities, appropriate mechanisms for disaster relief and rehabilitation in the fisheries sector and apply standardized protocols to promote coordination and cooperation at all levels;

7. Build and strengthen resilience and adaptive capacity of small-scale fishing communities and reduce their vulnerability to natural disasters;
8. Make adequate budget provisions to support disaster risk management at all levels;
9. Ensure that disaster management and disaster risk management measures applicable to the fishing sector are informed by reliable information regarding fishing fleets, fishing gear and fishing operations in cooperation with the relevant fisheries departments and the Coast Guard;
10. Develop baseline information on marine and coastal habitats (natural reefs, coral reefs, sandy beaches, etc.) to assess damages to these habitats and dependent species from natural and manmade disasters consistent with Article 7 (adaptation) and Article 8 (addressing loss and damage) of the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC);
11. Promote public awareness about natural disasters like cyclones, among other means, through school curricula reforms, school clubs and through ocean literacy programmes;
12. Strengthen the capacity of local self-governments to enhance community participation in disaster risk reduction;

II. Early warning and prediction authorities

13. Improve accuracy of cyclone prediction and efficiency of its dissemination among coastal fishing communities, and among nearshore and offshore fishers;
14. Develop innovative new approaches (e.g. earmarking 'dynamic cones of uncertainty' as potential cyclone zones) for cyclone prediction, along with multichannel communication, to rapidly disseminate cyclone alerts to local communities (community radio, VHF, HF, satellite phones, etc.);
15. Integrate safety of fishing vessels, vessel navigation and operations as well as occupational safety of fishers into disaster risk reduction protocols to reduce the number of fishers losing their life during cyclones, including through the provision of financial incentives;

III. Fisheries authorities

16. Recognize the role and responsibilities of the fisheries authorities in monitoring fishing activity and safeguarding sea safety and ensure them an active role, along with other agencies, in search and rescue operations as well as in relief, rehabilitation, reconstruction and recovery efforts; in this context, coastal state/union territory fisheries authorities and the fisheries department at the centre should collaborate;
17. Provide effective and appropriate communication equipment to all fishers and registered fishing vessels at sea;
18. Develop awareness of small-scale fishing communities and provide training about adoption of effective sea safety procedures including use and maintenance of communication equipment;
19. Enforce sea safety norms and integrate sea safety into fisheries management and governance for short-haul and long-haul fishers, consistent with the recommendations of the SSF Guidelines, employing the "relief-development continuum" and "build back better" principles and a human rights-based approach;
20. Build capacity, including through pre-sea training, to deal with fishing in rough sea conditions and working for excessive periods of time, after an assessment of the risks concerned;

IV. Fishing communities

21. Improve the efficiency of cyclone alerts dissemination among coastal fishing communities, and among nearshore and offshore fishers, using the most cost-effective means of communication (e.g. community radio);
22. Encourage traditional and local knowledge and use of traditional protocols to predict disasters and to reduce disaster risks, and to promote community-based disaster risk management planning;
23. Strengthen the capacity of community-based organizations, including women's organizations, to deal with disaster risk management, particularly at the local level;
24. Propose 'green zones' under coastal disaster preparedness programmes to reduce the vulnerability of small-scale fishing communities to sudden-onset cyclones; and
25. Integrate sea safety into community-based initiatives for fisheries development and management.

In conclusion, building resilience to natural disasters and climate change of coastal communities requires coordination at all levels and open consultation with, and participation of, all stakeholders. This includes an awareness of the responsibilities of the community in ensuring an overall culture of safety at sea and on land.

initiated projects to distribute warning and distress-alert devices for fishers, voice communication was prized by the community. The women described the hardships of the families of dead and missing fishers, whose livelihood needs had not been addressed, despite the generous compensation paid by the government.

The second panel on “Disaster preparedness at sea: ensuring credible early warning and better prediction of cyclones” dealt with the technology options available with meteorologists and disaster managers. S Balachandran, Director of the Chennai IMD Area Cyclone Warning Centre, explained the analytical models employed by the IMD for cyclone prediction. Pointing out that Cyclone Ockhi was unique, both in its rapid intensification in the Comorin Sea and its unusual track along the Arabian Sea, he said that climate change had increased the

three agencies crucial to the disaster-management sequence in Kerala: the State Disaster Management Authority, the Indian Coast Guard and the Department of Fisheries. S. Venkatesapathy, Director of Fisheries, Government of Kerala, stressed the importance of boat registration and data on the movement of fishers and fishing vessels. He said that the collection of information on fishing activity, particularly in the small-scale sector, was a challenge because most fishers left directly from their villages each day, and not from harbours.

V K Varghese, Commanding Officer, Indian Coast Guard (ICG), Thiruvananthapuram, presented videos of search and rescue (SAR) operations to describe the challenges faced by rescue forces during the cyclone. Responding to the affected community’s grievances concerning the operations, Varghese clarified that the ICG protocol allowed it to even cross international boundaries for SAR. Shekhar L Kuriakose, Head, State Emergency Operations Centre, Government of Kerala, said that, post-Ockhi, the government had decided to change its warning protocol so that even ‘depression’ warnings by the IMD would now completely halt all fishing operations in particular areas.

The fourth panel on “Integrating sea safety into fisheries management and governance” addressed issues of sea safety; the working conditions of fishers; boat manufacturing and design; and the need for monitoring, control and surveillance measures in the Indian marine fishing sector. It was pointed out that fishing had always been considered an unsafe occupation, but the dare-devilry of fishers had to be complemented with safety precautions and reliable equipment, gear and vessels. This required consultations with, and the active participation of, the fishing community.

Final panel

The final panel was on “Building back better, keeping nature and people in mind.” C M Muralidharan, Fisheries Consultant with the FAO, said that rehabilitation and reconstruction should aim at long-term sustainable

...fishing had always been considered an unsafe occupation, but the dare-devilry of fishers had to be complemented with safety precautions and reliable equipment, gear and vessels.

probability of such severe cyclones in this basin. Recognizing that fishers need warnings specific to their fishing times and geographical zones, and the limitations of most warning systems, Balachandran recommended the use of innovative means like dynamic cones of uncertainty in the IMD bulletins.

Abhilash S, Assistant Professor at the Department of Atmospheric Sciences, Cochin University of Science and Technology, spoke about the need for coupled atmospheric-ocean models for cyclone prediction. Sajan Venniyoor, a community radio consultant, said that the use of multiple low-cost technology and media channels, including community radio and television, was essential to put the community at the centre of effective communication strategies.

The third panel on “Improving institutional co-ordination and collaboration in disaster response and relief” consisted of presentations by



Vallavilai fishing village, Tamil Nadu, India. During discussions in the first panel of the workshop, fishermen and fisherwomen from the Ockhi-affected villages shared their experiences of the disaster

development, integrating fisheries livelihoods, fisheries management and disaster preparedness. T Peter, Secretary of the National Fishworkers' Forum, said that traditional knowledge and scientific knowledge should be integrated to make coastal fishing communities resilient to disasters. It was also pointed out that Ockhi had caused unprecedented changes in the marine ecosystem, which had not been studied. In this context, strong measures had to be taken for the protection of the coast, including ocean literacy programmes; mapping of fragile reefs and biodiversity hotspots; and the preservation of traditional knowledge about local ecology and sustainable fishing practices.

Four group discussions at the end of Day One dealt with several issues raised in the panel discussions, adding a community and multi-stakeholder perspective. The group presentations on the second day evoked lively discussions which enriched the Workshop Statement (see Box). It made several recommendations

towards disaster preparedness and disaster-risk management to build the resilience of coastal communities to cyclones, natural disasters and climate change, stressing on the need for co-ordination at all levels and open consultation with, and participation of, fishing communities, applying a human-rights-based approach within the Sendai Framework for Disaster Reduction 2015-2030 and the SSF Guidelines.

For more



<https://www.icsf.net/en/monographs/article/EN/165-cyclone-ockhi-.html?limitstart=0>

Cyclone Ockhi: Disaster Risk Management and Sea Safety in the Indian Marine Fisheries Sector

<https://www.icsf.net/en/proceedings/article/EN/164-report-of-the-n.html?limitstart=0>

Report of the National Workshop on Small-scale Fisheries, Cyclone Ockhi and Disaster Risk Management 29 to 30 May, 2018, Kerala, India

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Cyclone Ockhi: A Stitch in Time

Welcome, JOHAR!

A World Bank-funded loan project has been developed in the Indian state of Jharkhand to enhance and diversify household incomes for targeted beneficiaries through fish culture

Jharkhand is one of India's poorest states. Its poverty rate is the highest in the country after Chhattisgarh's, with 37 per cent of the population below the poverty line. The average rate of decline in poverty in Jharkhand up to 2012 was 0.9 per cent per year—much slower than in the rest of India's rate of 4.8 per cent per year. A female literacy rate of 55 per cent is much lower than the rest of India's rate of 65 per cent. Malnourishment is a serious problem; 47 per cent of the children under five years are stunted, about 42 per cent are underweight and 16 per cent are wasted. More than 70 per cent of women and about 67 per cent of adolescent girls in the state are anaemic. Most households lack basic access to water and sanitation.

Agriculture provides employment to more than 60 per cent of the working population in rural areas; 63 per cent of the farmers have marginal land holding, averaging at 0.52 ha per head.

Agricultural production in Jharkhand can be characterized as poor and marginal. Farmers are unorganised and generally unaware of market opportunities. Most operate at a subsistence level of low surplus and rely on agents in the local markets (*haats*). Most of the marginal and small-scale farmers raise one crop in a year that is rain-fed, leaving them highly vulnerable to climate change. Recent droughts in the state resulted in crop losses of 40 per cent.

It is against this background that the Jharkhand Opportunities for Harnessing Rural Growth (JOHAR) project was launched. 'Johar' is a greeting in the local tribal language. The project comes under the umbrella of the Jharkhand State Livelihood Promotion Society and targets over 200,000 rural households formed into

3,500 farmer producer groups (PGs), based on women's self-help groups (SHGs). The World Bank funds this six-year loan project designed to enhance and diversify household incomes in select farm and non-farm sectors for targeted beneficiaries in the project areas of Jharkhand.

The target households are a sub-set of the SHG households supported by the National Rural Livelihood Programme (NRLP). These women SHG members come predominantly from the Scheduled Caste and Scheduled Tribe households that are either landless or have small land holdings; they are spread across 17 districts and 68 blocks of Jharkhand.

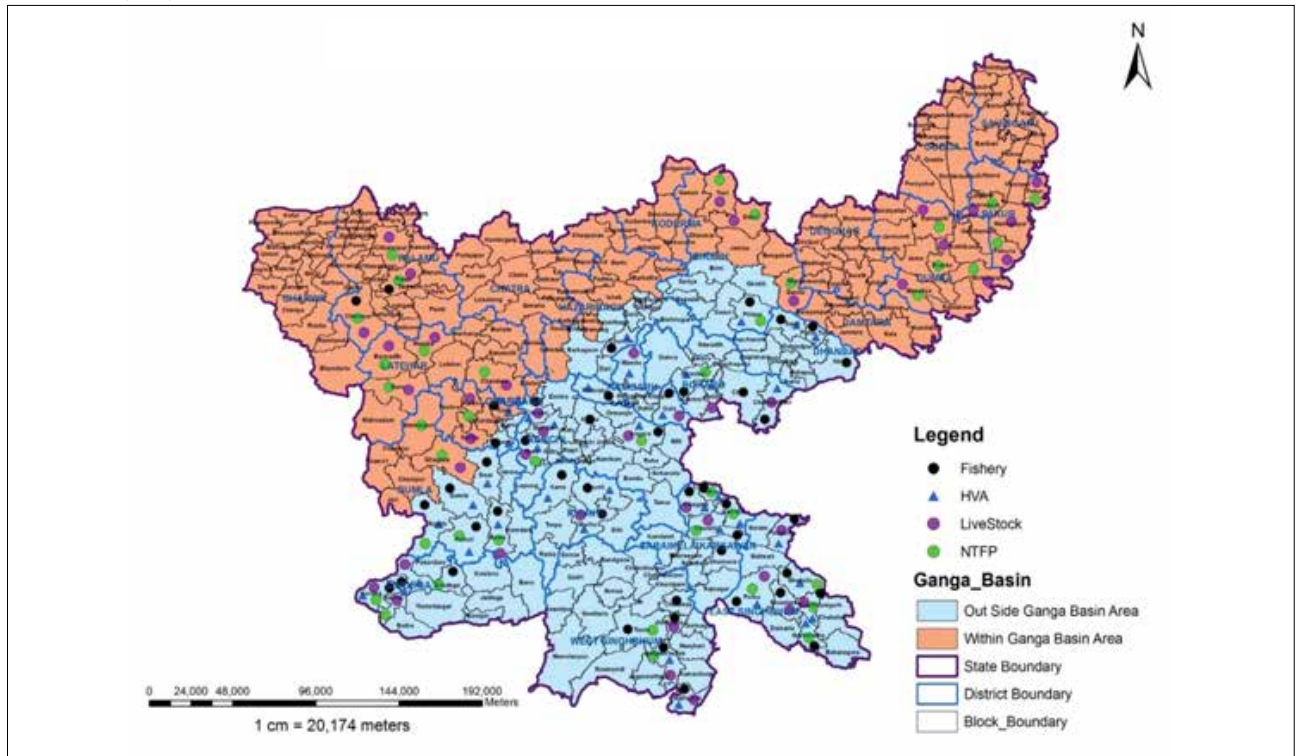
The project aims to help develop climate-resilient agriculture by focusing on year-round cultivation of vegetables, diversifying into new, high-yielding varieties of pulses and oilseeds. The project will also demonstrate resilient technologies for improving productivity and reducing climate risk in paddy cultivation, promote community-based micro-irrigation, and support the PGs to move into value-added sectors like livestock, fisheries and non-timber forest produce.

Water bodies

The fisheries and aquaculture sector in Jharkhand, principally comprising capture fisheries in large water bodies and fish culture, is viable and productive. Despite recurrent droughts, there is a large number of perennial and seasonal water bodies, which are increasing as water conservation programmes construct more small ponds (*dhobhas*) throughout the state. The popular fish species consumed here range from Indian major carp to indigenous species such as the local clarias catfish (*maghur/moghli*) and

This article is by Bipin Bihari (bipin.jslps@gmail.com), Project Director, JOHAR, Jharkhand State Livelihood Promotion Society, Department of Rural Development, Government of Jharkhand, and Smita Shweta (smita_shiweta@yahoo.com), State Programme Co-ordinator-Fishery, JOHAR, Jharkhand State Livelihood Promotion Society, Department of Rural Development, Government of Jharkhand

BIPIN BIHARI AND SMITA SHWETA



Composite map of revised JOHAR blocks. The 122 blocks in the state were ranked based on a set of criteria that included presence of mature community institutions, intensity of production in selected sub-sectors, proximity to markets, and access to public infrastructure

60

Fish culture provides considerable opportunities for improving the income and livelihood of the rural poor in Jharkhand.

climbing perch (*anabas/koi*). The fisheries sector has significant potential in the form of ponds, tanks, reservoirs, farm ponds and rivers. Enhancing fish

- Access infrastructure facilities for collective actions

In the long term, it is expected that the production surplus from the PGs will be marketed through Producer Organizations (POs). These are formal institutions that provide effective agriculture extension services to farmers, develop processes and systems for collection, processing, value addition and marketing.

Fish culture provides considerable opportunities for improving the income and livelihood of the rural poor in Jharkhand. It is especially suitable for risk-averse, low-income households with access to a water body. There is potential for incremental increases in productivity and profitability, which can be made with relatively simple technical improvements. The turnover in fish culture is rapid, with a seasonal crop taking six to seven months for harvest; monthly crops are possible in seed nursing operations. These production systems are suitable for the seasonal tanks typical in the state. With relatively low investment and high returns, fish culture can strengthen

production can generate employment, improve nutrition and reduce poverty. JOHAR is establishing PGs at the village level. These informal groups bring together farmers to deal with mutual objectives like market access issues, in general, and production-related issues, in particular. The PGs undertake, broadly, the following functions:

- Aggregate the produce
- Generate collective demands for inputs and procurement
- Seek better technology services to enhance productivity
- Source finances, and leverage benefits of government schemes

livelihood sources for the rural poor in Jharkhand.

Despite these opportunities, the fisheries sector in the state faces a number of challenges that constrain fishing and fish culture and, in turn, the development of the livelihoods of the rural poor. They include:

- Low fish productivity of seasonal water bodies
- Limited seed supply
- Large number of private tanks remaining unutilised for aquaculture
- Constraints on accessibility to formulated feed and supplemental agri-byproducts as pond feed inputs
- Weak extension support, especially for technology transfer to fish farmers
- Limited marketing channels and expensive harvesting arrangements
- Lack of access to credit for operational inputs to intensify production
- Lack of insurance support
- Risk-averse nature of poorer farmers and inexperience in entrepreneurship
- Need for appropriate pro-poor policy for enhancing access to, and use of, water bodies for fish production

To meet ambitious fishery growth targets and demand, there is a need to greatly increase the number of ponds being brought under culture and improve productivity from intensified culture. This requires a major boost to ongoing programmes to impact a

broader range of potential fish farmers state-wide. The distributed nature of water bodies in the state offers considerable opportunities to increase rural income generation through improved fish production and more effective marketing of fish products in a relatively low-risk manner.

As part of JOHAR, the goal of the fishery sector sub-component is to increase the capacity of smaller-scale producers and empower them to engage in the production and marketing of agricultural commodities to increase household income and improve the resilience of their livelihoods.

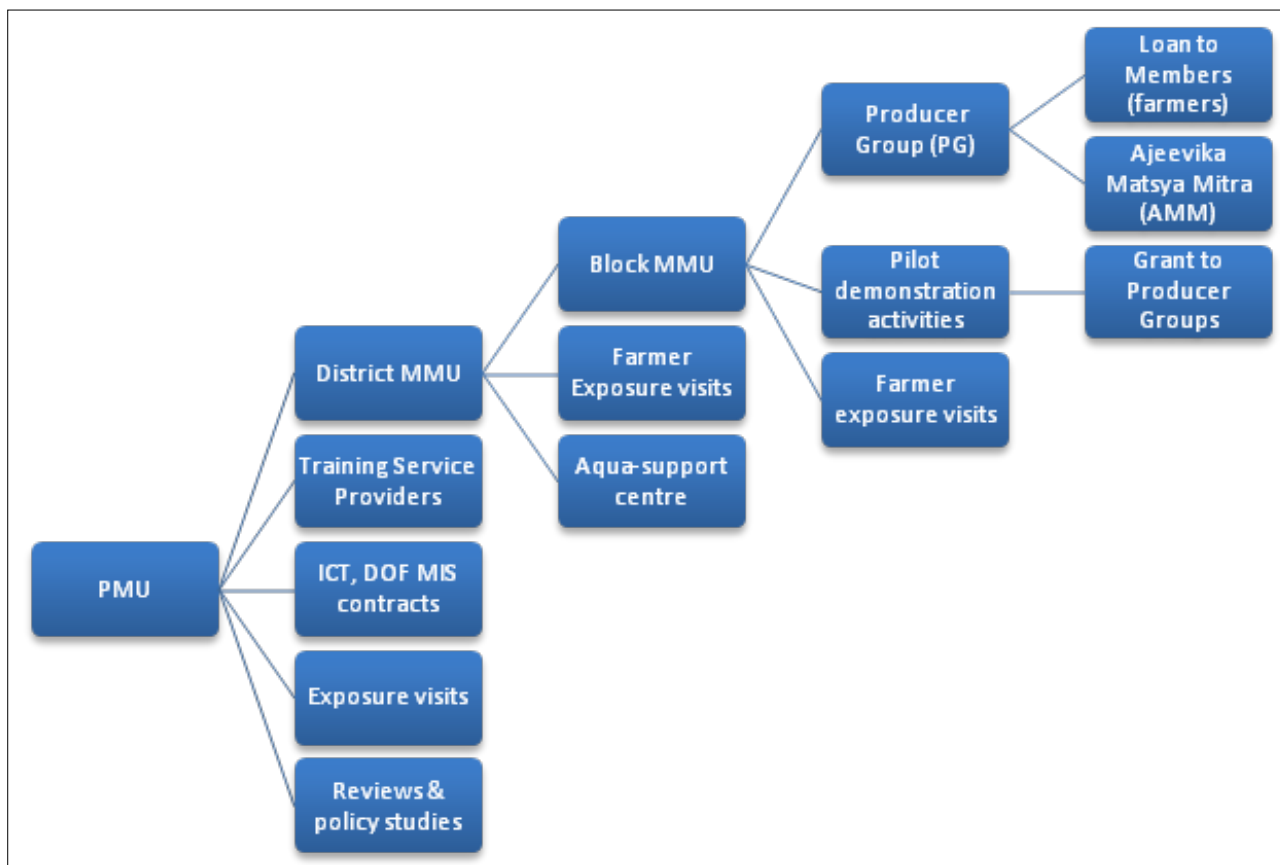
The approach of using PGs linked to savings SHGs as an entry point offers the opportunity to link credit provision to improved production techniques, thereby filling a gap that currently exists in access to rural credit.

The JOHAR objective is, therefore, to promote economic transformation of rural households by enhancing productivity and income generation from fish-production systems. This is sought to be achieved through:

- Strengthening or building robust, sustainable fishery producer groups (Farmer Producer Organisations);
- Introducing improved fish culture techniques and access to credit, which will give incremental increases in production over three crop cycles; and

Particulars	Unit	Unit Cost	Funding arrangement	JOHAR		BEN	
				Per acre	Half acre	Per acre	Half acre
				Pond improvement (pond rehabilitation & maintenance)	acre	1250	BANK (63%), BEN (10%)
Basic pond equipment (Plankton net, pH indicator, Sechhi disc)	farmer	1000	BANK (63%), BEN (10%)	900	900	100	100
Input cost for fish production (Manure, Feed, Seed)	acre	38000	BEN (35%), BANK (45.5%)	24700	12350	13300	6650
Total				26725	13812.5	13525	6812.5
Support for Harvesting & Marketing of produce	PG	20000					

Guidelines for disbursement of fisheries fund in PGs



Operational Structure

- Organising and co-ordinating with markets to improve producers' capacity to market their production so as to ultimately transition towards small and medium enterprises (SMEs).

The fisheries sub-component aims to strengthen the capacity of fish seed producers and bring new ponds and farmers into fish production. State-wide bottlenecks in availability of fish seed are also addressed through improving access to seed, development of farmer-based fry production and strengthening the state's spawn production capacity.

JOHAR targets women SHG members who already have existing ventures, or those who express an interest in starting fishery-related livelihood activities. All the direct beneficiaries of JOHAR are women. The project training and capacity building of women's groups will focus on productivity enhancement, sustainable access to credit, and the use of information communication technology

(ICT) for monitoring, improvement in marketing and overall sector development, including policy reforms. Alongside empowering women's groups to enter or improve fish culture, the sub-component also supports the development of technical advisory capacity and enhanced accessibility to state fishery support programmes at district and block levels through improvement of the state Department of Fisheries (DOF) training curricula.

Among the challenges faced by the women PG members are: acquiring ownership of community ponds; theft; seasonality of water bodies; siting of ponds beyond the homestead; and disputes among the members.

Skill development

Aqua-support centres have been developed in district fisheries offices to impart training and upgrade the skills of the community-level fishery para-professionals ('Ajeevika Matsya Mitra' or AMM). The formation of

PGs also enables access to credit, services, training, knowledge and skill development provided by the DOF, other line departments and NGO partners.

The PGs:

- Enable women's groups to organise to access community water bodies and reservoirs for fish culture;
- Help build capacity to act as fry producing clusters to supply advanced fingerlings;
- Build capacity for stocking private and community ponds for improved fish production;
- Use private water bodies, community water bodies and ponds dug under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA);
- Facilitate training of members in improved fish culture;
- Assist small producers to access seed for stocking and feeds;
- Act as a linkage to the feed supply chain and procurement clusters, eventually ordering from suppliers of agri-byproducts like oil cakes and rice bran from local SMEs; and
- Act as harvesting/marketing groups to take advantage of the increased production from pond and reservoir cage producers.

After one year of intensive organisation, JOHAR has formed 484 PGs, covering 6,000 households, and 3,500 women have been trained in fish culture at the village-level training programme. Increasingly, pen culture in larger water bodies will be explored as a way of enabling SHG women to access water bodies for fish culture. Models for small pond fish culture are also being developed to increase income from seasonal *dhobhas* (ditches) and small water bodies. The long-term target is to create 1,400 PGs covering up to 34,500 households.

The adoption of methods to improve fish production requires access to zero- or low-interest credit to improve fish ponds and procure inputs. The PGs act as the project vehicle for provision of loans to producers to cover the increased costs of the operational inputs required to improve productivity and increase incomes from fish production.

Ultimately, the JOHAR project, once fully implemented, will:

- Ensure that women are involved, for the first time, in fish farming;
- Utilize 30 per cent of the water bodies/*dobhas* now lying derelict;
- Involve landless and marginal farmers in fish farming, using community pond/reservoir pen culture;
- Double incomes;
- Establish an improved skill base amongst target farmers and fisheries para-professionals (AMMs);
- Strengthen the fishery information system of the DOF and JOHAR to provide post-project support to project beneficiaries for their existing schemes and institutional arrangements; and
- Make fish culture—currently an allied secondary agricultural activity of the farmers of Jharkhand—the primary activity as women's PGs become more confident and realise the potential of fish culture. ↴

For more



<https://www.downtoearth.org.in/news/governance/net-profit-52597>

Jharkhand taps its dam reservoirs and ponds to boost fish production as well as livelihood

<https://www.downtoearth.org.in/coverage/orphans-of-the-river-14068>

Orphans of the river

A Heavy Price

The cyclonic wind that swept through the shores of the Indian state of Odisha in the wake of Cyclone Fani have razed the livelihoods of many fisherfolk

On 3 May 2019, as Cyclone Fani swept through the coast of Odisha on the eastern seaboard of India, many homes were either badly damaged or completely shattered. Thousands of trees were uprooted. Most businesses and infrastructure were also destroyed, including the fishing industry, which is the economic backbone of the state's fisherfolk community of around 600,000-strong.

Fani affected over 200,000 fisherfolk. About 11,000 fishing vessels anchored along the Odisha coast were damaged in the gusty winds under the influence of the cyclonic storm. Many fishing vessels collided with one another and many were tossed over, said Prasan Behera, secretary of the Odisha Traditional Fish Workers' Union (OTFWU).

Hundreds of houses in the fishing hamlets were damaged and, as a result, large numbers of fisherfolk are now living under the open sky, added Behera.

"We underestimated the intensity of Cyclone Fani and paid a heavy price," said Apala Raju, a fisherman

Paradip, Kharinashi and other areas. Penthakota, with a population of 15,000, was the worst-affected fishing village in Odisha, said Iswar Rao, a local marine fisherman.

In a bid to conserve fish stocks at sea during the breeding period, the government of Odisha had imposed restrictions on fishing by mechanized fishing vessels from 15 April to 14 June in the state. The 60-day-long fishing ban had stopped all fishing activities in fish-landing centres and fishing hamlets, as large numbers of fishers and fishworkers had gone to their villages in Andhra Pradesh and other areas, leaving behind their fishing vessels and gear in the fishing hamlets. These boats got damaged in the cyclone, said P Aparajitha, a fisherman of Penthakota.

The Odisha state government has announced a compensation of Rs 9,600 for each damaged boat and Rs, 2,600 for damaged fishing nets. These are not expected to cover the cost of even minor repairs, said M Suribaba, a fisherman of Penthakota.

The gales of wind that swept through the shores have razed the livelihoods of many fisherfolk. Electricity has not been restored and people have very little access to drinking water even a week after the cyclone, said M Jagadish of Penthakota fishing village.

"I renovated my fishing boat by spending around Rs 50,000 two weeks ago during the fishing holiday period. As ill luck would have it, my vessel was damaged in the cyclone," said Ramana Rao, a fisherman of Chandrabhaga fishing village. "Fani damaged my boat and my house all at the same time," said 45-year-old Gopi of Chandrabhaga. "Our thatched house was damaged in the cyclone. Now we are staying in a nearby school," said Durga Ma, a fisherwoman of Penthakota.

A large number of fishermen suffered heavy losses for not taking precautionary measures to keep the fishing boats safely away from the beach.

in Penthakota fishing hamlet in Puri district. Raju was not alone. A large number of fishermen suffered heavy losses for not taking precautionary measures to keep the fishing boats safely away from the beach.

Fishing vessels were damaged in Penthakota, Chandrabhaga, Chilika,

This report is by Ashis Senapati (ashissenapati3@gmail.com), a journalist based in Odisha, India



Cyclone Fani affected over 200,000 fisherfolk. About 11,000 fishing vessels anchored along the Odisha coast were damaged in the gusty winds under the influence of the cyclonic storm

“Cyclone Fani crossed Puri with wind speeds of 175 kmph. On May 3 it destroyed and damaged thousands of fishing vessels and related infrastructure, causing a loss of over Rs 110 million as per our preliminary survey. Up to 6,390 fishing vessels were damaged in the cyclone in the state; 4,620 fishing vessels in Puri, 1,514 in Chilika, 78 in Kendrapara, 76 in Jagatsinghpur, 54 in Balasore and 48 fishing vessels in Bhadrak. About 7,240 fishing nets have been damaged. Fish-landing centres at Markandi in Ganjam district, Saran in Puri district, Bandara in Jagatsinghpur district, the fishing harbour in Paradip, fishing jetties at Jamboo, Kharinashi and Talacua in Kendrapada district have been damaged by Fani. Hundreds of boats are lying scattered on the beach. The fisherfolk are helping us in our work,” said Pratap Ranjan Rout, joint director of Fisheries (coastal) Department of Odisha.

“Our department is preparing support measures for fisherfolk, providing essential fisheries inputs and assisting in the repair of damaged fishing vessels and damaged fishery

infrastructure. It is the fighting spirit and the past experience of the fisherfolk in many seaside fishing hamlets that made them leave their coastal homes to safer places to save their lives. Around 41 persons died in Fani, but no fisherfolk have so far been reported dead in the state in this cyclone.”

For more



<https://www.icsf.net/samudra-news-alert/articledetail/58452:cyclone-fani--the-worst-is-over,-but-picking-up-the-pieces-won%E2%80%99t-be-easy.html?language=EN>

The worst is over, but picking up the pieces won't be easy

<https://www.icsf.net/en/samudra-news-alert/articledetail/58431-Cyclone-Fani-hi.html?language=EN>

Cyclone Fani hits Indian coast, a million people evacuated

<https://dc.icsf.net/en/component/dcnews/articledetail/13860.html>

Fishermen vulnerable due to frequent cyclonic events

Some Grains of Salt

India's 2019 Draft National Policy on Inland Fisheries and Aquaculture is an ambitious effort but limited in depth and vision

The Draft National Inland Fisheries and Aquaculture Policy (NIFAP) is an important and welcome development on the manifold issues of managing inland fisheries. It was prepared in March 2019 by an expert committee appointed by the Government of India. The need for such a policy stems from two important features of inland fisheries. One, they are a sprawling, heterogeneous, and ambiguous bricolage of diverse ecologies, institutional regimes and cultural practices. As a result, the administration of these systems is inherently complex and perhaps in need of an umbrella policy. Two, due to the boom in freshwater food fish, especially carp, aquaculture in India—economists call this chimera the ‘inland fisheries sector’—is big and growing; it warrants efficient, revenue-oriented and sustainable management by the state. Both aims are difficult to achieve, and make the draft NIFAP an ambitious attempt.

The policy remains limited in its depth and vision, however, and can benefit through a more thorough engagement with inland capture fisheries by recognising:

- The ecological declines facing inland capture fisheries and fisher livelihoods;
- The complexities of fishing rights and access conflicts; and
- The political constraints to implementation of fishery policies in capture systems at large.

This article attempts to discuss these three main limitations and identify where we have to take this well-meaning policy on freshwater fishes—with some grains of salt—while engaging with its broad vision.

Inland fisheries in India comprise capture fisheries (mostly in rivers and streams, floodplain wetlands, estuaries,

etc.), culture fisheries (intensive pond-based fish aquaculture), and mixed capture-culture systems, in which fish seeding is practised and wild fish are also harvested in, for example, dam storage reservoirs, tanks, ponds and other wetlands. Each of these systems is linked with different ecological conditions and social settings. The dominant contribution of culture and mixed systems to India's total revenue from inland fisheries (over 90 per cent) biases the understanding of the word ‘inland’ in a way very unfair to river-floodplain capture fisheries. Capture fisheries in natural water bodies may have a negligible revenue share, but are immensely important in sustaining the protein needs and livelihoods of millions of people across India. Further, due to the degraded and altered state of river flows and water quality in most parts of India, capture fishery yields are reducing in both quantity and quality. Hence, assessing the so-called ‘potential’ of river/wetland fisheries in terms of their area and length is not enough. The ecological and social health of these fisheries needs to be the primary variable of management, not just revenues and stocks.

General neglect

But, unfortunately, it appears that the general neglect of concerns related to capture fisheries has also carried over into the NIFAP, which discusses these aspects only in a cursory manner. The emphasis of the policy framework on intensive aquaculture fisheries and comprehensive state control of inland fisheries is problematic. By privileging state control and focusing mostly on aquaculture systems, the NIFAP downsizes the relevance of reviving community-based fisheries management in riverine and wetland capture fisheries. This has implications



Fishermen take their boat out to use a multi-mesh drag-net in the Ganga river, India. Capture fisheries in natural water bodies may have a negligible revenue share, but are immensely important in sustaining the nutritional needs and livelihoods of millions of people across India

not only for equity and justice, but also for food security, poverty alleviation, biodiversity conservation, water quality, and alternative-sustainable-water management scenarios.

The NIFAP's classification scheme of 'Inland Fisheries' appears artificial and arbitrary. Capture and culture fisheries have also not been properly distinguished in relation to the geographic categories, despite their divergent characters. This is important because the management practices and governance structures are entirely different in these two modes of fish production. Another example of the arbitrary classification is in 'recreational fisheries', which does not sit together with the other geographical categories like river, reservoir, wetland or cold-water. Recreational fisheries are minor, but exist across rivers, wetlands, reservoirs and even cold-water streams in India. A composite and nuanced scheme of classification would have been excellent, integrating institutional management categories, capture/culture practices and geographical attributes. But the opportunity to frame helpful distinctions of types of inland fisheries systems has been missed.

To date, a reasonable estimate of livelihood dependence of people on inland capture and mixed fisheries remains wanting. With successive

A comprehensive fishery census and stock-revenue assessment of capture fisheries can provide a strong baseline for further implementation, monitoring and adaptive management guidelines...

inland fisheries interventions at the state and national level being strongly biased towards aquaculture over the last few decades, the neglect of capture fisheries has compounded. An effort to co-ordinate countrywide intensive data collection for the quantification of fishing effort and nature of dependence is much needed in riverine capture fisheries. A comprehensive fishery census and stock-revenue assessment of capture fisheries can provide a strong baseline for further implementation, monitoring and adaptive management guidelines, before the NIFAP recommendations are operationalized.

Ecological flows are not only important for biodiversity, they are critical for riverine capture fisheries as well. The NIFAP's emphasis on river and wetland ecology is weak although it aligns with the 2012 National Water Policy's recommendation for 'minimum' ecological flows. Strengthening the focus on optimal water allocations for ecological needs and to maximize ecosystem services, which include capture-fisheries yields, needs to be a component of greater significance. The minimal right to water for fisheries is undoubtedly important, but one worries that the minimal right should not merely translate to the dated idea of 'minimum flow' in rivers. The right to water for fisheries can be supported in the true spirit only when ecologically adequate flows are provided, which can mimic natural seasonal variability in river flow.

From the early 1900s, with plans for the commercial development of fish aquaculture, rivers were merely seen as a stock for spawn collection, especially of the Indian Major Carps or IMC species that now dominate all pond-based carp culture. Excessive and unregulated collection of spawn through the 1950s and 1970s directly affected riverine fish stocks of IMCs and other species as well. With this history, restocking of inland water bodies with seed of native fish species is an interesting suggestion in the NIFAP. Yet, it might be difficult to link seed production units with actual success in the restocking of any native species. Restocking success will be predicated upon maintenance of near-natural flow regimes in regulated

Feedbacks between intensive aquaculture and river flows, especially in semi-arid regions, also deserve careful attention. The NIFAP glosses over the key distinction that, while capture fisheries are non-consumptive water users, aquaculture is often a consumptive water user. With intensive carp culture in regions such as Andhra Pradesh or Rajasthan, large chunks of inland aquaculture in India depend on extraction of groundwater or surface water. The quality of water extracted from these sources might then deteriorate with the continued use of weedicides and pesticides in aquaculture ponds, and even affect the soil health of catchments. Therefore, organic practices and improvement in aquaculture efficiency—akin to irrigation efficiency and crop water use improvement—need to be integrated in aquaculture and mixed fisheries. Such practices can also help protect natural water bodies in the vicinity from pollution and degradation. Another factor contributing to declines of native fish species has been the wanton introduction of exotic fish populations. While the NIFAP recognizes that the entry of exotic species is to be regulated, the policy should recommend bans on any further additions of species or populations of exotic alien fishes to inland fisheries in India.

The NIFAP emphasizes the vesting of leasing and management rights in state departments, and supports the entry of private businesses to develop inland fisheries. This is to be done while retaining the trusteeship and custodial rights of respective local agencies and institutions. Yet such an arrangement may become contested without exact guidelines on implementation. Frictions between local non-state institutions and state departments invested in fisheries are not new. Conflicts between local communities, state agencies, and third parties—private players, contractors, NGOs, etc.—are common over issues of hierarchy, control and benefit sharing.

Big question

As for the NIFAP, are local agencies and institutions to be recognized by the state as trustees, or participants, or as equal partners in fisheries management?

...organic practices and improvement in aquaculture efficiency—akin to irrigation efficiency and crop water use improvement—need to be integrated in aquaculture and mixed fisheries.

rivers. Growth and survival bottlenecks of fish larvae/fry are influenced by the timing and duration of river flow across different seasons. To ensure population recruitment and survival towards stock enhancement, such restoration measures will need to depend on major, radical changes to existing paradigms of river water management in India.

How they interact across hierarchies and scales is a big question, given that local agencies would inevitably be nested underneath government structures. The same question applies to the revival of functional fishery co-operatives, which the NIFAP emphasizes, while retaining all leasing and licensing powers with the state at the same time. The potential of fishery co-operatives in managing fisheries has been limited in many regions due to state or elite interference. So, reviving community-based and local co-operative institutions that work with state agencies, and not under them, is critical. In fact, consolidating state control over riverine or reservoir fisheries might lead to erosion of local institutions that have demonstrated effective fishery management through community-based interventions, for example, tribal groups in Jharkhand and Maharashtra.

Active participation of fisheries governance in management of river systems is also identified as an important area, but what organization models might work in rivers is not addressed. The political dimensions (especially with regard to caste and access) also impinge on making state control effective beyond a point. As river fishers generally receive little consideration in matters of inland fisheries, it seems unlikely that their inclusion in river management strategies will be easy or even acceptable across many quarters, including state agencies themselves. Acknowledging these systemic conflicts and seeking ways towards their resolution or management is an aspect missing from the NIFAP, which, while not ignorant about them, appears to wish away these problems.

The NIFAP's emphasis on the state becoming almost the sole controller and regulator of fisheries affairs may work well for intensive, organized and high-revenue aquaculture systems. But its application to river-floodplain capture fisheries is questionable, for various reasons. In Bihar, for instance, all river fisheries on flowing waters are open-access and state involvement in managing river fisheries is almost non-existent because there is no revenue to be extracted. The hands-off approach of the state fisheries department for

riverine fisheries has led to near-total control of access to fishing grounds by mafia-style gangs and other 'anti-social' elements that regularly exploit local fishers through violence and threats. These are ground realities along many rivers of north India where gangs or bands maintained by strongmen or fishery contractors work as a 'shadow state' ruling the fisheries. Criminal control of fisheries has serious implications for fishing rights as well as human rights, but these have not been acknowledged in the NIFAP. A steady trend of exit has also been noted from such areas. Fishers forced to continue fishing in these regimes have limited choices, and often involve compromises with the gangs in order to maintain access to fishing grounds. In such situations, it appears impossible that state agencies will even consider—let alone be proactive—about assuming control of risky, scattered and low-revenue yielding capture fisheries.

Even if state interest in managing capture fisheries may be low, state agencies cannot avoid engaging with fishers' development and well-being issues. State-led incentives to better organization and development of capture fisheries are very important. To improve and sustain revenues

...there is also room to change the approach towards capture fisheries, by focusing on their food security, livelihood and conservation dimensions rather than profitability.

obtainable from capture fisheries, state funding channels and investments towards improving market access and fish price regulations are much needed. In the absence of financial incentives and support structures, local fishery institutions may find it difficult to manage their fisheries. At present, the primary way to revive state interest in capture fisheries is, it appears, to make it more revenue yielding and commercially viable.

However, this would need radical changes in river water management. Given these complications, there is also room to change the approach towards capture fisheries, by focusing


on their food security, livelihood and conservation dimensions rather than profitability. Open-access regimes, despite being riddled with pernicious conflicts over fishing rights and access, continue to provide a safety net to the most marginalized fisherfolk. For the poorest of the poor, the space offered by free entry and exit helps ensure some continuity in basic incomes and independent decision making by fishers. State control and regulations in such contexts may end up excluding from fishing the most vulnerable groups such as the landless, economically backward, or Dalit fishers.

That said, the NIFAP's point about updating fishing regulations is of utmost importance. Currently, the focus of regulations is on fishing practices—limits to mesh sizes, bans on destructive methods, for example. But there is a need for more nuanced regulations on spatio-temporal fishing behaviour, catchability and effort applied for gears used in fishing. A systematic revision of existing ad hoc regulations and management guidelines might thus be an important step towards implementing fishery regulations to foster sustainable fisheries. Fisher mobility allows for some buffering capacity against external social and environmental shocks. But mobility is also a hurdle to organizational management of fisheries and a reason for inter-sectorial/institutional conflicts. Thankfully, inter-sectoral co-ordination receives adequate attention in the NIFAP. Reservoir fisheries above dams or barrages, for instance, often overlap with the boundaries of protected areas managed by the state environment/forest departments. In such settings, forest and fisheries departments need to work together to plan fisheries development as well as minimize impacts of fishing on wildlife and vice versa. Access to fishing is also affected by conservation and protection laws and entry restrictions in protected areas. There seems no way other than inter-departmental co-ordination to manage such boundary conflicts. Conflict management is thus central (albeit neglected in the NIFAP to the objective of balancing livelihood needs and developing

fisheries production alongside ecological conservation priorities. NIFAP neglects this aspect.

Given the complex nature of inland capture fisheries, NIFAP's vision of 'pluralistic and participatory systems' is the ultimate challenge and deserves continued engagement. This calls for expanding the scope of inland fisheries research and management in India to socio-political and cultural dimensions. This requires going beyond the biological heuristics of fish stock assessments, the technical calculations of intensive fish culture, and the economic forecasts of fishing revenues and 'potential', which have so far dominated the discourse on inland fisheries.

Beyond regulations

In summary, the NIFAP offers hope, but also lets loose several uneasy questions. As a set of guidelines, it appears distanced and sanitized from ground realities in capture fisheries that are murky, difficult and even unsettling. It is hoped that it can see beyond regulations and revenues, and grapple more with contestations that are like the clockwork of India's inland capture fisheries. 

For more

<https://www.icsf.net/en/samudra/article/EN/75-4258-Tempered-Down.html>

Tempered Down

<https://www.atree.org/users/nachiket-kelkar>

Nachiket Kelkar's page

http://dadf.gov.in/sites/default/files/NIFAP%20%28English%29%20%28merged%29_0.pdf for more

Draft National Inland Fisheries and Aquaculture Policy (NIFAP)

Remembering Rambhau

An energetic and committed worker for the cause of fishers, he was a lighthouse for the fishworkers' movement

Rambhau Patil, an enterprising member of the fishing community of Maharashtra in India, was 79 years old when he left us on July 29, 2018, for his final journey. Born Ramchandra Patil, he received the affectionate moniker of Bhau, or Rambhau, due to his benevolence and his always-on smile. Almost always dressed in a *khadijhabba*, a traditional pyjama-like loose-fitting shirt and trousers, he was never seen without his bag full of books and documents hanging down his shoulder. Rambhau was born in the village of Mahim in Wadrai, Maharashtra. Although fishing was his family's ancestral trade, he was brought up and raised in an educated environment. Rambhau completed his primary and secondary education at the block headquarters in Palghar.

a co-operative of fishermen. Fishing gear, at necessity for fishing, was made available to the village through this co-operative, along with essential items like food grain and kerosene.

The co-operative also took efforts for children's education to address the illiteracy in the village. These efforts included the opening of a Rashtra Seva Dal centre for adolescents and youth. This centre conducted recreational activities like sports and singing sessions in order to bring about social and political awareness.

Rambhau actively participated in all such events. Therein lay the strong foundation of his future socio-political activities. After completing his education, Rambhau took up a job at the famous Haffkine Institute, a biomedical research centre. He was also deeply interested in art and architecture. This drew him towards a diploma course in architecture, for which he studied after his working hours. He could not complete this course; family responsibilities forced him to give up his job and assume the family's fishing business.

He began an independent fishing business in 1969. He also tried trawling, a new business in Mumbai at that time. Subsequently, over the next two to three years, he tried his hand at a fishing business at Satpati, a place known for the trade. He could not land much success. He began to think through the problems in the fishing business, the risks and their solutions. This is what later led him to join the fishermen's movement. Undaunted by failure, he refused to sit quietly. He became the sarpanch (head) of his village at the behest of the people there. He remained in that position for a good 15 years.

Almost always dressed in a khadi jhabba, a traditional pyjama-like loose-fitting shirt and trousers, he was never seen without his bag full of books and documents hanging down his shoulder.

The village had produced several freedom fighters; its inhabitants came from various tribal groups, a fishermen's community and small farmers. After being released from jail, these freedom fighters strove to unite these underprivileged communities through a socialist movement. They began working for their economic empowerment by creating co-operatives and social organizations. The fishing community was in dire straits then. They were severely exploited by the traders and agents in their business. Rambhau's father, the late Kanha Patil, took the initiative in forming

This article is by Purnima Meher (purnima.meher@yahoo.com), Member, Maharashtra Machhimar Kruti Samiti (MMKS), Maharashtra, National Fishworkers' Forum (NFF), India and translated from Marathi by Ashwini Jog (ashwini.jog@gmail.com), Mumbai, India

Tireless work

Rambhau worked tirelessly to make housing available to the fishermen and to establish their rights over it. Another important issue was housing for the tribals. The village was spread over a large area, the tribal hamlets were remotely located. He hence prioritized the building of roads, and the creation of drinking water facilities, followed by a health centre and a school. He managed to get these facilities executed despite the fund crunch. He used his architectural/engineering knowledge—and his aesthetic sense—in the construction of the structure and in the design of a water scheme.

His work was widely celebrated, extending his social and political circle.

He continued to read extensively, consulting with experts and those who had experience in the fishing business. He ended up joining the Maharashtra Machhimar Kruti Samiti (MMKS), an organisation fighting for the rights of fishermen.



This was a period of change; with mechanization of the fishing industry had begun and other several new schemes had been introduced in the coastal areas. Moreover, the country was also going through the phase of economic restructuring and globalisation. This had created large industrial settlements in the coastal regions for improving employment opportunities. The period also saw introduction of commercial ports, atomic energy plants and chemical industries, which would release their toxic wastes into the rivers, bays and seas nearby.

Increasing pollution in the coastal villages endangered fishing activity. MMKS began organizing protests around these issues. The founder of MMKS, Bhai Bandarkar, along with Moreswar Mistry, who formed the union of sailors, and Motiram Bhawe had organised protests against mechanization and environmental pollution. They also campaigned in

Mumbai and Delhi to obtain diesel subsidies as well as tax rebates on the equipment necessary for the fishing business. They were fairly successful.

In the 1980s, Rambhau was introduced to Thomas Kocherry, who was leading a campaign to organise the fishermen in Kerala and Tamil Nadu to fight for their rights. In 1989, he had organised the Kanyakumari March around the slogan “Save Water, Save Life”. Rambhau had joined this March along with several of his colleagues. Thus began his association with the National Fishworkers’ Forum (NFF). This was a turning point in his life. At this stage, he met several leaders from across the country, including Harekrishna Debnath of West Bengal

and Nalini Nayak of Kerala. Although Rambhau was already sensitive to women’s issues, the objectives of NFF gave him the scope to incorporate women into the union and to develop an appreciation of women’s contribution in this field. He

used to enthusiastically elaborate upon the importance of using the term “fishworkers” in the title of NFF. Incorporating women into the movement was not an easy task, as he explained later. He served as President and Secretary of both MMKS and the NFF over several years. This was a time when several important leaders of the organization died one after another—Thomas Kocherry, Harekrishna Debnath, Mathai Saldanha and MD Koli, an important leader from Maharashtra. Rambhau did not allow a leadership vacuum. He kept the organization stable and held its components together. During this period, he faced disappointment, too.

Significant struggles

The significant protests and struggles Rambhau helped organize include:

- The struggle against foreign fishing vessels: This struggle continued for a long time. Participating in a hunger

strike along with Thomas Kocherry, he fasted for nine days.

- The Coastal Regulation Zone (CRZ) Notification of 1991: He travelled throughout the country to raise awareness about the Notification and organised several awareness campaigns.
- He campaigned to acquire subsidy for diesel fuel, which is essential for operating fishing vessels. He subsequently also succeeded in increasing the subsidy amount.

Rambhau was fond of writing. He used simple language which could be easily understood by the common fishworker. He translated into Marathi the 1995 FAO Code of Conduct for Responsible Fisheries and also the booklet about the recommendations of the Murari Committee. Another concern of his was the relationship between mangrove forests (Tivarvane) and the fishing occupation. He composed songs for the worship and celebrations held on the Fishworker's Day every year, encouraging everyone to sing along.

He spoke incessantly of the importance of preserving and protecting the rivers, bays and salt marshes in the villages. Rambhau made a major contribution in the protests and campaigns for laws regarding marine biodiversity, environmental protection and conservation. He traversed the country while working for MMKS, the NFF as well as the World Forum of Fisher Peoples (WFFP), with which he was associated. His family responsibilities did not hold him back from his social activism. He found several colleagues, friends as well as mentors among these three organizations. He always felt grateful for this. He was very appreciative of the fact that he met activists from all castes and religions while working with these three organizations.

Rambhau had the good fortune of Sane Guruji's company during his youth. He always upheld the values and principles of peace and democratic socialism, working for the greater common good. He would always assert, while addressing public meetings, that in the coastal fishworkers' communities, there were activists from different background, and yet there never was

any dispute on the coastline. In his four decades of public work, he always received great support from his loving family, his brothers, his wife Lalita, his sons Jivitesh and Prashant and daughter Vandana; their co-operation and contribution to his achievements is by no means insignificant.

Rambhau, the energetic activist and a lighthouse for the fishworkers' movement, left us on 29th July 2018. 🙏

For more



<https://indianfisheries.icsf.net/images/stories/indian/FULL-NFF-BOOK121208.pdf>

Save the Coast, Save the Fishers: Report of "Machhimar Adhikar Rashtriya Abhiyan", May - November 2008, National Fishworkers' Forum

A Platform for Women

Women in fisheries can utilize the SSF Guidelines to advance their interests, even as they relate to one another and build up solidarity and a common vision

Over the last several years, many fishworker organizations have been engaged in spreading awareness among the fishing communities on the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines). It is certainly a tool that can be used to advance the sustainability of small-scale fisheries, if sufficient pressure is applied on governments, despite the fact that there has been a massive change in the sector.

In India, in 2016, the International Collective in Support of Fishworkers (ICSF) had organized a large national workshop to discuss the provisions of the SSF Guidelines with women in fisheries from various states (provinces). A follow-up workshop was organized in August 2019, this time focusing on states where women are better organized, in order to help them take the discussion towards concrete action. This was also in the backdrop of the National Policy on Marine Fisheries (NPMF), which was notified in late 2017 by the Government of India.

PS from the Central Institute of Fisheries Education, (CIFE), Mumbai. Thirty women leaders from the states of West Bengal, Maharashtra, Tamil Nadu and Kerala got together for this three-day session.

The August workshop began with women sharing their activities and the issues they face in the workplace in their respective states. It was encouraging to see that women's organizing capacity in these states has progressed substantially and that they have been making their demands heard either through public demonstrations or by constantly applying pressure on the administration to safeguard their rights. Women's leadership is growing and is building links among women across districts. It was also clear that the socio-economic situation of women varied from state to state, with women in Maharashtra being the most advanced, followed by Kerala, Tamil Nadu and West Bengal. The variation in socio-economic situation also has to do with differences in fisheries across states. The first step was to help women not only to understand these differences but also to help them relate to one another, in order to build solidarity and a common vision.

While analysing NPMF, it was apparent that women do not even figure in the preamble. Although gender justice is mentioned as one of the pillars of the overall strategy, NPMF recognizes only post-harvest activities of women. It does not take into account other activities along the fisheries value chain that are performed by women. Nikita Gopal tried to emphasize and discuss those areas where gender mainstreaming could be advocated to benefit women. The reference to tenure rights of traditional fishermen under fisheries

It was also clear that the socio-economic situation of women varied from state to state, with women in Maharashtra being the most advanced, followed by Kerala, Tamil Nadu and West Bengal.

It was deemed necessary to understand whether or not there was convergence of this national policy with the provisions of the SSF Guidelines.

The session was organized in collaboration with Nikita Gopal from the Central Institute of Fisheries Technology (CIFT), Kochi, and Ananthan

*This article is by **Nalini Nayak** (nalini.nayak@gmail.com), Trustee, ICSF Trust and Member, Self Employed Women's Association (SEWA), India*



Group photo of National Workshop on The SSF Guidelines and Mainstreaming Gender into Fisheries Policies and Legislation, YWCA, Chennai, India, 18-20 August, 2019. The group decided to create a national platform to design a mechanism to take up national issues

management, for example, could be broadened to also include secure tenure rights to fisherwomen. Areas can be reserved not only for traditional fishers under NPMF but also for fisherwomen to undertake traditional fish-drying activities. Territorial use rights, which are tenure rights, could thus pertain to water as well as to the rights of women over specific land areas to undertake fish-drying operations. In the case of mariculture, while encouraging small fishing communities, fishermen's groups and fishery co-operatives, fisherwomen's groups or co-operatives could also be created and encouraged to undertake and benefit from mariculture operations.

The education level of fishing communities was rising on the whole but still remains below the state average. The education status of women was below that of men, it was noted. Nikita Gopal indicated certain pockets where the education levels are falling. The premature death of the male parent often led to young boys being forced into fishing and leaving school. Also, the participation of mothers in fish vending led girls

to drop out of school to take care of the family. In addition, poor access to educational institutions, located far away from home according to a sample study as reported to the workshop, led to dropping out of school. Health-related issues appeared to be common across states for women and were mainly related to the occupation of fish vending/fish processing, lack of water and sanitation infrastructure or just living at a distance from healthcare facilities.

The session on tenure rights and fisheries management highlighted the difference between the gender perspective in the NPMF and the SSF Guidelines and the need for women to use the latter to advocate for their rights. To do this effectively, it is important to better understand various terms and concepts such as 'the ecosystem-based approach', 'management', 'co-management' of fisheries resources, the 'value chain', and 'biodiversity conservation', as understanding of these terms is part of the requisite knowledge in engaging with fisheries issues while asserting their rights. Understanding these concepts would

help if women seek to make their claim included in management committees and to integrate issues that also affect their lives, in general.

After giving a broad outline on the gender budget, Ananthan PS talked about the budget allocations in the fisheries department. The Central Government has instructed that at least 30 per cent or nearly one-third of the funds under state programmes should go to women beneficiaries or to women-oriented programmes. Up to 2017-18, there were more than a dozen schemes under the Central Government. In 2018-2019, though, several schemes have been amalgamated under one called the 'Blue Revolution' scheme.


Although clarity is still required on the specificities of allocations, there is a 75 per cent grant-in-aid to self-help groups (SHGs) of women for the creation of modern hygienic fish-marketing infrastructure. This is available for retail fish markets and transportation infrastructure. Women were to be made to understand how they can demand budget allocations at the state level and how these allocations can be utilized. Ananthan highlighted how various state governments demanded and utilized the Central funds. Although women leaders were aware of the schemes, they were not aware of how allocations were made to these schemes. Once this process is understood, they would strategize to influence allocations to schemes that benefited women.

There was then a sharing of some innovative and successful development projects that the CIFT has been engaged with women, like the use of the fish dryer and the cultivation of clams and processing of clam meat.

All sessions were followed by group discussions so that women could digest the inputs and make their responses, which made the programme quite intense and indicated the interest on the part of fisherwomen to understand and share their experiences. Discussions were also held on labour issues within the framework of labour rights in India and other specific legislative provisions like The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, and The

Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013—all important pieces of legislation but not known to many of the participants.

On the concluding day, the state groups worked on their action plans. While sharing them, it emerged that some issues were specific to their regional context while others carried national relevance. The group decided to create a national platform to design a mechanism to take up some of these national issues. To begin with, the platform could take up two major issues: The first was related to budgets, monitoring how much of the budget allocations go to schemes that benefit women, and how they could lobby for this. The second was for the platform to work on demanding enhanced assistance from the state and Central governments to compensate for their non-fishing days, including fishing days lost due to the ban on fishing and fishing days lost due to bad weather conditions.

While the modalities of the functioning of the platform were not discussed, this will hopefully be taken forward in the coming year in order to advance the interests of women in fisheries. 

For more

<https://igsf.icsf.net/en/page/1095-India%20Mainstreaming%20Gender%20and%20Fisheries.html>

National Workshop: The SSF Guidelines and Mainstreaming Gender into Fisheries Policies and Legislation, YWCA of Madras International Guest House, Chennai, Tamil Nadu, India, 18 to 20 August 2019

<https://www.icsf.net/en/proceedings/article/EN/163-report-on-works.html?limitstart=0>

Report on Workshop on Enhancing Capacities of Women Fishworkers in India for the Implementation of the SSF Guidelines, Chennai, India, 21-23 November 2016

Chewing the Policy Cud

Reflections on the ICSF workshop and recommendations to India's draft National Inland Fisheries and Aquaculture Policy (NIFAP), September 2019

The International Collective in Support of Fishworkers (ICSF) organized a national workshop to discuss the draft National Inland Fisheries and Aquaculture Policy (NIFAP), being finalized by India's Union Ministry of Agriculture and Farmers' Welfare. The main objectives of the workshop, held in Kolkata on September 6-7, 2019, were to review existing social and ecological knowledge-gaps, to develop long-term and short-term recommendations—action points—for implementation, to integrate the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) with NIFAP, and to build capacity and awareness of fishers and fishworkers about the draft policy and its realization.

The workshop intended to generate discussion on the factors that could influence processes and outcomes of existing and proposed inland fisheries governance systems. It embraced a human-rights-based approach (in accordance with the SSF Guidelines) to address the needs of vulnerable and marginalized fishing groups. The workshop was an important step towards expanding the relevance and scope of NIFAP by connecting it with on-ground experiences of the participants. It brought together fishworkers—men and women—fisheries scientists, academics, policymakers, activists, community workers, and non-governmental organisation (NGO) representatives.

Five months on, the recommendations that evolved from the workshop can be broadly classified, analysed and mapped. By understanding the core positions from which discussions took place

and reflecting on the conflicts and complementarities that emerged, it is possible to detail their positive outcomes—and some difficult questions they have left behind.

The NIFAP vision

NIFAP provides the Indian states and union territories with guidelines to implement fisheries management. It helps identify and prioritize sustainable management and governance of inland fisheries and aquaculture. Its vision is: “ecologically healthy, economically viable and socially inclusive inland fisheries and aquaculture that generates gainful employment and economic prosperity.” Other objectives pertain to increasing fish production

NIFAP advocates an ecosystem approach to fisheries management and recognizes significant scope for utilizing the potential of inland waters for commercially viable fish production.

and fishers' living standards, to create gainful employment and marketing opportunities, and to ensure food security while conserving native fish genetic stocks and associated ecosystem services from fisheries, in a complementary manner. NIFAP advocates an ecosystem approach to fisheries management and recognizes significant scope for utilizing the potential of inland waters for commercially viable fish production. It also incorporates a wide range of issues, including development of post-harvest and trade, gender equity, governance, stakeholder participation, public-private and community partnerships and market support, among other things.

*This article is by **Nachiket Kelkar** (nachiket.kelkar@atree.org), PhD Candidate, Ashoka Trust for Research in Ecology and the Environment (ATREE), Bengaluru, India*

The chair of the NIFAP drafting committee addressed the workshop participants and said that the time had come to move from mass production to “production for the masses”. Given this intent and vision, we must bear in mind the various challenges to implementing the NIFAP. Fisheries researchers and forums have emphasized that the policy’s implementation across states needs more discussion. This pertains especially to addressing issues of rights that are essential to realizing the benefits of fisheries, as also to acknowledge and engage with conflicts over fishing rights and access that complicate effective governance of inland fisheries.

Inland fisheries are complex, diverse and dynamic socio-ecological systems. Varied outcomes are expected when the NIFAP is superimposed upon and adapted to locally changing and socially contingent realities. These stem from the varied characteristics of ecosystems and social contexts—including cultural practices, community norms, power relations, and history—in which inland fisheries relate with broader social objectives. The diversity of existing policies, legislation, and institutional arrangements at the national and subnational levels highlights the need to find consensus principles for

An encouraging sign in the recommendations from these themes was that ecological, environmental, social and policy research figured as critical to address the existing gaps.

implementation, which can be brought about by combining NIFAP vision with the SSF Guidelines.

Classifying the recommendations

Overall, 50 recommendations emerged from the workshop. They were organized as per the themes of awareness and outreach, data gaps and review needs, pollution and health issues, gender issues, and interventions in legislation and policy issues. Almost 50 per cent of the recommendations were related to legislation and policy-related

interventions. Discussions on rights and entitlements, responsibilities, co-operative management, environmental protection, restoration, and sustainable use of fisheries resources, livelihood security, and gender issues dominated the suggested final recommendations.

The themes on data gaps, awareness and outreach, pollution and health, and gender issues were strongly linked. An encouraging sign in the recommendations from these themes was that ecological, environmental, social and policy research figured as critical to address the existing gaps. The degraded or deteriorating ecological condition of India’s rivers and floodplain wetlands was repeatedly flagged by several participants. Their emphasis included the recognition of ecological flows, not just minimum flows, for conservation of fish resources as well as biodiversity; fisheries studies to understand fish responses to hydro-climatic changes; impacts of dams and barrages on river flows; fishing practices that are illegal and regarded as destructive; generation of basic knowledge on fish ecology and biology; and biological assessments of water pollution status.

The degree of water pollution and impacts of hydrological modification on riverine-wetland fisheries had to be assessed at large landscape or region scales. The formalin problem in fish from Andhra Pradesh, which was experienced across eastern India in May-June 2019, was a strong reference point in discussions during the workshop. A complete ban on dangerous additives, improved sanitation at fish markets and accessibility to soil and water labs were some crucial recommendations for these issues.

Sanitation and health issues were also directly connected with sustaining the involvement of women in fishing and fisheries’ work. Poor literacy, lack of a secure working environment, limited social bonds and networks, and their decreasing participation were strong hindrances for women in fishing communities.

Social science research was proposed on a range of subjects, including demographic and socioeconomic data, legislation, fishing practices and

cultural beliefs, seasonal fishing activity especially in poorly-known irrigation ponds and canal systems, and migration of fishers. Participants highlighted the need for focused attention on fishery conflicts with business interests, especially tourism, industry and aquaculture. Key recommendations included the need to promote gender-sensitive and gender-disaggregated research and data on women's involvement in inland fisheries.

The call for rights

The primary drivers of legal and policy recommendations were the perceived gaps related to recognition of rights, awareness about rights, allocations of rights through equitable and just ways, the minimal right to water, collective and individual rights, community rights, and so on. NIFAP states the minimal right to water but the call for recognizing fishers as the primary non-consumptive users of river water is equally important. It was driven home by activists that the National Water Policy of 2012, which guides the grant of rights to water use, does not even mention 'fishers' or fisheries as important stakeholders. The Policy thus needs revision to include fishers' inalienable rights to water. Recommendations towards the recognition, definition and formal or legal codification of rights came mostly from fishworkers and their institutional representatives across several states.

The call for rights involved the recognition of a large bundle of rights. A key aspect of the recognition of rights was their diverse origins. Rights demands were pervasive across categories, and hence most important to engage with. The recommendations involved demands to replicate community-based fishing rights akin to community forest rights to be granted as per the provisions of the Forest Rights Act, 2006. The need to secure the rights of fishers by modifying national and state management priorities and institutional structures was also expressed. Institutional processes towards maintaining rights also needed to involve rural self-governments (panchayats, tribal councils, societies) and co-operative

functionaries. Examples of successful governance could be shared for their application in other contexts.

Overall, some important recommendations emerged. It was discussed that fishing rights could be granted on a hierarchy of needs: from locality-based rights (proximity to water body) to traditional identity, and to preferences and priorities of fishing communities. Women also needed to be recognized as fishers 'in their own right' and not through their status as dependents of fishermen. In river channels, community rights over access and use were thought necessary to prevent conflicts over open access, which remains the dominant mode of access for riverine fishers. Similarly, leasing periods should be increased up to 10 years in water bodies fished through leasing arrangements. Shorter leases might lead to overharvesting. For large reservoirs, while lease systems were needed, stocking rights and responsibilities could be granted to communities. This could bring a sense of stake and ownership to the fishers involved in leasing regimes. Special arrangements are also needed to secure rights pertaining to dynamic shifts

Special arrangements are also needed to secure rights pertaining to dynamic shifts in the spatial extent and characteristics of the fishing areas...

in the spatial extent and characteristics of the fishing areas; this bears upon tenurial uncertainty in river channels and estuaries due to flooding, meander cut-offs, frequent and rapid erosion-deposition processes. Inland water bodies in India are almost always multi-use systems. Hence the issue of equitable management comes to the fore, when fishery rights compete with other rights to the same water. It was discussed that the 'first right' to use water to fish must be granted to fishing communities. The compatibility of such rights with other uses needed to be ensured.

The rider of responsibilities

It was stated throughout the workshop that the enjoyment of fishing rights

came with responsibilities of fishers towards protecting human rights, social harmony, economic opportunity and equity, and environmental conservation. The demand for fishing rights and tenure thus needed to include voluntary expression by fishing communities of responsibilities towards environment and biodiversity conservation, prevention of crime, and prevention of human exploitation in the form of child labour and forced labour. Fishing involved risks both to and from biodiversity. In inland waters, where fishers interacted closely with threatened species, therefore, there was a need to identify ways in which any mutual negative impacts could be minimized. To do so, conservation laws for biodiversity could not be side-lined, while securing fishing rights. The risk of bycatch of threatened species in fishing gear, the introduction of exotic and potentially invasive species in inland waters, disease spread and the contribution of fishers to plastic waste pollution were some of the issues discussed.

In light of the already noticeable impacts of climate change, 'climate-smart' fisheries and aquaculture needed identification, especially in the aquaculture sector. Fishers agreed that fishing rights came with responsibilities. However, when rights had not been granted, responsibilities are being imposed without the rights getting granted. Responsible tenure and rights are essential to the effective

A significant part of the discussions focused on safeguarding and improving the conditions of fishers.

and sustainable governance of inland fisheries, but existing laws and regulatory regimes do not allow for both. In this regard, it was proposed that a review of fishing policies be undertaken in relation to legislation on biodiversity and environment, and other social issues. This would mean amendments to existing regional and national laws concerning fisheries and

environment laws, such as the Forest Rights (Traditional and other Forest-Dwellers) Act, 2006 and the Wildlife (Protection) Act, 1972.

The appeal for improvement

A significant part of the discussions focused on safeguarding and improving the condition of fishers. Numerous gaps remaine unaddressed: disaster relief and insurance schemes for fisherfolk who are the most vulnerable to disasters such as cyclones and flooding; protection from harassment related to corruption and crime and its tussle with law enforcement (for example, the suspicious activities associated with sand mining); measures for full social security and safety of fishworkers during work; reviving and restoring wetlands for urban and rural poor who could avail of their fishing benefits; and mechanisms for grievance redress.

Many recommendations also involved structural changes in the working of fisheries departments and their governance systems. The need for independent fishery departments in all states was strongly felt, because currently, fisheries are often managed together with agriculture and animal husbandry. Independent fisheries departments could be more active in directly addressing the needs and grievances of fishers, especially with regard to constitutional violations of human rights and fishing rights.

Improvements in the staffing and technical capacity of fisheries departments were recommended, as also increase in extension and training for fisheries development. Reviews of fishery legislation and co-operatives across states were wanting, and a priority for upcoming planning of inland fisheries and aquaculture development was welcomed. Value addition of fish produce was a major area of intervention called for. In fish supply-chains, reducing the length and role of market intermediaries could help add value and secure consistent prices for fish. In the case of water bodies on which major fisheries depend, inter-sectoral and inter-departmental co-ordination at the state-level, between states, and between the state and national levels was identified to be of utmost importance.



Group photo of Kolkata workshop on India's National Inland Fisheries and Aquaculture Policy (NIFAP), September 6-7, 2019. It is hoped that the collective learning at the workshop will remain cognizant of generally unacknowledged realities

Co-operatives in special focus

A major strand of discussions throughout the workshop was the performance of co-operative institutions in inland fisheries. It was vehemently emphasized by the director of the National Federation of Fishers Co-operatives Ltd. (FISHCOPFED) that co-operatives were the most widespread institutions in India. They were thus best placed to grant community rights in inland fisheries. However, their failure in doing so, over the past decades of their existence deserved critical attention. The ineffectiveness of co-operatives emerged repeatedly and throughout, as also the need to overhaul or revisit many basic assumptions about them. The recommendation to have state-level reviews of co-operative institutions to identify the factors responsible for their current functioning and their relevance to fishing rights and tenure was made in this respect. It was suggested that model studies on selected co-operative institutions that were both regarded as 'successes' and 'failures' be undertaken. Women's co-operatives, on lines similar to those in Bangladesh, also needed to be created.

Fundamental questions

To realize and implement the above recommendations, some fundamentals needed to be known well. We still do not have accurate or precise estimates

of how many fishers are actively fishing in India, how many in each state, or who can be defined as a fisher. The participants learnt that clear or correct answers to these fundamental questions are still not forthcoming. Who are traditional fishers? More importantly, in a changing economy and climate and shifting ecological baselines, what do we mean by community, tradition and knowledge in inland fisheries?

The need for active applied research towards understanding more on these aspects was emphasized. It was pointed out that recognizing fishing rights based on traditional identity has direct connections with deep-rooted caste politics at local scales. How we overcome exclusionary politics over fisheries would be an important challenge to the sustainability and productivity of fishing tenure—in the process of granting rights and access to fishers.

Conflicts and complementarities

The dominant discourse of the workshop was on fishing rights, but the means to realize them were negotiated from multiple positions. Overall, there appeared to be broad agreement on the need for moving institutional regimes towards community-based and participatory management. Importantly, while the call for rights mostly came from fishworkers, activists and development workers,

government officials, scientists and NGO representatives emphasized more on the responsibilities of fishers that come along with their rights. The primary normative concerns of scientists were related to the state of freshwater ecosystems and their decline, which needed restoration for actually realizing the most benefits from the allocated rights. Legal concerns about the status of fishing rights in multi-use water bodies and the conflicts involved therein formed the mainstay of the views of scientists and officials. Scientists and policymakers often took a balancing position, while fishers and fishworkers remained largely focused on the granting of rights and access. The balancing or reconciliatory position was summed up well by a senior speaker, who said that we needed a “development-oriented” and “value-chain oriented” approach towards fishery management in a departure from current modes of operation, which are either only revenue-oriented or welfare-oriented.

There were some key outcomes of these alignments. First, several inland fisheries experts who were part of the drafting committee of the

Scientists and policymakers often took a balancing position, while fishers and fishworkers remained largely focused on the granting of rights and access.

NIFAP were present; they did not appear overtly defensive of the NIFAP guidelines and were open to listening to the participants’ varied concerns. It appeared that the workshop had succeeded in facilitating discussion in ways that sustained the dynamic and adaptive evolution that was envisioned for the policy.

Second, almost all participants agreed that the state fisheries departments needed more autonomy and should be the central institution to the vesting and transfer of rights. This derived consensus leads us to think about what would be the hypothetical point where fishing rights would truly

become autonomous. Once fishing rights were granted according to sets of rules and principles, the role of the fisheries department role would be largely that of a regulator and an arbiter of conflicts. Or would it? A member of the audience asked why government officials do not initiate consultations with inland fishers proactively, rather than as reconciliation, response or reaction. This issue will remain as long as radical shifts happen towards stronger bottom-up management processes for inland fisheries. But such shifts have seen numerous endogenous and exogenous hurdles.

In the big policy vision for inland fisheries, there is a need to ideate about the social justice and ecological conservation goals that must be achieved first. A senior scientist said that fisheries has always been a “residual activity”. This must change to allow inland fisheries, especially capture-based fisheries, to develop in an organic way.

Today’s rights in future possibilities

The workshop tossed up difficult questions. One of the most telling examples of this came about in the exchange sessions when the translator for participants from Andhra Pradesh found it hard to share with the audience what he had just heard. The fisher representatives from Andhra had told him that the basis for providing fishing rights must be caste, that some so-called ‘lower castes’ had no business getting fishing rights. The translator appeared embarrassed as he went about translating. He told the audience that he was only translating and did not subscribe to what these participants had said. This shows how it’s impossible to wish away caste in any matter pertaining to traditional fishing rights. Typically, we treat human rights and fishing rights as inseparable in matters of fisheries sustainability and development. Sound research has highlighted that human rights and fishing rights show convergences and divergences. Human rights are universal whereas fishing rights are specific. Thus achieving one could come at the cost of the other.

When we speak of shifting institutional management towards community involvement, where is the community we are talking about? If the community is to be defined by caste and tradition, it could lead to the exclusion of other socially and economically marginalized fishers. If the community is to be defined by locality and spatial access, seasonal fishers that traditionally visit specific water bodies to fish might get excluded. In short, we cannot take for granted the idea of what makes a fishing community. This becomes particularly important in regions such as Bihar where community institutions have eroded and fragmented. With distress-linked out-migration being a major determinant of active fishers across the Gangetic plains, few fishers remain on the ground to assert their rights in many areas. If we must go by the numbers, most members of particular fishing communities may not be fishing. Will they be recognized as fishers and granted rights? These issues are by no means simple. Policymakers or the people fishing on the ground don't understand them in their complexity. But that does not mean that they remain neglected or wished away in our continuing engagement.

Conclusions

The ICSF workshop was a remarkable and invested effort. It facilitated serious discussions on numerous issues affecting inland fisheries governance, tenure and rights. The primary draw of the workshop was that it deliberated on several aspects before the finalisation of the draft NIFAP. This generates hope. With its diverse representation across regions, its elaborate and cross-cutting recommendations, it provides NIFAP with an excellent opportunity to move forward. The destination of 'successful implementation' must be reached by taking the path of recognizing the multi-dimensional nature of inland fishers' rights. But this path is not all roses.

As NIFAP embarks on the ambitious effort of guiding state policies on inland fisheries, it must also take on the challenge of conflicts across a range of politics. In times of deepening social

divisions, conflicts over identities, entitlements, priorities, resources and even histories, are very real in their political expressions. It is hoped that the collective learning at the workshop will remain cognizant of these generally unacknowledged realities. Will the implementation of NIFAP be successful in creating and sustaining a space for rights of inland fishers? Only time will tell. But a good beginning has been made at chewing the policy cud; more rumination always helps!.

For more



https://igsf.icsf.net/images/SSF%20India%20workshop/Kelkar_Situation%20Paper_Inland%20Fisheries%20and%20Aquaculture%20in%20India.pdf

Governance of Inland Fisheries and Aquaculture in India: Situation Paper in the Context of India's Draft National Inland Fisheries and Aquaculture Policy and the FAO SSF Guidelines

<https://www.icsf.net/en/samudra/article/EN/81-4391-Some-Grains-of-.html>

Some Grains of Salt, Samudra Report No.81, June 2019

The Future is Inland

If managed sensibly, inland water bodies can go a long way to provide India with a sustainable future and food security for its population

Fish production in India registered a remarkable 16-fold increase during the last six decades to reach 12.59 mn tonnes (MT) in 2017-18, propelling the country to the position of the second-largest fish-producing nation in the world. During this period, the share of inland fish production has increased from 30 per cent to 70 per cent, and the present inland fish production has reached 8.9 MT. More than 14 mn fishers and fish farmers depend on fishing and fish farming for their livelihoods; many times more than that number eke out their living through support and ancillary activities like fish processing, trade and making of fishing craft and gear. The Gross Value Added (GVA) from fisheries is estimated at ₹ 1,330 tn (US\$ 17.80 bn), which contributed to nearly 1 per cent of the national GVA, at current prices in 2016-17, and about 5.37 per cent of agriculture GVA.

Recognizing the role of fisheries and aquaculture as a major driver for the security of food, nutrition and livelihood, the government of India has recently made substantial investment in the sector, both in terms of financial allocation and institutional support. A dedicated department for fisheries has been created under the newly formed Ministry of Fisheries, Animal Husbandry and Dairying, which is entrusted with the task of doubling farmers' income and achieving a target fish production of 15 MT by 2022 under the Blue Revolution scheme. The recently launched schemes like Fisheries and Aquaculture Infrastructure Development Fund (₹ 75.22 bn or US\$ 1 bn) and Pradhan Mantri Matsya Sampada Yojana (₹ 200.5 bn or US\$ 2.7 bn over the period 2020-25) are the highest-ever fisheries development projects launched in the

country, aiming at raising the income and quality of life of fishers and fish farmers in the country.

Inland fisheries are crucial for several socially, economically and nutritionally vulnerable groups of people around the world. But the challenges in monitoring inland fisheries preclude a complete understanding of the magnitude of their contributions. The low profile of inland water ecosystems (including their fisheries) in the UN Sustainable Development Goals (SDGs) exemplifies their marginalized status in major policy arenas. India is no exception to this. However, this situation is rapidly improving with the increasing recognition of inland fisheries in

Inland fisheries are crucial for several socially, economically and nutritionally vulnerable groups of people around the world.

development discourses; this has also encouraged research to enhance knowledge on the importance of inland fisheries.

Small-scale operations

Unlike marine and aquaculture segments, where both small and large scales are relevant, fisheries in inland open waters of India are based exclusively on small-scale fishing operations. In all such water bodies, including large reservoirs and lakes, traditional fishing craft—coracles, improvised rafts, dug-out canoes and wooden country boats—and gear (mainly gillnets) are employed. Motorized boats are rarely seen even

This article is by V V Sugunan (vasu.sugunan@gmail.com), retired assistant director general of the Indian Council of Agricultural Research, New Delhi, India

SUJIT CHOUDHURY



Unlike marine and aquaculture segments, where both small and large scales are relevant, fisheries in inland open waters of India are based exclusively on small-scale fishing operations.

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in large reservoirs that yield several tonnes of fish every year. Individual fishers who operate under co-operatives or have obtained a lease to fish in the water body get a limited quantity of fish, often below what might be called the subsistence level. Thus, the entire gamut of inland fisheries in India falls under the ambit of small-scale fisheries.

India has rich natural inland fisheries resources in its rivers, ponds, lakes, reservoirs and floodplain wetlands. Fish-production systems in these water bodies can be summed up as the capture fisheries of the rivers, estuaries, lagoons and lakes; aquaculture in ponds; and various forms of enhancements. Of these, enhancements—mainly culture-based fisheries and stock enhancement—being practised in reservoirs, lakes and floodplain wetlands offer relatively ecofriendly options for sustainable fish production from aquatic resources.

The inland open-water fisheries is a complex mix of artisanal, subsistence and traditional fisheries; their marketing system is highly dispersed and unorganized. The tenure rights are archaic and inequitable. Capture

and enhancement fisheries being common-property regimes, the community is often not empowered to manage the ecosystem and fisheries on a sustainable and equitable manner. Appropriate policy-level interventions are required to bring them under co-management platforms to enable and empower the community members to follow the norms.

Often, it is not the complexity of technology that comes in the way of achieving higher production and maintaining sustainability in aquaculture and open-water fisheries. It is the lack of appropriate community governance arrangement for open-water fisheries and lack of institutional mechanisms to regulate the growth in aquaculture that lead to low productivity and unsustainable practices. There is also a social dimension of enhancement. The profit obtained in aquaculture ventures accrues to an entrepreneur, investor or a small group of individuals as 'return on investment'. On the contrary, a sound regime will provide for the sharing of the benefits due to increased fish production obtained

Fig. 1. Fish production trends during the last six decades in million tonnes

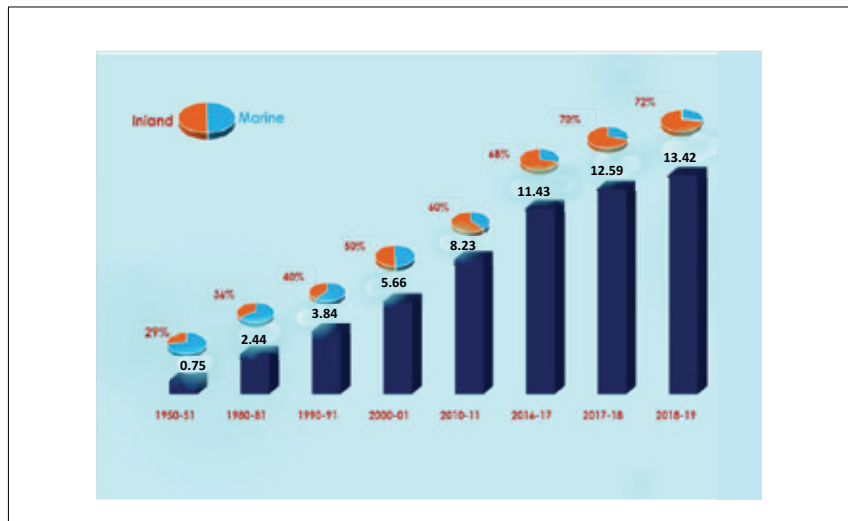


Fig. 2. Small scale fisheries in India

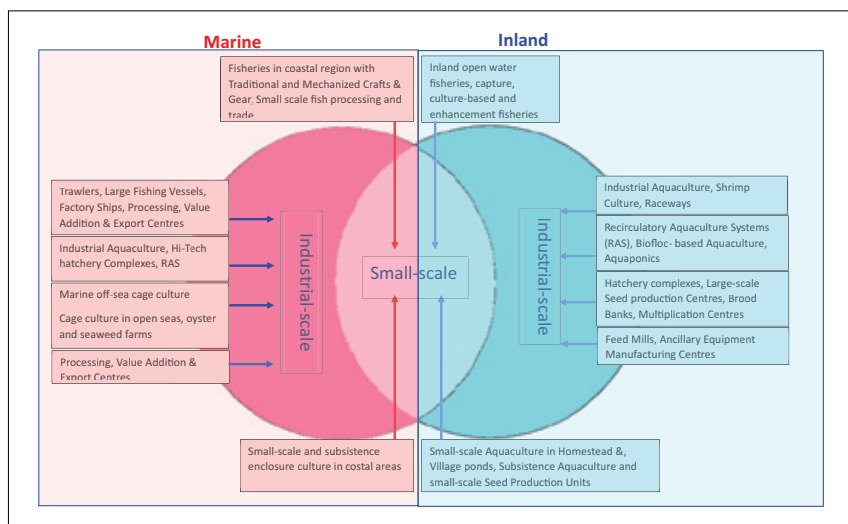
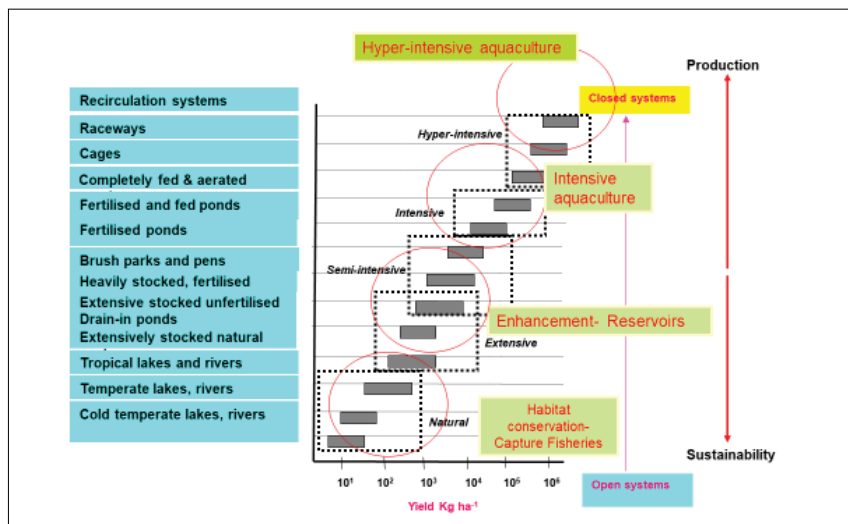


Fig. 3 Inland fish production systems and their sustainability (Modified from Welcomme and Bartley, 1998)



in an enhancement fishery among a large number of fishers—the key stakeholders. There is this large cake and each stakeholder gets a slice, albeit small. Thus, the enhancement provides opportunities for inclusive growth that is economically sound and socially equitable.

In order to realize the production potential of open-water bodies and ensure sustainable growth of aquaculture, several challenges must be addressed. Technologies used for developing capture fisheries and enhancements in open waters are relatively simple and do not demand exceedingly high technical skill. These can be applied by anybody with some basic management skill and intelligence. Still, the rate of adoption of scientific advice for open-water fisheries is remarkably low.

Most water bodies in the country are still being managed in a very arbitrary manner, leading to low productivity and low sustainability. This can be attributed to lack of proper governance environments. The open-water bodies in India are common-property resources; their management is generally based on community activity. Thus, organization of the community that manages the system plays a key role.

The main challenges facing the inland open-water fisheries are:

- Archaic tenure systems are not conducive for helping the fisher

The land and water resources are becoming scarcer in the wake of increasing demands from various water and land-use sectors; climate change...

community to utilize natural resources for supporting their livelihood and generating income on a sustainable and equitable manner.

- Consequently, the fisher communities that utilize the water bodies as common-property resources are not empowered and well-organized. Their resources are exploited by numerous

other stakeholders like market intermediaries and money lenders.

- The lack of post-harvest and market infrastructure, long market chains and no value addition result in making fishing unremunerative to the primary stakeholders.

Compared to intensive aquaculture, capture and culture-based fisheries provide management options more compliant with the norms of sustainable development. The sustainability of fish-production systems is inversely proportional to intensification. Hyper-intensive culture systems are not environmentally sustainable and, many a times, these work against social equity by affecting access to resources by many stakeholders. The future strategy for inland fisheries development should centre on the principle of growth with sustainability. Sustainable development should not degrade the environment, and should be technically viable and socially acceptable.

Currently, fish production in India is growing at the rate of 6 per cent per annum. Various projections on demand for inland fish during 2021-22 range from 5.3 MT to 15 MT. It is now well accepted that the country can achieve 15 MT by 2021-22 as envisaged in the Blue Revolution targets. But it is also obvious that any big increase in fish supply must come from the inland segment, considering the slow growth of mariculture and the dwindling catch from marine capture fisheries.

Fish production

From 2009-10 to 2017-18, inland fish production increased by nearly 3 MT. It is estimated that the current inland aquaculture production is about 7.75 MT – 7 MT from freshwater aquaculture and 0.75 mn from coastal aquaculture. By the end of 2020-21 it is expected to touch at least 9 MT, with coastal aquaculture inching to 1 MT and freshwater aquaculture increasing by 1 MT. It is pertinent to note that inland fisheries enhancement (and capture fisheries) accounted for only 1 MT in 2016-17, which can be raised to 2 MT. Combined with marine capture fisheries production, this is the way to achieve the Blue Revolution target of 15 MT by 2020-21.

Looking beyond 2020-21, maintaining the 6 per cent growth for prolonged periods, say up to 2025-26, will bring in many new challenges. The land and water resources are becoming scarcer in the wake of increasing, and often conflicting, demands from various water and land-use sectors; climate change and environmental concerns compound the problem. While it is unavoidable to practise intensive aquaculture in order to keep the pace of growth and to meet future demands, it is equally important to ensure that all avenues for increasing production through more sustainable use of resources and protection of the ecosystem are explored.

Herein lies the importance of enhancement fisheries. As culture-based fisheries and other forms of enhancement in reservoirs are a non-consumptive water use, it does not create any extra demand for water. Moreover, in the absence of feeding and chemical treatment, there is no chance for eutrophication and chemical pollution. It is necessary to utilize the opportunities for raising fish through culture-based fisheries, enhanced capture fisheries and sustainable cage culture in reservoirs. Prioritizing culture-based fisheries and other forms of enhancement from reservoirs holds the key for increasing inland fish production in India in a more sustainable way. It will reduce the necessity to depend heavily on unsustainable practices like high-intensive aquaculture.

As with any other development sector, Indian fisheries is at a crossroads. The living aquatic resources, although renewable, are not infinite and need to be managed on a sustainable basis if their contribution is to be harnessed for the nutritional, economic and social well-being of a growing population. In the enthusiasm to produce more fish from all available water bodies, many developing countries in the past paid higher attention to production and yield, while ignoring key issues like environmental sustainability and social equity.

India is no exemption. A number of key ecosystem goods and services and their significance to the livelihood,

nutritional and health security of riparian populations have almost been ignored, at least during the early years of development. Today, awareness about environmental impact assessment, biodiversity conservation and environmental flows is increasing. A substantial section of the scientific community in the country and its civil society at large are now aware of, and committed to, achieving a sensible trade-off between sustainability and increased productivity.

Small-scale fisheries of the inland water bodies in India need greater attention from planners and policymakers. There is a glaring lack of institutional mechanisms to ensure healthy growth of inland fisheries and aquaculture. Globally, despite its high productivity and contribution to the livelihood and nutrition of the poor, water resources planning gives little recognition to freshwater-dependent fishery production or its ecological basis. Poor appreciation of the importance of small-scale

Small-scale fisheries of the inland water bodies in India need greater attention from planners and policymakers.

fisheries of inland waters has several consequences. It exacerbates the lack of data, which, in turn, hampers research and management.

The national policy on inland fisheries needs to:

- strike a balance between aquaculture and various enhancement practices to achieve higher fish productivity, environmental sustainability and social equity;
- assist fishers to organize themselves to take advantage of community management schemes and establish their user rights as envisaged in the 1995 Kyoto Declaration; and
- provide necessary institutional mechanisms to ensure the healthy growth of small-scale inland fisheries and aquaculture. 📌

For more

https://igssf.icsf.net/images/SSF%20India%20workshop/Kelkar_Situation%20Paper_Inland%20Fisheries%20and%20Aquaculture%20in%20India.pdf

Governance of Inland Fisheries and Aquaculture in India: Situation Paper in the Context of India's Draft National Inland Fisheries and Aquaculture Policy and the FAO SSF Guidelines by Nachiket Kelkar

https://www.icsf.net/images/samudra/pdf/english/issue_81/4399_art_Sam_81_art16_FishCulture_%20JOHAR_Bipin_Bihari.pdf

India: Welcome, JOHAR

The Sea around Us

In an innovative attempt, researchers in India have roped in traditional fishers to help them prepare a biodiversity register of the sea

The south Indian State of Kerala has about 38,828 sq km of land and 13,000 sq km of sea (up to 22 km) under its jurisdiction. As early as two centuries ago, studies have been done on the specific characteristics of this area and the natural resources in it.

Although minute details are available of the types of land in Kerala, that is not the case with the sea. There are many difficulties involved in doing a detailed study of the sea.

However, generations of traditional fishers, who earn their livelihood from the sea, know the environmental specificities of each nook and corner of the sea because of their work experience. This knowledge has been transferred down the generations not in any written form, but orally.

It is in this context that we should examine the call given by the United Nations (UN) to its member countries to take steps to collect and store information on the biodiversity of the sea, based on traditional knowledge.

Realizing the importance of this, the first step taken in India to and biodiversity of the sea on the basis of the traditional knowledge of fishers was initiated in Kerala.

A sea area of around 440 sq km, along a 20-km-long coastline from Puthukurichy to Valiyathura in Thiruvananthapuram District, was chosen for the pilot study.

Protsahan, a community-based research initiative, undertook the work at the request of the Kerala State Biodiversity Board (KSBB).

The study had three major objectives:

- to prepare a register of the ecology and biodiversity of the sea based on fishers' traditional knowledge;
- to identify and prepare, with the help of fishers, location maps of the natural reefs in the seabed, which are the natural dwelling areas of marine living organisms, and enhance the sea's productivity; and
- to collect information on the living organisms in the area, classify them with the help of experts and prepare a register of them. Apart from these, information would also be collected on coastal vegetation, beach-based living organisms, shore-line changes, sea

...the first step taken in India to study the ecological specificities and biodiversity of the sea on the basis of the traditional knowledge of fishers was initiated in Kerala.

birds, estuaries, sea pollution and so on.

The methodology of the study was to collect data directly by travelling together with traditional fishers to their specific working spots in the sea, while also interviewing them en route. The research team members, who are also from the coastal fishing community of the study area and could thus understand the many colloquial terms and local names that fishermen use to describe what they see, sought the active collaboration of skilled fishers with deep knowledge of the hidden artefacts of the sea. Oral documentation of the traditional knowledge related

*This article has been written by **Robert Panipilla** (robert_potsplants@yahoo.com) and **Aneesha Ani Benedict** (aneeshaani5@gmail.com), the study team members of Protsahan*

to the bio-ecosystem of the seabed was done.

The study team undertook many sea voyages with fishers. Data was collected on the shoreline changes and the different species of fish caught in various seasons at different depths and areas. Data on beach creatures, vegetation and seabirds were also collected. The KSBB Chairman, Oommen V Oommen, the Head of the Department of Aquatic Biology of Kerala University, Biju Kumar, and Protsahan members also came along on some trips.

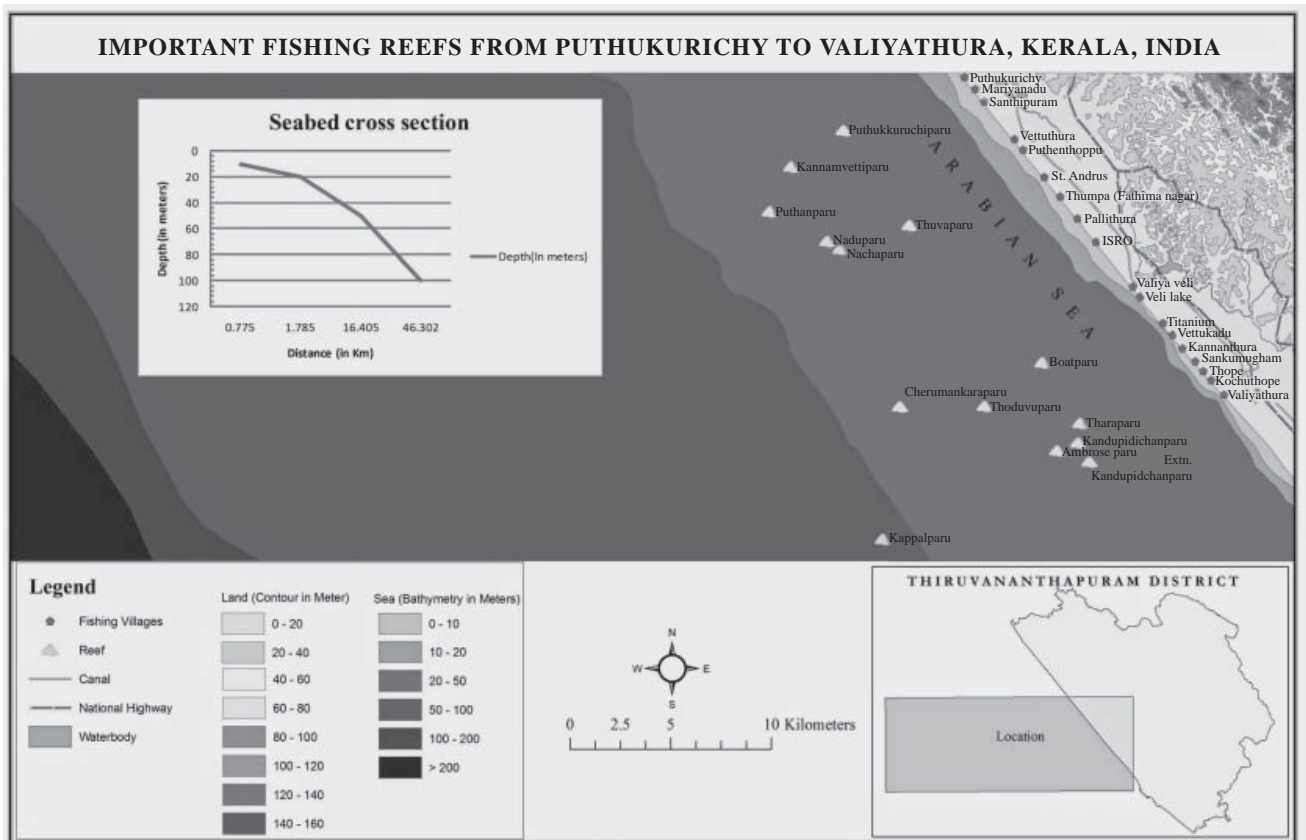
The study revealed the deep knowledge that traditional fishers have about the different ecosystems of the seabed area of the coast. For example, it was possible to classify, on the basis of specific features, the seabed into 'sandy seabed' (locally called *madakal*), 'clayish seabed' (*chenikal*), 'hard floor seabed' (*tharapparukal*) and 'high-surface areas' (*parukal*). The Marine Biodiversity Register (MBR) that resulted from the study also incorporated visual documentation, including paintings and pictures.

Perhaps the most interesting traditional knowledge of fishers in

the area is their navigation skills that help them seek out the exact locations of various reefs without the aid of any sophisticated devices. This traditional knowledge is called '*kanicham*' (triangulation method). The study area, which has 13 important reefs with unique features, was documented using Global Positioning System (GPS). The results are so vivid that even a layman can understand the features of the hidden seabed and also locate them.

Floor reefs are flat, hard grounds in certain specific areas of the seabed that form the habitat of diverse vegetation and small living organisms as well as varieties of medium- and large-sized fish species. On the basis of the fishers' traditional knowledge of the sea, floor reefs can be considered an important habitat for many types of marine species.

During the period of the study, around 50 floor reefs were identified, of which 15 were studied in detail and used as specific locations for collection of materials. Twelve species of black corals and soft corals and 10 types of sea fans were identified.



An interview with Robert Panipilla

Can you tell us briefly about the hook-and-line fishers in Thiruvananthapuram District, in the context of your own parents' in-migration from Kanyakumari?

Most of the hook-and-line fishers in Thiruvananthapuram District (in Kerala State) had their origin in Kanyakumari District (in Tamil Nadu State), though before 1950 both Kanyakumari and Thiruvananthapuram were part of the erstwhile Travancore kingdom. There are two categories of hook-and-line fishers. One is the more skilled reef fishers who target large species like perches, sharks and rays in deeper waters with the help of large-sized hooks. The other targets small- and medium-sized varieties like horse mackerel, mackerel and squid, usually in inshore waters, with the help of small-sized hooks. My father came from Kanyakumari to Valiyathura, close to Thiruvananthapuram city, in the early 1950s. He was a skilled deep-sea hook-and-line fisherman. Even before him, some hook-and-line fishers had already come and settled in Thiruvananthapuram.

My father was the first fisher in Valiyathura to introduce artificial baits. But he and his colleagues faced stiff opposition from other fishers, including those who had come from Kanyakumari earlier and were using only natural baits. The opposition was more out of jealousy, as my father and the new group of fishers were getting good catches. Some of the fishers even said that the use of unnatural methods was against the tenets of God. But good sense ultimately prevailed and others began using artificial baits.

The introduction of new innovative techniques in fishing invariably results in conflict and opposition. The introduction of nylon nets is a case in point. These days, though, the introduction of new techniques often leads to overfishing. This year, some fishers introduced use-and-throw baits, in the form of glass tubes with luminescent liquid inside, to attract and catch ribbon fish in deeper waters. Some old hook-and-line fishing methods (such as 'mattuchoonda' i.e. Longline) have disappeared as the target species, like some varieties of sharks and rays, have been overfished and are more or less extinct.

Can you point out the landmark changes or developments among the hook-and-line fishers in terms of technology used?

First of all, the introduction of 'chillamaram' (*Albizia* sp.) as the wood for *kettumarams* (catamarans) was a major change in the 1950s. It increased the size, capacity and life of the *kettumarams*. Then came the introduction of three-cornered sails for propulsion of fishing crafts. They helped to make use of multidirectional winds. The latest major change, which is a continuing one, is the introduction of artificial baits in hook-and-line fishing.

Can you describe the special traditional skills of hook-and-line fishers? There is a saying that a good hook-and-line fisherman has eyes on his fingertips. How far is this true?

It is not just one or two skills that these fishers possess. Most of them have a variety of complex skills, which include navigation and fishing techniques, as well as an understanding of the nature and characteristics of the sea and seabed. Most of the traditional fishers have a good understanding of the different types of winds, currents, waves, breaking of waves, fish shoals and so on. But the complex skills of the hook-and-line reef fishers is a class above these ordinary fishers. First of all, they have the skill to locate the reefs with ease and precision, even though today's fishers have started using GPS.

However, the skill of the hook-and-line fisherman to identify the particular fish that just got trapped on his line is something unique, which cannot be replaced with modern technology. These fishers can identify the exact species of fish caught by observing its reaction to the bait and the hook. They can almost feel the reaction on the tips of their fingers.

I will explain this with a recent experience. During one of our study trip voyages into the sea, Dr Oommen, the Chairman of KSBB, accompanied the fishers. After reaching a specific reef, the fishers started fishing with their hooks-and-line. After a few minutes, a fisherman announced that a medium-sized *kozhuva para* (*Carngoides gymnostathus*) has probably been caught by his hook. We could see him testing the line and paying it out in a particular manner. Dr Oommen asked him how he knew the fish caught was a *kozhuva para*? The fisher replied that he could sense it from the way the fish was struggling with the bait, which he could feel in his fingers. When the line was pulled up, the fish caught turned out to be a *kozhuva para*. Though impressed, Dr Oommen doubted whether the fisherman could predict his next catch with equal accuracy. His next catch, the fisherman announced before reeling in his line, seemed to be a kalava (rock cod or grouper). He was spot on.

The fisherman explained that different fishes respond differently to the bait. Some come near it and spend time nuzzling against it or feeling it up before gulping it down, which is when they get caught. Some species are particularly greedy and swallow the bait immediately. The struggles put up by different species after taking the bait vary too. It is from these longtime observations and felt experiences that the fishers have learnt to predict the particular species of fish caught in their hooks, relying on the sensory feelings in their fingertips.

You had some experience in the introduction of new types of artificial reefs some decades ago. You also tried to involve some scientists and government institutions in that exercise. Can you share your experiences and insights about this?

A few decades ago, the traditional hook-and-line fishers tried on their own to create artificial reefs as fish aggregating devices (FADs). These were collectively made and managed by fishers' groups. Stems and leaves of coconut trees were largely used for the FADs. When I was working in an NGO in the late

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1980s, we interacted with these fishers and helped create larger and better structures of artificial reefs. Various types of triangular-shaped concrete models were tried which proved successful. Two scientists from the CMFRI centre at Vizhinjam collaborated in the effort. We also tried to assess the changes in and around these artificial reefs over the period, and the varieties of fish using these structures as their habitat. But we realized that the ability of the local scientists were limited, as many of them did not even know how to swim or dive. I remember some of them were so afraid of the sea that they forced us to take them back to the shore in the midst of a trip. Fortunately, we managed to get the help of two marine scientists from the United Kingdom (UK) who documented the changes over different time periods with the help of underwater cameras.

I think many of our marine scientists are interested only in land-based research inside laboratories. They do not wish to interact with the fishers and learn from them.

Providing artificial reefs is now part of the official programme of the Department of Fisheries in Kerala. However, implementation is poor because of the skewed attitude of officials towards the fishers.

What was your experience in preparing a biodiversity register of the marine environment of part of Thiruvananthapuram District?

For me, the work was not something totally new, but more or less a continuation of my longstanding involvement with fishers and fishing communities. Documenting the traditional knowledge of our small-scale fishers is a passion

for me. I also realize that it may not be possible to do this a few years from now, as the situation on the ground is changing very quickly and we are in a transitional period. That is why I have been spending time, for a few years now, documenting the traditional knowledge and skills of our fishers. Hence, when Protsahan and KSBB asked me to prepare a biodiversity register as a pilot programme, I was really happy and jumped at the opportunity.

In the vast and complex world of sea fishing there are several opportunities to observe new things and gain fresh insights. This particular study helped me to learn more about the importance of '*tharapparuka*' (hard floor seabed) for the productivity of our seas. Earlier, my focus was only on the rocky reefs and their characteristics. I believe there's still a lot more to learn about our sea and the life in it, and I'm convinced that one can do it only with the help and involvement of our traditional fishers.

In this particular study, my colleague was a girl from the fishing community, who is also a college student pursuing a degree course in biotechnology. I am very glad to report that her involvement in the study was an enriching experience for her too. She got an opportunity to present a paper on fishers' traditional knowledge at the National Biodiversity Congress held in Kerala. From an ordinary student, she soon became an exemplary product of the college, whose authorities conferred on her an award for 'innovative initiative'.

—Robert Panipilla (*robert_potsplants@yahoo.com*)
was interviewed by A J Vijayan (*vijayanaj@hotmail.com*) of Protsahan, Kerala, India

Nearly 100 molluscs, 30 to 35 crabs, many shrimps, star fishes, murray (locally called *vlanku*), eels, sea snakes, 30 *manthals* (*Crossorhombus azureus*), *kadanthal* (*Choridactylus multibarbus*, *Thysanichthys* sp., *Pterois russelli*) and *petha* (*Antinnarius nummifer* sp.) were also identified, apart from many common fishes. All these species were classified with the help of the Department of Aquatic Biology, University of Kerala.

Perhaps the most important outcome of the study was the identification of six new marine species (five of which were found for the first time in Kerala and one for the first time in India). About 15 species were submitted to the University of Kerala for further study and analysis. Apart from some endangered fishes, other rare species of fish, sea birds, sea snakes, beach crabs and soft corals were also identified.

On the whole, the study reconfirms the value of the traditional knowledge of fishers. Our traditional fishing communities, just like forest-dwelling tribals, are a rich storehouse of traditional knowledge acquired over eons and passed down through generations. They, and their precious knowledge, need to be preserved. **3**

For more

<http://keralabiodiversity.org>

Kerala State Biodiversity Board (KSBB)

www.nbaindia.org

National Biodiversity Authority

A Twisted Trajectory

The fish-processing industry's path of using fishmeal to grow shrimp amounts to exporting the precious nutrition that India's children badly need

In the early morning of 25 September 2019, on the shores of Cuddalore in Tamil Nadu, India, the humble sardine commenced its journey. The journey of its afterlife, that is.

A group of women waited together, empty baskets in hand, chatting while waiting for the boats to arrive. Their expectations do not remain unanswered. Boats bulging with little shiny sardines return from calm seas. Boats carrying sardines, along with their histories of struggle. Big trawlers, small trawlers, ring seines, fibreglass boats: everyone has been scooping up schools of sardine today.

The women are eagerly waiting for a good auction, hoping to take some

hungry stomachs at all? Will they get transformed into sumptuous curry? As onlookers, our glances are brimming with questions.

Small sardines, juvenile sardines, flapping sardines, damaged sardines, bulk-landed sardines. Three out of four sardines landed in Cuddalore make their way on to the trucks. Trucks that provide a safe haven for unruly schools of fish arriving in unpredictable quantities.

We turn our eyes back to the waiting women, with mixed feelings. Some of them display a bit of relief for being able to procure some sardines. Other faces are about to erupt in frustration as their expectations are crumbling in front of them. They never wanted too much, yet their baskets are almost empty. They didn't get a chance at the auction! Who said competition is fair? They waited in vain. No need to ask why the sardines ended up in the trucks beyond their reach, though. They know why.

The plants are growing increasingly hungry. Their ever-growing bellies need to be sated. They push trawlers into the seas; sponsor madness through credit...

Bulging trucks

Hundreds of miles to the west, packed in line, the trucks move through the gates of a plant in Udipi, a coastal town in Karnataka. Trucks from harbours near and far away, piled with fish, their bulging intestines squeezed out of overflowing baskets.

We land upon one such fishmeal plant, established in 1989, one of the earliest in India. It arrived on the coast as a saviour in 1989, to accommodate the overproducing modernized fleets, to convert bumper catches into fish oil and fishmeal. Bumper catches that couldn't be stored, iced or eaten. The fishmeal plants arrived as a welcome rescue, and converted supposedly worthless bycatch into 'real' value. Yet, as time passed, dozens of fishmeal plants were built along the Karnataka

sardines to their loyal customers and earn a livelihood. Their customers are waiting to make a sumptuous fish curry of the sardines, keeping a little aside to be fried. Tasty curries, destined to nourish families with the nutritious wealth of the humble sardine. But today is not a day for sardine curry.

Big boxes of sardines are swiftly unloaded from boats to the shore on the heads of careworn labourers, who blithely pass the baskets along and straight into waiting trucks. The number plates reveal the trucks' origin and destiny. Securely filled metal bellies thronged with tonnes of tiny humble sardines, ready to traverse the highways to Karnataka. We wonder whose stomach would require so much sardine! Will they satisfy any

This article is by Joeri Scholtens (J.Scholtens@uva.nl) and Karuppiah Subramanian (subu_india@yahoo.com), both from the University of Amsterdam, The Netherlands; and Amalendu Jyotishi (amalendu.jyotishi@gmail.com), Azim Premji University, Bengaluru, India



Inside a fishmeal plant in Mangalore, Karnataka. What looked like a humble enterprise in the beginning began to stare gluttonously at the sea, desiring any fish that could be caught. The humble sardine is the prized prey for its oil and high protein.

coastline, their hungry cravings to be satisfied by the ocean's wealth. They began to pollute the water, the coastline and the air.

The trucks release their sardine-filled bellies onto piles of unidentifiable oceanic biomass. Fish treated without care; fish treated worse than waste. Waiting to be released to machines that devour sardines, smashed, trashed, squeezed and meshed. The humble sardine is transferred to oil and powder. Meal, yet not a human meal.

The plants are growing increasingly hungry. Their ever-growing bellies need to be sated. They push trawlers into the seas; sponsor madness through credit; contract trawlers to ensure future supplies; and navigate the market in innumerable ways. Ever-growing boats, with ever-growing nets and engines, spread their reach like octopi. They search for whatever is there in the sea. The plants aren't so picky. Their centrifugal machines gratefully grind any fish into oil and meal.

What looked like a humble enterprise in the beginning began to stare gluttonously at the sea, desiring any fish that could be caught. The

humble sardine is the prized prey for its oil and high protein. From Cuddalore to Kanyakumari, from Malvan to Mangalore, the sardine keeps finding its way to the fish-devouring machines.

This is where the humble sardine begins its journey. We continue to follow the sardine. Some sardines find their way to overseas fish farms. Yet we follow the larger share and, bypassing the shrimp feed plants, we reach the mouth of the Godavari in Andhra Pradesh. The coast here is buzzing with enterprising enthusiasm that has already transferred rice fields into 100,000 ha of high-yield shrimp ponds. The whiteleg shrimp (*Litopenaeus vannamei*) descended from nowhere to become Andhra's new white-pink gold. And its growth knows no limits.

Vannamei is hungry too: hundreds of thousands of tonnes of shrimp do not grow on air or murky waters. They need the powdered little fish. We sit down and calculate. Growing 680,000 tonnes of shrimp requires almost 1 MT of shrimp feed, including 220,000 tonnes of fishmeal. Producing such amounts of fishmeal requires over 1 MT of marine fish. Sufficient to lay a dense

fish tapestry over New Delhi. A third of India's annual marine fish catches are required to feed the hungry shrimp.

By now transformed into frozen shrimp, the sardine is destined to leave the country. Masses of shrimp are exported to feed foreign elites. Americans, Europeans and Japanese all love Indian shrimp. This route doesn't nourish the needy or hungry children. Empty stomachs cannot afford shrimp. But these exported shrimp certainly make a lot of dollars. *Vannamei* is championing the art of transforming our humble sardine from Cuddalore into dollars. It powerfully adds dollar value in the chain, destroying other values along the way.

Why, we wonder, do we allow over 1 mn kilos of little fish to fill the shrimp's stomach? Foreign exchange and employment are worthwhile, for sure. Yet, had the sardines been sold in Cuddalore or Mayurbhanj, Nalgonda or Srikakulam, they would have been sufficient to nourish 35 mn children. Sufficient to nourish a nutrient-deficient nation. A nation headlining the global ranks of malnutrition; headlining the global ranks of child stunting; leading the global ranks of child wasting.

It's a choice between feeding the shrimp for export dollars or nourishing the nation.

Leading the global ranks of shrimp exports, then, isn't so innocent anymore.

A few hundred kms north of the Godavari delta, a ray of hope emerges when we reach Cuttack in Odisha. It is 17 October 2019. Here, the possibility of an alternative journey fires our imagination. Along with WorldFish, the Odisha government is seeking to put small fish to a better use.

The idea is straightforward: supply fish-based nutrients to those who most need the nutrition. Nourishing children, pregnant and lactating mothers, provided they welcome fish in their diet. The work builds on the

existing infrastructure of the mid-day meal and the Integrated Child Development Services (ICDS) scheme. It draws the connection between prolific malnutrition and the nutritious wealth of small fish. The movement from fishmeal to mid-day meal is a salutary re-orientation in purpose that sits much better with the soul.

This repurposing of little fish to local schools is not as simple as it sounds. On a different day, about 80 km from Cuttack, we visit a shelter home called Nilachal Seva Pratishtan (NSP) in a place called Kanas. It hosts hundreds of orphans, visually and physically challenged children, homeless elders and helpless widows. If so much vulnerability and suffering doesn't melt you, nothing else will.

It is the day of the week when small fish is served in the mid-day meal, an experiment initiated just a few months ago. We are curious: how do they cook the fish, how is the response from the cooks, children and others when they eat the fish; what are the challenges? *Mola* fish (or *Mahurali* in Odia) is fried in an open kitchen and added to the curry prepared with a strong mustard flavour. The ecosystem of NSP is like a family despite the people being far from blood relations; the children, elders and the physically challenged are cared for by able women and men. There is a glow on their faces when the crunchy fried fish touches their lips. The rice filling the hungry stomach, the fish appealing to the taste buds. The sardines missing in the plates in Cuddalore are replaced with the joy of Mahurali in the plates at last. Of course, *mola* isn't sardine. Yet it could well be to Odisha what the sardine is to Telangana or other regions. (Here, sardine covers a broader range of small pelagics, including oil sardine, lesser sardine, Indian scad and small-sized mackerel.)

More challenges

Yet the challenges come when the numbers grow. How to scale up this approach? There are 6 mn school going children in Odisha. There is an equal number of children in the pre-school group. Great numbers of lactating and pregnant mothers would

Fishmeal production and exports

At the time of writing, in between 45 and 60 fishmeal plants were functioning across India, about half of them in the state of Karnataka. The maximum capacity of these factories is 100-800 tonnes raw fish processed per day. Since the 1970s, the capacity of these plants and exports increased approximately by a factor 100. India's total cultured shrimp production was estimated at 680,000 tonnes for 2018, according to FAO data.

The feed conversion ratio (FCR) of whiteleg shrimp is 1.2-1.6 kg feed input per kg shrimp output. Only 6 per cent of these feed requirements are imported, and 17-27 per cent of this feed consists of fishmeal. To produce 1 kg of fishmeal requires 4-5 kg of fresh fish. We have used the averages of these ranges, verifying the data with local industry. India is also a net exporter of fishmeal (about 25 per cent of the total production is exported, whereas imports are minimal), making total fishmeal production larger than required for shrimp production alone.

Using these figures, fishmeal production is estimated at 280,000 tonnes per year in 2018, requiring approximately 1.25 MT of raw fish. And this is accounting for only industrial fishmeal production from 'wet fish'. It excludes the fish that is sun-dried on the beaches and subsequently sold to poultry feed manufacturers, which can also be referred to as fishmeal.

Shrimp exports

The total export value of shrimp was US\$ 4.8 bn in 2017. India is the number one shrimp exporter in the world, both in terms of volume and value. It ranks fourth in terms of total seafood exports. A central minister announced in February 2020 that India was keen to become the top global seafood exporter. Up to 60 per cent of India's shrimp exports are destined for the US, Europe and Japan. *Litopenaeus vannamei* of Indian origin sold for € 26.90 (US\$ 31.5) per kg in a mainstream Dutch supermarket in June 2020, which positions shrimp in the upper price range of fish and meat products in these supermarkets.

Food and nutrition security

In absolute terms, India has the highest number of stunted, wasted children in the world, both key indicators of malnutrition. In relative terms, corrected for population size, India ranked 102 out of 117 countries measured, according to the Global Nutrition Report 2018. Iron and zinc inadequacy is high in India. The total content of iron and zinc in fish entering the fishmeal plants equals the recommended intake of these nutrients for 35 mn children. From a food and nutrition security perspective, the significance of eating 'small' fish, as compared to larger fish like carp or tilapia, stems mostly from the fact that small fish tends to be eaten whole, including bones and heads, which is where significant parts of the nutrients are located. World Fish recommends 75 gm of fish powder or dry fish per child per week.



also be in need of nourishment. Even a crude calculation of 10 mn individuals needing 100 gm equivalent of fresh fish for 50 weeks would mean 50,000 tonnes of fish for Odisha alone. And to nourish the entire non-vegetarian population of the country, we need far more than this.

Yet it requires less than a miracle; it doesn't require a production boom; it doesn't require a high-tech innovation. The sardine and other varieties of small fish are quite plentiful. Only their course needs to change, a reimagining of the sardine's journey and some bold, co-ordinated action. It needs to return the sardine to those baskets of waiting women. To find frugal technologies for

drying, packing and distribution. This will allow the sardine to find their place on the plates of school children across the nation.

Looming disaster

Our journey traced the fate of the humble sardine. The anguish of the Cuddalore fisherwomen and their near-empty baskets! The gloom of the factory in Udupi where the sardines were crushed into meal for shrimp and salmon! The looming disaster in Andhra with its shrimp culture that exports the sardine hidden in its flesh while degrading the surrounding soil and waters. There was hope still. At NSP, the plates carrying fish and the

JOERI SCHOLTENS



Fish vendors waiting for the sardine catch to be unloaded at Cuddalore, Tamil Nadu. Big boxes of sardines are swiftly unloaded from boats to the shore on the heads of careworn labourers, who blithely pass the baskets along and straight into waiting trucks.

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happy faces of children savouring the food despite the adversity that brought them to this place provided a glimmer. We left the place with some wishful thoughts. How can the sardine go to these plates and nourish the children, instead of disappearing in the export markets? Isn't this just plain sense?

This isn't to say that a good diet is merely a matter of compiling a cocktail of adequate nutrients. Human diets reflect historical and cultural preferences. People should be able to choose a diet fitting their taste and preferences. Yet diets and preferences are also subject to change. Who will argue against adding some fish to carefully devised school meals?

In a page from history, way back in 1978, when the fishmeal plants were only infants, John Kurien noted prophetically: When the option is between fishmeal for earning foreign exchange and protein for the masses, the choice is obvious. He was referring to the obvious choice in front of the powers that be. Four decades later we realize the choice isn't obvious, the path is tangled. It's a choice between feeding the shrimp for export

dollars or nourishing the nation. The twisted trajectory must be unknotted and straightened. We need to abandon this madness and rebuild the sardine's road. A road that leads to the plates of the needy children, to nourish them now and forever. 3

For more

<http://changingmarkets.org/wp-content/uploads/2019/10/CM-WEB-FINAL-FISHING-FOR-CATASTROPHE-2019.pdf>

Fish meal and fish oil industries pose threat to the fishing sector in India

https://www.researchgate.net/publication/267381587_Production_and_marketing_of_fish_meal_in_India_-_a_study

Production and marketing of fish meal in India: A study

<http://eprints.cmfri.org.in/9607/1/3.pdf>

Economic analysis of fishmeal plants in Uttara Kannada district, Karnataka

Activist, Advocate, Comrade

A prominent leader of India's fishworkers succumbed to COVID-19 on 8 October. Peter was a committed organizer and a practical leader with exemplary political acumen

T Peter, the General Secretary of the National Fishworkers Forum (NFF), India, passed away on 8 October, 2020. About a week earlier, on 2 October, Peter had led a protest at sea in Kollam (Quilon), Kerala, against a shipping corridor routed through the famous 'Quilon bank', a rich fishing ground falling between the 200-metre and 500-metre depth lines. He was unaware that he had already contracted the virus. He returned home to Thiruvananthapuram and his busy routines, ignoring the tell-

of good fish catches. When fish was plentiful, Veli would bustle in a festive atmosphere. Peter's eyes would light up when he talked about helping the fishermen remove fish from the nets, playing hide-and-seek amidst the fishing boats beached on the shore and, above all, the joys of a large extended family full of cousins to play and quarrel with.

His parents chose to get Peter educated rather than follow the traditional occupation. Although he barely managed to scrape through school, the education gave him a foundation. In the late 1970s, when Peter was looking around for suitable career options, most of his contemporaries in Veli with a semblance of an education joined the 'Gulf rush'—the mass migration to the oil-rich countries of the Western Asia—as did most of Kerala's unskilled workers. Peter had several cousins to ease his path there. But something held him back from the conveyor belt to the Gulf countries.

He cut his leadership teeth in his community. At age 21, he became the secretary of a trade union of small-time, casual labour in Veli working in the nearby campus of the Indian Space Research Organization (ISRO). Being part of the 'affected area' of the space centre, Veli was seen as a potential source of trouble. It was hence pacified with jobs. But the low level of educational qualifications meant that these were mostly menial jobs. Peter's union did its best to extract job opportunities and other benefits there for the local community.

It was around this time that the fishermen of Trivandrum district were in ferment; bottom trawlers—introduced in the 1960s by the state government that grew into a sizeable fleet by the late 1970s—threatened their livelihoods, regularly invading the coastal waters,

When an internal crisis forced him to take over as NFF's general secretary, his close personal relations with union leaders from other states was pivotal to his success.

tale symptoms of cough and cold, assuming it was a familiar form of seasonal distress. His health suddenly deteriorated; he was hospitalised on October 5 and put on the ventilator. Despite the best medical attention, he died of multiple organ failure, brought on by COVID-19.

Peter's achievements emerged from humble beginnings. Born to Clarie and Thomas Bell in a fisher family in Valiya Veli, a coastal village at the edge of Thiruvananthapuram (earlier Trivandrum, the capital of the south Indian state of Kerala), Peter's childhood was spent in a small fishing community of the 1960s. He encountered the struggles of an occupation dependent on the vagaries of nature, the poverty of a community living on the edge of land and society.

Yet his memory was etched with the good old days—often the days

This obituary is by V Vivekanandan (vivek.siffs@gmail.com), ICSF Trustee and Secretary, Fisheries Management Resource Centre (FishMARC), affiliated to VRUTTI, Livelihood Resource Centre in Bengaluru, India



T Peter, the General Secretary of the National Fishworkers Forum (NFF), India, passed away on 8 October, 2020. About a week earlier, on 2 October, Peter had led a protest at sea in Kollam (Quilon), Kerala, India

reducing the local fish catch, cutting their nets, damaging the reefs in the area. The newly-formed Trivandrum District Fishworkers Union mobilized the fishing community into a massive and militant struggle against trawling, the likes of which had not been seen before.

Some of the organizers saw leadership potential in Peter at a youth training camp organized by the Programme for Community Organization (PCO), a local NGO that did pioneering work among the fishing community of Trivandrum. In no time, Peter was pulled into the struggle as one of the organizers. Their interventions included squatting on railway tracks and the first-ever blockade of the Trivandrum airport.

The first struggles of the Trivandrum fishers in 1980 caught the imagination of the fishing community across the Kerala coast, creating a statewide fisher movement against trawling that coalesced into the Kerala Swatantra Malsya Thozhilali Federation (KSMTF), an independent (non-party) trade union that was a network of local fishworker organizations. The KSMTF made waves

throughout the 1980s by virtue of its relentless anti-trawl movement. This eventually led to an experimental ban on trawling during the southwest monsoon period in 1988 and become a regular monsoon ban from 1991 onwards. A seasonal ban on mechanized boats eventually became the norm across the entire Indian coast when scientists and administrators, who had initially opposed the ban, became champions of the trawl ban.

Father Thomas (Tom) Kocherry, the leader of the Trivandrum Union, became a key figure in the Kerala fishworkers movement. He attracted and mentored a large number of young fishers. Which is how Peter, one of the most promising youngsters in that lot, became the trade union secretary, a role he performed with skill and dedication. Once KSMTF was reorganized as a unitary organization by the mid-1980s, Peter would continue as the secretary of its Trivandrum district unit. By the late 1980s, he became its sheet anchor. It was clear that Peter had made a permanent commitment to the fishworker movement and had dropped all career options. He had chosen the arduous path of full-time activism.

Over the next decade, he quietly managed the day-to-day running of the Trivandrum union, organizing innumerable protests and rallies with little fuss. From a token protests to large rallies of thousands, Peter created a system that delivered—planning, communicating issues to rank and file, mobilizing members, logistics, the media management—and all on a shoestring budget.

In a city where protest rallies are an everyday occurrence and the ordinary public quietly suffers the inconvenience without taking much notice of the protest itself, the fishworker protests always caught the public imagination. Led by a large proportion of fisherwomen and young people, the rallies were colourful and dynamic, guaranteed to attract attention. Trivandrum being the seat of administrative power in Kerala, all major state-level protests ended there. It all owed to Peter's coordination.

By the mid-1990s, Peter enjoyed state-wide importance. By the late 1990s, he had become KSMTF's strong man, a status he held till his death, irrespective of his formal position in the organization. Over the last two decades Peter had become the face and voice of small-scale fishworkers in Kerala. He was accepted across the spectrum by both left-wing and right-wing parties and by other fisher organizations and administrators. His mobile telephone number was invariably on the speed dial of journalists covering fisheries issues; TV channels routinely interviewed him on matters concerning the fishing community.

For over 20 years—remarkably—Peter published *Alakal*, the fortnightly Malayalam newspaper of KSMTF. He wrote much of the content and convinced others to write for it, collected advertisements and sponsorships, proofread the pages, and got it printed. Often, he also posted copies to the subscribers! The newspaper provided useful information and analysis to Kerala fishworkers. More importantly, it propounded KSMTF's views on important issues. He wasn't restricted to small-scale fishers, either, drawing a wider community consensus. Despite the conflict of interest, the trawl associations of Kerala respected Peter and were often willing to cooperate.

In 1987, when Kocherry took over NFF's leadership, Trivandrum became the nerve centre for the national movement. Peter was ever-dependable in the NFF. From the early 1990s, fishworker's issues became national in scope and required a coordinated effort by the member unions. Delhi became the centre of activity, posing a big challenge to NFF with its predominantly coastal membership. If Kocherry opened doors in Delhi using his forceful personality and larger-than-life image, Peter and others followed in his footsteps and developed their own contacts and networks, using those settled or working in Delhi and hailing from the coastal states.

Peter commanded respect for his rich experience and political acumen. Given his commitments in Kerala, his precarious finances and his unfamiliarity with English and Hindi, Peter did not aspire to a national role. But he had to take on a more active role in the NFF following the death of several towering leaders such as Harekrishna Debnath, Thomas Kocherry, Matanhy Saldanha and Rambhau Patil.

When an internal crisis forced him to take over as NFF's general secretary, his close personal relations with union leaders from other states was pivotal to his success. Many of them stayed with him when they visited Trivandrum and he, in turn, stayed with them when he visited their states/towns. This helped them transcend barriers of language and culture. Peter also mindful of the diversity of the NFF's base, stretched across a wide spectrum of fishing fleets, many of them in conflict with one another. Their leaders trusted Peter's non-partisan handling.

Peter quietly developed his language skills and taught himself to use modern information technology—computers, the Internet, social media.

Peter was using the COVID-induced break to work on many ideas and issues. He had ambitious plans to celebrate the 40th anniversary of the KSMTF from December 2020 to May 2021. He was all set to take the NFF forward on several fronts when he was taken away. ❧

At Sea, Out of Sight

A first-of-its-kind survey in coastal Andhra Pradesh, India, revealed the peculiar vulnerabilities and demands of fishworkers who migrate regularly to Odisha, Karnataka and Gujarat

When the authorities enforced large-scale lockdowns to prevent the spread of the COVID-19 pandemic, the vulnerabilities of migrant workers were thrown into high relief. Other than the hardships and challenges that are common to migrant labourers across sectors, migrating fishworkers face certain specific adversities. The International

lockdown. The surveyors were two civil society activists from AP, well versed in the local language, Telugu, and who have significant experience of working with fishworkers. They enquired after not only the migrant fishworkers themselves but also their groups and communities. They were asked about the reasons for migration and their experiences during the COVID-19 crisis.

The fishworkers had been migrating to three locations to work as crew on mechanized boats: Veraval in Gujarat; Malpe in Karnataka; and Paradeep in Odisha. Almost all the respondents have worked in all three locations at some point or the other, adding to the representative nature of their feedback. All of them migrate for better income. Their migration is largely fuelled by relationships of kinship and family. The survey showed its pattern.

Srikakulam district: Five respondents

The respondents from Srikakulam were in two groups. One migrates to Malpe and the other to Veraval. Dhoni Lakshmana Rao, 40, is from D Matsyalesam village of Echherla Mandal. For 20 years now, he has been going to Malpe to work on mechanized fishing boats. Four others from this district had returned from Veraval, where they have been working as crew on mechanized boats for between nine and 16 years. They include: Cheekati China Danayya, 45, from Narasayyapeta; Komara Gurusurthy, 40, of Mohfus Bandar; and Ganagalla Korlayya, 30, who comes from China Ganagalla Peta. All three areas come under Srikakulam Rural. The final respondent from this district is Moogilkkayya, 35, who hails from D Matsyalesam of Echherla Mandal.

Previous surveys and studies have shown that fishworkers from this region have been migrating to as far as Gujarat—the other end of the Indian coastline—since the 1990s, especially to work on multi-day trawlers.

Collective in Support of Fishworkers (ICSF) conducted a detailed survey of 14 migrant fishworkers to understand their conditions, their vulnerabilities and what is required to provide them the security and dignity outlined in international labour laws.

The respondents of the survey were from three locations in coastal Andhra Pradesh (AP): across Srikakulam district, across Visakhapatnam district, and from the hamlet of BCV Palem (Boddu Chinna Venkataya Palem) in Korangi, a fishing village in East Godavari district. Previous surveys and studies have shown that fishworkers from this region have been migrating to as far as Gujarat—the other end of the Indian coastline—since the 1990s, especially to work on multi-day trawlers. A 2016 study had estimated the number of migrants from AP to Veraval in Gujarat at 25,000 every season.

The 14 fishworkers were surveyed in the month of June after they had returned to their villages following the COVID-19 crisis and the resulting

*This article, by **Sopan Joshi**, is based on ICSF's fishermen migration survey conducted by **Arjilli Dasu** (arjillidas@rediffmail.com), executive secretary of the District Fishermens Youth Welfare Association, Andhra Pradesh, India; **B.L. Narasimha Raju** (blnraju1992@gmail.com) of Andhra Pradesh, India; and the report prepared by **Venkatesh Salagrama** (vsalagrama@gmail.com), independent consultant based in Kakinada, Andhra Pradesh. The preliminary report was prepared by **Ahana Lakshmi** (ahanalakshmi@gmail.com), an independent researcher based in Chennai, India*

MOOGI APPANNA



Srikakulam migrant fishers are working in Gujarat, India. The diet comprises a breakfast of freshly cooked rice with fish fry; lunch usually features rice and fish curry; dinner consists of chapati and fish curry. Vegetables are served with each meal on Saturdays

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Visakhapatnam district: Four respondents

The migrant fishers from this region go to work as crew in Gujarat, Karnataka, Goa, Maharashtra, Odisha and Tamil Nadu. The respondents to the survey, in particular, had returned from Veraval. They included: Koviri Mahesh (Nookaraju), 46; Perla Apparao (Danayya), 48; Perla Dasu (Danayya), 35; and Garikina Mandulodu (Peddayya), 32. They are all from Gangavaram village in Pedagantyada Mandal of the district.

BCV Palem (East Godavari district): Five respondents

Karri Annavaram (Suryanarayana), 35, has been going to Malpe for the last 15 years as crew on a mechanized boat. Previously, he had migrated to Paradeep and Veraval. While he was still living and working in BCV Palem, his father and he fished together on a

wooden shoe-*dhoni*. The catches were meagre and hardly sufficient to meet the family needs. After he got married, his father-in-law Annavaram helped him go to Paradeep, later to Chennai and finally to Malpe. Once he found his feet in the new place, he arranged for around 15 people to find work in Malpe's fisheries, including his father, 10 younger family members, and four young men from the village. His condition improved since he started migrating. Besides, his father being on the same boat gives both of them security and support. Had COVID-19 not forced them back, they had two more months of good fishing left before the monsoon break. Nowadays, he is part of the crew on a Kakinada-based trawler.

Kopanati Peda Acchiraju (also called Bhairava Swamy), 46, and Karri China Suryanarayana (Peda Narayana), 56, have been going to

MOOGI APPANNA



Srikakulam migrant fisherman. In a 29-day trip, they get to take a bath hardly four to eight times. When they bathe, it is mostly with seawater that is washed off with about four small containers of freshwater towards the end.

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Paradeep for the last 10-12 years. Both have previous experience of working on similar boats in Gujarat, Mangalore, Malpe and Chennai. Prior to venturing into mechanized fishing, they were fishing with various kinds of estuarine gears in the creeks and backwaters near BCV Palem. After running up debts, there was no option but to migrate on a long-term basis to Paradeep. Once Acchiraju found his feet, his uncle and his brother-in-law followed him into the seasonal migration. It was the other way round for Suryanarayana; his son and the son's father-in-law had been working in Paradeep and he followed them there.

Pinapothu Mahalakshmi (aka Pentayya Kamaraju), 50, also fished 15 years ago in the creeks near the village on his wooden boat, using estuarine nets—both fixed and drag nets. He found additional income in agricultural labour and net making/repair. Over time, as the family grew, it became difficult to meet the household needs. Moreover, small fishing activities in the village declined, with the wooden boats getting replaced by fibre-reinforced plastic (FRP) boats

and the fishing grounds shifting to the sea and the Kakinada Bay; his estuarine gears were of little use there. Faced with problems on several fronts, migration to Paradeep to work on mechanized trawlers offered a way out. The demand for fishing labour meant that the income was good, regular and sufficient for the family's needs. Mahalakshmi spends most of the year on a trawler in Paradeep, visiting home for festivals. Living on the boat for extended periods of time has its disadvantages but Mahalakshmi has made a virtue of a vice. He said it keeps his expenses down and helps him to save enough to pay off his old debts.

Like him, Sangani Gangadhara Rao (aka Chinna Apparao), 57, has also been working as a crew member on a mechanized boat in Paradeep for the past 10 years. Previously, he worked on a similar boat from Kakinada. That did not work out because his expenses were higher than the returns, partly because he found excuses to avoid going to fish. As he watched his daughters grow up, he felt the drive to work harder and earn better. Migration to Paradeep paved the way for that.

Nature of work, life at sea

The migrants who go to Veraval described their work cycle. The fishing operations last eight months (mostly eight trips) in a year. They leave their villages for Veraval by the last week of July. Work begins in the first week of August. Each fishing trip lasts about 25 days; the return to the harbour takes an additional four days. In Malpe, the migrants are engaged only on the larger boats; the smaller boats are crewed by the local fishers. In Veraval and Paradeep, the boats are more uniform in size and the smaller boats of Veraval employ mostly local crew. In Malpe boats employ 10-15 crew members; in Veraval the count is nine; and in Paradip it is eight to nine. They spend one day in the harbour, unloading the catch and loading supplies for the next trip, starting back for fishing that same night. Fishing is carried out some 270 nautical miles from shore. The sale of fish and shrimp from each trip generates about INR 10-15 lakh (USD 14285-USD 21428) in revenue. The operations close in March and by early April they are back home.

Onboard, the fishers hardly get any sleep because sleeping arrangements are poor, leaving the fishers exposed to the elements; rainy months are much worse. In Malpe, it rains June to August; in Paradeep the season is July to August; and in Veraval, it rains from August to November. In a 29-day trip, they get to take a bath hardly four to eight times. When they bathe, it is mostly with seawater that is washed off with about four small containers of freshwater towards the end. The harbour and its surroundings are unhygienic and the facilities are very poor. The occasional stay on land while the boat is getting repaired—or for some other contingency—is not a welcome distraction.

Despite all the hardships, the fishers still choose to migrate because of the assurance of regular monthly salaries. While fishing in their own neighbourhood can fetch between INR 5,000 (USD 71) and INR 10,000 (USD 142) a month, the expenses are much higher when a fisher works on his own and lives with the family—there are opportunities for extravagance. Being stuck onboard for 29 days at a

stretch off the Gujarat shore precludes any opportunities for expenditure, automatically enforcing a discipline of austerity. There is no opportunity to spend the income; the boat owners meet the daily needs. The diet comprises a breakfast of freshly cooked rice with fish fry; lunch usually features rice and fish curry; dinner consists of chapati and fish curry. Vegetables are served with each meal on Saturdays.

Terms of work and payment

When the fishermen spoke about the location of their migration, their responses often overlapped, regardless of whether they were talking about Veraval, Malpe or Paradeep. But when they talked about their own villages, very little was common. It is usual for each group of fishermen to work out their arrangements with the boat owners. This does not happen directly, however, but through the mediation of the *tindels* or skippers. It means the migrant routes tend to be stable and unchanging year after year.

The demand for fishing labour meant that the income was good, regular and sufficient for the family's needs.

There are no written contracts of employment. The mode of payment varies from place to place. In Veraval, the fishing crew are paid on a monthly basis; 40 per cent of the annual salary is paid out in advance and the rest in equal instalments, depending on the mutual agreement. The Srikakulam fishermen said the monthly salary varied from INR 10,000 (USD 142) to INR 12,000 (USD 171); the fishermen from Visakhapatnam said the salary ranged between INR 8,000 (USD 114) and INR 10,000 (USD 142). They do not have any share from the catch returns. The boat owners have very little role in the recruitment, the payment of salaries, or addressing the crews' concerns. All such responsibilities rest with the skippers, who are also migrants hailing from Andhra Pradesh. They have separate agreements with the owners

MOOGI APPANNA



Srikakulam migrant fishers. While drinking water was supplied, a single well within the harbour premises was the only source of water for all non-drinking purposes

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to cover all their expenses and earn monthly salaries of INR 25,000 to INR 30,000 (USD 357-USD 428); even INR 35,000 (USD 500), in some cases.

A different mode of payment is used in Malpe and Paradeep where the duration of the fishing trip is seven to 10 days: A share of the catch. The average value of catch fluctuates wildly based on the quantity, variety, quality and season of the fishing. Broadly, the value of catch in each trip is INR 8-12 lakh (USD 11428-USD 17142) in Malpe and INR 3-6 lakh (USD 4285-USD 8570) in Paradip. In Veraval it is at least INR 8 lakh (USD 11428), going up to INR 15-20 lakh (USD 28570-USD 21428) The two groups migrating to Malpe reported slightly different arrangements. The crew's share in the income is 21 per cent, divided among the eight members. Dhoni Lakshmana

Rao of Srikakulam said one share goes to each crew member, while two shares are taken by the captain. The BCV Palem fishers said that after deducting all operational expenses from the gross income, 22 per cent of the income is shared equally among the crew members.

Fishers from BCV Palem going to Paradeep said 17-18 per cent of the income from the catch is shared among the crew members, after deducting operational costs from the gross income. Here, too, the crew has no direct contact with the boat owners; from recruitment to all subsequent dealings, the skipper handles it all. He is also a migrant, usually from the same area as the crew—that's how recruitment happens—but has longer experience and a working relationship with the boat owners.

Migrant fishworker sector: A profile

The respondents were asked to enumerate the migrant fishworkers from their state; their gender; their age groups; and the availability and quality of on-shore accommodation. The responses indicated it is mostly men who migrate. No accommodation was provided in Malpe and Veraval and none of the migrants had a place to stay on shore; they spend 29 days in a month at sea. They said it was impractical and unsafe to take their families with them.

A few Telugu women do migrate and are involved in shore-based activities like supply of ice and water; but they were from areas other than where the respondents had come from. In Malpe, it was estimated that 700 fishers were from AP, of whom 280 were from Srikakulam and 40 from BCV Palem. Fishers from Ichhapuram, Nellore and Kakinada also migrated to Malpe. They ranged in age from 16 years to 55 years.

Respondents who migrate to Veraval said that there were between 12,000 and 15,000 fishers who migrate to other states exclusively for fishing.

Most migrant fishers from BCV Palem go to Paradeep (except for a group that goes to Malpe) and the numbers, according to the respondents, ranged from 160 to 1,000. The men lived on the boat for 25 days at a stretch. They fell in the 25-60 age group, with a majority of them between 40 years and 55 years of age. A few fishers here had taken their families along with them because they speak Odiya; this helped them make a living on their own while the men were away fishing.

COVID-19 crisis: Immediate relief and shelter

The fishers were asked about incidences of COVID-19 among the fishermen. All of them said they had not heard of any fishers testing positive for COVID-19, though they were worried about getting infected. In Malpe the fishermen were in a 45-day quarantine in the Malpe harbour. They were given two masks and medical check-ups were carried out on them twice each day. In Veraval, doctors tested fishers but all the tests came out negative. Both in Paradeep and in BCV Palem, the migrants received good medical attention. They

were quarantined for eight days after their return to AP and allowed to go only after all precautionary conditions had been met. One group from BCV Palem said that they visited the local Community Health Centre upon return to BCV Palem from Paradeep, and were sent to Kakinada for quarantine. Once the period was over, they were tested thoroughly for any symptoms and allowed to go home. Doctors and other medical professionals looked after the fishers well.

Boat owners called in their boats, asking them to stop fishing after 18 March, 2020. The fishers in all three locations returned to their harbour base between 19 and 22 March. They had to stay within the harbour area till they left for home. The Malpe fishers left for their hometowns on 17 May, while the Veraval fishers left on 30 April.

The migrant fishers were asked whether, during the lockdown, they were entitled to food rations,

Despite all the hardships, the fishers still choose to migrate because of the assurance of regular monthly salaries.

good hygienic accommodation, medical facilities, counselling and communication with their families. Were they provided timely and accurate information on COVID-19 in a language they understood?

Fishermen who worked out of Malpe said that, initially, food was reasonable but the quality declined with time. Unable to move out of the harbour area, the option was to go hungry. BCV Palem respondents said that the rice they received initially was undercooked; when they complained, they got overcooked rice. In general, the accommodation in the harbour was unhygienic. While drinking water was supplied, a single well within the harbour premises was the only source of water for all non-drinking purposes.

Good health services were provided to all but no counselling. COVID-19 information was available in Kannada in Malpe, but not in Telugu. While cell phones helped in communication with their families, it only made them feel more lonely and homesick. The

BCV Palem respondents also said that supervisors did not respond adequately or appropriately.

Fishers in Veraval said that they were fed during lockdown and quarantine but the accommodation in the harbour was poor. Health services were good but there was no counselling. While information on COVID-19 was available, it needed to be translated by some of them who knew Gujarati. Communication with families was through cell phones.

In Paradeep, responses varied. Kopanati Peda Acchiraju and Karri China Suryanarayana said that while they remained stuck at Paradeep harbour, each fisherman received five kg of rice, lentils and other groceries to cook their food; both the owners and Odisha government helped with this. The owners paid INR 1,000 (USD 14) as advance and that was the sum total of the help they offered. They spent 45 days in the jetty, during which time there were twice-a-day health checkups. The health workers also provided them with face masks. The owner sent drinking water, but there was no water provision for bathing and other purposes other than one well. Pinapothu Mahalakshmi said that in Odisha, several officers from the police, fisheries and other departments visited the jetty regularly and explained what the novel Coronavirus was about. It became difficult to stay in the harbour indefinitely, with no idea of the future.

Getting back home, compensation

The boat owner in Paradeep booked train tickets for the fishworkers to get back home, but when the trains were cancelled again, he handed each of them INR 1,000 (USD 14) to make their own way back; after the first few days, though, he stopped taking calls from the fishers. (The migrant workers are not sure if that is a handout or an advance.) They walked about 85 km to Cuttack where they had heard that a Telugu-owned transport company was helping migrants back home. During quarantine at Iccapuram on the border, they received good food and tea. There were hygienic kitchens and good medical facilities; the fishers were able to charge their phones, talk to their families and keep up-to-date

with everything. However, the INR 2,000 (USD 28) promised by the AP government was not forthcoming. One group received essential food items from volunteers on their return to the village; the state government provided ration four times and gave a one-time cash allowance of INR 1,000 (USD 14). No compensation was provided for the loss of fishing days and opportunities.

Those returning from Malpe also denied getting this cash. They said boat owners who had been supportive earlier were not so forthcoming this time around. Fishers returning from Veraval to Srikakulam said that about 30 per cent of them received INR 2,000 (USD 28) compensation. According to fishers returning to Visakhapatnam from Veraval, until now, no government officer has shown interest to know about their situation or to offer any assistance. When the fishers approach them, they reply that they have no information or orders to support the fishers.

The migrant fishworkers were asked if they were repatriated to their villages under government arrangements; if not, who had borne the costs. The responses were varied. Migrant fishermen from Srikakulam in Malpe said that each of them had raised INR 4,400 (USD 62) from boat owners to pay for the bus journey back home. It took them two days to go from Malpe to Srikakulam, where they were quarantined for two weeks, followed by another six days of quarantine in the villages before meeting their families. They said that their travel expenses were INR 2,000 (USD 28). They had not received the relief promised to help them tide over the quarantine period. BCV Palem migrants in Malpe said that they raised INR 4,000 (USD 57) each to find their way back to their villages.

From Veraval to Srikakulam or Visakhapatnam cost the fishers INR 3,000 (USD 42) each that they raised from boat owners. The group from Visakhapatnam said that the state governments of AP and Gujarat had discussed their repatriation several times. The fishers had tried their best to pressure them into prompt action. There was a proposal to send the workers back by sea route on a ship, but this was abandoned in favour of bus transport.

Relief and assistance

The migrants were asked if they had been receiving help from other quarters. The Srikakulam group from Malpe said that they had not received any support from anyone. The group from Veraval said the same. While they were in Veraval, the AP government had arranged to distribute to each of the migrant fishers 10 kg of rice, blankets, groceries for cooking, soaps, mosquito nets and masks. The Veraval group from Visakhapatnam said aside from a dry ration kit provided by the NGO District Fishermens Youth Welfare Association (DFYWA)—itself quite inadequate—they had not received any support from any other source, government, NGOs or otherwise.

The BCV Palem group from Malpe said that the Boat Union association provided food from day four onwards because their food stocks did not last beyond the third day. Back in BCV Palem, the state government supplied rations in four cycles along with INR 1,000 (USD 14) per family as immediate assistance.

Some local philanthropists (Boddu Satyanarayana and Voleti Jaggarao) as well as the local shrimp processing units like Apex provided the fishers with rice and other essential supplies. The Member of the Legislative Assembly of Yanam, Malladi Krishna Rao, supplied vegetables to every household in the village. More recently, ICSF helped a small number of fishers with a package of essential items.

What do the migrant fishworkers demand?

Their list of suggestions and demands is long, be it related to recruitment, working and living conditions, or social protection. The responses were quite similar on this count, pointing to a clear path of common action.

Those who go to Malpe and Veraval demanded written contractual agreements directly with the boat owners, signed in the presence of officials of the two state governments and the local boat owners' associations in Malpe; these bodies should vouch for the agreement. They demanded identity cards and the reduction in the duration of fishing voyage from 29 days to 15 days, letting the crew rest for at

least five days in a month; this led to the demand that the harbour premises need cleanliness and maintenance. The captains, they urged, should be instructed to avoid fishing near the Pakistan border. They need insurance cover because those who die or suffer accidents at sea are not protected at all just now, covered neither by the boat owners nor the state governments, even though the boats are insured. They demanded bio-toilets on the boat for safety and convenience; fishers sometimes fall overboard while relieving themselves, in the absence of toilets.

They need the same support and services that the AP government extends to other fishers in the state. The fishers said that if mini-jetties were built in AP and they were provided boats and nets at 90 per cent subsidy, they will not need to migrate for work.

They said that the monthly salary must be enhanced from INR 15,000 (USD 214) to INR 20,000 (USD 285).

The average value of catch fluctuates wildly based on the quantity, variety, quality and season of the fishing.

Some portion of the income from fishing revenue is set apart from the sharing process (Veraval does not have a sharing system); the respondents said this amount should also be shared with the crew. They said sharing patterns differ between the boats that have skippers from Tamil Nadu and those from Karnataka. While the owners pay impartially, how the skippers pay the crew depends on their whims. This needs to stop, they said; recruitment is best handled by the owners directly, making them responsible for the needs and well-being of the crew.

All information, warnings and other notices should be provided in Telugu, they said; the boat owners should pay for the travel expenses incurred on account of the lockdown, compensating the fishers for the loss of two good months of fishing.

Location, location, location

Paradeep migrants said their conditions were better than those who stayed and worked in their villages. They received regular salaries and are looked after well. Only an emergency like the COVID-19 pandemic left them in need of support that was difficult to find. They called for a systematic approach to support migrant fishers in emergencies. One part of it will have to be improved facilities to rest in the harbour after the fishing trips. During the COVID-19 lockdown they had to spend several days in the harbour, putting up with poor amenities.

Several of their demands were the same as those of the migrants of Malpe and Veraval: accountability from the boat owners; toilets on the boats; insurance; emergency cover; and identity cards, among other things. A

Respondents who migrate to Veraval said that there were between 12,000 and 15,000 fishers who migrate to other states exclusively for fishing.

major difference was how the Paradeep migrants wanted to deal with the boat owner; they were happy with the captain as the *via media*. They thought direct contact with the owner put the worker at a disadvantage on account of difference in language. They also thought the owners were on their home turf in Paradeep, while the workers were not, reducing their ability to drive a bargain.

The reaction to the question of insurance was different, too. Some fishers of BCV Palem said in case of a fatal accident, the deceased fisher's family receives a compensation of INR 50,000 (USD 714), contributed from a common fund set up by the skippers in Paradeep. In earlier times, the Paradeep fishers said, the owners arranged for medical treatment of a migrant who had fallen ill. If the treatment was prolonged, they arranged for the worker to return home.


Pinapothu Mahalakshmi said that each fisherman has an insurance policy, but no savings schemes nor other

government support programmes. Every fisherman has his own cell phone. The state government relays weather warnings and organizes a meeting with all people in the harbour every 10 days to give advice on safety practices.

Skilled but unrecognized

When asked if they considered themselves skilled, all the respondents responded in the affirmative, citing their considerable experience of fishing. They knew swimming and signalling and were adept at using different kinds of fishing gear – trawl, long-line and hand lines, for example.

Malpe migrants said that they knew their fishing grounds lie between 13°N and 17°N; that if they travelled closer to 18°N, they would reach Mumbai. They know how to operate a global positioning system (GPS) and put it to regular use on their boats.

In addition, Paradeep's migrant fishers said that since there was no difference in fishing between Kakinada and Paradeep, they found it easy to adapt to the fishing systems there. Gangadhara Rao is partially blind on account of having only one eye but is a skilled fisherman. He is of advanced age and hence in charge of cooking and is a good cook—an example of the diverse skills that go into migrant fisher's work. 

For more

ICSF's Survey of Migrant Fishers and Fishworkers during COVID-19, India

<https://www.icsf.net/images/what%20is%20new%20page/India%20Migrant%20fishworkers%20survey.pdf>

India: Left in the lurch

<https://www.icsf.net/yemaya/article/EN/60-2343.html?lang=en>

Inter-state migration of fishers from Srikakulam district, Andhra Pradesh

https://www.academia.edu/10610681/Inter_state_migration_of_fishers_from_Srikakulam_district_Andhra_Pradesh

A Study of Migrant Fishers from Andhra Pradesh in the Gujarat Marine Fishing Industry

https://www.icsf.net/images/occasionalpapers/pdf/english/issue_160/160_Migrant_Fisher_Study_Manas_Roshan.pdf

Looking at the Long Term

A survey of fisherfolk in the Indian state of West Bengal shows that relief measures for natural disasters and the COVID-19 pandemic must take into account long-standing vulnerabilities

The two most important concepts to set the agenda for the Sustainable Development Goals 2030 (SDGs) are 'social development' and 'sustainable management'. The Food and Agriculture Organization of the United Nations (FAO) has been the key player in raising awareness and providing guidance on sustainable aquaculture development and management, as stated in the Code of Conduct for Responsible Fisheries, laid down in 1995. Almost two decades later, in 2015, FAO introduced the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines).

Support of Fishworkers (ICSF) Trust to conduct a study on social development and sustainable fisheries in the state.

The study intended to examine the socioeconomic conditions of the fisherfolk in West Bengal, with special reference to the COVID-19 pandemic and cyclone Amphan that hit the state on 20 May 2020. It was an opportunity to study various aspects of fisheries and the means to improve the social conditions of the fishing community, especially the small-scale and traditional fishers of the state. It was also a search for viable solutions to 13 specific day-to-day challenges facing the fishing community. This was to happen within a rights-based framework, looking into several fisheries concerns: improved access of full-time, part-time, occasional and subsistence, informal and formal, migrant and resident, women and men fishers and fishworkers; health, education, housing, sanitation, potable water and energy, as well as social development, social security and standard of living.

The state has rich natural endowments and fishing occurs in various kinds of water bodies, a feature that makes India the country with the second-highest fish production in the world. The small-scale and traditional fisher community are the primary custodians of these natural water bodies. They strive to maintain, protect and conserve the water bodies and fish resources. The challenges they face are well documented: declining access to resources; weak processing units; lack of proper market and infrastructural facilities; poor economic status; non-implementation of existing laws; exposure to natural disasters, especially in the district of South 24 Parganas; marginalization of women fishworkers; and gender inequalities.

Ensure the social development of fishing communities through basic amenities like education, access to drinking water, food, shelter and healthcare.

Partly in recognition of the SSF Guidelines, the Indian government brought out the National Policy on Marine Fisheries (NPMF, 2017), the Draft National Inland Fisheries and Aquaculture Policy (NIFAP) and the National Fisheries Policy (2020). They aimed to create a conducive environment for an integrated and holistic development and management of fisheries for the socioeconomic development of fishers and fish farmers, keeping in view the concerns of sustainability, biosecurity and the environment.

Despite the importance of fisheries to livelihoods, food security and economic development, fisherfolk are often poor and marginalized. This is especially true in West Bengal, which prompted the International Collective in

*This article is by **Shilpa Nandy** (shilpanandy@yahoo.co.in), Assistant Professor, Khudiram Bose Central College, Kolkata, India, and Advisor, Women's Wing, Dakshinbanga Matsyajibi Forum, West Bengal, India*

To stand up to these threats, fishers have been organizing themselves, and participating in movements at regional, national and international levels. Their usual hardships were multiplied in 2020 by the COVID-19 pandemic, which resulted in lockdowns. Then tragedy arrived with the gale winds of the tropical cyclone Amphan. Its devastation was wide-ranging, damaging fishing communities, in particular. The pandemic magnified the vulnerabilities of women in these communities—the single, the widowed, the old and the infirm. The study showed that government schemes, federal and provincial, offered social and occupational security through welfare measures that provided succour during the pandemic and in the aftermath of the cyclone. Significant relief efforts also came from fisherfolk organizations, voluntary associations, non-governmental organizations (NGOs), public trusts and individuals at all levels: regional, state, national and international.

The study allowed researchers to distill the most important demands

and recommendations of the fishing community of West Bengal, which are summarized below:

- Ensure small and traditional fishing communities' control over resources like land, water, forests, fish resources, the commons and livelihoods, especially in preserving the fish and ecological resources of the Sunderban area.
- Provide preferential access to the small-scale fishers and implement—in letter and spirit—the West Bengal Marine Fisheries Regulation Act and FAO's SSF Guidelines.
- Cease illegal and unauthorized encroachment of fishing areas. The government should proactively confer community user rights over fishing grounds to the fishing communities.
- Recognize and establish the rights and entitlements of fishworkers by mobilizing the community with specific awareness programmes that enhance skills and capacities. These must be built on a mandatory interface of the fishing community and government representatives.

SHILPA NANDY



Kathi Nona Jol fishmarket, West Bengal, India. The government schemes, federal and provincial, offered social and occupational security through welfare measures that provided succour during the pandemic and in the aftermath of the cyclone

MILAN DAS,DMF



Impact of Amphan cyclone, south 24 Parganas, India. The devastation of cyclone Amphan was wide-ranging. Besides shattering the livelihoods of communities, the cyclone destroyed basic amenities like shelter, housing, food, healthcare and education

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- Introduce effective efforts to form and sustain fishworkers' collectives at all levels: local government, block and district, and state government. Develop and strengthen fishworkers' co-operatives as a step towards democratization of society and the economy.
- Sensitize state and local government institutions to identify gender gaps and gender discrimination prevalent in the community. Policymakers must give prime importance in framing welfare laws that directly benefit and empower women in the fisher community, especially the most vulnerable among them—old, infirm, single, widowed—who are dependent on fishing activities.
- Create national and state commissions for people who depend mostly on natural resources like land, water and forests.
- Ensure the social development of fishing communities through basic amenities like education, access to drinking water, food, shelter and healthcare.

This study has provided an overview of the concerns and demands of small-scale fishers of West Bengal.

The immediate priority, however, is access to basic amenities for fishing communities in the state, which has been rendered very difficult by the COVID-19 pandemic. Even as this is emerging as the vital concern of fisheries organizations across the world, efforts to provide basic relief from the COVID-19 pandemic's consequences must also incorporate a long-term perspective. 3

For more

A Heavy Price

https://www.icsf.net/images/samudra/pdf/english/issue_81/4397_art_Sam_81_art14_A_Heavy_Price_FANI_A_Senapati.pdf

Easy to watch and informative

https://www.icsf.net/images/samudra/pdf/english/issue_38/855_art11.pdf

Fish Vendors Struggle for their Rights!

https://www.icsf.net/images/yemaya/pdf/english/issue_35/1698_art08.pdf

Hand in Hand

Though Kerala and Tamil Nadu are top performers on the Human Development Index, their advances in sustainability and social development do not reach small-scale fishers

Social development of fishing communities can be made possible only through policies and services for poverty eradication, employment generation and social inclusion that address the specific needs of the community and ensure their well-being, through successful governance processes at different levels. Being socially and economically backward and lacking access to development opportunities makes the road to social empowerment difficult for fisherfolk.

Kerala and Tamil Nadu are two of India's highest performing states in human development. There are a number of schemes and policies in both the states for the social development of small-scale fisherfolk. And yet there is a long way to go. Both the states fail

figure is substantially worse than the proportion of people below the poverty line among the general population. A string of poverty-alleviation policies and programmes do not seem to have created a sizeable improvement in their condition. Some economic, social and cultural attributes unique to fishing communities have prevented their members from reaching the degree of 'capabilities' other Kerala communities have reached. Frequent natural disasters also reverse the development process of the fisherfolk. In order to reduce poverty among fisherfolk, policies that focus on climate-change resilience have to be the first priority, be it in housing, employment or healthcare. Without this, the policies will remain unsustainable.

Culturally conditioned livelihoods lead to many disadvantages, including the least likelihood of mobility out of employment. This adds to the misery of fisherfolk. There are alternative employment opportunities for fisherfolk communities in both the states, including exclusive opportunities. Many of these are in the making, especially in Kerala. Policies and programmes in both the states seem to be less efficient in case of providing access to healthcare to the fisherfolk villages. Analyzed data reveals that Tamil Nadu should focus more on improving the healthcare facilities accessible to fisherfolk as the number of hospitals near fishing community villages is much lower than the average.

Uneducated proportion

Access to education creates inclusion in the development process. Analysis shows the existence of a much-higher-than-average proportion of uneducated people among fisherfolk.

Analyzed data reveals that Tamil Nadu should focus more on improving the healthcare facilities accessible to fisherfolk...

to pick up their fishing communities along the overall development journey. In many of the social-development indicators, fisherfolk are way lower compared to the general population, data shows. While the general population shows a relatively better state of development, it has not trickled down to the fisherfolk—economically, socially or politically. Though there exist promising policies and programmes, a big push is required in policies, schemes and welfare programmes for development to reach fisherfolk.

More than half of the fisherfolk population in Kerala and Tamil Nadu live below the poverty line. This

This article is by A.S.Medha (medha@cess.ac.in), Research Scholar, Centre for Economic and Social Studies (CESS), Hyderabad, Telangana

The proportion of fisherfolk with higher education is also very small, which limits occupational mobility. The proportion of females who had no formal education at all is very high compared to the general population. Kerala seems to have exclusive policies to improve the education status of fisherfolk but unless access is assured through institutional inclusion, there will not be a drastic improvement in the educational status of fisherfolk. Housing is a major issue. Lack of access to land in fisherfolk villages adds to this problem. Both Kerala and Tamil Nadu seem to have exclusive policies for improving the housing conditions of fisherfolk.

Collective action has been the major strength of fisherfolk. A number of establishments dedicated towards the welfare of fisherfolk exist in Kerala and Tamil Nadu. Both the states have co-operatives that work towards the betterment of the community. Non-governmental organizations (NGOs) have contributed vitally to the resilience of the fisherfolk in the face of the COVID-19 pandemic.

Globally, concerns over resource sustainability have led to fishing prohibitions and withholding of fisheries subsidies. This is a tricky issue for fisherfolk. The bans and restrictions keep them away from their daily fish catch. Though both states offer compensations, the amount is very small. Then there is the disruption brought to the fishers' livelihoods by natural disasters. The uncertainties they face need a careful examination. In comparison to other fishing methods, the techniques employed by small-scale fisheries have fewer negative impacts on the ecosystem. The development of small-scale fisheries not only contributes to global food security, but it is also desirable for environmental sustainability.

The state governments must ensure land security by assuring tenure for fisherfolk. Policies and programmes need to consider the unique characteristics of small-scale fishers. They lack alternative livelihood opportunities, especially during the fishing ban period. This calls for urgent government action. The fisherfolk need increased financial assistance

during the duration of the fishing ban. Compensation for injuries and for the needs of the disabled needs to be more generous and widespread, given that fishing is one of the riskiest jobs in the world.

A large number of workers in activities allied to fisheries are women. Their work and lives are not protected adequately by social-security systems when compared to active fishers, who are mostly men. The provision of pensions for fishing-allied workers is

Some economic, social and cultural attributes unique to fishing communities have prevented their members from reaching the degree of 'capabilities' other Kerala communities have reached.

needed, especially for women. Access to social development is directly related to access to education and healthcare. More public hospitals need to be built near fisherfolk villages. Community study centres need to be organized in fishing villages to make sure there are no dropouts, and that nobody is left out of school.

Complementary policies

The digital divide needs to be addressed by improving access to the Internet and information technology, critical for access to education as well as for the development of resilience. Sustainability and social development should go hand in hand because one is complementary to the other. Policies related to one must take the other into account.

For more

Nets for Social Safety - An Analysis of the Growth and Changing Composition of Social Security Programmes in the Fisheries Sector of Kerala State, India by John Kurien and Antonyto Paul, 2000

http://www.icsf.net/images/monographs/pdf/english/issue_33/33_all.pdf

The Beauty of the Small

https://www.icsf.net/images/samudra/pdf/english/issue_72/4184_art_Sam72_e_art09.pdf

The Sea around Us

https://www.icsf.net/images/samudra/pdf/english/issue_67/3987_art_Sam67en_art08.pdf

Shifting Sands

The COVID-19 pandemic poses an additional challenge for the social-ecological resilience of the fisheries of Pulicat, India's second largest lagoon

Pulicat, India's second largest lagoon, which straddles the states of Andhra Pradesh and Tamil Nadu on the Coromandel Coast of south India, covers a maximum area of 750 sq km and has an average depth of 1 m. The depth at the mouth (opening into the Bay of Bengal) is almost 10 m. When full, the lagoon spans up to 60 km in length and 18 km in width. About one-third of the lagoon lies in the Thiruvallur district of Tamil Nadu and the rest in the Nellore district of Andhra Pradesh.

The lagoon harbours three islands—Venadu and Irukkam, almost in the middle of the lagoon, and Sriharikota acting as the barrier island between the Bay of Bengal and Pulicat. In addition to other smaller streams, the lagoon derives its freshwater source from three major rivers: the Arani, the Swarnamukhi and the Kalangi. Seawater enters the lagoon through the northern end near Sriharikota Island (Tupilipalem) and flows back into the Bay of Bengal through the southern end (Pulicat). This interaction of fresh- and sea-water in the lagoon acts as a breeding ground for many species of fish and prawn, including commercially important white prawn (*Penaeus indicus*) and tiger prawn (*Penaeus monodon*), which supports the lives and livelihoods of fishing communities residing in and around the villages.

The outbreak of the COVID-19 pandemic has had an unprecedented adverse effect on public health, as well as on livelihoods, around the world, leading to precautionary and preventive measures such as nationwide lockdowns, social distancing and temporary closures of industries. The resultant economic downturn and job losses as a result of these measures have only worsened the situation. The pandemic control measures have also

threatened—or have the potential to threaten—the social-ecological resilience of the fishing communities situated within the Pulicat Lagoon.

Based on the experiences of one fishing village located on an island in Pulicat, we explore how (a) resource-governance institutions function on the island; (b) social-ecological resilience was impacted during the first wave of the pandemic; and (c) a larger set of environmental, social, and political factors that impact the day-to-day life of the islanders. Of the three islands, our study focused on the people of Irukkam, particularly fishing communities, and their relationship with the lagoon. This

This interaction of fresh- and sea-water in the lagoon acts as a breeding ground for many species of fish and prawn.

walnut-shaped island, located south of Venadu, spans over 2,636 ha and has a total population of 1,820 individuals and 513 households.

Focus-group discussions

With the consent of the fishing community, we conducted the study in Irukkam from January to March 2020, employing detailed, semi-structured interviews with 25 households in the village. Two focus-group discussions were also conducted, including one with women who commute to the mainland to work in factories for processing fish, and manufacturing shoes and pharmaceuticals. During the COVID-19 pandemic, four telephonic interviews were conducted with participants in July and August 2020, to understand the impacts of the lockdown and other restrictions on their daily life.

This article is by **Bharath Sundaram** (bharath.sundaram@krea.edu.in), who teaches Environmental Studies at Krea University, Sri City, and **Vadivel Chinnadurai** (vadivel.c@ahduni.edu.in), a doctoral student at the School of Arts and Sciences, Ahmedabad University

SAURABH CHATTERJEE



The only means of transportation between Irukkam and the mainland is by boat. Anyone who wishes to leave the village and relocate to the mainland has to pay the Jamaat, a traditional, self-organized village committee, a sum of INR40,000 (USD532)

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The island of Irukkam has two settlements, Irukkam and Kuppam, which are geographically separated by grasslands and sand dunes, and are situated in the north and south of the island, respectively. Human settlements on Irukkam are segregated on the basis of caste. The people of Irukkam, who constitute the non-fishing, agriculture community, are considered higher in the caste hierarchy, whereas the people of Kuppam, belonging to the fishing community (Pattinavar) are considered lower in the hierarchy.

There is a third category of 100-150 households of Irula people (a Scheduled Tribe) who work as labour on the agricultural lands owned by the upper castes in Irukkam. Most inhabitants are Hindu, though there are also a few Christian households. Although the island falls within Andhra Pradesh, most inhabitants speak Tamil with the exception of a few bilingual Tamil-Telugu speakers.

The only means of transportation between Irukkam and the mainland is by boat. Boat services operate twice a day, with separate jetties and boat operators for the two dominant castes

of Irukkam and Kuppam. Fishers, students and workers commute daily to the mainland, to industrial centres such as Tada, Sri City, Sullurpeta and Chennai, which are also important fish-marketing and processing hubs.

The people of Kuppam have institutions of their own to govern the social, economic and environmental interactions in their lives. One such institution is the Jamaat, a traditional, self-organized village committee whose members (usually males) represent their respective households. It has the power to take decisions in all socioeconomic, environmental and political affairs in Kuppam, and is led by the village head (elected by the members of the Jamaat).

Economic activity

All economic activity has to go through the committee, be it the management of the lagoon fisheries, the allocation of boat contracts or the sale of goods from the mainland. The committee also controls social organization, imposing rules on marriage, the resolution of conflicts and the celebration of festivals. Transgressions are usually punished

through a cash penalty: For instance, inter-caste marriages are strictly forbidden and are fined INR20,000 (USD266). Anyone who wishes to leave the village and relocate to the mainland has to pay the committee a sum of INR40,000 (USD532). These sums are significant, relative to the average income in the area, and serve as strong disincentives against certain forms of behaviour.

Most households depend on the lagoon for their livelihood; many own their own fishing craft, usually purchased with the help of a loan. The Jamaat allocates fishing grounds—most of which are located near Sriharikota to the north—on a rotational basis to individual households. Fishers depart for their fishing grounds at night, setting their stake nets near the shores of Sriharikota. They collect their catch in the morning. The major portion of the Kuppam fishers' income comes from prawn, most of which is sold for INR300-400 (USD4-5) per kg to processing factories in Sullurpeta, Sri City and Arambakkam.

Most women are engaged in repairing nets and selling fish, in addition to household work. In Kuppam, traditional gender roles usually have women engaged in fisheries pre- and post-harvest activities and in household work, while the men go fishing. However, with the perceived reduction in the productivity of the lagoon in the past two years, women have begun working in other sectors on the mainland. Most men, on the other hand, continue with their precarious fishing livelihood.

The money that the Jamaat collects from the leasing of economic activities and other sources is used to conduct festivals, construct village-owned infrastructure and for the welfare of the community. The Jamaat is also the guardian of the coastal and marine common-property resources, and has traditionally played a greater role in fisheries management than the State. The committee regulates the allocation of fishing grounds and decides on days when fishing is banned (locally called '*thalavu*'). The practice of *thalavu* is a community-evolved mechanism for sustainably managing fish stocks in

the lagoon during the breeding season (mid-April to mid-June). Additionally, the Jamaat declares one day every month when fishing is banned. All members of the fishing community are answerable to the Jamaat and there were no instances of people operating outside its influence. Therefore, any changes in the practice of *thalavu* can affect the resilience of the ecosystem as a whole.

Social resilience in this context is seen as the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change. In the case of fisheries, social and ecological resilience are linked because the lives and livelihoods in the community directly depend on common-property resources managed by traditional institutions such as the Jamaat. Disturbances or changes could threaten the resilience of the whole social-ecological system. As the example of Irukkam shows, COVID-19 is one such major disturbance that can have ramifications at the level of both the individual and the system in small-scale fisheries.

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The catch from Irukkam is either sold locally, or sold directly to wholesalers on contract. Fishermen from the island usually sell most of their catch at the nearest market town of Arambakkam (8 km away) or to factories located along the national highway nearby. However, almost throughout the first wave of the pandemic (March-May 2020), Arambakkam was declared a 'Red Zone,' in which very few activities were permitted. No vehicular movement of any kind was allowed.

Devastating effect

This total lockdown during the first wave of the pandemic had a devastating effect on Irukkam's fishery. The men were unable to return to their fishing grounds even after

the fishing ban period. Despite the community's demands to the Jamaat, the thalavu remained in force. The Jamaat themselves were powerless due to pressure from the police and administration, and for all practical purposes, the thalavu had been extended due to the pandemic control measures.

Individual households were thus presented with a dilemma—whether to disobey the thalavu or to comply with the community rules, thereby increasing their economic hardships. The Jamaat generates its revenue by levying duties and fines on households, whose incomes are mostly from the fisheries. Naturally, the resources flowing to the Jamaat have greatly reduced or stagnated. In these circumstances, there are chances that this pandemic could test the strengths of the traditional thalavu system and the Jamaat, which, in turn, can considerably affect the management of the lagoon fisheries. The resilience of the community, its institutions and the ecosystem are thus inextricably linked.

While the COVID-19 pandemic poses several challenges to the community and to the lagoon, there are also other factors that destabilise their resilience. These factors have played out over larger temporal and spatial scales than the pandemic. As discussed earlier, three rivers drain into Pulicat: Arani, Swarnamukhi and Kalangi. During the monsoon, Arani and Kalangi bring in sewage, agricultural chemicals and industrial effluents into the lagoon. In recent times, the flow and balance of freshwater in the lagoon has been impeded by siltation. The average depth has reduced over time and its mouth is almost entirely closed by a sand bar. This has affected both the productivity of the fisheries and the ability of fishing vessels to enter the sea. (Several fishers from Pulicat also fish in the sea.) Proposed solutions by scientific institutions, such as building training walls on either side of the bar mouth, could themselves have long-term ecological consequences and have been kept in abeyance for the time being. In addition to these threats, the lagoon is also impacted by industrial activity in and around nearby Chennai,

such as a petrochemical factory, a thermal power plant and a port project. Together, these developments have severely polluted local rivers, cleared thousands of acres of land and encroached on coastal commons.

The impacts of these interconnected factors make it imperative to be aware of the complex historical, social and environmental factors that underpin the relationship of the community and the lagoon. The future of the Jamaat in Irukkam rests on governing the fish and prawn fishery in Pulicat. Eventually, the sustainability of the livelihoods from the fishery, the effective enforcement of the thalavu system and the maintenance of equitable trade with the mainland all rest on the ecology of the lagoon.

Vital questions

With the productivity of the fishery under threat due to siltation and the pollution in the region, the Jamaat is stuck between a rock and an even harder place. These local and regional stressors have coalesced with the impacts of the COVID-19 pandemic, such as market disruption, reduced access to fishing grounds and the out-migration of people from Irukkam, thus raising vital questions about the importance of maintaining social-ecological resilience. 3

For more

Study of territorial use rights in small-scale fisheries: Traditional systems of fisheries management in Pulicat lake, Tamil Nadu, India.

<https://indianfisheries.icsf.net/images/Indian%20Fisheries%20Site/Resources%20others/Study%20of%20territorial%20use%20rights%20in%20small-scale%20fisheries.pdf>

The Chilika Lagoon Social-Ecological System: An Historical Analysis

<https://www.ecologyandsociety.org/vol19/iss1/art1/>

Reaffirming Rights

https://www.icsf.net/images/samudra/pdf/english/issue_75/4246_art_Sam75_e_art07.pdf

Bringing Back the Artisanal in Small-scale Fisheries

The future of sustainable fisheries around the world does not lie merely in the scale of operations but in the artisanal attitude and its attendant culture.

This is the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022). From a quick survey of the website of the Food and Agriculture Organization of the United Nations (FAO) and many other publicity briefs of civil society organizations (CSOs) that are co-celebrating the year, the focus is strongly on small-scale fisheries and aquaculture. ‘Small in scale, big in value’ is one of the key messages.

But I wonder: What has happened to the ‘artisanal’ dimension of the celebrations? Why is there no focus on that? Is there today no overlap between small-scale and artisanal? Or was this a relationship of the past? Should we seek to revive it in the future?

Without getting into the detailed etymology of the word, there are three very appealing attributes to any activity that we can call ‘artisanal’: skill of body and mind; judicious use of human and renewable energy; and freedom of work and expression. These combine to give the activity an artistic overtone. Together, they lead to convivial and sustainable livelihoods.

I had spent a considerable part of my early working life with fishing communities in the state of Kerala in India. They joyfully embodied these three attributes in their daily lives. However, observing their context half a century on, I notice that there is little overlap between how they fish today and the valuable attributes of artisanal activity they possessed earlier.

I have also been a keen observer of their trajectory over the years, studying the manner in which they lost these attributes.

But I am happy to report that some of my recent observations on the coast reveal that there is a slow return to artisanal practices. Let me try to briefly explain this cycle of events, starting with the initial context of the fishery, and restricting my story to the technology of fish harvesting at sea.

We start with the craft called the *kattumaram*. For a deep-sea going marine fishing craft, this is as simple as it can get. The *kattumaram* is just four logs of wood, about 10-15 ft in length, tied together with coir ropes across a cross bow at each end—the ultimate do-it-yourself (DIY) craft. At sea it is unsinkable, though being on it makes you feel like you are sitting or standing on water! The *kattumaram* is initially powered by rowing with a split bamboo

... I am happy to report that some of my recent observations on the coast reveal that there is a slow return to artisanal practices

pole. Later the lateen (triangular) cloth sail can be rigged mid-sea, with bamboo poles and coir ropes, to even gather the swell of winds blowing almost in the opposite direction. This is the ultimate in sailing skills.

The launching of a *kattumaram* is followed by rowing it speedily to get across the rough surf waves. The art of rigging and operating the sails, fishing in deep waters out of sight from the shore, then getting back to the village on the shore, even at night, guided

This article is by John Kurien (kurien.john@gmail.com), Visiting Professor, Azim Premji University, Bengaluru

MANAS ROSHAN



Shore-seine operations in Trivandrum, Kerala. Three appealing attributes to any 'artisanal' activity are skill of body and mind, the judicious use of energy, and the freedom of work and expression

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only by the stars... all evidence of the remarkable skill of body and mind, as also the creative ability to harness renewable energy to make a living. This is the artisanal way par excellence, with zero operating cost.

... OBMs relieved the drudgery of physical labour and increased the time available exclusively for fishing

The change began with the introduction of the outboard motors (OBMs) in the early 1980s. Initially, the motor was fitted to one of the cross bows. But, it soon became evident that the centuries-old DIY *kattumaram* and the sleek Japanese-manufactured OBMs are structurally incompatible.

This realization led to design of the plywood *kattumaram*. An unsinkable craft looking much like the original, it better accommodated the OBM. The only downside was that it could not be dismantled.

The propulsion power of the OBM soon led to the obsolescence of the sail. That, in turn, caused the gradual loss of the artisanal skill of understanding the nuance of winds and working in tandem with nature. While OBMs relieved the drudgery of physical labour and increased the time available exclusively for fishing, they also contributed to decline in the fishers' fitness. They also increased accidents on crossing the surf.

On the financial side, the motors added significantly to investment and operating costs. But they changed little in the probability of harvesting more fish. On occasions when fishers harvested more fish, prices dropped

on shore. Their net earnings increased only marginally.

While only a few fishers adopted OBMs of a certain power rating, they stood to have a comparative advantage over those who did not have the motors. They could get to the fishing ground faster, fish for longer periods and get back to the shore earlier, thus getting a higher price. That advantage disappeared when all fishers in a village adopted the same type of motors; everyone reached a lower equilibrium, so to speak. The investment and operating costs increased but the increase in earnings was not commensurate with the expenditure incurred.

A few fishers broke out of this trap by opting for motors with more power. This triggered a vicious cycle of higher capital investment and a race to guzzle fossil fuels. Bigger and more powerful engines, in turn, fuelled the demand for newer types of craft. The modified plywood *kattumaram* was not suitable any longer. Bigger craft, more canoe-shaped, were prized. The new models provided more room for carrying larger nets. This warranted a bigger crew; their total lack of artisanal skills—even knowing how to swim—was not an issue now. Seasonal migrants from non-fishing communities, with no knowledge of the sea, were adequate. You just needed ‘labour’! And the race to the bottom went on and on.

I recently estimated the collective results of this adventure over 50 years. It shows that the individual outcomes have been varied and that inequalities between fishers have increased. The net result has been a rise in the fossil-fuel consumption and in the average investment in craft and gear. The median level of indebtedness has increased at galloping speed. Yet the collective fish harvests began to plateau a decade ago and have now started a downward trend.

Discussions with fishers—all small-scale, beach-landing operators—reveal the realization among them that this Olympic race of adopting larger boats, more fishing gear and more powerful motors is leading to collective catastrophe. They realize that this needs to stop.

But their quandary was who will take the first step?

That was when I discovered a new but raging trend on the coast. Along one stretch of a sandy beach, I noted a new raft-like contraption. It had a flat base of thermocol/polystyrene, about nine ft by four ft, stitched around in black rexine. It looked more like a Brazilian *jungada* than a *kattumaram*! There were over 200 of them in close proximity.

They were steered with a paddle-shaped oar. Each could carry about 10 kg of gillnets and accommodate two fishers. The owner-operators of these rafts were middle-aged fishers; they had not forgotten their skills of rowing and sailing. Fishing was in eyeshot of the coast, from 5 a.m. to 8 a.m. Afterwards, they took their nets with the fish still gilled onto them to the highway and sold the fresh fish, straight off the net, to customers passing by in cars. No fuel costs! A daily income made from five hours of labour, adequate for sustaining their families—and the freedom to engage in other pursuits.

A fisher was close at hand and he spoke into my voice recorder: “There is no meaning in this race we have got ourselves into. Every other fisherman is steeped in debt. We started with 9-hp (horsepower) OBMs. We are now using 45 hp, but still fish the same shoals. When I started fishing 25 years ago everyone got enough fish. Now one unit catches it all. The others come back without even casting their nets, and having to bear the cost of fuel and pay for the food of the crew. The losses accumulate. Many like me have now gotten out of this race. The future is perhaps in stepping back to traditional (artisanal) ways of fishing. Near our homes. Using our knowledge and skills.”

The thermocol rafts are certainly not the answer to the fishery problems of Kerala. They are a calibrated response to the overall crisis facing the fishery. These rafts can only be used in the months when the sea is calm, usually November to February. But such surety about the condition of the sea is also a thing of the past. The rafts do pose crew-safety issues in the event of overturning, particularly for those

CASTLE THERMOCOL BOATS



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The new raft-like contraption commonly used by fishers in Kerala. It has a flat base of thermocol/polystyrene, about nine ft by four ft, stitched around in black rexine, looking more like a Brazilian *jungada* than a *kattumaram*

who may not be expert swimmers. The Fisheries Department is unwilling to provide a registration for these vessels because insurance companies will not cover risks of fishers using such ‘unseaworthy’ structures which do not qualify to be defined as fishing craft.

Yet, these rafts represent some basic, innate and hidden attributes that are worthy of serious consideration. These are attributes historically associated with artisans, and with what we call the ‘artisanal’ way. Let me mention a few: Artisanal fisheries can be decentralized and spatially dispersed. They have a low carbon footprint and near-zero operating costs. They embody freedom and emancipation from indebtedness, owing to the possibility of owner-operatorship. This allows fishers to flexibly combine fishing, at a chosen time of day or night, with other meaningful avocations. The conviviality of labour and work also makes it possible for fishers to revive a healthy and active lifestyle. Artisanal methods can help communities regain the intimate knowledge of the sea and its moods, now lost with fuel-powered propulsion. Finally, the shorter value

chains of these fisheries are more viable, providing fresh products and direct contacts between harvesters and consumers.

As the world celebrates the International Year of Artisanal Fisheries and Aquaculture, can we also ponder over these attributes and issues? 📌

For more

The Human Relationship with Our Ocean Planet

<https://oceanpanel.org/blue-papers/HumanRelationshipwithOurOceanPlanet>

From Individual Rights to Community Commons

<https://www.icsf.net/samudra/from-individual-rights-to-community-commons/>

Involving the People

<https://www.fao.org/voluntary-guidelines-small-scale-fisheries/resources/detail/en/c/1475206/>

Rings of Fire

Conflicts over fishing gear have again erupted along the Coromandel Coast of India, pointing to the urgent need for effective management

In August, 2021 tensions escalated in the state of Tamil Nadu along India's southeastern coast when an altercation between fishers at sea led one to be hospitalized with serious injuries. A few days later, there was a riot between two fisher hamlets in neighbouring Puducherry (formerly Pondicherry) when ring-seine fishing nets were burnt at sea. The police had to intervene to stop the violence.

The previous month, a section of fishers from two districts in Tamil Nadu blocked a highway to protest against a state government decision to implement a ban on ring seines. Over 1,000 fisherwomen from one of the area's largest fisher settlements protested in front of the district police headquarters for two days.

Despite the raging pandemic, the coastal villages in Tamil Nadu and Puducherry have repeatedly witnessed violence over the past year. Our team of researchers at the French Institute of Pondicherry have been travelling along this strip of the east coast since 2018 to document the lives of local communities as they cope with socioeconomic and environmental changes.

Disputes over fishing gear are not new in this area, but the reason behind the recent tensions seem to be the oil sardine (*sardinella longiceps*). An increase in demand for oil sardine, along with administrative failures to implement existing fishing regulations, have resulted in this protracted conflict, causing widespread anxiety and uncertainty in the community. Over the past two years of the COVID-19 pandemic, we have become concerned about conflicts over this widespread fishing gear that has divided fishers in the region. The disputes have escalated since 2018, peaking in 2021.

The underlying reasons need to be understood before any help or support can be offered to ease tensions.

Oil sardine is not a preferred delicacy in coastal Tamil Nadu. The pride of place afforded to the *kavalai* (*sardinella gibbosa*) does not extend to the *mathi* or the oil sardine. *Kavalai* curry is a favourite dish in the kitchen of any class of people; it costs ₹80-100 per kg (US\$1 = ₹75). The costs of oil sardine can range from ₹20 to ₹100 per kg, depending on the market in the neighbouring State of Kerala, where consumer demand for the species is high. Large quantities of small pelagic species going into the fishmeal industry adds to the value of this fish. The Kerala market absorbs about 90 per cent of the oil sardine catch along the Coromandel Coast.

Oil sardine availability has declined along the west coast for reasons that remain unclear; the changes have been attributed to overfishing and environmental factors, including climate change. Along the eastern coast, they are netted in large quantities like never before. Fish landings data, collected by the Central Marine Fisheries Research Institute (CMFRI), register a huge increase in oil sardine landings in Tamil Nadu in 2019, accounting for 43 per cent of the national total. Anandan, a fisherman from Pudukuppam village in Puducherry, said: "Although the fish was always available, large quantities have been landed throughout the year since 2000. With no real value in the local market, we were reluctant to cast our nets into a shoal of oil sardine; half the catch spoils by the time it is removed from the gill-net. But today fishers go out in search of it. No matter the quantity, vehicles queue up on the shore to move them to Kerala."

This article is by Dr. Bhagath Singh (bhagath.singh@ifpindia.org), postdoctoral fellow at the French Institute of Pondicherry



Fishing boats stranded at Sothikuppam in Tamil Nadu. Both its adherents and its opponents—artisanal fishers using selective gear such as gill-nets—have compelling arguments for and against the ring seine gear

Over time the craft and gear for sardine fishing have evolved. These days, the largest quantities are caught by ring seines. The gear is the smallest form of purse seines or encircling nets in many parts of the world. The ring seine, first introduced in Kerala, requires a large 55-ft-long fishing vessel (called *kanna* locally) and seven to 10 small craft. At least 50 workers are required for a ring-seine operation. The large fishing net—handled by a hydraulic winch fitted to the big vessel—encircles the fish shoal. Floaters are attached to the top of the net and a series of rings at the bottom. A long rope threaded through the rings is tightened to close the net at the bottom, forming a purse around the shoal. The catch is loaded on to the small craft. Fishers claim that damage to the catch is minimal, compared to that caught in gill nets.

This technology also targets mackerel, seer, trevally and several species of tuna.

Eventually, as the oil sardine migrated from Kerala to the Coromandel Coast, so did the ring seines, as idle boats were sold cheap. Considerable profits catalyzed the spread of ring-seine fishing. When the ring seine was first introduced in northern Tamil Nadu in 2003, rival fishers from a village called Devanampattinam set fire to the nets. Later, this same group of protesting fishers became the leaders of the new technology, accounting for the largest number of ring seines in one village. A leader of this village explained: “We opposed the technology believing fish stocks should be available to all. But we were sued for our protests. When the government favoured this new

technology, many people bought ring-seine boats to tap into this lucrative business.”

The ring-seine trips take place in two seasons: from January to mid-April, and from mid-June to November, the onset of the northeast monsoon. At the beginning of each season, the district administration and the police seize some ring-seine boats and trucks with netted fish. Despite the action, operations continue for the next few months without any hindrance. But in the past years, disputes over ring seines have started to become more heated and increasingly violent.

In 2000, the Tamil Nadu government banned the gear with the stated reason of conserving fish stocks. Amendments to the State fisheries law were proposed that year. Fishers who had invested millions fought against the ban. After negotiations, the ban was relaxed for a few more years. Up until 2017, more ring-seine units were purchased cheaply from Kerala. Meanwhile, new steel-hulled ring-seine boats were built locally.

Since *kanna* boats can operate only with ring seines, fishers invested in a

had borrowed heavily. The sudden ban was devastating to many fisher families.

Both the adherents of the ring seine and its opponents—artisanal fishers using selective gear such as gill-nets—have compelling arguments for and against the gear. Although the law appears to favour the artisanal fishers at the moment, in practice the bureaucracy treats both sides in an even-handed manner. It is worthwhile trying to understand the arguments of either side.

Ring seines catch entire shoals of fish, including juveniles. They are also highly effective gear whose benefits accrue to a few boat owners and crew. On the other hand, the divisions between these categories and crew are not always clearly defined: Ring-seine fishers operate with small-scale craft and gear in other seasons. They employ large crew sizes, and the earnings from this gear has improved incomes and standards of living. Its supporters also reject the accusation that the nets indiscriminately catch juveniles.

Neither side is without its arguments. “The whole country is developing, moving towards newer technology. Why should we remain paralysed, limited to artisanal technologies,” asked a young fisher from Thirumullaivasal village in Tamil Nadu. “Should a fisherman live only with one piece of cloth hung around his waist in the future, too?”

Fishing conflicts are common around the world. Fisheries authorities and communities have employed various measures to create a level playing field, ranging from traditional rules such as the *Padu* system in Pulicat, Tamil Nadu, to legally authorized controls on inputs (craft, gear and other regulations) and the demarcation of fishing zones for artisanal fishers. Tamil Nadu’s Marine Fishing Regulation Act, 1983 was itself a result of the disputes between artisanal fishers and mechanized trawlers. The Act and its Rules demarcated inshore zones reserved for artisanal fishers, protecting their access from mechanized fishing vessels. But the regulations have not been updated to

... in the past years, disputes over ring seines have started to become more heated and increasingly violent

new type of steel boat, combining ring seining and trawling operations. While rare in parts of the northern coast, such boats number more than 100 at three important fishing harbours in Tamil Nadu. Poompuhar, a large settlement with a new fishing port, reveals the scale of this fishery. Here, fishers built the new boats at a cost of ₹20 mn (US\$264,000), shared among 20 to 40 investors. Then the pandemic struck, followed by successive lockdowns that severely disrupted the fisheries value chain. Since January 2021, the state government has not allowed these newly-built boats to venture into the sea. The investment is earning nothing for the shareholders, many of whom



Small-scale fishers pick oil sardines from their gillnets in Pudukuppam, Puducherry. Although the oil sardine was always available on the East coast, large quantities have been landed since 2000

reflect the changes along the coast, and the Fisheries Department has opted for a blanket ban instead of sound management.

As the dispute simmers, ring seiners have demanded not to be singled out; they say all mechanized boats must be stringently regulated. They have emphasized that provisions in the law for minimum mesh sizes and the length of fishing vessels be followed in letter and spirit. Ring-seine fishers have also demanded that large vessels operate only between 5 a.m. and 6 p.m.

To maintain law and order, district administrations restricted all mechanized boats. Explaining the rationale behind the ring seiners' demands, a fisher leader from Devanampattinam village in Tamil Nadu, said: "This [will] make it clear to the government and the opposition

that it is not prudent to ban fishing methods based on a legislation that has not been modified in light of the latest technological developments." He added: "Since the foreign exchange revenue associated with the oil sardine is low, they can easily block ring seines. They will not do the same to the shrimp industry." He urged the research community to investigate whether policy has kept pace with environmental and technological developments.

Both fishers and scientists agree that the regulation of ring seine units is imperative. They operate within five nautical miles from the shore, which leads to almost daily conflicts with artisanal fishers. However, the present conflict needs to be understood in the wider context of increasing capacity in the fisheries. In Tamil

BHAGATH SINGHA



Oil Sardines iced and ready to load on to trucks going from Tamil Nadu to Kerala. Fishers and governments should together resolve conflicts and ensure a fair distribution of benefits

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Nadu, mechanized vessels (mainly trawlers) account for 83 per cent of the catch. “Why don’t government officials intensify their efforts against the negative impacts of trawling and industrial pollution in the coastal belt, instead of concentrating only on ring-seine fishing?”, asked a fisher from Rasapettai village in Tamil Nadu.

Since 2021, several dozen ring-seine boats have lain stranded on the shore—dead investment for marginalized fishing communities. Both sides are victims in this story. As this episode unfolds, it is important to address the shortcomings in existing fisheries-management measures. “It is the fishers’ fault for investing in a banned gear. On the other hand, the Fisheries Department and the district administration [enforced] the law without understanding the issue on the ground,” said SG Rameshbabu, co-ordinator of the Coastal People’s Right to Life Organization.

Increasing demand for seafood, combined with ecological changes and developments in the value chain, will continue to drive innovation and relentless competition in fisheries. The state government of Tamil Nadu should resolve this conflict and ensure a fair distribution of benefits to fishing communities. It can consider strengthening local governance with the participation of traditional institutions and civil society, and updating its regulations to reflect the reality of the fishery. Tamil Nadu’s fishers need a management system guided by the principles of equity and sustainability. ❧

For more

The Troubled Ascent of a Marine Ring Seine Fishery in Tamil Nadu

<https://www.epw.in/journal/2020/14/special-articles/troubled-ascent-marine-ring-seine-fishery-tamil.html>

Clash over use of ring nets, group sets fishing boat on fire

<https://timesofindia.indiatimes.com/city/visakhapatnam/vizag-clash-over-use-of-ring-nets-group-sets-fishing-boat-on-fire/articleshow/88687142.cms>

Judgment: M.G. Santhanaraj v. Secretary, Government Of Tamil Nadu And Others

<https://www.casemine.com/judgement/in/600125cc9fca1917ab0f9549>

A Platform for Action

Meeting in Mumbai, women fishworkers of the coastal districts of the Indian State of Maharashtra drew up an agenda to advocate for their rights and livelihoods

In December 2021, a dozen women from the coastal districts of the western Indian State of Maharashtra assembled in the capital, Mumbai. All experienced fishworker leaders—most of them representing the Maharashtra Machhimar Kruti Samiti (MMKS)—they had gathered to learn from one another and discuss strategies to address the challenges faced by fisherwomen and coastal fishing communities. Organized by the International Collective in Support of Fishworkers (ICSF) Trust the meeting was hosted by the Central Institute of Fisheries Education (ICAR-CIFE) from 3 to 4 December.

Purnima Meher, vice president of MMKS and the National Fishworkers' Forum (NFF), and Nalini Nayak, ICSF Trustee, welcomed the participants and explained the purpose and structure of the workshop. Thereafter, the discussion proceeded to the impacts of the COVID-19 pandemic on the sector and its workers. The aim of the meeting was to understand how the women's livelihoods had been sustained, despite new and existing challenges. At the same time, it was important to connect their experiences in India to global trends in fisheries, the acceleration in the ocean and coastal economy, and the climate and biodiversity agenda. The outcomes of this meeting will feed into ICSF's national workshop on the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines), and women in fisheries, to be held in Chennai in April 2021.

The first session kicked off with the identification of women fishworkers' concerns in the State. Participants from its five coastal districts presented accounts of the day-to-day working conditions of women in the sector, their

livelihood issues and the programmes of their organizations. The leaders largely represent women in post-harvest fisheries—ranging from fish sorting, salting, drying and processing, to auctioning and vending activities. (An estimated 77,000 women work along the fisheries value chain in the state, 70 per cent in fish marketing.) As the presentations drew out details of their fish chains, the women noted both similarities and differences in their experiences. Contexts varied greatly—from the big harbours and markets of bustling Mumbai to the distant village landing centres of the Konkan coast; and from the organized and vocal women in formal markets to the dispersed and vulnerable dry-fish vendors.

Despite their diversity, the women identified a few key issues that were relevant to a majority of fishworkers and communities. They noted the

The aim of the meeting was to understand how the women's livelihoods had been sustained, despite new and existing challenges

marginalization of women's livelihoods as a result of rapid changes in the value chain. When traditional fish landing centres were replaced by new harbours, along with the bigger boats fish merchants with deep pockets arrived on the scene. Women, if they are not organized, lose out in the auctions. In a discussion on women's access to credit and finance, the women noted the community's hardships with indebtedness. They said that large lending institutions are not the answer, instead highlighting more equitable

*This article is by **Ahana Lakshmi** (ahanalakshmi@gmail.com) and **Sopan Joshi** (sopan.joshi@gmail.com), independent consultants. ICSF Trust thanks the Central Institute of Fisheries Education (ICAR-CIFE) for hosting the event.*

CÉDRIC Z



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A fish processor at Mumbai's Sassoon Docks. An estimated 77,000 women work along the fisheries value chain in the state of Maharashtra, 70 per cent of those in fish marketing

financial models, including through self-help groups and co-operatives, which could help fishing communities break out of the cycle of debt and poverty.

The changes in the fisheries value chain mirrored those on the coast. Discussing the tenure rights of coastal communities, the women pointed out several instances when they had lost

... fishworkers conducted a mapping of formal and informal street markets in Mumbai to demand that the city administration protect them from eviction

access to community commons, fishing grounds and livelihoods. In Mumbai and other areas, urban development has often excluded and marginalized fishing communities, as they are displaced by other more powerful economic interests, or their livelihoods are slowly choked by pollution and environmental degradation.

Customary rights are rarely recorded or recognized, including to market spaces. Although the Koli fishing communities of Mumbai have had some success in garnering visibility for the rights over their *koliwad*s (fishing hamlets), the women continue to struggle with municipal authorities to recognize their livelihoods. Their demands to improve their working conditions in formal city markets are rarely met. Similarly, they face the constant threat of being displaced from their street vending sites. In an inspiring case of the women mobilizing to safeguard their rights in 2012, fishworkers conducted a mapping of formal and informal street markets in Mumbai to demand that the city administration protect them from eviction. Discussing the mapping exercise, the women noted that now they have the aid of a national legislation for street vendors and they should ensure its implementation.

The second day opened with a Koli song describing boats going out



Participants at the Mumbai meeting in December, 2021. At the end of the meeting, the women drew up a series of demands to be addressed by their organizations at the national and sub-national levels

fishing on moonlit nights. The day's programme was split into two parts. The first was a discussion of strategies to strengthen fishworker organizations, particularly to enable women's participation in decisionmaking at the State and national levels. In the next session, the women identified the main issues that connected their struggles with the international and national legal instruments that offer pathways to redress their problems.

At the international level, they noted the SSF Guidelines, endorsed in 2014 by the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO), and, at the national level, the National Policy for Marine Fisheries (NPMF), 2017.

At the end of the meeting, the women drew up a series of demands to be addressed by their organizations at various levels. They demanded that women have the right of first sale of the fish landed at their beaches and harbours. This would protect their access to markets. They pointed out the urgent need to record and protect their customary use of coastal village lands for housing, fisheries livelihoods and community infrastructure. Women's access to clean and well-equipped market spaces to sell their fish should also be improved. The women discussed the importance of the Street Vendors

Act, 2014 in regulating street vendors in public areas. Highlighting the impacts of industrial pollution on the health of fishing communities and the marine environment, they noted the ongoing struggles of their organizations to draw attention to existing and emerging threats on the coast.

As the meeting concluded, the women looked to the future with resolve and decided to build on these discussions at the national level, with their partners and collaborators from India's other coastal States. ↴

For more



Report of the National Workshop: The SSF Guidelines and Mainstreaming Gender into Fisheries Policies and Legislation, Tamil Nadu, India, 2019

<https://www.icsf.net/wp-content/uploads/2022/03/930.ICSF214.docx>

Report of the Brainstorming Session for the National Workshop on Enhancing Capacities of Women Fishworkers in India for the Implementation of the SSF Guidelines, Kerala, 2019

<https://www.icsf.net/wp-content/uploads/2022/03/930.ICSF212.pdf>

Report on workshop on enhancing capacities of women fishworkers in India for the implementation of the SSF Guidelines, Tamil Nadu, 2016

<https://www.icsf.net/wp-content/uploads/2017/08/930.ICSF158.pdf>

Restricted Entry

Shrimp farms in the south Indian state of Tamil Nadu have proliferated despite a 1996 Supreme Court judgement to regulate coastal aquaculture

“Given an option, I would move away from this village to nearby Chidambaram town because, year after year, the fertility of my agricultural land declines.” This was told to us by a lamenting farmer concerned about the expansion of shrimp farms in Pichavaram, a village situated near the backwaters and mangroves of Cuddalore district in the southern Indian state of Tamil Nadu. In the neighbouring fishing village of Thandavarayancholaganpettai (T.S. Pettai), a fisher echoed a similar sentiment when he complained about the menial jobs he undertook in the Middle East for 15 years because, as he put it, “shrimp farms had polluted the adjacent Uppanar river and the fish resources within it.”

Despite these voices, brackishwater shrimp aquaculture continues to expand and even, some would say, flourish. India’s overall shrimp exports, according to the Marine Products Export Development Authority (MPEDA), amounted to 590,275 tonnes with a value of US \$4,426.19 million in 2020-21; of this total, 88 per cent comes from culture species. While aquaculture, both fresh and brackishwater, is being promoted by international organizations that support livelihoods and strengthen food and nutritional security, such as the Food and Agriculture Organization of the United Nations (FAO), shrimp aquaculture is blossoming because of its international demand and foreign exchange potential. In villages such as Pichavaram and T.S. Pettai, shrimp aquaculture is promoted with export markets in mind and with promises that aquaculture is a better option to agriculture in increasingly saline coastal ecologies.

The story of brackishwater aquaculture is, however, more

complicated. Aquaculture is as much a cause of salinity as it is a solution to it. Moreover, while there are potential winners—those who have the capital to invest and the ability to take risks—there are many more losers, such as those who bear the environmental and socioeconomic consequences of degrading agricultural lands and polluted water bodies.

Looking back at Indian aquaculture

India’s tryst with aquaculture goes back to the late 1940s. After establishing fisheries stations for both inland and marine fisheries, the Indian government set up the Central Inland

... shrimp aquaculture is promoted with export markets in mind and with promises that aquaculture is a better option to agriculture in increasingly saline coastal ecologies

Fisheries Research Institute in 1959; two years later came the Central Marine Fisheries Research Institute. While the main focus was on capture fisheries, aquaculture also received attention during the Blue Revolution.

Soon to follow was a National Aquaculture Development Plan aimed at improving the technical expertise in aquaculture. In 1987, the Central Institute for Brackish Water Aquaculture (CIBA) became the nodal agency for research in the sector. The Central Institute for Fresh Water Aquaculture (CIFA), a sister organization, was also established. MPEDA, charged with promoting exports, had a major role, too.

With the state significantly invested in brackishwater shrimp aquaculture, it is no surprise that it has grown since

This article is by Arunkumar A.S. (arunkumar.as@ifpindia.org), post-doctoral fellow at the French Institute of Pondicherry in Puducherry; Ajit Menon (ajit1112@gmail.com), professor at the Madras Institute of Development Studies in Chennai; and Nithya K. (nithanthro@gmail.com) and Shakila H. (saishaki251998@gmail.com), former research assistants at the Madras Institute of Development Studies in Chennai

the 1980s. In 1985, the total aquaculture (fresh and brackishwater) production in India, according to FAO data, was only 0.63 million tonnes, but by 2019, it had risen to 7.8 million tonnes. It accounted for approximately half the total fish production, which had peaked at 14.2 million tonnes.

Though freshwater aquaculture still accounts for over 85 per cent of the total production, a couple of reasons explain why brackishwater aquaculture is likely to grow. Firstly, fisheries experts predict a declining availability of fish in the ocean due to 'overfishing'. Secondly, according to CIBA, more than 80 per cent of the potential land for brackishwater aquaculture in India is unutilized, indicating the direction of future growth.

Salt of the earth

Cuddalore's brackish water shrimp aquaculture growth story is a microcosm of India's. In the late 1980s, aquaculture farms were established both in the north and south of the district. *Penaeus monodon* (tiger prawn) was the preferred species. Pichavaram and T.S. Pettai, located in the south of the district, were two of many villages in the Killai area where aquaculture expanded.

State agencies had identified Killai as a suitable site for brackish water shrimp aquaculture. A merchant from neighbouring Chidambaram town established the first shrimp farm in 1988. Many others—mostly outsiders—followed suit, triggering significant growth of shrimp aquaculture in the 1980s and 1990s. When widespread diseases struck that species in the 1990s, many non-locals sold their ponds to economically-powerful people in the villages.

Aquaculture's growth had a cascading impact; increased salinity hit agricultural productivity, turning it unviable. People in T.S. Pettai have another factor to explain increased salinity and the expansion of aquaculture: the 2004 tsunami had a long-lasting impact on aquifers. Scientist say the tsunami's effect would have been short-lived, receding in the long run. This suggests that shrimp farms were most likely

responsible for the sustained high levels of salinity.

Polluting with impunity

India has long witnessed the warning signs and then the adverse socioeconomic and environmental impacts of brackish water aquaculture. In the 1980s, aquaculture was mostly taken up by both foreign and Indian multinationals. Activists and many local people saw aquaculture as a form of land grab. They also highlighted how aquaculture led to environmental problems such as salinization, land degradation and water pollution.

In 1996, the Supreme Court directed the Indian government to establish a regulatory Coastal Aquaculture Authority (CAA) and ordered that no shrimp farms be constructed in coastal zones protected under the Environment Protection Act, 1986.

However, in villages such as Pichavaram and T.S. Pettai, the Supreme Court's judgment seems a thing of the past, if at all it was ever taken seriously. Many of the licensed farms in Pichavaram and T.S. Pettai, covering an area of approximately 40 acres according to official records, are situated in ecologically sensitive areas in violation of CAA rules, either on the banks of the Uppanar river or close to the backwaters and mangroves that are supposed to be no development areas. The main aim of CAA was to ensure a precautionary approach to development on the coast. Ground reality illustrates that the approach taken is anything but precautionary.

Besides being located in prohibited areas, some farms are very close to village habitations despite CAA guidelines stipulating that farms should be minimum distance of 100 metres away from villages if the human settlement has a population of less than 500 and 300 hundred metres away if the population is more than 500. Shrimp farms are also located too close to storm water drains and do not maintain adequate spaces between ponds as is mandated, so as to contain contamination of water bodies and ground water aquifers. And perhaps most noteworthy, many farms do not have valid licenses at all. No license



Many of the licensed farms in Pichavaram and T.S. Pettai are situated in ecologically sensitive areas in violation of the rules of the Coastal Aquaculture Authority. Farms do not maintain adequate spaces between ponds, contaminating water bodies and groundwater aquifers

means no electricity connection, but this does not prevent farms from operating.

Violations galore

Pichavaram and T.S. Pettai face a host of other environmental problems. Agriculture-dependent families watch crop yields decline year by year. Disadvantaged families from the Scheduled Castes such as Paraiyar and Schedule Tribes such as Irular have lost agricultural work, left with few alternatives. Those with cattle have to travel longer distances to graze the animals as both private lands and commons have come under aquaculture.

Women in Pichavaram complain about the salinity of drinking water, squarely blaming the shrimp farms. They say that the groundwater quality has deteriorated over the years as shrimp farms have expanded. Many women told us that they often have to travel up to a kilometre for drinking water in the morning; this is a real burden as that's the time they have to ready their children for school. Some families are now buying drinking

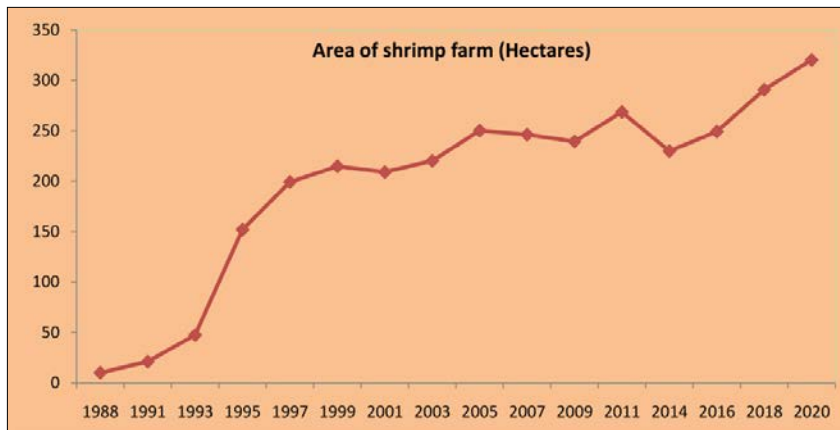
water, multiplying the stress of their threatened livelihood.

Fishers have been equally affected by the discharge of untreated effluent into the river and the backwaters. One fisher in T.S. Pettai told us that several species of fish, molluscs and crustaceans that they caught earlier in the Uppanar river are no longer available. Fishers could earlier predict the movement of species according to the tides; water pollution prevents this now.

Both Scheduled Caste men and Irular women who gleaned for shrimp say they have lost both a livelihood and an important source of protein. They now catch polychaetes, widely used in aquaculture feed. Irular women and men are almost fully dependent on this work. Commercial agents transport Irulars to the nearby backwaters of the Vellar and Kollidam basin to catch polychaetes, which are then smuggled to shrimp hatcheries in the neighbouring state of Andhra Pradesh.

A wider pattern

These problems are not specific to Cuddalore. They exist throughout



Graph showing the expansion of shrimp farms (area in hectares) in Cuddalore district, Tamil Nadu (Source: CAA, Landsat 5 and Landsat 8)

regions, in practice shrimp aquaculture in Tamil Nadu seems to benefit the economically and politically powerful. In Pichavaram and T.S. Pettai, most of the aquaculture farm owners are connected to powerful political parties in the state.

Aquaculture requires substantial capital investment and the ability to take several risks. The feed agency shop owner told us that it “costs almost INR 1.4 million (US\$ 17,000) per hectare for one three-month cycle of shrimp culture”. This is not possible for most people, even those who now feel that shrimp farming is the only option due to high levels of salinity.

Those who can invest also depend on financial support from feed and marketing companies such as CP, Shenglong and Avanthi that also provide seed and feed and then claim the advance back post-harvest. In case of loss—quite common in shrimp aquaculture—the farm owner should be able to sustain losses and repay the dues. That is why one shrimp owner said: “Not everyone in the village can run the show.”

the coastal regions of Tamil Nadu where shrimp farms have proliferated. Take, for example, the expansion of shrimp farms in Thalajiyayiru village of Nagapattinam district. Where paddy cultivation was once dominant, effluent now pollutes arable lands. Vaippar village of Thoothukudi faces a different problem: here, shrimp farms encroach upon land allocated to Scheduled Caste cooperatives for salt production.

In a recent judgment by the National Green Tribunal (NGT), CAA was directed to demolish all illegal

Aquaculture requires substantial capital investment and the ability to take several risks

and unlicensed aquaculture farms operating near the Pulicat Birds Sanctuary in Thiruvallur district. Prior to this order the District Collector submitted a report which indicated that there were only 52 licensed ponds while others were all unlicensed. Given the unsuccessful attempt to regulate shrimp aquaculture and the failed history of legal remedies, one wonders what impact the NGT order will have?

Only those with capital

While being envisaged as an alternative livelihood for small farmers especially and a solution to salinity in the coastal

For more

S. Jagannath vs Union Of India & Ors on 11 December, 1996

<https://indiankanoon.org/doc/507684/>

Aquaculture in India : The Supreme Court Verdict

<https://base.d-p-h.info/en/fiches/premierdph/fiche-premierdph-4040.html>

A Responsible Line

A community-based, bottom-up regime of fisheries management, rooted in traditional ecological knowledge, is practised in the pole-and-line tuna fishery of India's Lakshadweep Islands

India is home to a large number of small-scale fishers (SSF) using diverse craft-gear combinations along the country's long coastline and island systems. One standout entry is the pole-and-line (P&L) tuna fishery of the Lakshadweep Islands. Compared to other fisheries, this is not mentioned much in the outside world—or even on the Indian mainland. Yet this unique and sustainable fishery deserves a sharper focus during the ongoing International Year of Artisanal Fisheries and Aquaculture (IYAFA).

The P&L fishing gear comprise a fishing line with a barbless hook attached to a bamboo or fibreglass pole. The fishing method uses plenty of live fish as bait to attract the tuna. The 'baitfish' are small pelagic and reef fishes caught from lagoons and reefs surrounding the islands. P&L fishing is considered one of the most sustainable fishing methods.

P&L fishing is practised across the Atlantic, the Pacific and the Indian oceans, with minor-to-significant variations. For example, the Japanese P&L fleet is highly mechanized with robotic pole-and-line apparatus; the main boat is supplied with fresh, live baitfish from time to time. Meanwhile, in Senegal, multiple P&L boats first collect reliable amounts of baitfish and then proceed to fish for tuna, together using each other's boats as huge fish aggregating devices (FADs).

In Lakshadweep, the P&L fleet consists of vessels 40-60 feet long and crews of 8-12 fishers. They begin their fishing day with baitfish fishing and then proceed to catch tuna. Baitfish are kept alive in aerated holding tanks onboard fishing vessels before being used as bait for P&L fishing. Fishers locate and approach tuna schools in the open sea by taking cues from the preying seabirds or, at times, with the help of FADs.

On locating a school of tuna, fishers throw the live, shiny baitfish from the boat to attract the tuna toward the boat. Fishers onboard scatter baitfish and simultaneously spray water to mimic a feeding frenzy for tuna. In this situation, the tuna start biting on anything shiny, even the silvery hooks. As the tuna takes the bait, the fishing crew standing at the back of the boat with their fishing poles immediately cast their lines into the tuna school. On hooking a tuna, the fishers skilfully hurl it onto the deck behind. The barbless hooks make it easy to disengage the entangled tuna with a mere flick of the hand; the fishing continues, one tuna at a time, till the feeding frenzy ceases.

The P&L technique is said to have evolved centuries ago in the islands of the Indian Ocean, including Minicoy, the southernmost island of Lakshadweep

The P&L fishery has a low impact on the marine ecosystem. Being an offshore operation, it alleviates the fishing pressure on the islands' sensitive coral reef ecosystem. It makes a major contribution to the socioeconomic well-being of the community, being a primary source of income for a significant number of Lakshadweep's residents. It contributes nearly 15 per cent to India's total tuna landings, as of 2019.

The P&L technique is said to have evolved centuries ago in the islands of the Indian Ocean, including Minicoy, the southernmost island of Lakshadweep. The Lakshadweep Fisheries Department introduced the technique from there to other islands in 1963. Initially, it was backed by development programmes, policies and

This article is by Prerana Gawde (prerana@dakshin.org) and Ajithraj R (ajithraj@dakshin.org) of Dakshin Foundation

SHWETHA NAIR



Tuna landing in Agatti. The increased demand for—and declining availability of—baitfish has made fishing arduous. Fishers now spend more time, fuel and labour searching for bait, increasing costs

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subsidies to enhance the livelihoods of the local fishers. Now, it has acquired a more production-centric path because of supportive policies and incentives for multi-day fishing and scaling-up production. These policies have intensified fishing activities on the islands and have subsequently increased fishing pressure, not only on the tuna resources but on the baitfish resources as well. Baitfish are a critical limiting resource.

Challenges ahead

The last ten years have seen an increase in the size and number of P&L boats in Lakshadweep due to policies and subsidies that are encouraging higher tuna catches. This has consequently led to an increased demand for bait, subsequently intensifying baitfish fishing. For example, over the past few years, many boats have been fishing for baitfish species like the silver striped herring (*Spratelloides gracilis*) using 'light fishing', employing artificial light emitting diode (LED) from night time till before dawn, to attract the baitfish.

Although the short-term benefits of using artificial lights to attract fish

are undeniable—higher catches, less effort, fuel savings—experts have demonstrated its negative effects like overfishing and increased bycatch. The herrings form spawning aggregations before dawn; they are drawn towards the lights and then caught. This can impair recruitment and affect local baitfish stocks. A majority of fishers reported that light fishing is a major reason for the perceived decline in the availability of baitfish. Continued light fishing can endanger the sustainability of baitfish stocks.

The increased demand for—and declining availability of—baitfish has made fishing arduous. Fishers now spend more time, fuel and labour searching for bait, increasing costs. Salahudeen, a P&L fisher from the island of Agatti with the highest number of tuna fishers, said, "Earlier, we would begin baitfish fishing at daybreak; there was ample baitfish for all. Now, everybody rushes to the fishing ground before dawn or even at midnight to land enough baitfish for the day."

While there is a lack of information on the exact magnitude of the impact of

such fishing practices on Lakshadweep's baitfish stocks, it is vital to take prudent precautionary measures to manage these resources sustainably.

Masmin, the smoked staple

Masmin or *hiki mas* is a smoked and sun-dried product of Lakshadweep's tuna; the processing increases its shelf life. It is similar to the Japanese *Katsuobushi* and *Velho mas* of the Maldives. This processing technique has spread through the Lakshadweep islands along with P&L fishing. As of 2015, over 90 per cent of Lakshadweep's P&L caught tuna is converted into masmin. Very likely, this is due to the absence of infrastructure to store and transport fresh fish to the mainland.

Lakshadweep masmin is mainly exported to Sri Lanka and Southeast Asian countries through supply chains consisting of traders and agents from the Indian mainland. This complete dependence on a handful of traders has created a monopoly in the market. Owing to this market structure, a slight disruption in the supply chain can make fishers highly vulnerable to price volatility.

This was evident during the COVID-19 pandemic. The price of masmin halved from INR350-500 (US\$4) per kg to INR120-180 (US\$2) per kilo, exposing the vulnerabilities of fishers due to their reliance on a single supply chain. This freefall worsened the fishers' limited access to markets and low value for their masmin.

In transition

Direct and indirect socioeconomic or ecological challenges can push small-scale fisheries towards unsustainable practices. With the P&L fishery facing issues like declining baitfish resources and the lack of adequate returns, Lakshadweep's fisheries are seeing a transition to reef fishing, adding pressure on the sensitive coral reef systems that constitute this archipelago.

Lakshadweep is also facing intrusion of illegal, foreign and mainland Indian fishing boats into its waters, a concern for many fishers. Moreover, changing developmental priorities of the government present other external challenges. For example, there is currently a push for large-scale

tourism development in Lakshadweep. This can negatively impact the islands' fisheries sector, limiting fishers' access to fishing grounds and the coastal commons.

Although tourism can be encouraged, its implementation has to take an equitable and balanced approach by considering the concerns of the fisheries sector that is critical for the livelihood of the Lakshadweep's population. Tourism models must be compatible with the unique social-ecological context of the islands.

Fisheries management now

Despite the complexities and challenges of P&L fisheries, there is a dearth of active cooperatives to help fishers undertake collective action to address pressing issues. The islands have had collectives in the past; they did not endure, with the exception of those initiated by the fisheries department. These societies are primarily engaged in selling boat spare parts and providing other fishery-related services.

Decisions concerning fisheries in Lakshadweep are made within a

... there also exists a community-based, bottom-up regime of fisheries management on Minicoy Island, from where P&L was introduced to the other islands

conventional, top-down, bureaucratic system; the directives that trickle down the hierarchy are designed to fulfil the overarching national fisheries goals. Such a bureaucratic system is beneficial in driving government interventions, it does not necessarily reflect the nuances and complexities of issues at the local level. Lakshadweep's P&L fishery faces complex, multi-dimensional and ever-changing challenges. They require holistic solutions developed through multi-stakeholder involvement.

In addition to the conventional, top-down management system, there also exists a community-based, bottom-up regime of fisheries management on Minicoy Island, from where P&L was introduced to the other islands. Minicoy Island has its customary systems of resource management, rooted in

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The P&L fishing method uses plenty of live fish as bait to attract the tuna. The 'baitfish' are small pelagic and reef fishes caught from lagoons and reefs surrounding the islands

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traditional ecological knowledge, preventing the overharvest of resources. Learning from such unique examples and, wherever possible, incorporating their elements into contemporary fisheries management could be a step towards making resource management more inclusive, contextualized and sustainable.

Tiding over the challenges

What remains undisputed for enabling inclusive fisheries governance is awareness, motivation and empowerment among stakeholders. Dakshin Foundation, an organization working on coastal and marine systems in India, has been engaged in research and interventions aimed at preserving the P&L fishery and creating systems for participatory fisheries management in Lakshadweep for almost a decade. Dakshin's Community-Based Fisheries Monitoring (CBFM) programme is aimed at empowering fishers through participatory knowledge generation for long-term and sustainable management.


The CBFM programme has gained traction among the fishers over the years. It has provided a good entry point for mobilizing support for making

decision-making more inclusive. In turn, this has fostered dialogue around the creation of a multi-stakeholder fisheries governance platform in Lakshadweep.

The initial consultations on this front have been favourable. Getting various stakeholders together to operationalize such a platform requires more work. Such participatory governance systems have the potential to go beyond resource management; they can enable fishers and other stakeholders to collectively address the larger challenges facing the island fisheries.

The way forward

The ongoing IYafa period that celebrates small-scale and artisanal fisheries is not merely a reminder to the world about the significance of SSF like the P&L fishery. In fact, it compels us to ask critical questions about ensuring equity and justice for small-scale fishers, fishworkers and their communities. It is imperative to address these questions now, in the face of the rapacious pursuit of fish in a hamstrung environment.

To ensure a viable future, we strongly recommend the need for well-coordinated action at local and national levels. This will ensure fishers' participation across the various levels of resource management through novel and dynamic approaches like participatory, community-based or cross-scale governance. Investing in small-scale fisheries in this way can be a global investment toward a sustainable future for fisheries and healthier oceans. 

For more

Where Tradition is a way of life: Traditional Knowledge in the U.T of Lakshadweep, India

<https://www.icsf.net/resources/where-tradition-is-a-way-of-life-traditional-knowledge-in-the-u-t-of-lakshadweep-india-2/>

Dakshin Lakshadweep Fisheries

<https://www.dakshin.org/lakshadweep-fisheries/>

Tap into the Potential

The limitations of India's local self-government institutions can be overcome through capacity building and institutional strengthening

Community participation and the use of technology in disaster response as well as the role of local self-government institutions (LSGI) in fisheries management were the highlights of a two-day workshop on Sea Safety and Fisheries Management in the southern state of Kerala. It was organized jointly by ICSF and the Kerala Institute of Local Administration (KILA) on March 1-2, 2023 at Thrissur. Sebastian Mathew of ICSF, emphasized the importance of conservation and sustainable use of fisheries resources, promoting a human rights-based approach in fisheries management. The workshop aimed to foster an understanding of key chapters and concepts related to social development and sustainable development of the SSF Guidelines, he said, calling for a coordinated approach to be

of natural disasters, he said these need to be reconstructed to address specific challenges from climate change. Community participation, he said, was crucial to address the impact of natural disasters, as they often affect local residents who are also first responders.

A rescue, an idea

Continuing on this theme, Geetha Gopi, former member of the state's legislative assembly, presented an experiential account of the practical benefits of integrating novel technological advancements in the realm of maritime security within her constituency. On January 5, 2021, four fishermen from Naatika village went missing during a routine fishing expedition. Devang Subil, an engineering student and drone pilot, was roped in to develop a specialized search and rescue plan. Using a high-resolution drone camera equipped with GPS tracking, Devang conducted an aerial search and located the missing fishermen at sea. This guided a successful rescue operation. The incident underscored the importance of technology, youth engagement, and innovation in addressing challenges faced by vulnerable communities.

In her presentation, Shibina Elayi, a research scholar at the Central University of Kerala, examined the social and economic conditions of fishworkers in Kerala, including their livelihoods and income, in the context of fluctuations in the fish market. She also investigated the policy measures and programmes implemented by LSGIs to protect the economic and social well-being of fishworkers and reduce social inequality.

Sajeevan Moosamikandy of the Kerala University of Fisheries and Ocean Sciences (KUFOS) spoke of the role and duties of LSGIs in enhancing safety at sea and regulating illegal,

The potential for collaborative efforts and partnerships in addressing climate change impacts and disaster management measures were also discussed...

implemented for integrated coastal protection and fisheries management involving local self-government institutions (LSGI). In attendance were representatives of a range of LSGIs, trade unions, cooperative self-help groups and related social organisations, apart from academics and practitioners.

In the past, Kerala relied on tapioca and sardines as a source of carbohydrates and protein, respectively. But climate change had led to fluctuations in temperature and rainfall, affecting the availability of sardines, said Joy Elamon, director general KILA. While institutions in Kerala had developed plans for adaptation to and mitigation

This article is by **Anagha E** (anaghaeasanan@gmail.com), Rural Development Specialist at the Kerala State Disaster Management Authority, Kerala, India and **Ahana Lakshmi** (ahanalakshmi@gmail.com), an independent researcher and consultant, based in Chennai, India

unreported, and unregulated (IUU) fishing. He said that fishworkers in small vessels, particularly in territorial waters, were associated with significant risks and hazards. However, data on small-scale fisheries (SSF) and the individuals engaged in these activities were often limited, with only the names of boat owners known and little information about the fishers on board. This lack of information makes it challenging to understand their work and risks, delaying the implementation of effective marine protection measures and timely intervention in case of emergencies. He said that the involvement of local governments and community-based organizations could facilitate data collection, emphasizing that active participation, cooperation, vigilance and accuracy in data collection were critical for obtaining reliable information. To address illegal practices in fisheries like catching juveniles, there's a need for proactive measures such as establishing effective monitoring and reporting mechanisms and implementing regulations to discourage unregulated fishing.

The challenges

Insights into the current system, services, and challenges encountered by various departments and LSGIs in the areas of sea safety, fisheries management, and social development of fisherfolk communities came from P. Anish from the fisheries department. He elaborated on the existing system and services while highlighting the challenges faced by these entities in effectively addressing the needs of fisherfolk communities and ensuring their social development. He explained that the state's fisheries department was responsible for various activities in the marine fisheries sector, including registration of fisherfolk and fishing boats, disaster management, resettlement and conservation of fish stocks. Other tasks included implementing awareness programmes, enforcing laws and regulations and operating fish-landing centres and harbours.

The department also engaged in activities to protect marine life and provided 24x7 master control room services. Anish said the government

had notified use of mandatory personal protective equipment and security devices for individual safety and protection. The list of equipment for each type of craft was available and if not provided as per the regulations, many small boats might not be eligible for a licence. He said the establishment of Fisheries Management Councils was on-going, headed by the chairperson of the village LSGI or the president of the municipality. These councils include councillors from municipal areas. It was essential that they get cooperation from organizations such as cooperative societies, trade unions and fishworkers' associations. Through proactive measures and stakeholder engagement, these councils aimed to promote sustainable and profitable fisheries while addressing challenges related to resource conservation and the livelihoods of fisherfolk, he said.

The safety of fishermen at sea, particularly those using large mechanized craft, was of paramount importance in the international maritime domain, said John Swamy, former merchant navy navigation officer, who had conducted studies as well as training programmes for fishermen in Tamil Nadu and Kerala. Heavy mechanized craft were used, and there were guidelines for the safety measures to be employed for the protection of human life on such vessels. However, it was worth mentioning that these guidelines might not be applicable or followed strictly in the case of small-scale craft. Typically, fishers acquire knowledge and expertise in safety practices through experience, ranging from early age to maturity. Along with a lack of proper facilities for safety measures on small boats, the absence of suitable infrastructure posed a significant challenge in ensuring safety, he said.

Lessons from other programmes

The successful implementation of several specific components of tribal sub-plans (TSP) had facilitated the access of tribal communities to basic infrastructure, including clean water and electricity, which had been instrumental in improving their socioeconomic conditions, said Rajesh K. of KILA. However, reasons

for lack of similar initiatives for the fishing community were unclear. He said Kerala's fisheries sector did not receive a proportional allocation of plan funds based on population; that there was a lack of meaningful participation in policy making from the fisheries sector. Reorganizing and providing legal recognition to facilitate better participation was essential with emphasis on the discussion about the rights of the sea and the coast. Local learning centres and residential schools for fishing communities needed to be established in the manner similar to that of tribal communities.

One point got emphasized over and over: managing the coastal fisheries sector required a comprehensive understanding of the local context and the stakeholders. C. Ramachandran from the Central Marine Fisheries Research Institute (CMFRI) said that fisheries management concepts originated in cold-water marine regions of western countries; they hence focus on regulating and controlling fish populations to ensure sustainability. However, this approach might not be

Knowledge and expertise in safety practices are typically acquired by fishers through experience, from an early age

applicable in the tropical region of Kerala due to differences in local social structures, traditional practices and unique coastal ecosystems. On the other hand, fisheries management in this region should consider and integrate local social, economic and ecological factors for effective conservation and sustainable use of fish resources.

Mathew A.K., described the experiences of Theeramythri programme on alternate livelihoods meant only for women in families of the fishing community, specifically to build business enterprises of women aged between 18 to 55 years. After identifying the women, training and technical help for new initiatives were given. A dedicated group was involved in this programme. The main businesses were

tailoring units, provision stores, snacks units, flour mills, beauty parlours and dry fish sales.

Recommendations

The final component of the workshop was a group discussion where participants were divided into three groups and asked to deliberate over four questions looking at the role of LSGIs with respect to fishing communities. The workshop's recommendations are as follows:

- * Introduce a sub-plan exclusively for fishing communities of each LSGI of Kerala with a minimum population of 50 families. Budget allocation can be made following the number of families and region-specific needs and issues.
- * Make plan guidelines more flexible and specific, indicating the potential activities that can be undertaken in formulating budget allocations to ensure sea safety, welfare and quality of life of fishing communities along the Kerala coastline.
- * Follow patterns of tribal sub-plan under the 14th Five Year Plan in administering a sub-plan to benefit fishing communities.
- * Make provisions for sea safety, coastal, marine and inland water disaster preparedness and response related to fishing, social development of fish workers, and develop common facilities for fishworkers' livelihoods development programmes as mandatory components within sub-plans.
- * Strengthen local Institutional mechanism of fishing communities. For example, the
- * Expand the network of fisheries inspectors.
- * Develop a system for programme integration.
- * Provide compensation for lost workdays due to adverse weather conditions, as notified by the government, and introduce parametric insurance through LSGIs.
- * Introduce and operationalize through LSGIs a vessel monitoring system for fishing vessels to improve sea safety. For example, a QR-code or a punching-based system.



A Group photo. The workshop emphasized the need for continued development of the mechanisms of local self-governance to address similar issues

- * Develop regional disaster management plans with LSGI participation and train Emergency Response Team (ERT) members, providing them with appropriate training and capacity building through institutions like the Kerala State Disaster Management Agency (KSDMA). The ERT should be trained in search and rescue techniques and operations, including the use of drones, and equipped to provide emergency medical assistance. LSGIs can provide the necessary resources for this team, such as life jackets, fuel and first aid kits.
- * Develop a sea safety protocol at the local level, with the participation of local communities. Financial resources can be pooled through government and non-government institutions for developing such protocols.
- * Establish Marine *Haritha Karma Sena* with the participation of the fishing communities to effectively address the issue of marine litter. The operation of recycling plastic units and generation of user fees can help meet costs associated with the removal of marine litter.
- * Encourage LSGIs to cooperate with the fisheries department to enforce fishing regulations to prevent overfishing, protect stocks and to promote safety of fishing operations. This can include setting limits on the size and number of fish that can be caught, enforcing closed seasons, prohibiting destructive fishing practices, restricting fishing during extreme climate events, monitoring the movement of fishing vessels, and coordinating search and rescue missions with the participation of fishers.
- * Assist LSGIs to build the capacity of local fishing communities and other stakeholders in fisheries management through training programmes. This can help ensure that local communities have the knowledge and skills they need to participate in sustainable fisheries management.
- * Equip KILA to set up a centre to promote development planning of fishing communities and to support the LSGI when they prepare their plans.

For more



Workshop on Sea Safety and Fisheries Management: Training and Capacity Development of Local Self-Governments, 01-02 March 2023, Kerala, India

<https://www.icsf.net/resources/lsg-workshop-icsf-kila-kerala-india/>

Report of the Workshop on Sea Safety and Fisheries Management: Training and Capacity Development of Local Self-Governments, 01-02 March 2023, Thrissur, Kerala

<https://www.icsf.net/resources/report-of-the-workshop-on-sea-safety-and-fisheries-management-training-and-capacity-development-of-local-self-governments-01-02-march-2023-thrissur-kerala/>

Creating a Cadre

Inland fishers and activists mingled with experts at a workshop on training of trainers on India's fisheries policy

A prerequisite for implementing the 'Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication' (the SSF Guidelines) is to mainstream these into the State's policy and legal framework. In inland fisheries, this task proves stupendous for several reasons. Chief among them is the diffused nature of resources and the continuing unorganized and unempowered nature of stakeholders at the grassroots.

The problem is further compounded in inland fisheries by the poor tenure system or, rather, the lack of it. Many fishers still operate under customary and traditional tenure rights that are ill-defined and are not mainstreamed into any legal or policy instruments. Thus, they are often exploited by vested interests working against social equity and environmental sustainability. Such flawed tenure systems can undermine all efforts to put in place development processes adhering to the SSF Guidelines.

The International Collective in Support of Fishworkers (ICSF) has been active in addressing this. It has organized events that catalyze efforts by the authorities at the policy and legislative levels to mainstream the principles of sustainable and equitable development of the SSF sector. ICSF events address international conventions and norms like the Code of Conduct for Responsible Fisheries (CCRF), the ecosystem approach to fisheries (EAF) and the SSF Guidelines.

During the two key workshops on implementation of the SSF Guidelines held in 2019, ICSF found it necessary to adopt a trainers' training approach. This is effective in creating awareness among the fishers so that they can become partners in removing the obstacles in mainstreaming the principles of the SSF Guidelines. Further to such efforts, ICSF organized a National Training of Trainers (TOT) Workshop for Inland Fisheries in

Kolkata on December 22-24, 2022. In attendance were key fishworker representatives from the states of Assam, Bihar, Jammu and Kashmir, Kerala, Maharashtra, Manipur, Odisha, Rajasthan and West Bengal.

The training programme tackled recognizing fishers' tenure rights, their participation in resource management, the recognition of their rights to development and to create social safety nets for protection and security. This is important to actually obtain legitimate tenure rights of the fishers, enabling them to play their role in implementing the SSF Guidelines.

The workshop helped create a cadre of trainers for training, preparing them to make the fishers and fishing communities aware of the present situation and explore ways to correct the situation so as to become key players in creating their future. The trainers obtained valuable inputs and knowledge from experts and researchers. The highlights included the voluntary participation of a set of leaders who offered to be the trainers, and the presence of a large number of fishers who attended both individually and through their organizations. The translators played a basic role in interpreting the experts' views to the fishers from various regions.

Issues and concerns

The programme revealed the multiple challenges in the inland open-water fisheries where the depletion of wild fish stocks affect the livelihoods of fishers. The fishers who target different resources under varying governance environments narrated the issues and concerns they encountered. The experts at the workshop, in turn, advised them on how to deal with such issues. Conflicting claims for water from different user communities are affecting inland ecosystems, their fishery resources and the services they provide, namely, fisheries-

This article is by V V Sugunan (vasu.sugunan@gmail.com), retired Assistant Director General of the Indian Council of Agricultural Research, New Delhi, India

AMITRAJIT CHAKRABORTY



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Fishers check for fish after casting their cast net on the banks of Teesta river. The programme revealed the multiple challenges in the inland open-water fisheries where the depletion of wild fish stocks affect the livelihoods of fishers

based livelihoods, also due to the low bargaining ability of the inland fishers.

There was a consensus at the workshop that concerted efforts by all players—from experts to those at the grassroots level—are needed to correct the situation. Although an uphill task, this is essential to inform the policy and legislative efforts about the rightful role of fishers in decision making while planning for water resource management programmes.

In sum, the Kolkata Workshop achieved the following objectives :

- * Creating a cadre of trainers who can reach out to fishers and fishers' groups to, one, train them on the SSF Guidelines; two, explain the benefits of, and make them aware of their role in implementing, the SSF Guidelines; and, three, create awareness on sustainable and equitable utilization of inland fisheries resources.
- * Providing an opportunity for fishers and their organizations to interact with scientists, experts and officials to share their concerns and clarify doubts.

This process will meet its logical end when:

- * The trainers go back and interact with the fishers and transfer knowledge to them;
- * ICSF keeps in constant touch with the trainers to monitor progress and provide them the necessary inputs;
- * ICSF interacts with the experts to obtain clarifications that trainers might need;
- * ICSF tracks and assess the output obtained by each trainer, as also its impact based on the quantified outputs generated by the trainers; and
- * ICSF initiates appropriate follow-up activities based on the achievements of the training programmes.

For more

National Training of Trainers (TOT) Workshop (Inland Fisheries) on the SSF Guidelines, Seva Kendra, Kolkata, West Bengal, 22-24 December 2022

<https://www.icsf.net/resources/icsf-tot-inland-fisheries-2022/>

Politics or Policy?

Reflections on a recent workshop on India's National Fisheries Policy (Inland)

The Training of Trainers workshop on the National Fisheries Policy (Inland) in December 2022 in Kolkata was a great learning experience for the participants. Just that this time around, the learning was of a different nature. It was not from data, facts, meetings or experiences but from many uncomfortable realizations. A vote of thanks is due to ICSF for organizing it. However, a critique of the nature of participation and the tenor of voices is also important.

Every workshop, by design, follows an arc of narratives. Scientists and government representatives, some with a double role, speak about the problems facing inland fisheries, followed by their (almost always successful) solutions and future challenges. They speak about the revenue side and the welfare side of fisheries management in India's inland waters, providing a canvas across states. This discourse is largely based on facts and figures, yet partly driven by a subconscious ideology of modernist neoliberalism. According to eminent rights advocates present at the workshop, it was another version of top-down control cloaked in terms of welfare or justice. Fisher groups then respond saying that these big numbers and platitudes barely address issues they are facing on the ground.

One of the strengths of ICSF workshops is how they always provide this democratic, deliberative space. It is an encouraging attribute for those at the margins, who are not from the government nor aligned with fishing groups or the organizers. The core contention in the debate above is not new; but the management of that debate should be fresh—one workshop at a time.

However, three months after the workshop, what registers prominently is the political oppositions at all costs, especially from the louder rights advocates. The aim of a workshop is

mutual learning, neither consensus-building nor political polarizing. And so, we must grapple with what this tough rights-centred politics on the fisher groups' side may mean for the future of ecosystem-based management of inland small-scale fisheries (SSF).

With the National Fisheries Policy in the public consultation and revision process, and in light of the SSF Guidelines, the much-touted 'Ecosystem Approach' to fisheries management is soon to occupy its own policy niche in India. The phrase has not much traction beyond a buzzword because issues of people's rights and ownership remain unaddressed in the highly diversified and sprawling enterprise of inland fisheries.

With the National Fisheries Policy in the public consultation and revision process, and in light of the SSF Guidelines, the much-touted 'Ecosystem Approach' to fisheries management is soon to occupy its own policy niche in India

The low interest in ecosystem-based management probably stems from the belief that after communities have control of their fishery habitat and resources, an ecosystem-based approach will magically follow. Because communities will always have the intrinsic knowledge, wisdom, and foresight to understand and implement it. Importantly and arguably, this may not be true in most cases. Like all institutions, community institutions comprise people and their failings. So there is no rational reason, except faith, in expecting them to be better or worse than state or civil society organizations.

Numerous experiences

Experiences from numerous SSF across the world show that, as much as collective action and equitable

This article is by Nachiket Kelkar (rainmaker.nsk@gmail.com), Head, Riverine Ecosystems and Livelihoods programme of the Wildlife Conservation Trust, Bengaluru, India

ICSF



A group photo. The aim of a workshop is mutual learning, neither consensus-building nor political polarizing. And so, we must grapple with what this tough rights-centred politics on the fisher groups' side may mean for the future of ecosystem-based management of inland SSF

management successes, narrowly focusing on rights had led to escalated conflicts, fragmentation and weakening of local informal codes and institutions (Kelkar and Arthur, 2022). It has also resulted in the abdication of responsibilities towards sustainability, environmental conservation, and ethical fisheries development (Bromley, 2009). There's no denying that the demand for rights and rightful 'stakes' in fisheries by community groups is absolutely critical. But increasingly so, the demand for rights is becoming narrower and narrower, with the mention of attendant responsibilities, social or environmental, being conveniently side-lined.

Politics is central and essential to organization and institutional management and use of resources by people. It allows for articulation of shared interests, of rightful demands to reverse long-drawn and normalized socio-economic inequities and injustices. Politics also creates ground for assertions that communities—and not the state machinery—are the naturally-selected institutions for taking decisions on resources. However, when these demands for entitlements become the end rather than a means to the larger goals of equity, justice, or sustainability, there is a problem of self-negation.

This can become a risk when fishers' interests regard themselves as sovereign in their sphere, as seen in the statements

of some workshop participants. In the process, it can disregard any other economic and ecological concerns of society. Researchers have pointed out multiple contradictions within the rights space in fisheries (Song and Solimann, 2019); between universal and specific rights, between rights to harvest and the duty to conserve, and between rights for individuals and community rights. Since this process begins with locating all State and civil society supporters as their sworn enemies, scope for any collaboration diminishes, and any such engagement is seen as weakness rather than conciliation.

Unfortunately, this can become the undoing of the activists' own cause. With a hard-line frame utilized to view all problems, everything appears dark and unfair only outside the community, and the scope for self-checks and constructive reform within the community shrinks. There are critical development concerns facing fishers.

Social welfare

Continued lack of access to social welfare schemes is a big one there, as is increasing involvement in crime, as seen with many inland capture fisheries turning into a criminal political economy. The first part is a structural crisis, the second part is a combination of fishers' agency and opportunism. School dropouts among fishers' children, or health issues

among women and aged fishers, are all severe problems. But are rights-centred political demands helping change the situation? At least in my experience, they have not, what with the absence of constructive political discourse.

The workshop had surprising moments of vicious attacks by several activists against cooperative institutions. It is true, as they repeatedly emphasized, that cooperatives have been functioning poorly, faced elite capture, and were being managed by corrupt functionaries, among other problems. But to respond to historical trust deficits by blaming cooperatives for taking away fishers' rights was a revelation.

It was also ironic that the same fisher representatives who showed utter lack of faith in even a pale shadow of the State, also demanded, in the same breath, numerous benefits and help from the State entities. To think of it, the demand for fishers' rights to resources, having come from disillusionment with the State functionaries in the first place, should also be accompanied by alternative and confident visions of fisheries sustainability and community development. As those visions were sorely absent or missing, the way out of the crises of scale facing fishers and fish resources have to be addressed with collaborative efforts. Surprisingly, the seekers of rights consider this anathema.

The rhetoric from the scientists' is worth noting also. Scientists of fisheries research institutions at once highlight both 'overfishing' and 'unexplored or potential yield' in inland fisheries as problems of overcapacity as well as underutilization. Overfishing does not leave any potential yield to explore unless fishers start harvesting anything that comes their way. If there are still 'yield gaps', that is, the difference between actual yield and potential yield, then where is the overfishing?

It is a basic question with far-reaching ramifications. From a conservation standpoint, all fishing is overfishing. From a fisheries revenue standpoint, all fishing is under-fishing. This is seen in the way the state fishery departments have been mostly about exploitation of fishery resources. (At the fisheries department office in

Port Blair, a sculpture of smiling shark had a message inscribed on it to this effect: Exploit me for my fins, my skin, my meat.) But when both seem to be happening at once, the fisher becomes both an imprudent resource exploiter as well as a conservative and pessimistic entrepreneur.

Both perceptions may not be true, even though they appear so because of the desperation fishers face in overcoming poverty and social barriers, and adapting to declining and uncertain fish catches. The fishers display resilience in continuing to fish despite their resource base being degraded by dams, water pollution, climate change, and weakening of local institutions. Scientists need to examine that resilience in order to become more acutely understanding of socio-cultural-economic bottlenecks to address problems affecting inland fisheries.

The weakening of local institutions stares in the eye the optimistic faith and vain romantic belief in community power. One activist said he feels energized by the 'consciousness' he senses in local meetings. Event-energy, however, should not be confounded with daily practice, the gaps in which would become apparent if one incisively dissected what community itself has become today.

Community rights are easier imagined than implemented, for the simple reason that the so-framed community consists of increasingly desperate individuals. Inland fishers are rapidly exiting fisheries and migrating to far corners as workshops continue and national policies get developed. In this fickle age of opportunist daily-earning livelihoods and volatile economics, it is increasingly difficult to afford altruism. A common refrain among the poorest fishers during numerous discussions is that they cannot afford to sit in meetings. They would rather fish; even as the better off among their community do not fish anyway but always organize and attend the same meetings.

With these difficult-to-accept realities, why continue holding the belief that only communities can secure social justice or environment? With the notion of community being nebulous, only faith can lead us to promote community-based management as the

panacea for all governance problems in inland fisheries. Community organizations, even if strengthened and reinvigorated, can only be one of the institutions among the larger mix, and cooperative arrangements would be inevitable, even though they would limit politics of rights and rhetoric.

What is the scope for placing concerns of ecological responsibilities and biodiversity conservation, perhaps the most basic need for fisheries sustainability, in the intensively cultivated landscape of rights and demands? Because these concerns matter more, or at least as much as those of human development, equity, justice, ethics, and compliance, it is disappointing to see a rapidly declining scope for them within rights-centric political positioning.

The 'ecosystem' in the ecosystem-based approach, unfortunately, seems to be turning into a space in which the narrowly self-centred political subspecies of *Homo sapiens* can thrive. One cannot help but wonder if it is just 'politics-based fisheries management' that fisher activists and organizations target in the name of ecosystem-based fisheries management.

The workshop might have gone closer to its aim with a more representative and diverse selection of workshop participants, with wider geographic scope and state quotas delimited. Apart from representation being highly uneven, decibel power and prior participation seemed to be two obvious self-selecting variables. The contingents of Odisha and West Bengal had several experienced members, not all of them trainers, probably due to their proximity. Only Maharashtra and Assam had one or two with genuine trainer-level experience and contextual understanding.


The number from two very important Gangetic plains states was zero and two, respectively, and those who attended from the latter were local politicians who barely knew the basics of the National Fisheries Policy or the SSF Guidelines. Representatives from two other states barely attended most sessions. The organizers would need to push for a more well-rounded and careful selection of participants, moving forward, if such workshops

have to achieve the goals of knowledge transfer and mutual learning, rather than hearing the same problems and shouting over and over again, *ad nauseum*.

Notwithstanding the above observations, there's no need for pessimism or cynicism. We can collectively work towards resource-sustainable, environmentally-conscious, economically equitable, and socially just inland fisheries management in the future. Fisher collectives and unions, and their activists and advocates, have been giving voice and representation to many marginalized and neglected groups. They need to continue doing this important work, but probably not by staying dismissive or unseeing of the changing micro-political and economic realities within communities.

The romance of activist consciousness cannot be a delusional one about the virtues of imagined or supposedly united communities. Moving towards ethical fisheries would need to involve a careful revisiting of what and how demands for rights, and whose rights, are prioritized. And, in the process, who may be left out. Accordingly, demands for rights will have to be tempered with a more thoughtful, inclusive engagement for concerns about socio-economic, community-based development and environmental conservation.

Democratic dialogue

These goals have to be joint, not one following another. One hopes that future workshops develop new ways and means for dialogue that remain democratic and healthily dissenting but also work towards problem-solving with a collaborative orientation across the political and institutional bouquet necessary for fisher communities and fisheries development. 

For more

National Training of Trainers (TOT) Workshop (Inland Fisheries) on the SSF Guidelines

<https://www.icsf.net/resources/icsf-tot-inland-fisheries-2022/>

Flush for Change

On-board bio-toilets help minimize accidents at sea, prevent marine pollution and foster healthier ecosystems

A workplace should have a roof, proper flooring, entry and exit points, along with sufficient space for movement during emergency. The floor surface should be flat, stable and dry; it should be appropriate for the nature of work involved. The workplace should also have good lighting and ventilation, so that workers are safe and they breathe clean air. It is also necessary to protect the workers from extreme weather while working. A space for dining, rest places for sick workers, drinking water facilities, and toilets and hand-washing facilities are some of the other basic requirements in the workplace.

Fisher's workplace is their vessels that, often, do not provide the basic facilities. Life on a floating workplace is unsafe. While fishing technology is developing very fast, boat-making techniques and the conditions of onboard facilities lag behind. This problem demands serious interventions from governments, research institutions, non-governmental organizations (NGOs) and other organizations.

Toilets are basic requirements that fishing vessels do not have. One reason for the large number of accidents at sea is the use of the gunwale as a toilet. If a fisher falls from a moving boat while using the toilet, chances are he will hit the propeller and meet his end.

Boat size depends on the type of fishing and the physical conditions of where they operate. Due to space restrictions onboard, toilets are not included in the design. A one-day fishing boat is smaller than a multi-day boat; a deep-sea fishing vessel is larger than a stay-fishing boat. Mostly, the

space is just about sufficient for fishing equipment. The task for boatbuilders, then, is to design toilet models to fit the space restrictions without affecting the work.

In 2016, a team of volunteers took on the task of finding a suitable boat under a pilot project of the Association of Deep Sea Going Artisanal Fishermen (ADSGAF), situated in the southern part of the Indian state of Tamil Nadu. It found support from the Madras Section of Institute of Electrical and Electronics Engineers Artisanal (IEEE), an association of technical professionals in

While fishing technology is developing very fast, boat making techniques and the conditions of onboard facilities lag behind

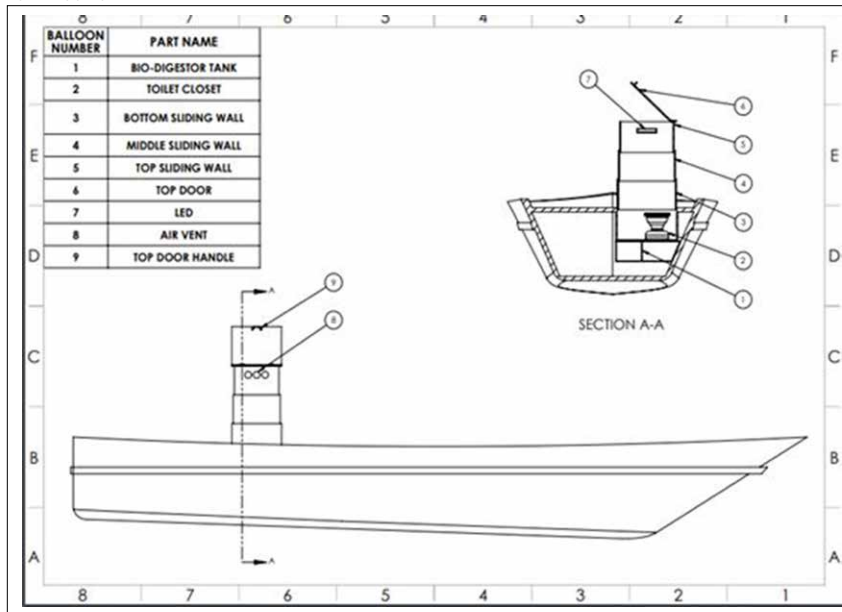
the south Indian state under its Special Interested Group on Humanitarian Technology (SIGHT) programme.

The team was able to select a boat under a subsidy scheme of the state's fisheries department, which required the boat to have a toilet. The team consulted bio-toilet makers from Indian Railways and other service providers of bio-toilets.

It did not yield results. After the project team members left, it became difficult to find volunteers and support staff. Yet, the idea of providing a toilet on a fishing boat was not given up. In 2021, a 3D modelling and designer joined the team. The work got going again. After continuous discussions with the fishermen, a model was designed for boats with no wheelhouse.

This article is by Vincent Jain. J (jain.v.siffs@gmail.com and vinjain26@gmail.com), Deputy Chief Executive, South Indian Federation of Fishermen Societies (SIFFS), Thiruvananthapuram, India, and Founder Chair, IEEE ADSF SIGHT

AJITH. K. / SIFFS



Engineering Drawing. Bio-toilets can be installed on varying types of fishing boats such as outboard motor-fitted fibre-reinforced plastic (FRP) boats and inboard motor (IBM)-fitted FRP boats, steel boats, as well as on wooden boats engaged in trawling, purse-seining, gillnetting and longlining

size and requirements, the bio-digester tank can be designed and installed conveniently anywhere on board the vessels.

In 2021, a real bio-toilet type was prepared and fitted to the model boat kept for demonstration at the boatyard of the South Indian Federation of Fishermen Societies (SIFFS) at Veli, Thiruvananthapuram, India. The four feet by three feet cabin enclosed a Western-style closet with flush tank, hand shower and wash basin, along with a 500-litre biodigester and a solar-powered lamp. The cabin size can be further reduced if space is constrained.

Spreading the habit

This toilet's purpose is to spread the habit of using toilets on board fishing boats. Those who come to the boatyard to buy boats do visit the toilet; no one has shown interest in having them installed on their own boats. After officials from the fisheries department of the neighbouring state of Kerala learnt of the facility, they began encouraging the fishermen to avail of it. Eventually, two owners got interested.

Nabesu, IND KL 08 MM 2564 is the name of a boat in Kannur owned by a person called Usman. Ancil D'cunha is the owner of a boat named *Shymol*, IND KL 05 MM 2275, at Azhekcode. Both of them came forward to have toilets installed in their boats. It is not difficult at the time of building the boat to fabricate the toilet cabins, fit them with bio-digesters and plumbing, and carry out related work. Yet it is very difficult to implement all these on an existing boat. A great deal of manpower went into fitting the toilets in *Nabesu* and *Shymol*. A team of six workers stayed at it for 10 days in two schedules.

The two boat owners and the fisheries officials were co-operative from the beginning and until the work's completion. SIFFS's working team established a communication mechanism with the two boats to assess the performance of the toilets.

The bio-digester technology is the important component of a bio-toilet, which is more expensive than the toilet designs in use. The unique bio-toilet

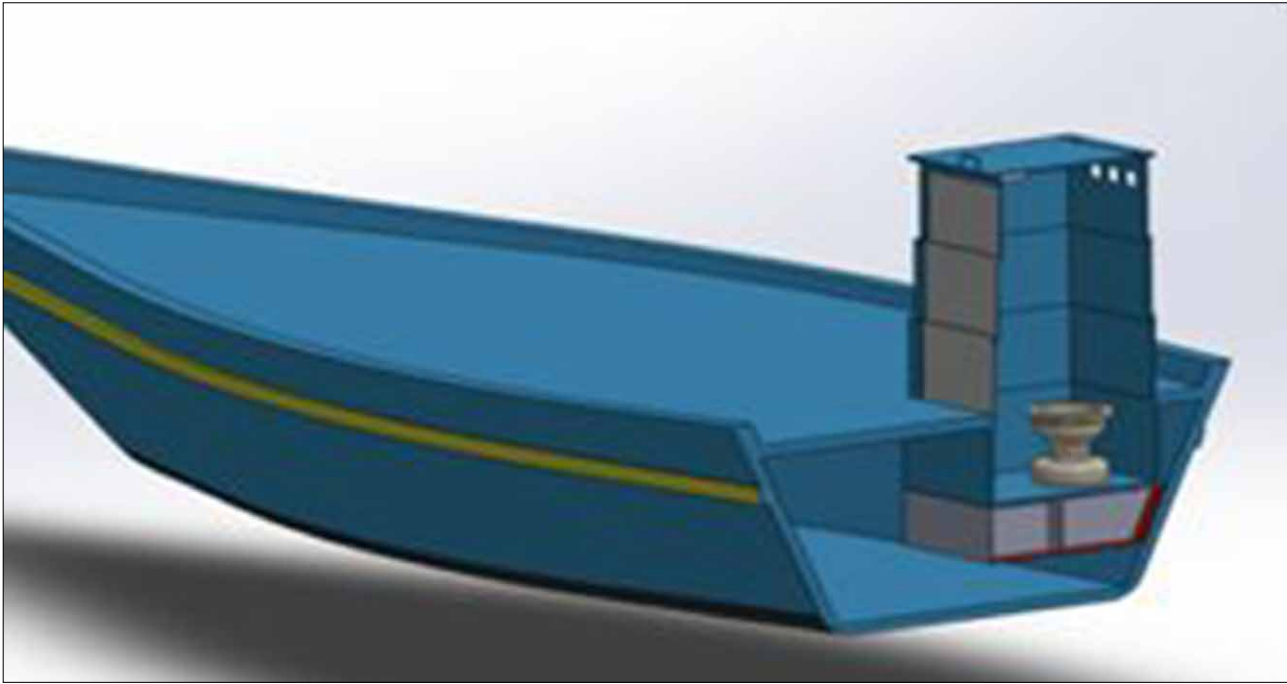
Hardware parts

In this model, the closet and other hardware parts are fixed under the deck; its length is three feet, width two-and-a-half feet and it has a depth of one-and-a-half feet. The dimensions can be customized according to the boat's size.

The top portion of the toilet area is closed with a door. Three levels of vertically sliding walls one-and-a-half feet high cover it. Depending on the convenience of the users, the height can be adjusted to the maximum of six feet. It provides ample space for ventilation and ingress-egress.

In another model, the bio-digester is fixed either underneath the closet area or under the deck, based on convenience. Users open the top door of the toilet and close it after using it. This does not need any extra space to be allocated for the fishers over the deck.

Bio-toilets can be installed on varying types of fishing boats such as outboard motor-fitted fibre-reinforced plastic (FRP) boats and inboard motor (IBM)-fitted FRP boats, steel boats, as well as on wooden boats engaged in trawling, purse-seining, gillnetting and longlining. Depending upon the



Bio-toilet design. Toilets are basic requirements that fishing boats do not have. One reason for the large number of accidents at sea is the use of the gunwale as a toilet

decomposes human excreta, using bacteria to convert it into methane gas, water and rich, moist and soil-like material. It eliminates the direct discharge of septage in the sea. The discharge into sea meets pollution standards. Its design can be modified according to the requirements of the end-users. The toilet offers a waste-free solution. It is expensive to build now but further research is expected to reduce costs in the future.

Features of the bio-digester toilet:

- * Anaerobic waste degradation
- * Decomposes 99 percent of the waste
- * Maintenance-free
- * No need for sludge removal
- * Discharge from tank is hazard-free water, odourless and colourless
- * Requires one-third the space needed for a septic tank

It is common now for the houses of fishers in South India to have more than one toilet. The majority of the users are women, aged people, employees and students. The active fishermen are still using the seashore as their toilet. This may be one of the reasons for the deliberate avoidance of toilets

on fishing boats. A generation imbued with the habit of using the seashore as a toilet cannot be changed overnight.

Fewer accidents

One can only anticipate that custom and practice may give way to change. Certainly, encouraging bio-toilets on fishing boats can minimize the rate of accidents at sea and can also contribute to a clean ocean and healthy ecosystems. ♻️

For more



SIFFS Research & Development

<http://www.siffs.org/research-development-siffs>

SIFFS designs biotoilets for fishing boats

<http://www.siffs.org/siffs-designs-biotoilets-for-fishing-boats#>

Fishermen should try this low-cost boat made from waste

<http://www.siffs.org/fishermen-should-try-this-low-cost-boat-made-from-waste>

Indian fishermen skeptical about success of bio-toilets on boats

<https://www.icsf.net/newss/indian-fishermen-skeptical-about-success-of-biotoilets-on-boats/>

A New Road Map

A national platform of fishers met to assert the inalienable right of fishers and fishworkers to access water bodies, campaign for climate justice, and become a federation of unions through a new constitution

The national council meeting of the National Platform for Small-Scale Fish Workers (NPSSFW) was held in Kolkata, India, on November 6-7, 2023. The main objectives of the first day of the meeting were to discuss the issues and challenges faced by small-scale fishworkers in the country and to strengthen the organization's efforts to address them. The primary objective of the second day of the meeting was to adopt the constitution of NPSSFW so as to provide a clear definition of small-scale fishworkers and indicate how the organization should operate at the state and national levels, with defined objectives and mechanisms to achieve the same.

At the meeting, Pradip Chatterjee, NPSSFW convener, placed the report on organizational progress before the national council. Representatives from small-scale fishworker organizations of 12 states and Union Territories reported on the situation of fisheries in their respective areas and the status of their struggle for livelihood. N. Venugopalan of ICSF made a presentation on titled 'Climate Crisis Impact on Fisheries and Fishing Communities', also speaking to the ways and means needed to address the problem.

Nandkumar Pawar and Sunil Dubey, along with Ramanand Wangkheirakpam, placed reports on the work of the ports and wetland committees, respectively. Pradip Chatterjee and Siddharth Chakravarty placed the draft constitution of NPSSFW. There were also in-depth discussions on the situation of women fishworkers, their demands and participation in the organization and the movement. Several decisions taken at the meeting will set the course of the movement. Five are worth mentioning.

Right to Water Campaign:

The national council reiterated the observation of NPSSFW that the small-scale fishworkers in both marine and inland sectors need legally recognized right to access the basic natural resources of their livelihood, that is, water bodies and fish resources. Neither do they have any legal right to protect the water bodies or fish resources. This has been a universal deprivation and the root cause of the sufferings of the small-scale fishers and fish farmers. It was resolved that NPSSFW will strengthen the 'Right to Water' campaign by connecting it with the specific conditions prevailing in every fishing community area, on the one hand, and by connecting the demands raised under specific area conditions into a national campaign, on the other.

Climate Justice: The council observed that the small-scale fishworkers as a community are least responsible for the climate change, yet they suffer the worst on account of it. The actors that reaped huge profits from fossil fuels have been the most responsible for precipitating the climate crisis. Meanwhile, government policy does little to address these actors. NPSSFW demands that the fossil fuel producing and using companies must pay for the damages of the climate crisis. Climate-resilient livelihood practices must be promoted. Pollution and encroachment of water bodies and destructive overfishing must be stopped to enhance the capacity of small-scale fishworkers to cope with the climate crisis. This discussion iterated the position of NPSSFW and to strengthen relations with other natural resource-based communities at international climate negotiations.

This article is by the NPSSFW Secretariat (npssfw@smallscalefishworkers.org/npssfw.delhi@gmail.com), India



Group Photo at the National Council Meeting of NPSSFW. A road map for proceeding with the constitution was agreed upon and a committee was appointed to oversee the process

Ensuing General Elections: The council observed that NPSSFW is duty-bound to undertake the following:

Protect the interests of the members of NPSSFW and make the political parties sensitive to the united voice of the small-scale fishworkers; submit a charter of demands on the main points to the political parties and present them time lines to implement them; prepare a manifesto for fishworkers to be published in Indian news outlets and social media; and undertake a continuous ground-level movement at all levels to carry forward the demands.

Women's inclusion and empowerment: Women fishers face barriers in entering the fishworkers' organizations due to societal norms, both at the community level, as well as the organizational level. To strengthen women's participation, these obstacles must be tackled through representation of women at all levels of the organization, as well as mobilizing them on women's issues at all levels of governance. Women fishworkers, who shoulder the responsibility of reproduction of life within households, also bear the burden of fishworkers' issues not only at work but also in their household tasks. Most often, only the livelihood space issues are addressed but not the mechanisms that affect the household. Women fish vendors play a crucial role in the supply of fresh fish to households. Society overlooks this critical role in providing nutrition. There are caste-based exclusions in

accessing water bodies. Women fishers bear the burden disproportionately. As part of their empowerment, women fishworkers need to develop their organizations and lead them as an integral part of the larger fishworkers' organizations. The addressing of these matters was taken up affirmatively in the drafting of the constitution with the view of building an inclusive and representative federation of unions.

Adoption of the constitution: The organizational expansion, increasingly covering new areas and categories of fishworkers in both marine and inland sectors, called for adoption of a democratic constitution for it as a federation of trade unions. The meeting discussed the main text of the constitution with its members. They made several suggestions for strengthening the organization's constitution. A road map for proceeding with the constitution was agreed upon and a committee was appointed to oversee the process. ❧

For more

National Platform for Small-Scale Fishworkers (NPSSFW)

<https://smallscalefishworkers.org/small-scale-fish-worker-organisations/national-platform-for-small-scale-fish-workers-inland/>

Freshwater Blues

The scarcity of freshwater fish resources in the eastern Indian state of West Bengal highlights alarming trends in inland capture fisheries

On a rainy day in August, when the availability of fisheries resources is high in the Teesta river here, Bimal Das returned from a four-hour fishing trip with only three kg of fish. While sorting the fish from the ice slabs, a dejected Das contemplated quitting fishing to looking for jobs elsewhere. All across the northern part of the Indian state of West Bengal, fishers like Das are faced with the dire crisis of fish scarcity, pushing them out of inland capture fisheries.

The freshwater aquatic ecosystem of the northern region of the state, once a biodiversity 'hot spot', is now threatened by multiple anthropogenic activities. Such threats not only impact the freshwater biodiversity and fish availability but also livelihood viability of the small-scale fishers. Considering cases from riverine ecosystems in four northern districts of West Bengal, a study tried to understand the ecological, social and political drivers of the vulnerability of small-scale fishers engaged in inland capture fisheries.

West Bengal is called *nodimatrik desh*, meaning the 'land of rivers'. It has a diverse riverine system stretching up to 2,526 km with rivers and canals. The northern part, commonly called 'North Bengal', comprises the districts of Darjeeling, Kalimpong, Jalpaiguri, Alipurduar, Coochbehar, North Dinajpur, South Dinajpur and Malda. These host a diverse freshwater habitats, both rain-fed and snow-fed by the Himalayan rivers. Rivers here include Teesta, Jaldhaka, Atrai, Raidak, Punarbhaha, Tangon and their tributaries. They host a rich faunal diversity, making them ideal for fishing.

Although fishing is not a predominant occupation in North Bengal, a significant population of rural communities belonging to the

backward castes depend on riverine capture fisheries. The fisheries resources in the major rivers have declined significantly, not only from destructive overfishing, but due to external anthropogenic causes. Resource degradation also stems from water control through dams and barrages, abstraction of river water for irrigation, upstream sedimentation due to deforestation, and mineral extraction from river banks, among other factors. These negatively impact the vibrant capture fisheries that provide livelihood and nutritional security to rural communities.

The importance of capture fisheries in alleviating poverty and their contributions to regional nutritional security do not get their due

National policies overlook such negative impacts on capture fisheries because dependence on fishing is seen as a cause of poverty and a barrier to 'development'. The importance of capture fisheries in alleviating poverty and their contributions to regional nutritional security do not get their due. Resource degradation forces fishers to either exit from the sector entirely or shift to fish vending in a highly competitive market of non-native species of fish arriving from other states.

The study analysed such trends from a social-ecological systems approach. It highlighted that such emerging crises are, firstly, located in discursive narratives of river water use; secondly, arise from an inadequacy in governance systems to

This article is by **Amitrajit Chakraborty** (amitrajit.chakraborty21_dev@apu.edu.in), a researcher at the National Platform for Small Scale Fish Workers (NPSSF), India

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A fisher operating a lift net in the downstream of Teesta river, West Bengal, India. The nature of fishing in the rivers Teesta, Jaldhaka, Atrai, Raidak, Tangon and Punarbhaba is small-scale

manage resources sustainably; and, thirdly, occur due to a lack of political will to support small-scale fishing communities to sustain their livelihood and integrate them in governance processes to manage and protect water bodies.

level gradually recedes after the month of November, especially in downstream areas; in some cases the rivers dry up completely until the monsoon rains. In upstream areas, the rivers retain water through the year.

Fishers in the upstream areas usually set sail on boats where water currents are stronger. They are usually gill-nets. In some cases, they cast their nets from the river bank as well. In the downstream areas of the rivers, where the waters are shallow and currents weaker, fishers cannot use boats. Here fishers mainly use cast nets, stake nets, lift nets and scoop nets, built for manual operation without being attached to the craft. Such gears are stationed on specific fishing grounds and are not mobile in nature.

The catch per unit effort (CPUE) in riverine capture fisheries in North Bengal is extremely low. The average CPUE in upstream areas is five kg per day, whereas in downstream areas it drops to three kg per day. Fishers say the CPUE is gradually diminishing over

The catch per unit effort (CPUE) in riverine capture fisheries in North Bengal is extremely low

Features of small-scale fishing

The nature of fishing in the rivers Teesta, Jaldhaka, Atrai, Raidak, Tangon and Punarbhaba is small-scale. The fishers operate on handmade non-motorized craft and use passive gear to catch fish. Its norms and knowledge have been passed down through generations. The type of boat is determined by water availability in the rivers. The water

the years. They take the catch to the wholesale auction market to sell. The decreasing CPUE compels them to sell their catch themselves by the road near the markets at prices much lower than prevailing market rates. Lacking cold storage boxes to preserve their catch, the fishers have no option but to distress sell on the same day.

The fishing communities can no longer rely on capture fisheries for livelihood. Diversification into work as agricultural labourers or wage labourers and, in many cases, out-migration to other states for manual wage labour has become common.

The fishers in North Bengal belong to socially backward castes and are mostly migrants from Bangladesh. Due to their poor social status, their political representation in the local, state and national-level decision-making in the governance of water bodies is extremely marginalized. Further, in the absence of a legal or political identity as a fish worker, their work remains largely 'informal'. Their contribution to inland fish production goes unrecognized. According to the International Classification of Status in Employment (ICSE), determined by the International Labour Organization (ILO), such small-scale fishers engaged in inland fisheries can be classified as 'own account workers'. They fall under the broader category of 'self-employed' because they deploy their own labour and capital to catch fish and are not employed by anyone else.

Despite attempts of the state government to recognize fisherfolk by issuing identity documents called 'Matsyajibi Card', many fisherfolk remain outside the purview of the programme. As a result, they are deprived of the necessary social protection in the form of social insurance and assistance; they end up excluded from the safety net during the lean season when fishing is not possible, especially in the downstream areas. They are not allowed to exercise their customary rights to access and manage the water bodies.

In the absence of customary rights, the fishers have to engage in multiple political struggles to access the fishing grounds. Property relations in the



Source: https://en.wikipedia.org/wiki/List_of_rivers_of_West_Bengal

river stretches are not formally coded, leaving capture fisheries to open access. Consequently, powerful groups with the backing of local political elites from the ruling party often privatize river stretches informally, looting the fish resources by staking large mosquito nets across the rivers. Such cases have been reported by the traditional fishers of the rivers Tangon and Punarbhaba in the South Dinajpur district.

In this district, fishers operating near the India-Bangladesh border are often subjected to harassment by the Border Security Force (BSF). The soldiers frequently mistake the fishers as intruders or smugglers from the neighbouring Bangladeshi villages, confiscating their gear and catch, aggravating the already marginalized. The desperate fishers' ability to organize themselves becomes even more difficult when they are faced with challenges of daily survival, spending long hours in fishing or other wage labour work. In the absence of rights and entitlements to protect and manage the water bodies, fishing communities cannot mobilize themselves to overcome the

causes for depleting fisheries and the deteriorating health of the riverine ecosystem.

The decrease in fish stocks results from the negative impacts of anthropogenic activities on freshwater biodiversity. It is a misnomer to label

Without customary rights over the water bodies, disempowered fishers have no way to prevent unsustainable and damaging practices

them 'natural'. Based on fishers' responses, the causes and effects of the severe threat to the freshwater biodiversity is summarized in Table 1.

Apart from the weather variability from climate change, all the listed causes are directly related to human interventions—in the larger frame, climate change is anthropogenic, too. Dams and barrages on rivers to regulate

water flow dominates the development discourse. Benefits derived from them include production of 'green' hydroelectricity; irrigation; industrial and domestic use of water. Such development discourses do not account for the health of the aquatic ecosystem or the livelihood of those who depends directly on it. Dams seriously affect the movement of fish and spawning areas, thereby affecting fishers. Infrastructure on riverbanks disturbs spawning areas, resulting in migration of fish species.

From pollution to destructive fishing using poison and electricity, from the growth of hyacinths on channel inlets to sedimentation and mineral extraction, all the threats can be attributed to a lack of governance and protection of water bodies. Without customary rights over the water bodies, disempowered fishers have no way to prevent unsustainable and damaging practices. Everything speaks to inadequate governance mechanisms.

The cumulative impacts of social, political and ecological factors are

Table 1: The causes, the severity of each threat and its impacts on freshwater biodiversity and fish resources

Dams, barrages and barriers	High	Prevents movements of fish schools, isolates populations
Unpredictability of weather and variability due to climate change	High	Increasing water temperature breaches the thermal maximum of fish species, forcing them to migrate
Infrastructure development along riverbanks like roads, embankments, houses, bridges	High	Change in spawning areas
Destructive fishing with poison, electric shock, explosives	High	Depletes fish stock. Use of poison and electric shocks is a serious threat in the rivers of Alipurduar district like Raidak 1, Dhaula, Dharsi and Turturi
Water flow regulation by opening and closing of dam floodgates	Medium	Changes water level, disrupting spawning
Pollution, toxic waste from farmlands	High	Pollutes water bodies, depletes fish stock, depletes spawning grounds
Growth of invasive species like water hyacinth	High	Changes nutrient levels in water, hits food webs, destroys bottom habitats
Sedimentation	Medium	Disrupts the flow of river water and movement of fish
Mineral extraction, sand mining	High	Erosion of the river bank and bed, affecting the river's course and flow

forcing small-scale fishers to exit from inland capture fisheries, either fully or partially. The study found many fishers entering the fish vending business, buying non-local fish from auction centres to sell in the market. Which brings them in direct competition with existing vendors operating with a larger capital base. Such trends question the basis of nutritional security from the declining local catch. The fishers who have completely exited the sector lack adequate adaptive capacities to cope with the resultant vulnerability.

Policy: a wrong direction

The recent West Bengal Inland Fisheries Policy 2023 aims to conserve aquatic resources and enhance fish production. Yet fishworkers' bodies in the state are concerned; they say the policy lacks a well-defined framework of fishers' rights and roles. The organizations include the Dakshinbanga Matsyajibi Forum (DMF) and the Uttarbanga Matsyajibi Forum (UMF). It contains little to no mention of the current state of affairs of not only riverine capture fisheries but also reservoir fisheries. Nor to the large number of smaller tank and pond fisheries that have high contributions to fish production in the inland fisheries of the state, providing livelihood to many.

The policy prescriptions allow leasing out of water commons to private entrepreneurs through auctioning. This will alienate the small-scale fish workers from exercising their rights to access, protect and manage the water bodies. Enabling privatization of the water commons through a leasing system alienates the customary rights of small-scale fisheries; it is also antithetical to the cause of sustainability. It disrupts ecological health by introducing non-native species and encouraging the pursuit of intensive aquaculture and cage culture.

How can this be addressed? For one, the participation of the traditional fishing communities in co-management efforts, along with responsible state departments and research institutes in conservation and rejuvenation of fish resources in the rivers. The state's inland fisheries policy must prescribe measures to protect the rights of small-

Table 2: River-based distribution of fish species has become scarce in the past decade, according to a survey among traditional fishers

Rivers	Local Name	Scientific name
Atrai	Bacha	<i>Eutropiichthys vacha</i>
	Chela	<i>Chela cachius</i>
	Dari	<i>Schistura scaturigina</i>
	Chnada	<i>Pseudambassis baculis</i>
Tangon	Boal	<i>Wallago attu</i>
	Tengra	<i>Mystus vittatus</i>
	Ar	<i>Sperata aor</i>
	Boal	<i>Wallago attu</i>
	Bacha	<i>Eutropiichthys vacha</i>
	Tengra	<i>Mystus vittatus</i>
	Gagor	<i>Hemibagrus menoda</i>
	Ghaira	<i>Clupisoma garua</i>
	Kajoli	<i>Ailia punctata</i>
Punarbhaba	Bacha	<i>Eutropiichthys vacha</i>
	Ar	<i>Sperata aor</i>
	Tengra	<i>Mystus vittatus</i>
	Kajoli	<i>Ailia punctata</i>
	Chela	<i>Chela cachius</i>
	Bou	<i>Botia dario</i>
	Tinkata	<i>Pseudolaguvia shawi</i>
Teesta	Chitol	<i>Chitala chitala</i>
	Boal	<i>Wallago attu</i>
	Ar	<i>Sperata aor</i>
	Baghair	<i>Bagarius bagarius</i>
	Sillong	<i>Silonia silondia</i>
	Shorputi	<i>Puntius sarana</i>
	Shol	<i>Channa Striata</i>
	Puia	<i>Acanthocobitis botia</i>
	Bacha	<i>Eutropiichthys vacha</i>
	Kajoli	<i>Ailia punctata</i>
	Chapla	<i>Gonialosa</i>
	Pangash	<i>Pangasius pangasius</i>
	Ritha	<i>Rita rita</i>
Jaldhaka	Bata	<i>Labeo bata</i>
	Khoksa	<i>Barilius vagra</i>
	Kajoli	<i>Ailia punctata</i>
	Boirali	<i>Barilius barila</i>
Raidak	Ar	<i>Sperata aor</i>
	Boal	<i>Wallago attu</i>
	Ritha	<i>Rita rita</i>
	Kalbaush	<i>Labeo calbasu</i>

scale fisheries over water bodies. Small-scale traditional fishworkers are by far the largest non-consumptive primary stakeholders and natural custodians of

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Fishers preparing to cast their net from the riverbanks of Teesta river near the Teesta barrage, West Bengal, India. Enabling privatization of the water commons through a leasing system alienates the customary rights of small-scale fisheries

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For more

NPSSF website

<https://smallscalefishworkers.org/small-scale-fish-worker-organisations/national-platform-for-small-scale-fish-workers-inland/>

Poverty in small-scale fisheries: old issue, new analysis

<https://journals.sagepub.com/doi/10.1177/146499341001100203>

Profits and Perils of Farming Fish

<https://www.icsf.net/resources/profits-and-perils-of-farming-fish-case-studies-of-shrimp-and-carp-aquaculture-in-west-bengal-santanu-chacraverti-2022/>


SIFFS Workshop Report, 23-25 February 2010

<https://www.icsf.net/resources/workshop-on-small-indigenous-freshwater-fish-species-their-role-in-poverty-alleviation-food-security-and-conservation-of-biodiversity-siffs-workshop-report-23-25-february-2010-c-2/>

water bodies. Their inalienable rights to access and manage water bodies can ensure sustainable management of fish resources wherein stock replenishment is naturally facilitated alongside traditional fishing.

At every step of the governance of the inland fisheries, small-scale fishers and fish farmers must be consulted since their engagement in inland fisheries is directly linked to the health of the freshwater biodiversity. Extension of rights to water bodies and inclusion of unions and organizations of small-scale fishers in planning and management of fisheries resources can be a step forward. It will help build up the adaptive capacities of small-scale fishers, also facilitating conservation and rejuvenation of aquatic and fish resources in freshwater ecosystems. Further, the relevant state departments and governing bodies must monitor that all small-scale fishers engaged in inland fisheries are identified and registered in the national statistics. That will pave the way to cover them under a comprehensive social security framework, ensuring the delivery to fishers of the benefits accruing from

state and central fisheries policies and schemes.

Such an integrated ecosystem approach to inland fisheries, based on human rights, can have longstanding positive results to maintain the health of the freshwater ecosystem. It can protect small-scale fishers, while enhancing the production of native fish resources that have the potential to secure the nutritional needs of the community at large. 

Spawning, Banning, Learning

An analysis of spawning periods of marine fish resources along both India's west coast and east coast reveals differences in the peak spawning periods for pelagic and demersal stocks

A new analysis of the spawning period of species along both the coasts of India suggests it may be appropriate to review the timing of the seasonal closure of marine fisheries in India.

The analysis is based on 526 historic fish and shellfish spawning records over a 64-year period, on Indian fisheries in the Arabian Sea and the Bay of Bengal between 1954 and 2018. The spawning records on 129 species are contained in the Indian Marine Life Histories (INMARLH) database. Its analysis revealed that along the west coast, 69 per cent of the species spawn during the April-May period and 65 per cent in the November-December period. Along the east coast, 68 per cent spawn during March-April. There were differences in the peak spawning periods for pelagic and demersal stocks along both coasts.

Spawning refers to the reproductive process of fishes, where they release their eggs and sperm into the water to fertilize and produce offspring. It is an essential part of their life cycle and ensures the continuation of their species. The specifics of spawning can vary from species to species, sometimes significantly. It is influenced by the physiological and biological state of the animal, environmental cues and favourable ecosystems, among other factors.

In India, the spawning period or peak period of spawning of important marine finfish and shellfish resources has been relatively well-studied for the past several decades; several insightful reviews are also available. However, the methodologies applied to these studies are varied and, often, subject to inaccuracies. Since

Indian seas are situated in tropical and subtropical latitudes, the finfish and shellfish resources, in general, have short life spans, fast growth and protracted spawning periods with peaks. Information on spawning and other biological attributes of marine finfish and shellfish resources have been recently collated into a database called INMARLH, available from a public repository. This analysis draws

... the spawning periods of most species are timed in a manner that the progeny—larvae and juveniles—begin their life when there is maximum primary productivity in the seas

from this database to determine the spawning pattern of Indian commercial marine fishes.

This database is a collection of biological and fisheries information on marine fish and shellfish species published in research journals and reports between 1954 and 2018. The database contains 3,132 records on 644 fish stocks from the four coastal eco-regions of India, namely, northwest, southwest, southeast and northeast. The 644 stocks belonged to 133 species; 90 genera; 55 families and 19 orders. INMARLH contains information on the number of spawning months in a year of 129 species. They were further classified into those off the west coast (76 species) and those off the east coast (53 species). Based on the realm of occurrence, they were further categorized into pelagic (50 species) and demersal (79 species). All analyses were carried out using spreadsheets.

This article is by Mohamed KS (ksmohamed@gmail.com), Sathianandan T V (tvshedpl@gmail.com) and Vivekanandan E (evivekanandan@hotmail.com), Former researchers of the Central Marine Fisheries Research Institute, Kochi, India

SUNIL MOHAMED



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Fishing vessels docked near the Munambam fishing harbour, India. Conservation managers and fisheries policymakers may consider to revise the ban period and promote more effectively the long-term sustainability of marine fish populations in India

Table 1. The total number of records and species in the INMARLH database used in the present study.

	Total	East Coast	West Coast
Number of records	526	181	345
Number of species	129	53	76
Number of pelagic records	202		
Number of demersal records	324		

Statistic	NSM
Count (n)	526
Average	5.73
CV	74.41
Q1	3.00
Q2	4.00
Q3	7.00
Q4	12.00
Min	1.00
Max	12.00
Std Dev	3.00

Zooming out

The analysis of data shows that spawning occurs in all the months of the year. Along the west coast, 69 per cent of the species spawn at their maximum during March-May; a secondary peak of 65 per cent of the species is observed during November-December. The least number of species, 55 per cent, spawn during the monsoon period of June-September.

The difference between the maximum and minimum percentages is small. The relatively lower number of species spawning during the southwest

monsoon may also be due to poor sampling during the monsoon season. Off the east coast, the maximum number of species spawning observed during March-April was 68 per cent and a secondary peak of 57 per cent was seen in February-May. The least number of species spawning was 30 per cent, observed in September.

When the data is examined coast-wise and realm-wise, the results show a similar trend for both coasts. This is apparent in the month-wise data of pelagic and demersal species spawning along the west coast (see Figure 2). The

largest number of demersal species spawning is 72 per cent in October-December. The minimum number of demersal species spawning was 51 per cent in June. In the case of pelagic species, the maximum number of spawning species observed was 83 per cent in April-May; the minimum was 26 per cent in September. The difference between maximum and minimum in both demersal and pelagic species was significant, sometimes more than double.

Off the east coast, the spawning of demersal species peaked at 67 per cent in March-April; the lowest point observed was 43 per cent during September (see Figure 3). In the case of pelagic fish stocks, also, the maximum was 90 per cent observed during March-April; the minimum of 14 per cent occurred in September. The difference between maximum and minimum was substantial on the east coast in the case of pelagic and demersal stocks.

Our observations indicate that, in general, the spawning periods of most species are timed in a manner that the progeny—larvae and juveniles—begin their life when there is maximum primary productivity in the seas. This is especially evident along the west coast for both pelagic and demersal during the southwest monsoon. For demersal species, a clear secondary peak spawning occurs after the monsoon in November-December, probably timed to catch the secondary production peak during the pre-monsoon period.

These inferences need to be confirmed with more detailed studies on the life cycles of individual species. Also examined was the periodicity of spawning, that is, the number of months each species spawns. It was observed that the maximum number of species, 15-25 per cent, spawn for three to four months in a year along both the east and west coasts of India. Another 10-15 per cent of the species spawn for seven months and throughout the year. When the data was analysed, it was observed that 61 per cent of pelagic species had relatively shorter spawning periods of three to five months, while 58 per cent of the demersal species had comparatively longer spawning periods of four to seven months. More importantly, 18.2 per cent of the demersal species were spawning throughout the year.

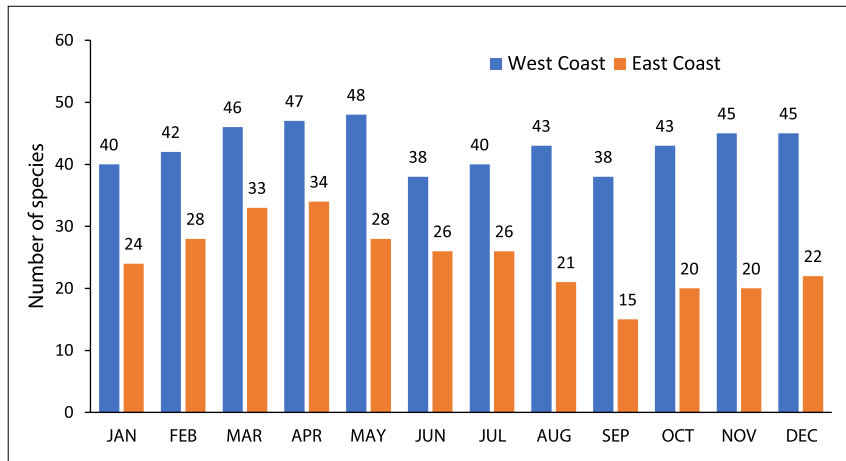


Fig.1. Bar chart showing the number of species spawning in different months of the year along both the west and east coasts of India. The total number of species over the year would exceed the actual number of species in the database because most species have prolonged spawning periods

The application

Protecting the spawning periods of fish is crucial for the conservation and sustainability of fish populations and marine ecosystems. To protect spawning periods effectively, it is important to establish and enforce regulations that

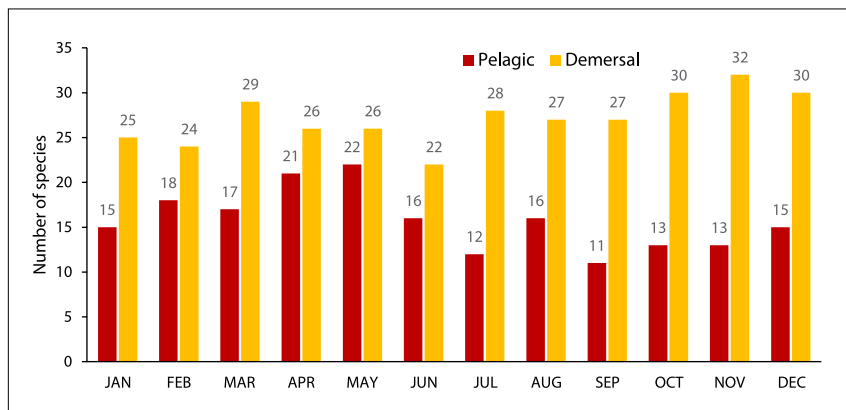


Fig.2. Bar chart showing the number of pelagic and demersal species spawning in different months of the year along the west coast of India

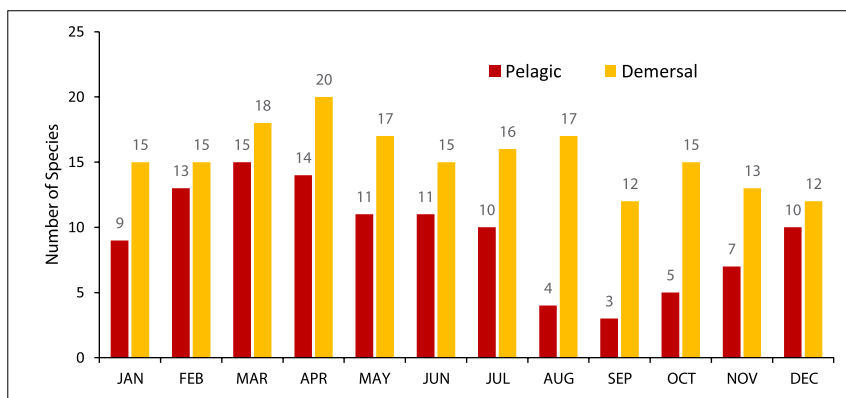


Fig.3. Bar chart showing the number of pelagic and demersal species spawning in different months of the year along the east coast of India

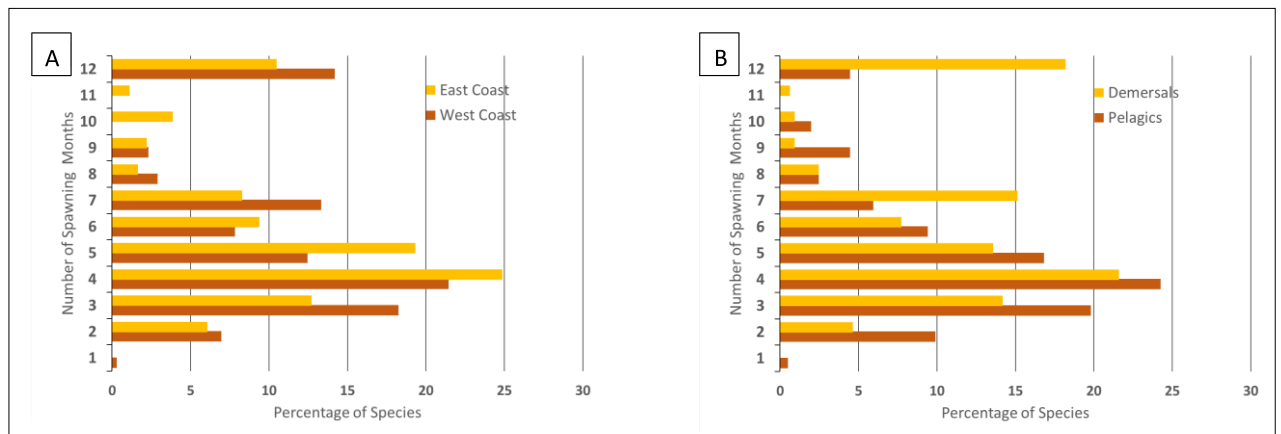


Fig.4. Chart showing the periodicity of spawning or the percentage of species that spawn for different durations (months) in a year on the east and west coasts (A) and among demersal and pelagic species (B) along both coasts.

restrict harmful activities during these times. This may involve implementing fishing bans, establishing protected areas, improving water quality, and minimizing disturbances to spawning habitats.


Some of the objectives for conservation are:

- **Reproductive Success:** The spawning period is a critical time for fishes to successfully reproduce and ensure their survival. By protecting spawning periods, we allow fishes to carry out their natural reproductive behaviours without disturbance or disruption, increasing the chances of successful reproduction and population replenishment.
- **Genetic Diversity:** Fish populations rely on genetic diversity for their long-term survival and adaptation to changing environments. Protecting spawning periods helps maintain healthy population sizes and allows for the mixing of genes between individuals. This genetic diversity enhances the overall resilience and adaptability of fish populations.
- **Population Maintenance:** Many fish species have specific spawning grounds or habitats where they gather in large numbers to spawn. These areas can be sensitive and easily disrupted by human activities such as over-fishing, habitat destruction or pollution. Protecting spawning periods ensures that these critical habitats remain undisturbed, allowing fish populations to maintain stable numbers and fulfil their ecological roles.
- **Sustainable Fisheries:** Fisheries management often includes

regulations and measures to protect spawning periods. By implementing fishing restrictions or seasonal closures during spawning periods, we can prevent recruitment over-fishing and the depletion of fish stocks. This approach supports sustainable fisheries by allowing fishes to reproduce and replenish their populations, ensuring a continued supply of fish for both ecological and human needs.

- **Ecosystem Health:** Fishes play crucial roles in maintaining the health and balance of aquatic ecosystems. They contribute to nutrient cycling, control populations of prey species, and serve as a food source for other organisms. Protecting spawning periods helps maintain healthy fish populations, which, in turn, supports the overall biodiversity and functioning of aquatic ecosystems.

While all points in the above list are important, preventing the fourth or recruitment over-fishing is the main basis on which India implements a seasonal fishing ban along both the east and west coasts. The ban is for 61 days from 15 April to 14 June along the east coast and 1 June to 31 July along the west coast.

Conservation managers and fisheries policymakers may consider this information to revise the ban period and promote more effectively the long-term sustainability of marine fish populations in India. It is also important to remember that biological information on species is always dynamic and subject to better understanding with time. 

For more

Indian Marine Fish Life Histories (INMARLH) database for determining resilience and vulnerability of tropical marine species

<https://www.seaone.org/data/00709/82124/>

An appraisal of the studies on maturation and spawning in marine teleosts from the Indian waters

<https://eprints.cmfri.org.in/1230/>

Application of biological and fisheries attributes to assess the vulnerability and resilience of tropical marine fish species

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0255879>

Seasonal Fishing Ban: Need for collecting and applying the right type of scientific information

<https://eprints.cmfri.org.in/14319/>

Unrecognized Tenure

The absence of tenure security threatens the traditional livelihoods of the fixed bag-net fishworkers in India's eastern state of West Bengal

Conflicts over use of natural resources are common in coastal areas globally. Fluid environmental frontiers, historical marginalization of fisher communities, and overlapping tenure systems coded in formal law or customary institutions make governance of coastal and marine resources complex. In the midst of such conflicts, fishworkers in small-scale fisheries (SSF) find themselves situated at the bottom of the ladder of development in terms of priorities, despite their useful contribution towards securing livelihoods of coastal communities and ensuring nutritional security of the global population at large.

In India, on the one hand, the absence of formally recognized tenure rights of small-scale fishworkers alienates them from the resources that form the basis of their social and cultural well-being. On the other hand, weak governance structures threaten the ecological sustainability of the resources which are claimed and contested by various user groups, including government institutions, civil society, private enterprises, marine fishing communities and the general public at large. In this article, we assess the implications of marine tenure systems on small-scale fishworkers practising fixed bag-net fishing (*behundi jal*) in the eastern Indian state of West Bengal.

Tenure in the international context

Concerns around the sustainability of marine fisheries have led to an increasing focus on the rights to use, access, manage and alienate marine resources. Broadly bundled together as 'tenure rights', these rights raise important questions around the social ties and institutions that govern such

resources. Understanding tenure systems requires an assessment of four broad aspects: the resource itself; those who possess rights to the resources; the rules and norms; and the authorities governing and managing the resources. A tenure system thus determines who can use which resources, and the duration and conditions governing such use.

SSF communities are widely acknowledged to be critical actors for ensuring sustainable and equitable utilization of coastal and marine resources. The environmental stewardship of SSF has found cognizance in international instruments such as the

In India, on the one hand, the absence of formally recognized tenure rights of small-scale fishworkers alienates them from the resources that form the basis of their social and cultural well-being

FAO's Code of Conduct for Responsible Fisheries (CCRF) and the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty (the SSF Guidelines). They prescribe that "small-scale fishing communities should have secure, equitable and socio-culturally appropriate tenure rights to fishery resources, fishing areas and adjacent land and forests" for their social and cultural well-being.

Within the broader rubric of tenure rights, customary tenure has been highlighted as a key component of tenure security for SSF. Defined as the norms regulating rights to resources that are enforced and managed by community institutions and non-State authorities, customary tenure is distinguished by its flexibility,

*This article is by **Shalini Iyengar** (shaliniyengar07@gmail.com), PhD Candidate, Department of Anthropology, Yale University, USA and **Amitrajit Chakraborty** (amitrajit.chakraborty@gmail.com), Researcher, National Platform for Small Scale Fish Workers (NPSSF), India*

dynamism and sensitivity to place and local moral economies. Critically, given colonial legacies and State interventions in fisheries, customary tenure interacts, and overlaps, with the formal legal system, and rarely functions entirely independently of the latter. In the fisheries context, this means that customary tenure relies on, and is impacted by, the formal legal system. In the next section we examine the formal legal system impacting customary tenure in coastal and marine contexts in India.

The legal setting

Coastal and marine fisheries in India are governed by a patchwork quilt of laws, rules and policies. At the constitutional level, in addition to the general environmental provisions, responsibility for coastal and marine fisheries is shared between the state and central governments. The former has the responsibility for tenure and fisheries within territorial waters and the latter beyond territorial waters. At the national level, the Government of

in relation to dwelling houses, boat-building and fishing activities. Equally significantly, the CRZ notification requires the creation of Coastal Zone Management Plans and local-level Coastal Zone Management Maps that must recognize and demarcate the fishing villages and common properties of the fisher communities as well as their fishing zones in the water bodies.

Taken together, it is arguable that the CRZ recognizes the presence of fishing communities and their traditional usage of coastal and marine resources. It is undeniable, however, that the CRZ grants no explicit protection to systems of customary tenure of SSF in India. When combined with increasing pressures on coastal land and marine space, efforts by governmental and private actors to enclose coastal areas for tourism and other activities, and poor governance overall, it is clear that tenure security for SSF faces grave threats.

In addition to the CRZ Notification 2019, the West Bengal Marine Fishing Regulation Act (WBMFRA), 1993, is the overarching state enactment for marine fisheries. While the WBMFRA does not explicitly reference customary tenure, it does, however, contain special protections for SSF. These include a heightened governmental responsibility for protecting SSF and creating special fishing zones for fishers using non-mechanized boats.

Fishing practices in each *khoti* are pursued following a set of rules and norms that uphold the principles of equity and collective action

India has issued the Coastal Regulation Zone (CRZ) Notification, 2019, under Section 3 of the Environment (Protection) Act, 1986. First issued in 1991, and then in 2011 and 2019, the CRZ notification has the stated mandate of conserving and protecting coastal and marine areas in addition to ensuring the livelihood security of fishers and other coastal communities.

The CRZ notifications have been extensively critiqued for their managerial approach towards the coast and a lack of focus on ensuring the rights and security of marine fishers. However, it is significant that while the notifications do not confer rights, they do recognize traditional rights of SSF. The notification makes several references to traditional rights and customary uses of fishing communities

Customary tenure and *behundi jal*

Customary marine tenure systems can be observed among the marine fishing communities of Purba Medinipur and South 24 Parganas in West Bengal, where production of dried fish follows an elaborate array of institutional arrangements from pre-harvest to post-harvest activities. Every year from the month of September until March, the marine fishing community from native and neighbouring villages of the two coastal districts come together to constitute social organizations known as *khoti*.

Fishing practices in each *khoti* are pursued following a set of rules and norms that uphold the principles of equity and collective action. That is to say, access to fishing grounds, and



With depleting fish catch and dramatic environmental change, a traditional way of life is under threat. Fishing practices in each *khoti* are pursued following a set of rules and norms that uphold the principles of equity and collective action

space on land for building living spaces and fish drying is distributed equitably among the fishing households in the *khoti* before the start of a fishing season. *Khotis* are usually responsible for determining who is permitted to join the community institution and for resolving disputes among their members.

The *khoti* is a gendered space. Fish work in the *khoti* is undertaken by family units where division of labour is based on gender roles. The men usually go fishing in groups of two or three on wooden motorized boats within the territorial zone until the limits of the fishing grounds of the *khoti*. After the fish is landed from the boats, the work of the women fish driers and sorters commences. They spread out the fish on the beach on top of nets which are laid out in front of the encampment of the *khoti*.

Once the fish is dried under the sun, the women carefully sort the fish, based on species and quality. The finer quality of the fish goes for human consumption whereas the second-grade quality goes for the fishmeal and fish oil (FMFO) industry, both bought and transported by the merchant or

dadondar. The women work either under the family units or, in some cases, as wage labourers in the *khoti* for a daily wage of INR 200-300, depending on the availability of work.

The fishing grounds are mapped and demarcated at the start of the season, where every fishing household is eligible for a stretch of the sea to stake their bag nets or *behundi jal* on bamboo poles. Fishing is based on lunar cycles. The fixed *behundi* nets, staked on poles, are lifted during the low tide to harvest the fish catch and automatically floats back on the water during the high tide. The technology of operating *behundi* nets, with their mesh size ranging between 10 mm to 24 mm, targets fish species such as small brown shrimp (*Metapenaeus monoceros*), ribbon fish (*Trachipteridae*), barramundi (*Lates calcarifer*), Indian anchovy (*Stolephorus indicus*), Bombay duck (*Harpadon nehereus*), golden spotted anchovies (*Coilia dussumieri*), hair-fin anchovy (*Setipina taty*), Indian white-prawn (*Penaeus indicus*), kuruma prawn (*P. japonicus*) and paste shrimp (*Acetes indicus*). However, over the years, the mesh size of the bag-nets has become smaller due to high demand from the

Recognizing and supporting systems of customary tenure is critical to ensure the resilience of marine fisheries

FMFO industry. This reduces scrap value from fishing effort, albeit at the cost of long-term sustainability of the marine ecosystem and available fish resources.

Threats to marine tenure

The tenure needs of the fishworkers in a *khoti* spans from the water to the land. However, in the absence of formal

and governance systems recognize the customary tenure systems practised by small-scale fishers. These systems are unwritten but they have widespread acceptance from the community members.

Recognition of customary tenure systems would imply that the State recognizes that small-scale fishers have a preferential right to access, use, manage and conserve coastal resources. It would grant them protection from State and non-State actors seeking to displace them, and would ensure that their traditional fishing practices and ways of life can be sustained and passed on to future generations.

recognition of their tenure rights, the viability of their social organization and traditional practice is subject to multiple threats.

Small-scale fishers lack formal land rights in coastal areas and, as a result, they have faced consistent threats of displacement from infrastructural projects for promotion of coastal tourism, national defence, trade and commerce and other developmental initiatives. For example, the unlawful development of hotels in violation of CRZ rules along the Mandarmani coast has displaced fishing communities.

The proposed development of a marine drive road, the Tajpur deep-sea port in Ramnagar, and a missile launching platform in Junput have been promoted on the grounds of enhanced connectivity, increased economic activity and national security, respectively. However, the cost of such developments is almost always borne by the small-scale fishers who find themselves increasingly erased from the Bengal coast.

Conclusion

Small-scale fishers rely on both land and sea for their customary rights and livelihoods. By practising ecologically sensitive and sustainable modes of fishing, they are custodians of the fragile coastal and marine resources that are critical to both the environmental health and food security of the entire nation. In order to ensure that they are allowed to thrive in coastal spaces, it is imperative that our legal

For more

A Review of Governance and Tenure in Inland Capture Fisheries and Aquaculture Systems of India

<https://www.fao.org/3/cb8615en/cb8615en.pdf>

Report on National Training of Trainers (TOT) Workshop on the SSF Guidelines (Marine Fisheries) October 13-15, 2022, Asha Nivas Social Service Centre, Chennai, India

https://www.icsf.net/wp-content/uploads/2023/01/930.ICSF_Marine_TOT_Report_2022.pdf

Profits and Perils of Farming Fish: Case Studies of Shrimp and Carp Aquaculture in West Bengal

https://www.icsf.net/wp-content/uploads/2022/12/930.ICSF228_West_Bengal_Santanu_Chacraverti.pdf

Social Development and Sustainable Fisheries: West Bengal

https://www.icsf.net/wp-content/uploads/2023/06/930.ICSF243_Social_Development_West_Bengal_India.pdf

Making Small-scale Artisanal Fishing Zones Work!: Research study on the tenure rights of the most vulnerable and marginalized fishers in Srikakulam, Visakhapatnam and East Godavari districts of Andhra Pradesh

https://www.icsf.net/wp-content/uploads/2022/10/930.ICSF223_Andhra_Pradesh_Tenure_Right.pdf

Exiled at Home

Every day, in the guise of development, new threats undermine the livelihood opportunities of fishing communities in the Sundarbans, the world's largest mangrove forest

The Sundarbans comprise a mangrove area in the delta formed by the confluence of the Ganga, Brahmaputra and Meghna Rivers in the Bay of Bengal. Spread across parts of India and Bangladesh, it is the world's largest mangrove forest. And it has fallen prey to capitalism. Unbridled and indiscriminate growth of tourism is wreaking havoc on the ecosystem. Activities of the forest department threaten to evict the poor and marginalized residents of the area; livelihoods are under constant attack; new threats undermine the livelihood opportunities of the fishers every day.

Today, the people who depend on the mangrove ecosystem for their livelihoods have become exiles in their own houses. They barely manage to subsist as mangroves are cut down, as hotels come up in hordes. The 'tiger widows' and their poverty-stricken neighbourhoods have become special tourist attractions. Resorts and watch towers are springing up in forest department offices and camps deep inside the forest, defying the actual goals of Project Tiger.

The fishers in the area are not allowed to use mechanized boats for fear of pollution, even as thick smoke billows from tourist boats fitted with high-powered engines. Legal restrictions are meant only for the poor, it seems, and do not apply to the tourism business and the activities of a favoured few.

The process of evicting forest-dependent people from the Sundarbans began in colonial India and continued after the country's independence. The present government of the province of West Bengal has set out to hammer the final nails into the coffin. Recently, the

process of incorporating 1,044.68 sq km of reserve forest in Matla, Raidighi and Ramganga ranges into the Sundarban Tiger Reserve (STR) has been completed. The 2023 proposal by the Chief Wildlife Warden of West Bengal, submitted to the National Tiger Conservation Authority for technical clearance and cleared in January 2024, spares not a shred of thought for the fate of ordinary people dependent on these forests. Several wildlife organizations and tourism entrepreneurs have backed the initiative.

The process of evicting forest-dependent people from the Sundarbans began in colonial India and continued after the country's independence...

Of the above-mentioned reserve forest situated between the Matla and Thakuran Rivers, 556.45 sq km has already been designated as the West Sundarban Wildlife Sanctuary. In the remaining 488.23 sq km area, fishing was permitted. But that area has now been acquired for STR. What then is left for the fishers? Forest officials and wildlife lovers have a pat answer: What is there to fear? Although it has been brought under STR, the area has been designated a 'buffer' and remains an area where fishing is permitted.

However, this bureaucratic reply does not dispel the fishers' fears; they know after some time the entire buffer zone will become a Critical Tiger Habitat (CTH) and fishers will be evicted. This happened in 2007, when, in addition to the entire core area of STR, 369.53 sq km of Kholabada, a fishing-

*This article is by **Milan Das** (mdas1640@gmail.com), General Secretary, Dakshinbanga Matsyajibi Forum (DMF) and Secretary, National Federation of Small-scale Fishworkers (NFSF), India*

MILAN DAS



Natural fishing harbour inside Chandanpiri Forest in Paschim Bada of Sundarban, India. With the Sundarbans becoming a reserve forest, the communities lost their intrinsic right to pursue livelihoods in the area

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permitted area, was declared a CTH; the fishers were expelled. Traditionally, the fishers have used mechanized boats in the above-mentioned fishing area. If that now becomes a 'buffer' within STR, mechanized boats will no longer be permitted, as these are not allowed within STR. Yet, these same rules do not apply for surveillance and tourist boats that operate with high-powered engines.

In 1928, the colonial government imposed restrictions on forest-based livelihoods by declaring most of the Sundarban Protected Forest in the undivided 24 Parganas district as a reserve forest. The remaining Protected Forest was also declared reserve forest in 1943.

With the Sundarbans becoming a reserve forest, the communities lost their intrinsic right to pursue livelihoods in the area. The few livelihood avenues and practices that remained continued only at the whim

and fancy of the forest department. In 1973, the government took the first step to evict fishers from the rivers, creeks and forests of the Sundarbans. In the Sundarbans forest, estimated to be of some 4,264 sq km in area, the Pub Bada, situated east of the Matla River, had the most fish wealth. In this area was established STR, measuring 2,584.89 sq km. Out of this area, 1,330.10 sq km was declared as the 'core' area, kept out of bounds for fishers.

In 1976, certain parts outside the core, namely, the 'buffer', were designated the Sajnekhali Wildlife Sanctuary (WLS), measuring 362.40 sq km. Thus, after 1976, fishing was permitted in only 892.39 sq km. The remaining 1,692.50 sq km of STR was definitively out of bounds for fishers. They called this the Bandhabada, meaning forbidden forest. According to the fishers, 70 per cent of the total fish of the entire Sundarbans are to be found in this area; the remaining

892.39 sq km of Kholabada (the open zone) yields only 15 per cent of the fish available in the entire Sundarbans.

Before STR was established in the 2,584.89 sq km of forest, there were about 8,000 fishing boats. After STR was established, only 923 boats were given boat license certificates (BLCs) for fishing in the 892.39-sq km Kholabada area. After STR was established in 1973, 1,679.11 sq km of forest area on the west side of the Matla River, referred to as the Paschim Bada, remained as reserve forest. Three years later, in 1976, about 44 sq km of this forest was declared a wildlife sanctuary. Only 5 per cent of the total fish in the entire Sundarbans can be found there. The remaining 1,635.16 sq km of reserve forest account for only 10 per cent of the total fish production from the Sundarbans. Around 3,700 boats have been granted BLCs and allowed to access this 10 per cent.

The number of fishers fishing in the Sundarbans has been estimated as over 100,000. Some fish in boats while others, fishing in waters adjoining their villages, often do not need boats. However, only those fishing in boats with proper BLCs have legal access to the forests. Unfortunately, only 4,623 boats have permission to fish in the Sundarban forests (923 for the original STR and 3,700 for the non-STR reserve forest). The usual number of fishers per boat is three. Therefore, about 14,000 fishers have legal access to the forests.

Hunger overrides all legislation, however. Thus, most of those fishing or hunting crabs in the traditional fishing grounds of the Sundarbans do so without permission. As a result, they are now seen as unwanted 'intruders' in the very areas they have been frequenting for generations to earn a livelihood. When caught by forest department guards, the fishers are subjected to indescribable humiliation—hefty bribes, beatings, destruction of food and water, confiscation of fish and crabs, and pouring of water into the oil tanks of mechanized boats. The officials often destroy the rudders and oars of the boats.

To evade the forest department officials, fishers row their boats deep

into the narrow forest creeks, where many fall prey to tiger attacks. They thus jeopardize the future of the entire family for the prospect of a little extra income. Even those with BLCs are not immune from persecution. Since the Kholabada has fewer fish resources, the fishers also enter the core or WLS areas to fish. The punishment is a fine of ₹1,150. A second-time offender must pay twice that amount. The third-time offender must pay twice the amount paid for the second offence, and so on. This principle of proportionately increasing fines results in extortion with impunity by government officers and employees.

In time, the boats with BLCs become old and break down. Added to that fact, many BLC owners have quit fishing but, for reasons unknown, their licences are not cancelled. The BLCs continue to be rented out as belonging to 'absentee owners'. Even when a BLC is cancelled, the forest department takes no initiative to re-issue it in the name of some other eligible fisher. Those who do not own a BLC try to rent one to avoid harassment. However, the demand for BLCs is many times greater than the number of BLCs available for rent. Hence, the rent keeps increasing and has now exceeded ₹100,000.

The Kholabada area of the STR, which requires high-rent BLCs, has shrunk in size. In 2007, the forest department declared a further area of 369.53 sq km as CTH. This brought down the area of Kholabada to only 522.86 sq km. It was this part of Kholabada that, along with the WLS, mentioned as a 'buffer' in 2009. Further, 556.45 sq km of the 1,635.16-sq km fishing area was declared as the West Sundarban Wildlife Sanctuary in 2013. The catch area was thus reduced to 1,078.71 sq km. In this way, the fishers have been steadily pushed into an ever-decreasing area of operation. This is how, for 50 years since 1973, the fishers of the Sundarbans have continued to retreat. In the last 50 years, about 50,000 boats belonging to the poor marginal fishers of the Sundarbans have been seized by Forest Department officers and have been rotting in its offices. Depending on

MILAN DAS



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Fishing in Pub Bada, Sundarban Tiger Reserve, India. Legal restrictions are meant only for the poor, it seems, and do not apply to the tourism business and the activities of a favoured few

size and quality, these boats are valued between ₹30,000 and ₹300,000. At an average price of ₹50,000, the total loss is estimated at ₹2,500 million.

Around 500,000 nets of the poor fishers seized by forest department officers have been ruined. Each net costs anything from ₹3,000 to ₹30,000. At an average of ₹5,000, the total loss is about ₹2,500 million. In the last 50 years, about 8,000 women have become widows after their husbands fell prey to tiger attacks. How does one estimate the monetary value of such a loss? However, the government has come up with a figure for the compensation! The family of a fisher who dies in a tiger attack gets a total of ₹1,24,000. Of this, ₹500,000 is payable by the forest department; ₹500,000 from the Prime Minister's Matsya Sampada Yojana; ₹200,000 from the state government's Matsyajibi Bandhu Scheme; and ₹40,000 from

the National Family Benefit Scheme (NFBS). (Whether the fisher's family actually gets all this money in hand is a different question altogether!) Thus, by government estimates, the compensation handed out to the 8,000 fishers who died in tiger attacks in the last 50 years is ₹992 million! at current rates. But what price can be fixed for all the injuries, humiliation and tears that, for the past 50 years, hundreds of poor marginalized fishermen have had to endure?

What has been gained from the Sundarbans in the last 50 years? Reportedly, there are only 103 tigers left, 79 of which live inside STR and the remaining 24 in the reserve forests. The fishing community has had to bear the cost of supporting these tigers, instead of the society at large. When STR was established, it had no legal basis. Neither did the 923 BLCs originally issued. And how was this number

arrived at? This question has not been answered by the STR administration till date. The forest department did not feel the need to consult with, and obtain the consent of, the fishers dependent on the forest before declaring the West Sundarbans Wildlife Sanctuary in 2013. Also, before finalizing the decision to include 1,044.68 sq km of the forest area of Matla, Raidighi and Ramganga ranges of the three reserve forest ranges in the STR, the fishers were not consulted even, let alone asked for their consent.


As a result of this scheme, only two ranges—Bhagbatpur and Namkhana—will remain outside STR. Soon, these two ranges will also enter STR as the latest in this 100-year long conspiracy to evict fishers from the Sundarbans. The impending disaster affects not only the fishers of the Sundarbans, but also the villages near the Sundarban forests. One often hears of a tiger entering a village. Why has it done so? The answer is evident. The Royal Bengal Tiger finds it difficult to get the food it requires within the forest. A tiger consumes five to 15 kg of meat a day and a full-sized male tiger can eat even up to 30 kg in a day. On average, if a tiger consumes roughly 10 kg of meat per day, then, in a year, an average of about 3.65 tonnes of meat will be needed per tiger. Thus, in round figures, a hundred tigers in the Sundarbans require 365 tonnes of meat annually. If the average weight of a full-grown wild boar or deer is 50 kg, then 7,300 such animals will be needed to feed 100 tigers in a year.

Besides, there are animals like jackals, fishing cats and so on in the forest which also need meat. With so many animals getting killed in a year, how long will the Sundarbans be able to provide sustenance for 103 tigers? And what if, in the coming days, the number of tigers increases from the current level of 103? Unless there are appropriate plans for meeting the nutrition needs of an increasing tiger population, what is to prevent the tigers from entering the forests adjoining villages of the Sundarbans in search of food?

These questions point to another dilemma. As the number of wild animals being slaughtered in the Sundarbans forests to provide for 103 tigers is so large, how many wild animals other than tigers are left surviving in the forest? And if they are surviving in ample numbers, then a doubt arises: are there really 103 tigers in all in the Sundarban forest? Or is there some other story behind the immense expenditure, endless persecution and monumental injustice being perpetrated in the Sunderbans?

In order to display benevolence and good faith, and build stable relations with the villagers, the forest department is undertaking development work by bringing the villages adjoining the forest under Joint Forest Management Committees (JFMCs). However, some argue that the real objective of the move is to use the JFMC members to gather information about those who are fishing in the forest without permission. Moreover, providing the JFMC villages with special financial facilities creates bad blood between the villages receiving the benefits and the remaining. Therefore, when, in the not-too-distant future, the villages adjoining the forests that receive benefits need to be evacuated to increase the area for tigers, these villagers will not receive sympathy and support from their unprivileged neighbours.

Largest mangrove forest

Over 100,000 poor fishers of the Sundarbans remain endangered as the state government of West Bengal, with the active co-operation of some wildlife conservation NGOs and the tourism business sector, continues to devastate the largest mangrove forest in the world. 

For more



Unchecked avarice and abuse of power push Sundarban fishers to the brink

<https://milandas1978.blogspot.com/2024/11/unchecked-avarice-and-abuse-of-power.html>

The Sundarbans Fishers: Coping in an Overly Stressed Mangrove Estuary

<https://www.icsf.net/wp-content/uploads/2015/09/930.ICSF145.pdf>

Profits and Perils of Farming Fish: Case Studies of Shrimp and Carp Aquaculture in West Bengal

https://www.icsf.net/wp-content/uploads/2022/12/930.ICSF228_West_Bengal_Santanu_Chacraverti.pdf

Fishing Community Issues in the Sundarban Tiger Reserve (STR): Report

<https://www.icsf.net/wp-content/uploads/2009/09/930.ICSF025.pdf>