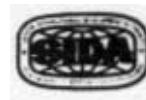


# BAY OF BENGAL NEWS



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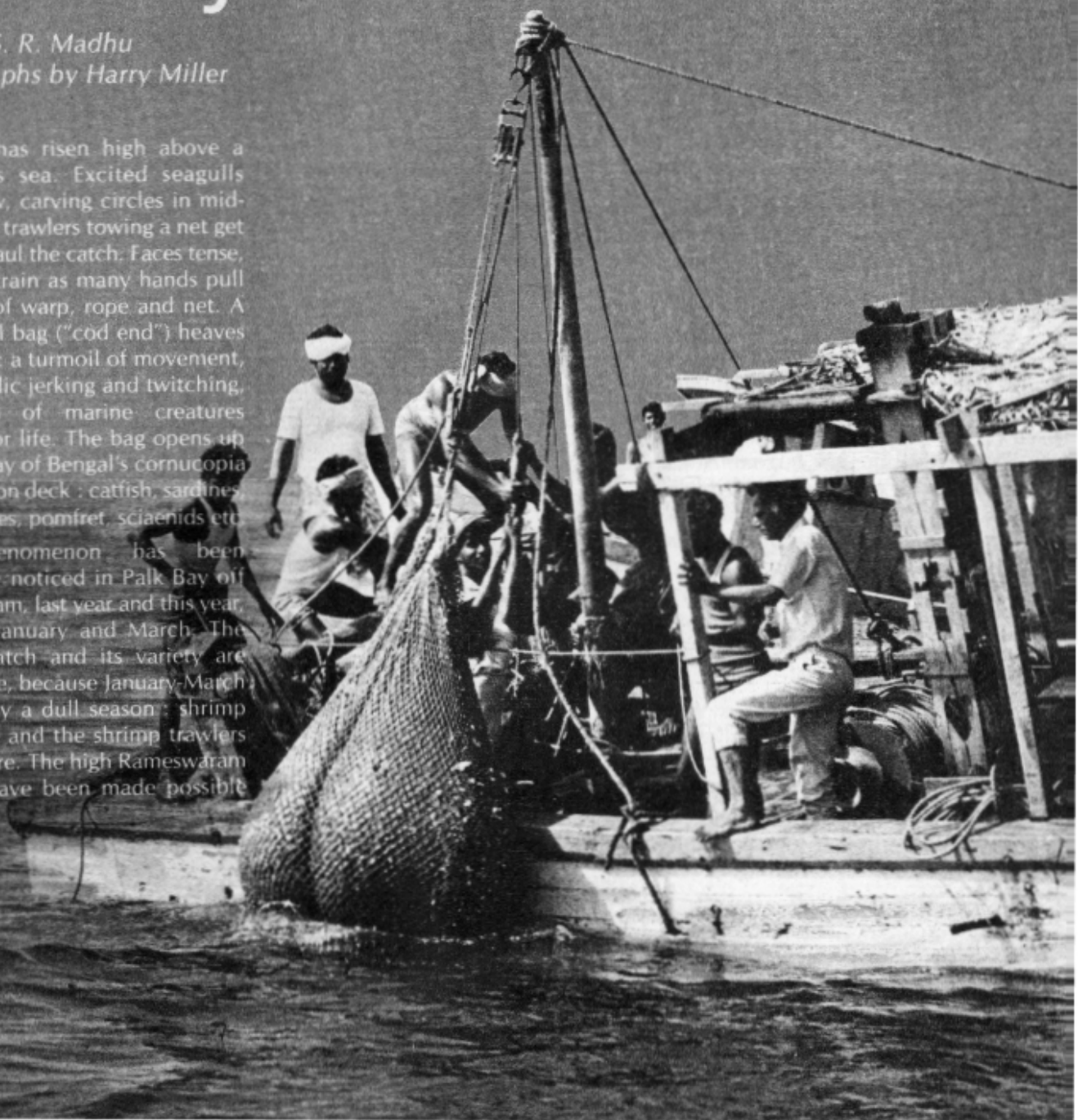
A PUBLICATION OF THE  
BAY OF BENGAL PROGRAMME  
FOR SMALL-SCALE FISHERIES DEVELOPMENT

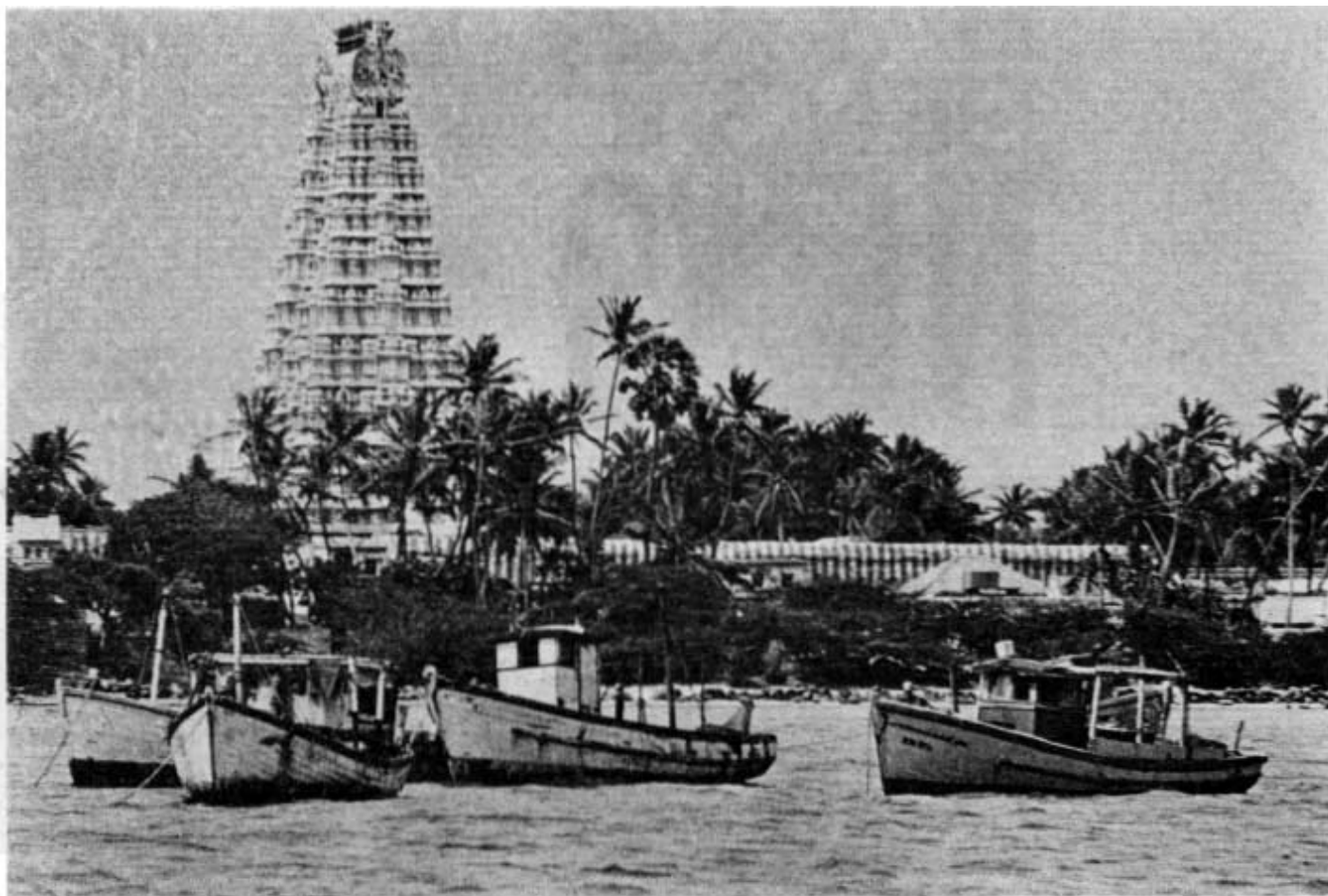
## A seasonal bonanza for Palk Bay fishermen

*Text by S. R. Madhu*

*Photographs by Harry Miller*

The sun has risen high above a boisterous sea. Excited seagulls swoop low, carving circles in mid-air, as two trawlers towing a net get ready to haul the catch. Faces tense, muscles strain as many hands pull up yards of warp, rope and net. A giant trawl bag ("cod end") heaves into view: a turmoil of movement, a spasmodic jerking and twitching, as scores of marine creatures struggle for life. The bag opens up and the Bay of Bengal's cornucopia pours out on deck: catfish, sardines, silver bellies, pomfret, sciaenids etc. This phenomenon has been repeatedly noticed in Palk Bay off Rameswaram, last year and this year, between January and March. The size of catch and its variety are remarkable, because January-March is normally a dull season: shrimp are scarce and the shrimp trawlers keep ashore. The high Rameswaram catches have been made possible





At Rameswaram, the Varadarajaswami shrine looms high above the trawlers and palm trees. (Pic: G. Karthik)

by the high-opening bottom trawl, a gear introduced to Tamil Nadu by the BOBP. (See *Bay of Bengal News*, January 1981 and September 1981.)

Conventional shrimp trawls scrape the bottom of the seabed to catch shrimp. Gillnets used by traditional craft such as vallams catch the surface fish. But the thick middle segment of the sea has remained virgin, and this is what the high-opening bottom trawl can tap. "The middle segment is rich all along the coast of India", says an expert — "from Paradeep, Orissa, in the east till Kanyakumari in the south east and again up along the west coast from Kerala to Gujarat".

"We never knew that so many fish varieties could be caught here", says a Rameswaram fisherman. "The *meen madi* (as the high-opening bottom trawl is known in Rameswaram) is in fact a golden net", says another fisherman.

The gold poured out of the sea during February and March 1982, as never before, in the form of white pomfret. Trawlers that went out to the sea in pairs towing the *meen*

*madi*, landed kilo after kilo of this rare species — on some occasions as much as 20 tons of pomfret on a single day. In March 1982, some 650 pair trawling operations off Rameswaram and Mandapam yielded a total of 750 tons of fish including about 350 tons of pomfret. The total catch from February to April 1982 which included sardines, sciaenids, catfish, silver bellies and rays and some miscellaneous fishes was about 1160 tonnes.

Said a 110-year old man near Rameswaram, father of fisherman Santiago: "Never in all my life have I seen pomfret landings like this." Said two scientists of the Central Marine Fisheries Research Institute (CMFRI), who conducted a study of the pomfret phenomenon of 1982 "It would seem that this valuable resource was not being exploited all these years because of lack of a suitable gear. It remains to be seen whether in the coming years, trawling operations during this particular period would bring in pomfrets in such large quantities as to make it an additional regular seasonal fishery".

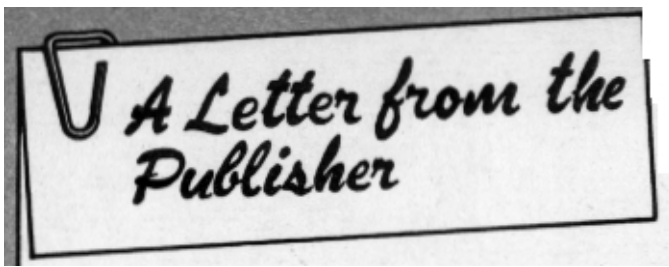
The BOBP first tried out high-opening bottom trawls in Mandapam in March 1980, then for about a year in Tuticorin, Madras and Mallapatnam, with BOBP fishing technologist G. Pajot and consultant John Crockett making several visits to these places. Several private operators started using the trawls, and BOBP engaged an experienced net-maker, Ezhumalai, to help them. Two officials of the Tamil Nadu government, S. Pandurangan and P. V. Ramamoorthy, were trained in the operation of the gear.

Experimental work on high-opening trawls by BOBP ceased in May 1981. But systematic dissemination of this technology to private operators was taken up through Ramamoorthy, Pandurangan and Ezhumalai.

Pandurangan and Ramamoorthy cite four reasons for the success of high-opening bottom trawls:

- a higher vertical mouth opening (3 metres) than conventional trawls (one metre);
- a wider sweep area, larger net-meshes, minimum resistance and more towing speed.

(Continued on page 4)



## FISHERY RESOURCES IN THE BAY OF BENGAL

Till the end of the last year the Bay of Bengal Programme was funded entirely by SIDA. From this year, a new module funded by the UNDP has been added to the Programme. It is a project entitled Marine Fishery Resources Management in the Bay of Bengal. It will have a duration of four years, 1983 - 86, and the technical work will be led by a senior fishery biologist.

The main purpose of the project is to assist the countries bordering the Bay to create a regional mechanism to assess and monitor the fishery resources, and in so doing to improve both resources knowledge and assessment methodology. Emphasis will be given to fish stocks shared between two or more countries. While none of the stocks in the region are shared by all, the fisheries of neighbouring countries do overlap. Instances are those of India and Sri Lanka in the Gulf of Mannar and Palk Bay; the Hilsa and other fisheries of the countries bordering the upper part of the Bay; the sardine and mackerel stocks shared by Malaysia and Thailand; tuna and possibly other fish in the Andaman Sea of concern to the surrounding countries. Apart from the resources, the issues and problems in respect of methodology and implementation of monitoring schemes in the region are similar in many ways.

Relatively little has been done in the field of stock assessment in the Bay of Bengal. This was manifest from a consultation on the subject conducted in 1980 at Chittagong under the auspices of BOBP (reported in papers BOBP/REP/10.1 and BOBP/REP/10.2). Very few in-depth studies have been undertaken; the data base is poor; and as a result the assessments available have such high margins of error that most of them are of doubtful value to planners and decision-makers.

But the need for better assessment of the resources is being increasingly felt. Problems of stagnating production and lower productivity are becoming more and more common in established fisheries.

These are aggravated, at least in some cases, by the fact that big programmes for investment in new fishing units are under implementation, though these fisheries have probably already reached a level of exploitation that would justify conservation measures. On the other hand, however, management becomes hazardous in the absence of adequate studies and data. Any conservation measure will have immediate economic and social implications, and without reliable quantitative information about the resource situation people at the political and administrative levels would hesitate to take decisions. They may be led to hope for a bonanza of hitherto undiscovered deep sea resources — for it appears that the declaration of exclusive economic zones (EEZ) has generated excessive optimism among laymen about the resource base.

Nevertheless, the Bay of Bengal picture is not an entirely gloomy one. There is reason to believe that there are under-exploited resources. In the western part of the Bay for instance, the available estimates seem to indicate that the production could be substantially increased. To divert fishing effort from over-exploited stocks and to plan development of new craft and gear to harvest the under-exploited stocks, however, much more information about the potential is required. Surveys, exploratory fishing, etc must be undertaken on a larger scale. But stock assessment is a long-term undertaking and it is unrealistic to expect that it will in the short run provide the definitive information that investors would wish for. For the nonce, the fishing industry must perforce continue to develop and expand as long as there is hope of viability until the stock assessment work improves sufficiently to reduce the gap between hope and certainty.

LARS O. ENGVALL



BAY OF BENGAL NEWS is a quarterly publication of the Bay of Bengal Programme (BOBP).

The BOBP is a regional fisheries programme executed by the Food and Agriculture Organisation of the United Nations (FAO) and funded by the Swedish International Development Authority (SIDA). It covers five countries that border the Bay of Bengal: Bangladesh, India, Malaysia, Sri Lanka and Thailand.

The BOBP's main aims are to develop, demonstrate and promote appropriate technologies and methodologies to improve the conditions of small-scale fisherfolk and the supply of fish from the small sector in member-countries. The BOBP began in 1979 and has a duration of five years. BAY OF BENGAL NEWS was started in 1981.

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## A Seasonal Bonanza for Palk Bay Fishermen

(Continued from page 2)

- long distance between the boats and the trawls towed by them.

(The boats do not pass directly over the path of the nets and do not disturb fishes in shallow waters with engine noise.)

- lower fuel consumption than conventional trawls.

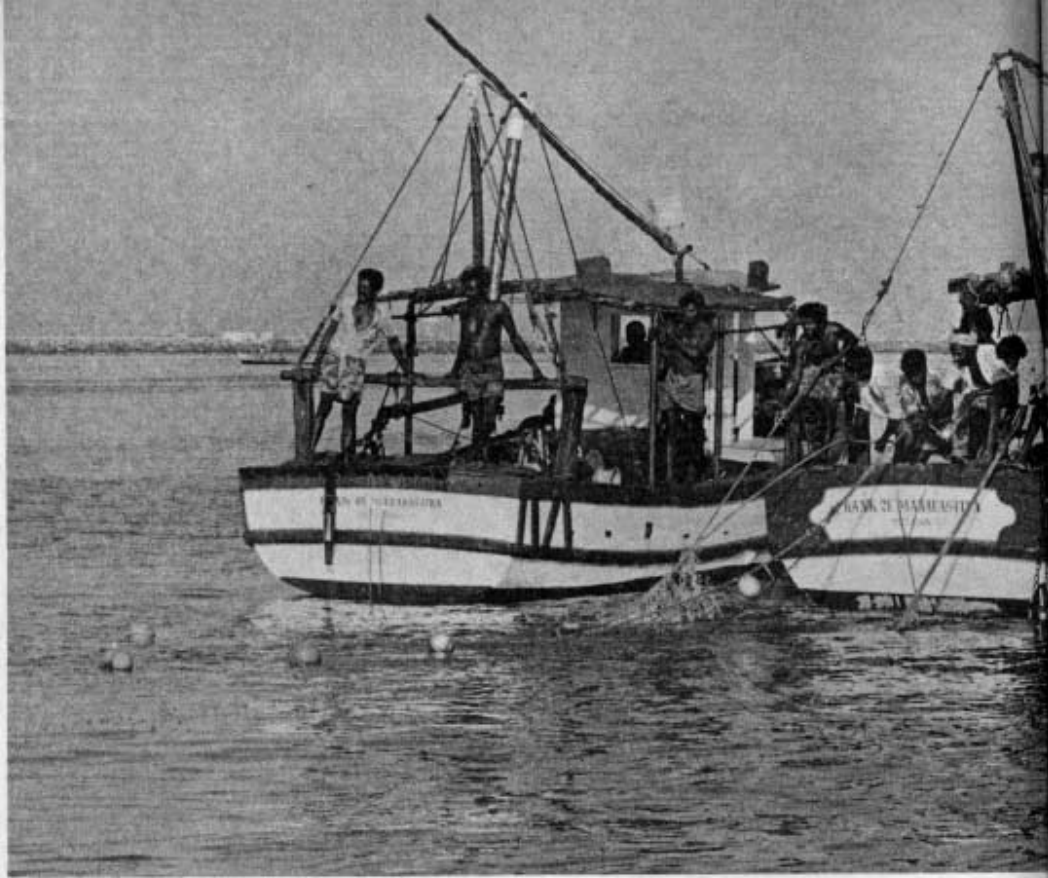
How did the meen *madi* fare in 1983? To find out, this reporter visited Rameswaram late February along with photographer Harry Miller.

It was still dark (4 a.m.) when we went out on a fishing trip. We boarded a Fisheries Department boat to trail and photograph the two meen *madi* trawlers. Our boat steamed off, and very soon the Rameswaram shrine and all the palm trees were specks on the horizon. The sun got fierce, the water glistened, tiny Belone fish frisked and flirted, friendly vallam fishermen waved us along. Three hours later the trawlers stopped, hauling began. About 50 kg of pomfret, a few hundred kg of other varieties. Quite modest. Miller, who had hoped to get a close-up of a ton of pomfret, was more disappointed than the crew, who said, "There will be more hauls".

More trawlers were around, and we went wherever hauling was imminent. Three more modest hauls, then a bumper catch on a Fisheries Development Corporation boat: it had to be hauled in two instalments. The cod-end disgorged a dozen massive catfish that immediately swished about the deck in a frenzy of anger and agony. The largest one weighed about 8 kilos. Ramamoorthy told us that it would fetch about Rs. 15. Total haul this time, about half a ton. Perhaps Rs. 1,000 in value.

Most of the trawlers were proceeding further out for more catch, but we returned ashore to study handling, curing, and salting operations, and to visit the fishermen's association.

We were told that Rameswaram fishermen like to fish for shrimp nine months in the year. The meen



*madi* apparently offers a viable alternative to shrimp trawls during three or four months. However, using the meen *madi* is far more difficult than using the good old shrimp trawl. First, everyone knows how to rig and operate the shrimp trawl, they have been doing it for years. The meen *madi* on the other hand has to be designed right and operated right, which means taking some pains to learn the technology. (Whoever tried to merely "copy" the meen *madi* design lost his

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| 1 | 2 |
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1. Pair trawling in progress : transfer of sweep-lines from one boat to the other just before hauling.
2. A symphony in motion : hauling in of the net.
3. Net-mending time for the high-opening bottom trawl.
4. After the haul: catfish blanket the deck.



## High-Opening Bottom Trawling Spreads to Gujarat—and Sri Lanka

High-opening bottom trawling is now spreading from Tamil Nadu to other states of India as also to Sri Lanka. India's leading fisheries training institution, CIFNET, recently deputed Paul Kirubakaran, Asst. Instructor, to undergo training on the rigging and operation of high-opening bottom trawls. He spent six months in Rameswaram and Tuticorin.

— At the request of Gujarat's Department of Fisheries, CIFNET began a 3-month demonstration of high-opening bottom trawling in February. S Pandurangan assisted in the activity for about 10 days by engaging in trial fishing in Porbandar and Veraval. "The activity is proceeding well," said CIFNET Director M. Swaminath in March, "and good catches are being recorded."

— Pandurangan and Ramamoorthy visited Sri Lanka March 8-20 to explore possibilities of introducing the *meen madi* there. They toured several fishing centres, from Negombo in the south to jaffna in the north; visited two CEYNOR net-making factories; and went out fishing on the island's 28 footers using conventional shrimp trawls. The two counterparts have provisionally recommended Pesalai in Palk Bay, between Mannar and Talaimannar, for demonstration fishing. Suitable nets will be fabricated in Rameswaram and sent to Colombo.

"I am convinced about the scope for high-opening bottom trawling, both in Gujarat and Sri Lanka," says Pandurangan. There are plans for similar experiments in Orissa.

John Crockett later corrected the design. Results were excellent. During four months of 1981-82, he netted more than half a ton of pomfret every day plus big quantities of other fish. During the current season, he bagged six tons of catfish on a single day. Average pomfret catch has been about 200 kg per day.

Michael Das Fernando, 28, is another fisherman who suffered initially from a defective *meen madi* design. But the net-maker Mahalingam, trained by Ezhumalai (he now engages in two-boat trawling in Dubai!), corrected the design. Early 1982 Michael Das had good pomfret catches and this year netted good shoals of catfish and miscellaneous varieties.

How has the better income made possible by the *meen madi* been used? "We eat better," says Michael Das. "More important, we go in for additional nets. Fishing is the only thing we know, so any money we make goes back into fishing".

Says Michael Das: "A good trawl catch, if well marketed, benefits nearly 100 people on sea and shore: the crew and their families, the net repairers, fish coolies, labour for carrying, salting and curing the fish, water carriers, ice coolies, dried fish and cured fish merchants, palm-leaf makers, canoe operators, ice-box makers

BOBP Director Lars Engvall says the success of high-opening bottom trawls in Palk Bay raises two

money.) Secondly a catch of just 20 kg of shrimp brings in good cash, sells easily and poses no problems. But the *meen madi* unload huge catches of a variety of food fish, and pose gigantic handling, transport, storage and marketing problems. "Sometimes the catch is so high that some fish escape or the net get damaged.... Big catches don't automatically mean big incomes", wryly comments a fisherman.

The main problem is that Rameswaram being an island, fish catch cannot be transported by lorry; so fish either goes to Mandapam by train and thence by lorry; or directly by train to a number of places: Madurai, Coimbatore, Dindukkal, Tiruchirapalli, Bangalore, Viluppuram, Parambukudi, Madras, Thanjavur, Cochin and Calicut. Any train loads only two tons of fish, say Rameswaram fishermen, so at peak times only some of the catch can be lifted — a good part remains to be salted or cured.

To derive the best possible advantage from high-opening bottom trawling, Rameswaram fishermen say they need more and better facilities — such as a refrigerated van and an additional parcel van in trains leaving Rameswaram; an additional Rameswaram-Mandapam rail shuttle service at night; better cold storage and freezing facilities at Rameswaram (a Government plant

is under repair while private plants face power shortage), and subsidized sale of high-speed diesel oil, a concession that only big trawlers enjoy at present.

This year, at least till the end of February 1983, pomfret catches have been modest rather than spectacular. The fishermen attributed this to two factors — monsoon failure and a northeast wind. They expected the pomfret haul to pick up subsequently. However, catfish were being caught in good number.

Muthiah Mascarenhas Ambrose, 37, pioneered the use of the *meen madi* in Rameswaram. He first copied Tuticorin models of the *meen madi*, apparently did it badly and failed.

Women help in the salting and curing of fish that cannot be transported fresh.





Above : Waiting for the fish landing. A good catch from the high-opening bottom trawl benefits nearly 100 people on sea and shore. Below: Skipper Ramamoorthy and a crew member hold aloft two prize specimens.

questions that should be carefully addressed : the possibility of over-fishing and of conflicts between trawler operators and traditional fishermen.

Responding to these two questions, Pandurangan and Ramamoorthy observe that for quite some time there is no danger of overfishing, and it is too early to even discuss it. Palk Bay has a large expanse of water; only about 30 pairs of trawlers used high-opening bottom trawls early 1982, of which some used defective gear and netted poor catches. This year some 40 pairs of trawlers have been using the *meen madi*. Such numbers cannot exhaust the existing resource.

About clashes between traditional craft and trawlers using high-opening bottom trawls, the FAO counterparts say that no clash has occurred so far. Possible reasons are (a) the country craft operate at night, and the *meen madi* operates during the day; (b) when the *meen madi* are deployed in Palk Bay (early in the year) the country craft are active in the Gulf of Mannar. By the time the country craft come to the Palk Bay, the *meen madi* are no more in action; (c) most mechanized boat operators were once traditional fishermen. In fact a few of them continue to own traditional craft, which are operated by relatives. Hence there is no hostility between the trawler operators and the traditional fishermen.



# glimpses into BOBP projects

## BOBP Seventh Advisory Committee Meets in Delhi

Top fisheries administrators of India, Bangladesh, Sri Lanka, Malaysia and Thailand attended the seventh meeting of the BOBP's Advisory Committee, held in New Delhi January 17-21, 1983. There were also representatives from the funding

agency (SIDA) and the executing agency (FAO), and observers from NORAD and ODA.

India's Minister of State for Agriculture and Development, Mr. R. V. Swaminathan, inaugurated the meeting, while Mr. P. K. Mukerji (left), Secretary, Department of Agriculture and Co-operation, welcomed the delegates. Mr. S. P. Jakhanwal, Joint Secretary, was elected Chairman (below).

Member-nations reviewed the progress of BOBP in 1982 and indicated their priorities for 1983 and beyond. SIDA confirmed interest in funding BOBP beyond 1983, while the ODA offered UK funding from April 1984 for a 2-year \$ 350,000 project on fish utilisation — handling, processing and marketing of fish — which would be integrated with the BOBP.



Top: Mr. P. K. Mukerji Secretary in the Department of Agriculture and Cooperation, Government of India, welcomes delegates. Below: The meeting is briefed about BOBP's work in 1982. From left: FAO's P. Gurtner, V. L. C. Pietersz and L. O. Engvall (BOBP) and S. P. Jakhanwal, Joint Secretary, Government of India and chairman of the meeting.



## Fuel-Efficient SRL-11 Proves Itself

SRL-11, a 26 ft. beachable motor sailor being developed for Sri Lanka by BOBP, has recorded excellent results during a whole year of fishing off Negombo.

Designed by BOBP fishing craft engineer Arild Overa, SRL-11 is meant to offer a viable energy-efficient alternative to the standard 28-footer equipped with a 30 H.P. engine (generally referred to as the 3½-tonner) which has so far been the mainstay of Sri Lankan fisheries. A few thousand of these boats fish in the island.

Operated by fisherman Adley Fernando, who used gillnets, bottom longlines and trolling lines, the SRL-11 caught 11,000 kg of fish valued at SRL Rs. 145,000 — as good a performance as the 28 ft. boats. But SRL-11 used only 2,200 litres of diesel fuel — a 28-footer would have consumed 5,000 litres — thus saving Rs. 16,000 in fuel costs.

FAO consultant Oyvind Gulbrandsen, who was engaged to evaluate the performance of SRL-11, said "If the whole fleet of 28 ft. fishing boats in Sri Lanka has the same fuel efficiency as SRL-11, the country will save 6,000 tons of diesel fuel yearly".

Apart from lower fuel consumption, SRL-11 has several other advantages over the standard 28-footers — lower capital cost; beachlanding capability; proven sailing ability, which none of the existing motorized boats in Sri Lanka has; shallow draft, which makes it possible for the boat to navigate shallow waters, such as entrances to lagoons.

Talking about sails, Gulbrandsen said that Sri Lankan fishermen use sails only to a limited extent at present; but if fuel cost rises, sailing ability could become crucial for economic viability.

Says Lars Engvall, Director of BOBP: "One of our objectives since the inception of BOBP has been to offer a viable alternative to the 28-footer. We are therefore pleased with the results of SRL-11. On the basis of experience derived with SRL-11, we have further improved the design, through the SRL-12, a 28-footer with

finer lines. Based on this again, a FRP plug and mould is now being built by CeyNor in Colombo. This will be the SRI-i4, the final version of a BOBP beach landing large-mesh gillnetter for Sri Lanka."

Fisherman Adley Fernando, 25, says that of the three gears he used with SRI-il, bottom longlines (used November 1981-May 1982) were the most effective. He landed snappers, groupers, coral and reef cods and carangs with them.

"My friends used to envy me", says Adley, "and not merely because of my high catches. On days when there was no catch, I spent only three gallons of fuel while they spent eight".



*The SRL-71 boat, developed for Sri Lanka as a relatively efficient beach landing alternative to the island's 28-footers, did a year of excellent commercial fishing off Negombo. A modified version of this boat is now being developed.*

## A Case for Sails!

### Arild Overa writes:

Here's a true story, Sri Lankan setting, that demonstrates the importance of sails.

Camilas Fernando, 24, of Beruwela in Sri Lanka, was one of the five crew members who went fishing with a 38 footer on a sunny day in December 1980. They went well offshore with their gillnets. When the nets were pulled up the next morning with a good catch they were in high spirits. The wind was fresh from the east and they were happy that a powerful engine would see them safely back to their homes.

As the last buoy came over the gun-whale, the skipper swung the boat towards Beruwela and gave full speed ahead only to hear the engine

spluttering for a moment before coming to a final stop. They knew that to anchor was impossible since their keel was some 1000 fathoms above the bottom.

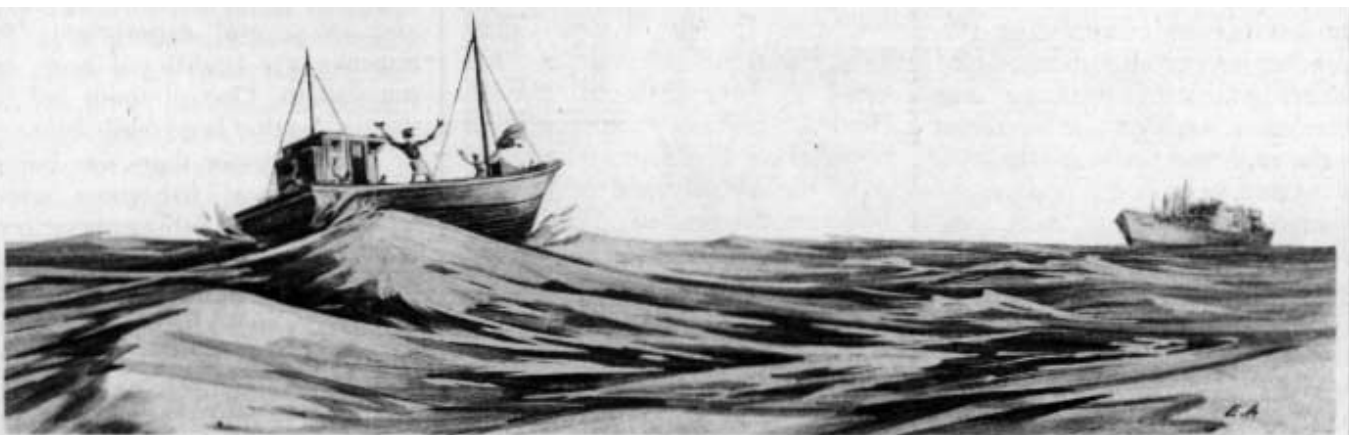
They tried to bleed the fuel system, did all the tricks they had learned and pressed the starting button repeatedly. But the engine was dead and fear rose in their throats. For a little while Sri Lanka could be seen to the east as a low line on the horizon. But soon they only saw sea and sky and were lost in the great Indian Ocean.

They lived. They ate fish, drank the water sparingly, watching each other. They saw ships but were not spotted until the 21st day of their drift. On

that day the crew of a Filipino ship on its way to Europe saw a boat which was too small to be in the middle of nowhere. The skinny, dehydrated men on board could barely make it up the rope ladder and were immediately given VIP treatment by the kind crew of the freighter.

A few days later, the ship berthed in Port Said and the fishermen of Beruwela were sent home by plane to a happy reunion with their families.

Joday Camilas Fernando is a crew member on the BOBP 34-footer, the only fishing boat in Beruwela fitted with sails! (For more about this 34-footer, see future issues of *Bay of Bengal News*).



A one-year BOBP-assisted training and extension project in the Maldives was launched early this year with a one-month training course for statisticians of the Ministry of Fisheries held January 28-February 25, 1983 in Male. The project is expected to upgrade the qualifications of Maldivian fishery statisticians as well as improve the present system of statistics collection and analysis in the island.

Funded and implemented under the Technical Cooperation Programme of FAO, the project is managed and monitored by BOBP. Participants are some 10 fishery officers, fishery assistants, field officers and trainees of the Ministry of Fisheries. Three FAO consultants — Dr. K. Sivasubramaniam (fishery biology), Mr. R. Willmann (fishery economics) and Dr. U. Tietze (fishery statistics) provide the technical expertise. They work with national project leader Hassan Maniku (Under Secretary in the Ministry of Fisheries) and Mr. J. N. Jameel, Under-Secretary, who is in charge of statistics in the Ministry of Fisheries. At the course opening ceremony, Dr. Ahmed Ali Didi, Deputy Minister of Fisheries, expressed the hope that the project would help introduce a sample system for statistics collection, generating more reliable data than the total enumeration attempted at present. He stressed the need for biological and socio-economic studies in order to acquire a better knowledge of the fish resources and the socio-economic conditions of fisherfolk.

The first four-week course dealt with basic concepts and methods of fishery statistics, biology and economics, with special reference to the pole and line tuna fisheries of Maldives. Besides classroom theoretical work, field visits were undertaken to landing centres in order to determine appropriate statistical classification for gear, craft, species, fishing effort etc; to observe problems of data collection in the field; to explain basic features of stratification species, and determine their sex, maturity etc.



*One of the Bangladesh net-makers (story below) with her family.*

After the course, the participants started practical activities in the field such as regular length/weight frequency measurements. Economic studies and the introduction of a sampling system in one of the Maldivian atolls for the collection of catch and effort statistics will follow.

#### *Net-Making by Women in Bangladesh*

There are more than 100 of them — children, housewives, widows, old women — and their ages range from 13 to 60. They hail from three impoverished fishing villages near Chittagong: Juldia-Shamipur, North Juldia and Diyang. They earn a fair wage by making nets — large mesh webbing for drift gillnets — following an extension project initiated by BOBP in cooperation with the Directorate of Marine Fisheries, Bangladesh.

The project is being organized day-to-day by Ghashful, a voluntary agency, which at this stage, receives nylon twine (27/30 ply — thinner than the twine local fishermen have been using up to now) at cost from BOBP, supplies it to the women and takes back finished nets.

Ghashful then sells the nets to fishermen who are involved in BOBP-assisted marine fishing projects. Efforts have been made to link the women net-makers directly with twine traders in Chittagong for supply of twine starting mid-1983.

The women net-makers are paid taka 20 per kg of net, and manage to earn 200-250 taka a month, working on a part-time basis. It normally takes a woman six weeks to finish 16 kg of net. Till January end, the women had earned nearly 30,000 taka as wages.

The women's net-making project began in 1981, while the BOBP was engaged in a socio-economic study and in several experiments to improve the traditional gears of Bangladesh. One of these led to the finding that large mesh driftnets of twine thinner than was being used by local fishermen were adequate for the fishing operations and not only cost about 30% less than traditional nets but might even catch more fish. The BOBP and the Government of Bangladesh agreed that this finding should be extended, and that fishermen should be encouraged to take up thinner-twined nets.

The idea of getting indigent women to make and supply these nets was then mooted : it would give them more income, it would further the use of thinner-twine nets — thus integrating socio-economic and technological development. Net-making is also quite suitable for the women as they can spend time in between various other chores they are engaged in — e.g. fish marketing, household work etc. — to make the nets in their own homes.

Three women were initially selected as village coordinators to organize the most needy women of their villages to make nets. They were trained to make nets by the Kalidaha Fishing Project or KFP (which has cooperated with the BOBP in its fishing gear projects). Most of the women were already familiar with net-making and only a little guidance and quality control was required.

In mid-1982, Ghashful was contracted by BOBP to expand the project. Building on the three core groups of existing net-makers and coordinators, about 10 persons per group, Ghashful hired two field supervisors and selected and trained two more coordinators. By November-end five groups of 15 women were functioning. They are now in the process of expanding further and 10 groups of 10-12 members may be established by end-March 1983. The process, if found effective, will eventually involve all the women (about 300 in the three villages).

Ghashful has also established a "revolving fund" to be used as capital for buying twine. The net-makers have started saving 15 per cent of their earnings; this is contributed to the revolving fund. This fund, together with the profit Ghashful makes by selling nets, will ultimately be used to buy twine when BOBP phases out its presence. It will also provide capital for a couple of pilot projects to raise incomes — relating to fish farming, poultry raising etc. Other extension activities are also proposed to be started. A store-room-cum-meeting place is to be built in consultation with the villagers and their leaders. It will be used to store twine, and to demonstrate kitchen gardening and simple home improvement practices including sanitation

maintenance. Water pumps and toilets will be provided for the villages, with the assistance of UNICEF and the Public Welfare Department. Adult education programmes will be expanded and will emphasize health, hygiene and cleanliness.

The three villages are thus humming with ideas. "BOBP net-making activity is generating the desired catalytic impact," says Patchanee Natpracha, BOBP sociologist.

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#### *Orissa Extension Officers Undergo Fishing Gear Training in Cochin*

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On February 25, Orissa's 15 marine fisheries extension officers completed two and a half weeks of training on small-scale fishing gear and methods at the Central Institute of Fisheries Nautical and Engineering Training (CIFNET) in Cochin. The course was part of a comprehensive in-service training programme being conducted by BOBP in cooperation with Orissa's Directorate of Fisheries. Earlier subjects covered by the programme included structural fisheries statistics; credit and finance; and community development/extension techniques.

The course syllabus was prepared by CIFNET in cooperation with Mr. P. Mohapatra, Additional Director of Fisheries, Orissa. Dr. M. Swaminath, Director of CIFNET, who took personal interest in the preparation and conduct of the course, said that this short-term

course was the first of its kind and was a valuable experience for his institute. He and the course instructors were pleasantly surprised at how easily most of the extension officers, who are often regarded as administrators, picked up the technical knowledge, and at the motivation they displayed in their practical work.

The extension officers in turn were pleased with the presentation of the course subjects. The Kerala trip also gave them the opportunity to study the wide variety of traditional fishing methods being applied there.

The course covered various traditional and modern small-scale fishing methods. It introduced the participants to net fabrication, repair and preservation, to various types of knots and numbering systems for twines, and to natural and synthetic fishing gear materials. The daily work schedule consisted of theory in the morning, practical work or field trips in the afternoon.

Towards the end of the course, possibilities for improvement of traditional gear and methods in Orissa were discussed. Suggestions were made concerning the substitution of materials for nets and ropes, improvement of traditional gear designs, and introduction of traditional methods to areas where they had not been used before. Pilot projects in fishing gear improvement, to be implemented with the help of the extension officers, are now under preparation.

*Another net-maker from Bangladesh in action. She would normally take six weeks to finish 16 kg of net, and earn 200 to 250 taka a month.*



# A 35-year saga beachianding boats for Tamil Nadu fishermen

*The BOBP's work in developing beachianding boats for Tamil Nadu began in 1979, but other agencies had attempted this task in the past, as far back as 1948. The chequered history of beachcraft development in Tamil Nadu is traced here by A. Daniel, Joint Director of Fisheries in the state and technical liaison officer for beachcraft development.*

The Tamil Nadu state is noted for the turbulent surf along its East Coast which makes the launching as well as the landing of fishing boats a very risky venture. The fishermen are scattered all along the coast in about 400 fishing villages; the traditional craft used by them such as kattumarams and masula boats are adapted for beachlanding. Although harbours or anchorages for fishing boats have been provided at some locations, the majority of fishermen still operate from open beaches. Rehabilitating them in areas where anchorage facilities are available cannot be easily accomplished as the fishermen will not readily leave their native villages. Moreover, development of harbours would involve high capital outlay and enormous maintenance costs and would be feasible only at a few places. A better alternative is to replace the traditional craft with motorized beachlanding fishing boats.

The boat that is to replace the kattumaram must be cheap and of light construction and be equally if not more efficient in its ability to negotiate the surf. In the absence of suitable prototypes, the evolution of a surf boat could be undertaken only through a process of trials, taking into consideration of course some of the salient features of beachboats in other countries.

A beginning was made in 1945, when the Fisheries Department set up a separate unit to go into the question of improvement of indigenous craft and gear. The design and construction of an inexpensive small boat was undertaken. The first boat 'M.B. Ajit' was built on the hard-chine principle.

With the experience gained in the operation of this boat, more boats

of improved design were built and demonstrated. However, there was no positive response from fishermen, which could mainly be attributed to their lack of appreciation of the advantages of the mechanized boats, their conservative nature, their lack of experience in handling engines, and the lack of facilities for repair and maintenance.

local gear. The boats however did not prove to be efficient when using local gear. Even when the boats with a complement of nets were offered to the local fishermen free of charge or obligation, the latter were unwilling to operate them.

In 1968 Mr. Henri Claireaux led a French Dory team to Tamil Nadu and conducted trial fishing with the



*Beachlanding boats developed by the Tamil Nadu Fisheries Department, which were tried out during the '40s and '50s.*

In 1950 when a couple of FAO experts came to India to study existing fishing craft and recommend development measures, their attention was focussed on a motorized surflanding boat which could be used under conditions such as those obtaining in South India. Such a boat did not exist and a special type had to be developed. The FAO experts spent considerable time in developing such a boat. They tried three prototypes in India, but all their attempts were futile. Arrangements were made with local fishermen to test the FAO boats using

dories which were fitted with 4 H.P. gasoline engines; but the fishing grounds for line fishing — 15 to 20 miles off Madras harbour — were a long way off. Although the dories were designed for beachlanding they operated with the Madras harbour as its base and were not successful as beachlanding craft.

Repeated attempts to replace the traditional beachlanding craft with competitively priced surflanding boats were unsuccessful until in 1979 the BOBP, as part of its effort to develop the small-scale fisheries in the Bay of Bengal area, attempted

to develop a mechanically propelled beachlanding craft with a greater carrying capacity and better protection for crew and catch than the traditional kattumaram for use from surf-beaten beaches on the east coast of India.

The IND-11 prototype, designed by BOBP for the Coromandel coast, is based on one of the principles of the kattumaram namely, the provision of buoyancy by solid members; these are polystyrene blocks totalling 3.5 cubic metres in volume, kept in place and protected by bottom and deck planks with a 10 mm gap between the planks. It therefore works like a raft. Since the floatation of the craft does not depend on water-tightness between the planks, low-cost timber can be used, together with simple construction which can be carried out in the villages. This boat was initially fitted with a Greaves Lombardini 5 h.p. air-cooled diesel engine. After trials, the BOBP has now designed a modified version of IND-11, known as IND-21, fitted with a VST Shakti Mitsubishi 8 h.p. air-cooled diesel. The IND-21 buoyancy block craft is a good surf-crossing and beachlanding craft and the design is now proven after technical and fishing



*A French Dory. The Dories, tried out in 1968, were based at the Madras harbour and were not successful as beachlanding craft.*

trials. It handles quite well both while coming in and going out. The fishermen from the fishing village of Injambakkam in Chingleput district wanted this type of boat and arrangements have been made to supply 30 boats through the Integrated Rural Development Programme\* allowing a 50% subsidy on the cost of the hull, engine and fishing gear. The cost of the boat together with engine may work out to about Rs. 45,000. It is hoped that the fishermen of the fishing villages of the Coromandel coast will take to this type of boat since it is ideally suited for their requirements.

The principal dimensions of IND-21 are as follows:

|                                  |              |
|----------------------------------|--------------|
| Length overall                   | : 7.20 m     |
| Length water-line:               | 6.3 m        |
| Beam (Max)                       | : 2.25 m     |
| Beam water-line                  | : 2 m        |
| Depth moulded                    | : 0.81 m     |
| Draft                            | : 0.3 m      |
| Cubic number                     | : 13.2 cu. m |
| Weight of empty boat with engine | : 900 kg     |

The IND-21 engine is an industrial type air-cooled diesel, 8 h.p. at 3000 r.p.m., with an in-built reduction ratio of 2:1.

With the introduction of the IND-21 in Injambakkam, an endeavour that is nearly four decades old finally bears fruit.

\* Government of India's Integrated Rural Development Programme, launched 1978—79 in 2,300 selected blocks all over the country, is meant to help the poorest of the poor in rural areas: small and marginal farmers, farm and non-farm labourers, rural artisans and craftsmen, 'scheduled' castes and 'scheduled' tribes. Under the IRDP, assistance may be given to states, union territories or cooperative societies; subsidies may be provided to fishermen and fish farmers for the purchase of boats, nets, fingerlings, manure or fertilizers, or to fish farmers who have obtained tanks on lease from panchayats, for desilting or reclamation of the tanks. The IRDP is implemented by the District Rural Development Agency (DRDA).

*The IND-21 beachlanding boat developed by BOBP. It is self-draining, like the kattumaram, with polystyrene blocks providing the floatation. Initially the Government plans to distribute 30 of these boats to fishermen*





Technically speaking, the successful implementation of a beachlanding fishing boat programme does not depend only on a good boat design. Once the boat has been developed to land safely on the beach, cross the surf in and out with gear, crew and catch, there still remains the problem of how to bring it easily and quickly up the often steep beaches found in the Bay of Bengal region. Various manual capstans and pulley arrangements have been tried in the past but one should bear in mind that fishermen coming back from a trip have often been out for 20 hours with little sleep and are therefore tired men. They are not very keen on manhandling a one or two ton boat up the steep sandy beach. Therefore this size of boat requires a diesel-powered winch. BOBP started work on such a winch a year ago when it was clear that the beachlanding boats developed by

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*Winches, rollers and air-filled plastic fenders – devices required to haul boats up steep beaches – are discussed here by BOBP's fishing craft engineer.*

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the Programme had proved to be safe craft. The first winch was constructed out of components found in a junkyard combined on a bracket with a Mitsubishi 8 hp diesel. The clutch system was by way of a flat belt and a jockey wheel lever, thereby tightening the flat belt and the winch would start pulling. The system worked well but the clutch is not very precise.

The second winch was similar to the first but used the gearbox made for the 32-footer trawl winches by Varuna Construction Company of Madras.

The engine output shaft is fitted with a 5 inch diameter rubberised friction wheel and the engine is mounted on a hinged bracket. A lever is fitted to this bracket and when pressing the lever down, the rubberised friction wheel comes in contact with the driven wheel and the winch starts pulling. When you release the engine lever, a brake shoe comes in contact with the driven wheel and stops it immediately. One can hold the lever half way down and the winch can freewheel. Through the 15:1 reduction gearbox the freewheeling starts very slowly and gently which is ideal for slackening off the wire.

The wire is fitted on a spool which can be disconnected by way of a dog clutch. On the other side of the gear box, a wrap head is fitted; this can be used for other purposes such as hauling up small craft, lifting out an engine and, as has been practised in Injambakkam, to assist in retrieving the beach seine.

Some people have argued that a winch is too costly. However, one winch can be used for pulling up an unlimited number of boats by way of a pulley system. Even without a pulley system the winch can handle at least 10 or 15 boats from one position. This means that the wire and rope will fan out towards the different boats. There is a base plate fitted under the winch with bevelled and raised sides. This enables the winch to turn itself in the direction of the wire. So in one way the winch floats on the sand. The winch is also fitted with a simple spooling control. It is very important to use a wire rope instead of synthetic rope since the wire offers much more positive power, it does not stretch before it pulls and you get much better control. The winch has a pulling power of 1.6 tonne, the weight is roughly 300 kilo

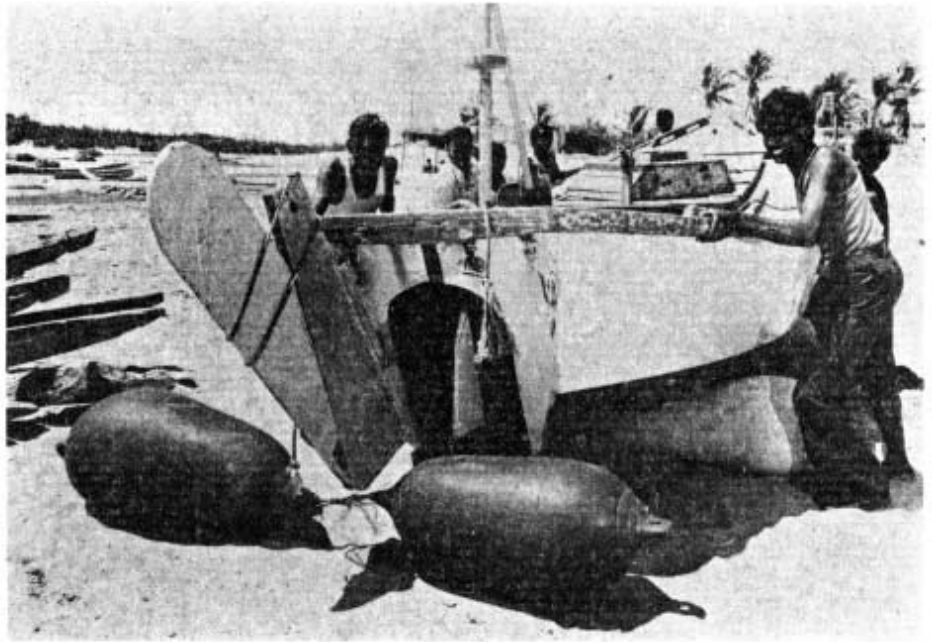
and its price ex-factory is Rs.16,000 (US \$ 1,700). In addition, wire rope, clips, etc. will cost an additional \$ 150.

Perhaps the biggest problem of hauling up heavy boats is how to reduce the friction between hull and



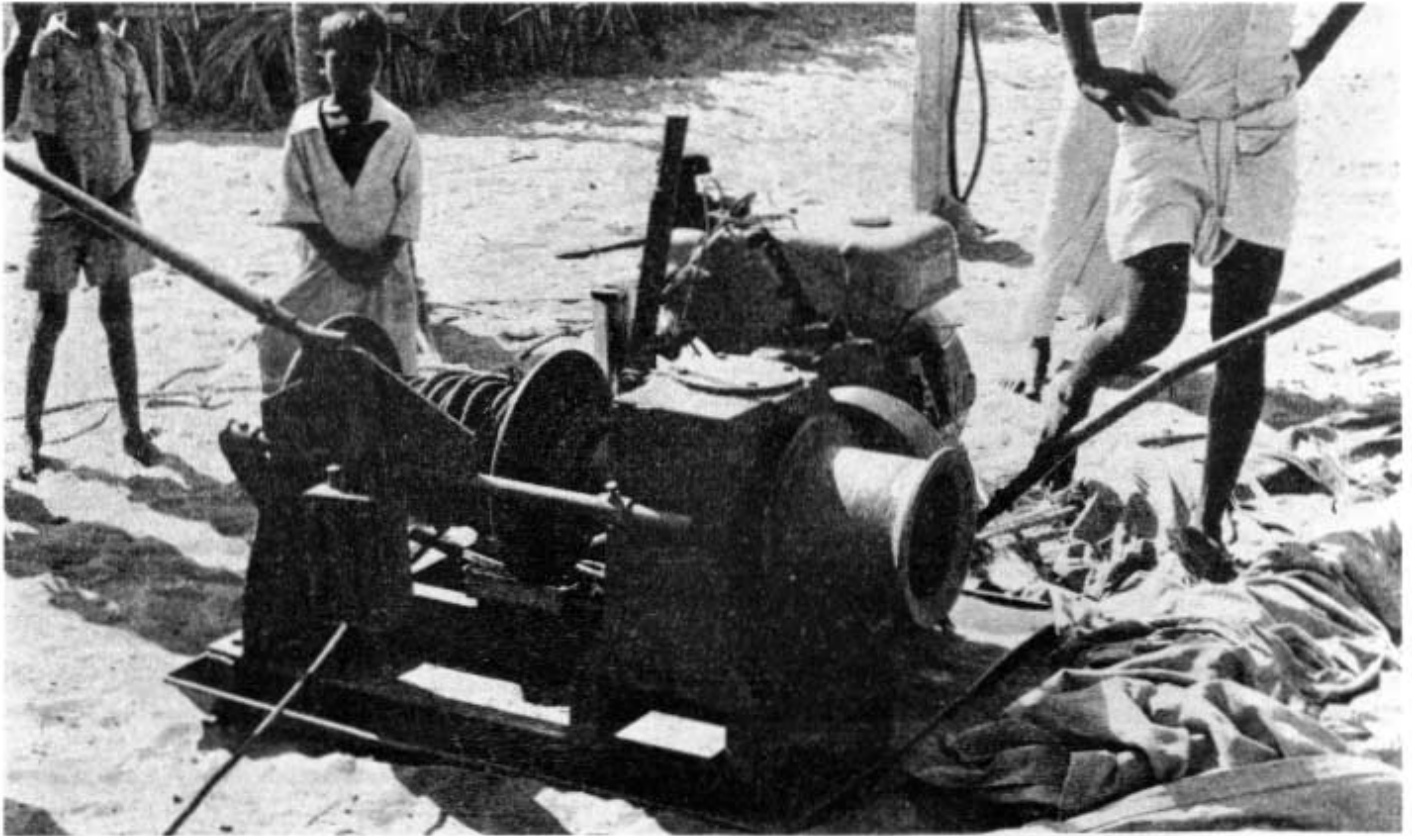
sand. Trials have shown that the friction coefficient is at least 1 on wet sand, meaning a pulling equal to the weight of the boat. Bearing in mind that a boat which is to be pulled up the beach also contains fishing gear and catch, the weight is quite heavy. The beaches are very soft and the sand is very coarse; a lot of it is washed up with the water — so anything put on the sand immediately gets buried.

Six inch round wooden rollers were tried in the early stage of the project. In the very first attempt, it was clear that such rollers would disappear in the sand when the boat was put on top of them. Therefore flat planks were first put on the beach and then wooden rollers on top of those



*Above : The IND-20, a 28-foot beachlanding boat developed for Andhra Pradesh, is being launched using pneumatic jenders as beach rollers. Below: The boat is being hauled up the beach at liTjambakkam near Madras by a diesel-powered winch secured to palm trees. The winch has proved popular with fishermen.*





*Above: The winch with its simple spooling arrangement and warp head. Below: The rubberized friction wheel is in contact with the driven wheel, combining the advantages of clutch and reduction ratio.*



planks and then the boat. In principle this works but it is very difficult to handle all this on the beach. In rough conditions, the slip current going sideways on the beach carries the boat along each time it floats: when the wave washes up the beach, the boat will float and wash a few meters with the current. So to keep the boat in position when you lay down the planks and then make sure the wooden rollers are in the right position and facing the right direction becomes very difficult to accomplish simultaneously. It can also be a very risky operation for tired crew. Hands might get between the boats and the rollers, since everything is shifting about very fast.

The answer proved to be the use of pneumatic or air-filled plastic fenders. Their cost is quite reasonable, in fact they would not cost much more than a set of wooden rollers and planks.

We imported some fenders in sizes varying from 1 foot diameter and 3 feet length up to 2 feet diameter and 4 feet length. We tied two and two together leaving a distance of one foot between them and put them under the boat (as shown on the pictures).

Pneumatic fenders are just about the only thing that can roll in a semi-flat condition. They give you a very wide surface on the soft sand because it gets partly squeezed flat.

The gap between them ensures that they wash with the boat along the beach. During the trials this was proven to our expectations. It is very easy to pull the boat up and to launch it back into the sea. It is pulled up straight with the bow first, and it is launched with the stern first since monohulls are easily turned around once they float.

The fenders we tested were made in Norway as ship to ship or ship to wharf fenders. They are moulded in plastic material and their cost is very reasonable — Rs. 200-300 a piece.

They are now undergoing long term tests in Injambakkam to check on how long they will last in this application. It is possible to make fenders of reinforced rubber or perhaps even some spongy solid rubber. However rubber fenders will cost a lot more. A quotation was obtained from Dunlop in U.K. and the cost of their standard fender was \$ 2000 a piece! The fishermen of Injambakkam have been using plastic rollers for three months now and it is impressive to see how quickly they bring the boat up and launch it. In fact the villagers have grown so fond of the winch and the rollers that if it is out of order they will not go fishing with the mechanized boats!

# TRAINING FISHERWOMEN TO TAP GOVERNMENT SERVICES

## A New Approach in Fisheries Extension

*How do you promote awareness among traditional fisherwomen? How do you stimulate progress through self-help? Socio-economist Edeltraud Drewes discusses BOBP's methodology: a group of fisherwomen from seven Tamil Nadu villages were given intensive training, later encouraged to initiate development activities in their villages in co-operation with government officials.*

Measures to improve the living conditions of the most disadvantaged among small-scale fisherfolk — women — must first go into the roots of their poverty. They must examine the awareness of this target group, also the awareness of the personnel (Government and non-government) who will plan and implement development measures. The process of analysis and problem-solving must closely involve the target groups — the fisherwomen — and must not be confined to bureaucrats who are preoccupied with their yearly "allocations" and how to spend them. To turn the government's eyes towards dis-

advantaged fisherwomen and to ensure positive impact, the target groups must be mobilized into an effective mechanism to receive and use government services.

This approach requires a clearly defined target group and a well organised network of communication between extension officers and the target group of fisherwomen. It requires an extension officer who is equipped with proper tools — knowledge about methods of communication, problem identification, planning and implementation.

When one aims at covering not just a section of the actual target group

but the total, one has to be realistic in planning the manpower and the costs. It is unrealistic to aim at posting one extension officer for each village or even for three or four villages. Another factor to be considered when women constitute a target group is the need for female extension officers and the problem of finding women with an adequate education (comparable to that of male extension officers) interested in village-level extension work. This calls for a struggle against socio cultural barriers and often even against harassment.

These two constraints could be overcome by approaching fisher-

*Tamil Nadu fisherwomen, who attended the 10-week BOBP-assisted training course on community organisation leadership, held last year in Madras in cooperation with the government, seen with the course organisers.*



women to function as link workers in their own villages between government extension officers and the target group — fisherwomen. This would enable the needs and problems of the target group to be identified, encourage their basic participation in implementation and planning and thereby ensure that development measures generate a more positive impact. Moreover, the expense would be more bearable. In Tamil Nadu, the Fisherwomen Extension Service: (FES) of the Department of Fisheries and the BOBP are trying to follow the approach described above on a pilot basis in selected villages of a particular district (Chingleput).

The FES and the BOBP formed a team consisting of women field and headquarters staff to plan and coordinate a training course for fisherwomen. This team formulated the goal of training, the functions of the trained link workers, the criteria for selecting villages and trainees, as well as the curriculum. The goal was to engage two trained fisherwomen in a village to function as group organisers and link workers between fisherwomen on the one hand and government officers and institutions on the other.

The functions of the link workers were defined as follows:

- mobilise fisherwomen for constructive group action to improve social and economic conditions.
- create understanding on the need for change in socio-cultural attitudes among men and women.
- encourage fisherwomen to utilise the services of governments and other institutions.
- stimulate government institutions to respond to the objectives and felt needs of the target groups through adjustment of development measures/schemes.

The team decided to choose fishing villages with only non-mechanised craft and poor infrastructural facilities, within a radius of 50 km of Madras. Seven villages were chosen. As for the number of trainees, 20 was considered appropriate. The field team first approached the village elders since there was no women's organisation, and explained to them the purpose of their visit. The elders called for meetings with

men and women in which the FES/BOBP team explained the purpose of the training programme and the criteria for selection of women trainees. The criteria had been fixed as follows

- should be able to read and write.
- should be married and below the age of 40.
- must be accepted and trusted by the poorest and most disadvantaged group of women in the village.
- must be willing to participate and be allowed to participate in a residential training course in Madras or any other place in the state.
- should know that the training will not guarantee employment anywhere else other than in her own village.
- must be willing and interested to work with a group of women and to learn new ideas.

The initial scepticism on the part of the men and women dissolved gradually during various meetings with the community members who then nominated the women to be trained. One or two criteria, such as marital status, proved to be unrealistic, since married women have to look after their husband and children.

The response of the women was far better than expected by the team

*At the course, group discussions, role plays and group exercises ensured the active participation of all and encouraged positive thinking.*



of planners. Twenty three women decided to participate in the training. In the meantime a curriculum was developed for a 10-week course after discussion between the team and the women trainees. It would be a residential course in four segments or units, each of about two and a half weeks' duration. This would enable the participants, who had never been away from home unescorted, to visit their homes after a period of time not too long for them. It would also enable them to describe their experience to their families, friends and neighbours.

The curriculum covered subjects related not merely to women's traditional household and family welfare responsibilities, but also to subjects such as political structure and decision making, financial management, communication, leadership and group organisation, new technology of fish handling and marketing, public savings and credit institutions, implementation procedures of government, infrastructural and welfare schemes.

The FES/BOBP planning and coordination team recruited resource persons from various government departments and non-government agencies, such as the Department of Social Welfare, Department of Rural Development, Department of Non-Formal and Adult Education,



*After the course. Development activities for the seven villages will be implemented by the Tamil Nadu Fisherwomen's Extension Service with the help of two BOBP-funded social workers and course participants from each village.*

Department of Public Health and Preventive Medicine, Family Planning Association of India, Guild of Service, Rural Unit for Health and Social Affairs.

During the first few days the trainees were a little hesitant about expressing their views. Being of different age groups and family backgrounds it took a little time for them to accept each other. These problems were tackled by training the course participants in the basics of group dynamics. This enabled the trainees to participate fairly equally in the course. Active participation of all was made an important objective of all the sessions. Consequently, lectures were reduced to a minimum and emphasis was placed on such teaching methods as small group discussions, role plays, working groups, individual and group exercises.

Field visits were organised to study the structure and functioning of block development offices, mini and primary health centres, a social service centre for women, and rural banking services. Visits were also

organised to the Tamil Nadu Fisheries Development Corporation cold storage, wholesale and retail fish markets and to the corporation fish stalls to study the storage and marketing of fish.

After completing the residential training, the link workers received two months of on-the-job training from the female course coordinators who both had a sufficient understanding of the extension approach.

Following the course, BOBP continues to finance the services of the two female course coordinators-cum-extension workers while the Department of Fisheries tries out its new approach to improve the living conditions of fisherwomen. These two women now form a team along with two male Government extension officers, sharing the same transport when travelling to the villages. Each of the seven villages is visited almost once a week.

The link workers carry out the basic work e.g. mobilise the women, visit them individually to discuss and plan further steps. For each village, the link workers have prepared a

list of the most urgent needs — such as credit for productive and consumption purposes, education of children, health care, water and electricity supply, land ownership for house construction, new income opportunities for women. Assisted by the extensionists, the link workers now prepare operational steps on how to meet the needs immediately and in the long term. Cooperative societies of fisherwomen have been formed and will be registered, since registration is necessary to qualify for government welfare and economic schemes. A woman's society — registered or not — is also necessary for the fisherwomen to learn to struggle to improve their basic social and economic conditions and to give them a voice in the community.

Many of the needs identified for the fisherwomen, particularly those relating to higher income and job opportunities, can be met only in the long term — through education for young girls. That means giving them a starting position similar to that of men in the job market.

# IMPROVING THE STATUS OF A FISHING FAMILY

## The story of an experiment





by M. H. Kalavathy

Poverty is a complex phenomenon, difficult to eradicate. I had a small experience with a poor family in a traditional fishing community which I would like to share with readers. It is the experience of a social researcher, not of a philanthropist or social worker.

This traditional community lives in Madras city. It belongs to a caste called Pariyapattinavars. Basically its economic organisation is pre-capitalistic and non-monetized in structure. Hence production, marketing and employer-employee relationships are not just economic systems, but are also closely linked to social norms and responsibilities. The community studied by me is one such. It mainly consists of two categories — one owning boats and nets, another without these assets. The net-owning category again consists of two groups, big net-owners and small net-owners. In the labour category there are day-to-day

labourers and permanent labourers. The permanent labourers are those who take an advance from the net-owners and get their income in the form of share from output. The families of these permanent labourers are among the poorest of the community.

#### **Tiftai and her family**

I got acquainted some time ago with Tillai, the housewife from one such family. She gradually became the key source of information for my research work. By nature she is intelligent. Her understanding of my study was so good that at times she would ask me to note down points that I might miss. She is much liked by her kith and kin, and is "auctioning woman" for the fish caught by the net-owners of the community. Her role as auctioning woman keeps her in close contact with net-owners, labourers and marketing women. She earns only one rupee and a few fish per day for her labours, which keep her busy from B a.m. till 11 p.m. Her family consists of eight members. The "immediate family" includes her husband, a permanent labourer; two sons aged 16 and 14; and an adopted daughter, 8 years old. Also living with them till recently were her brother's son, also a permanent labourer engaged in line fishing, and an adopted brother and wife. The adopted brother was also a permanent labourer.

I did not pay Tillai for the information. I preferred to offer her some money in a lump sum that would give her some economic security. I had heard her expressing some of her desires — to have a place of worship within her house like some other families, to own and use stainless steel utensils, to die as a net-owner. In the beginning, assuming that the first two wants were easier to gratify, I brought her a few stainless steel utensils as also the few items a fisherfamily keeps in the place of worship. I then looked expectantly at her face for signs of joy in partial fulfilment of her ambition.

To my disappointment, Tillai looked sad. She told me that only a family which has some regular source of income, can afford a place of worship, which is a status symbol,

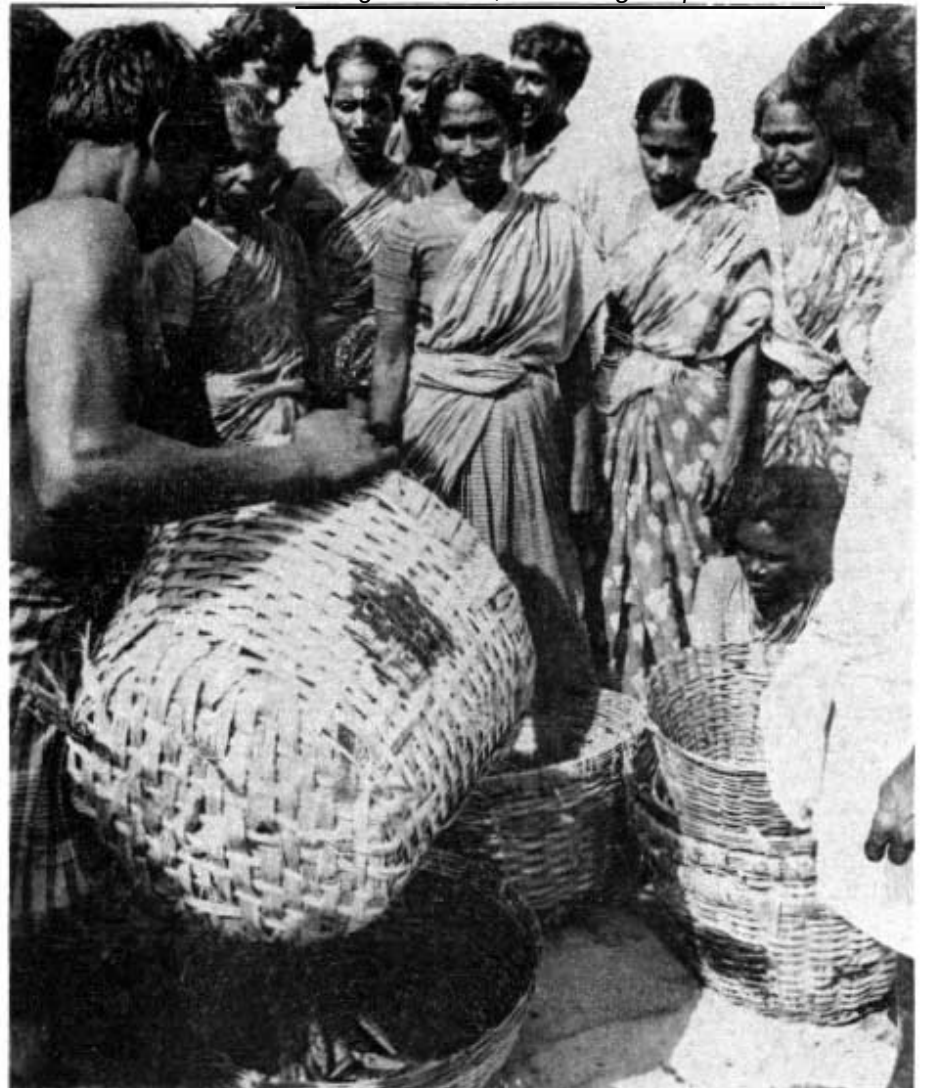
and the ritual that goes with it. The steel utensils made her happy. But they were borrowed all the time by her neighbours and she could not refuse to lend them. Soon I found that these utensils had found their way to the money lender. I was upset. She told me that she had to mortgage the utensils to feed her family. Moreover their presence looked laughable when there was no food to eat for days. Perhaps this was why she could not afford to keep a place of worship too. I tried to accept reality. The least I could do was to retrieve her utensils from the money lender.

This experience made me think. I realised that the Tillai family's economic condition had to be improved first. I thought of giving her Rs. 2,000 to buy a net and a boat and to get a fisherman to operate her net and craft. This would give her a regular income, a part of which could repay her husband's

loans. I felt that if I gave her a tree hand with the amount she might not care to invest it prudently. So I decided to collect a part of her income personally for reinvestment. I bought Tillai a second hand bottom-set gill net weighing 5 kg and a three-year-old kattumaram worth Rs. 1,200. It was generally considered a good buy. The kattumaram, it was said, might last another four to five years. The net, called *vala valai*, was commonly used throughout the year. It could provide enough to keep a family from starving. During the prawn season, one could catch tiger prawns with this net and make a good profit. This net could also earn its owner a miRimum of Rs. 100 during the ribbon fish season.

I kept Tillai ignorant about my reinvestment plan but told her she should give me some cash for saving. During the lean season, however, she need not give me anything. I

*"Auction woman" Tillai earns only a rupee and a few fish per day for more than 12 hours of work : selling the catch, collecting the proceeds.*



also gave her Rs. 500 to free Tillai's adopted brother from some obligations. He could now operate Tillai's new net, by himself or with Tillai's son or husband when the latter had time so that the net-owner's share and the labourer's share would both go to the family. Tillai was expected to give me 5% to 60% of her income — and this I wanted to reinvest for her.

After finalising this I was happy about my plan to improve Tillai's economic status and also happy that I would acquire first hand knowledge about the purchase of a second hand craft and gear, its operation and the family's income-expenditure-savings pattern during its operation. In practice it was difficult to follow the above pattern but I did get some cash as "savings" from Tillai. In two weeks she gave me Rs. 100. It was an ordinary fishing season and I expected her to make more profit later. This did not happen — she was unlucky with the catch. Within the first week of the active season, a mechanized boat tore the net into pieces and only a bit of the net weighing 1kg could be recovered.

***Tillai's new boat and net failed to raise her income — but aroused envy, kept old friends away, drew requests for loans from relatives.***

A group of fishermen accompanied by Tillai and her husband went to the Mechanized Boat-Owners' Association to claim compensation for the damage. Since the association was located far away, the group spent a whole day going there and arguing with the association. They had to make this trip several times, and all that they recovered was Rs. 130. But the money they spent on bus fare, lunch and the like was more than this. Again, Rs. 300 was spent to buy 2 kgs of yarn for the net. Now people were willing to lend bigger amounts, so Tillai was able to borrow a little from others and buy extra yarn. But already the lean season had set in, and the debt incurred to buy yarn had still to be paid back. All that Tillai managed to set aside as saving was Rs. 10 to Rs. 20 twice or thrice.

Next her husband fell seriously ill and was admitted to hospital. I could



*Fisherwoman Tillai and friend (the aCthor) at the Marina beach in Madras.*

not press her for payment during this crisis. When he returned, the couple living with them left the house on account of a misunderstanding and went back to their own village. Hence the net could be operated only when Tillai's husband regained normal health and when he was free from work for his regular employer.

Well, soon Tillai herself met with a serious accident. It took her four months to recover. During this period, the least I could do was provide medicines for her and not discuss savings. I realised that if at all the net was operated, she needed the money it fetched to regain health and provide for her family. Thus ended my adventure of improving the economic status of Tillai and her family.

The total effect of the financial assistance was negative. First, most of the income it generated went to pay debts. Without savings and investment, Tillai could not improve her income.

Second, her enhanced status as net-owner increased her social responsibilities. For example, more and more of her kith and kin came asking for financial help. Previously she could refuse outright, but after she got the net and boat, it became necessary for her to borrow and give them money. She was expected to give more cash during funerals, marriages etc. appropriate to her

status, as befitted custom. Hence she had to borrow for this. She was also expected to lend her net and craft to labourer friends; and she could not collect the net-owner's share from them as they were much poorer, and their output was enough to feed them alone.

Third, there were social embarrassments. A gap grew between Tillai and other net-owners, as also between her and some labourers. The former shunned her out of jealousy, they could not accept her as an equal as she had become a net-owner one fine day to their surprise. Some of her poor friends too kept her at a distance, thinking her family was no more like theirs.

Fourth — the only good effect — was that Tillai's adopted brother became an independent labourer, but this too had a negative effect as he deserted her. Result: her net remained idle most of the time. What I could conclude from all this is that in traditional communities many factors come between output and savings or reinvestment. Money given to assist these families and put them on their feet may be used in a variety of ways. In Tillai's case, the money was a gift, not a loan, so she was not under pressure. Perhaps the pressure to repay would have been too much to bear had she taken such a loan from a bank or a cooperative society.

## S. Pandurangan

and

## P. V. Ramamoorthy

"It sounded like the rumbling of a temple chariot", says P. V. Ramamoorthy, eyes aglow. "The high-opening bottom trawls, complete with wooden bobbins, were being towed over rocky patches in Gulf of Mannar off Tuticorin. I could even hear the sound of the ballast from the boat deck." And S. Pandurangan adds: "We were surprised at the catches: large-sized perches in good number, rock cod, rays. No other gear could have caught perches off these rocky patches". Says Ramamoorthy again: "And the trawls scooped up something else, very pretty — sponges of many colours and hues, orange, golden, crimson.... We were entranced".

S. Pandurangan and P. V. Ramamoorthy (SP and PVR, to be brief), both Tamil Nadu Assistant Directors of Fisheries, are FAO counterparts in the high-opening bottom trawl activity. During the past three years they have lived, worked and slept with the *meen madi* (as high-opening bottom trawls are known locally). For the first year they assisted BOBP's Germain Pajot and John Crockett



S. Pandurangan

during trials at various centres; during the past two years they have had primary responsibility for extension of this technology to Tamil Nadu fishermen — and also to government agencies in Gujarat and Orissa. And they are now just back from a 10-day trip to Sri Lanka where they made an initial survey of fishing

grounds. The two counterparts are enthusiastic about the *meen madi*'s potential. Here are some glimpses into their experiences:

— Once at Mandapam, PVR at sea told SP on the shore by radio telephone about a good haul of catfish. SP got in touch with a merchant who ordered an insulated van. Three tons of catfish left that evening for Tiruchirapalli, and there were many smiles that night. "Radio telephones are necessary to reap the best benefits from the *meen madi*" say SP and PVR.

—PVR was returning to shore near Ennore after a successful two-boat trawling operation. Hit by heavy surf the boat capsized, spilling the crew overboard. In a few minutes, however, the partner boat picked up everyone. "But for the partner boat" says PVR, "I may not have lived to tell the tale".

— In Tuticorin, Germain Pajot had introduced many innovations to streamline gear handling and deck lay out. Notably, a tiltable two-drum winch and gantry. On one occasion a private boat rocked and rolled after the net-drum was fitted on the gantry. Pajot had the net-drum shifted to the deck (it was a "non-standard" boat). The boat was now very stable, and gear-handling much easier and tidier.

— "Change is a slow process", says S.P. Initially Tuticorin fishermen were sceptical about the *meen madi*. But nothing succeeds like success. A few good hauls with the *meen madi* while conventional shrimp trawls returned empty, and fishermen trickled to the shore where the *meen madi* were laid out to dry, to count the meshes and rig their own versions.

Both S.P. and P.V.R. drudged as never before during the *meen madi* trials. Pajot was quite often in different to such mortal needs as lunch and coffee breaks — for himself and for others. And with Crockett, sleep became a luxury! For S.P. and P.V.R. often set out fishing with him before dawn, returned to shore at sundown, immediately began work on net-

repair, an operation that dragged on well past midnight. Hardly time for a snooze before they set out fishing again.

Those were crazy times, but S.P. and P.V.R. were too absorbed to be tired. An excellent camaraderie developed between Crockett, the crew and S.P. - P.V.R. Crockett used sign language at first, later picked up Tamil colloquialisms

— Extension work on the *meen madi* has three facets to it: the design,



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the rigging, the operation. At BOBP, SP takes care of requests for design details of the *meen madi*, and they flow in thick and fast from the west and east coasts. In the field, Ezhumalai helps out with net-rigging, using webbing supplied by the fishermen. As for operation, PVR goes out with Tuticorin or Rameswaram fishermen who have problems with their nets, finds out what has gone wrong, advises remedial action. "I spend 12 to 18 days every month out at sea", says PVR. In Tuticorin, all new trawlers use the innovations Pajot introduced and SP provides guidance whenever gantries are to be fabricated, hulls constructed or winches installed.

Pandurangan is 47, Ramamoorthy 46. Both joined government service in fisheries around the same time (1956-57). They complement one another well, Pandurangan being a methodical shore manager and Ramamoorthy a skipper with flair. They make an effective team. Says BOBP Director Lars Engvall: "Our success with high-opening bottom trawls owes not a little to the tenacity and competence of the two counterparts".

S. R. M.