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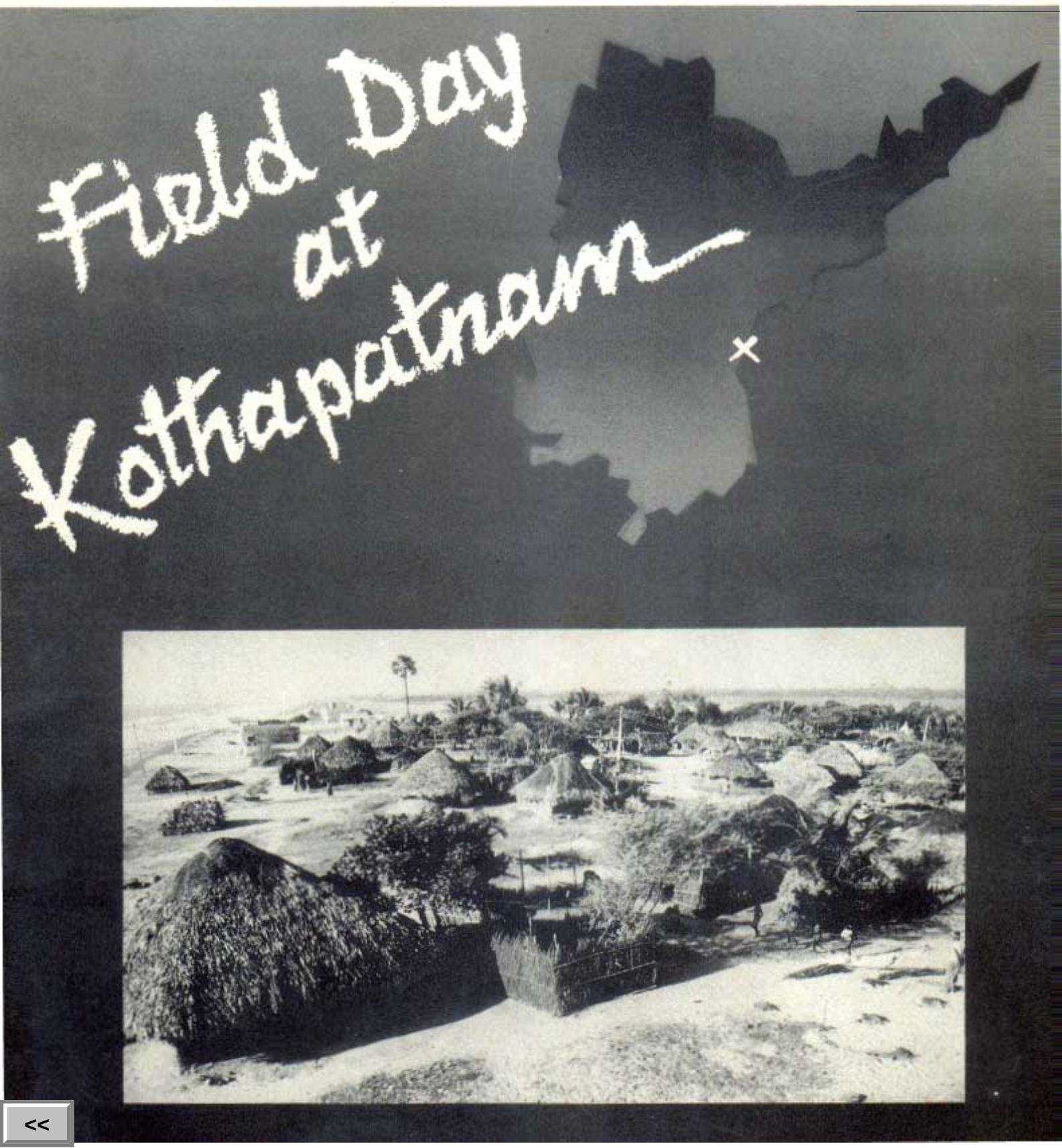
## Field Day at Kothapatnam



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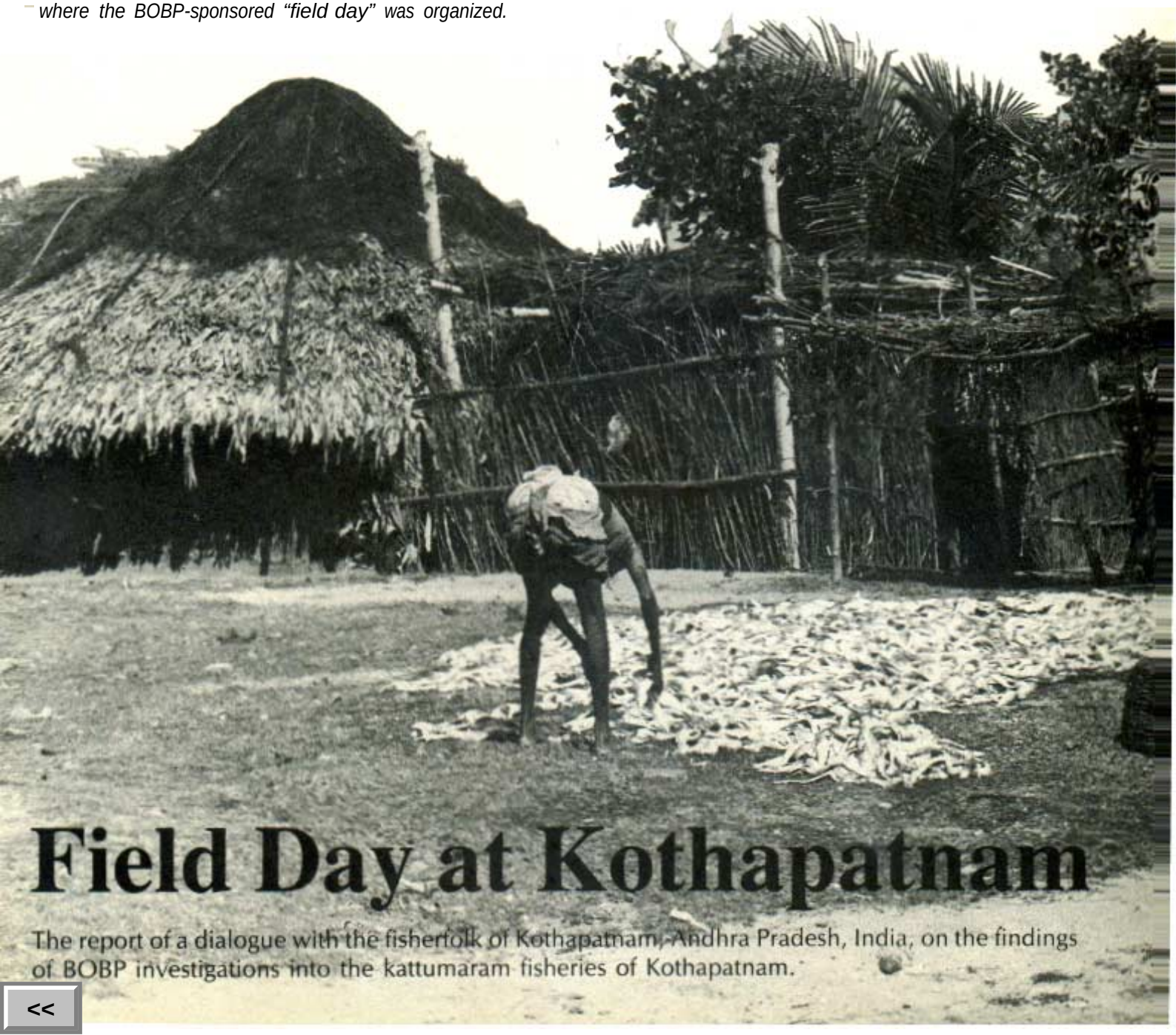
# Field Day at Kothapatnam

The report of a dialogue with the fisherfolk of Kothapatnam, Andhra Pradesh, India, on the findings of BOBP investigations into the kattumaram fisheries of Kothapatnam.



*Typical cluster of huts at Pallipalem viilage,Kothapatnam, where the BOBP-sponsored "field day" was organized.*

Normally a quiet fishing village, Pallipalem, near Kothapatnam — some 20 km from Ongole in Andhra Pradesh, India — was happily abustle on January 10, 1989 when the BOBP organized a "field day". The two highlights of the field day were a display of posters and. photographs on Kothapatnam fisheries in the afternoon, which drew willing crowds, and a "dialogue" in the evening, between respresentatives of BOBP, the local population, and village and state-level officials.

BOBP has been active in Kothapatnam from the middle of 1988. The aim is a multi-disciplinary approach to improve the earnings and living standards of Pallipalem fisherfolk. (The village has 600 households with' a population about 3,000). A comprehensive data base on Kothapatnam fisheries and fisherfolk is considered essential for such an approach. Towards this end, detailed data collection on fish capture, marketing and socio-economics began in July 1988, to continue for 12 months. The field day .climaxed the first phase of data collection and was meant to promote a dialogue with the fisherfolk about the findings.

A report of BOBP work in Kothapatnam, and of activities on the occasion of the "Field Day" is summarized below.

*What is the "multi-disciplinary" nature of BOBP work at Kothapatnam?*

Various BOBP disciplines — fishery resources, fishing technology, post-harvest technology, and extension — have been involved in planning, executing or analyzing the work at Kothapatnam. Each discipline has had an input to make.

*What is the mechanism for data collection? Who is doing it?*

Two full-time village-based investigators, both graduates specially trained by BOBP, have been systematically collecting data on a variety of subjects; the characteristics of fishing crafts and gears, fishing operations and catches, the seasonality of catches and the nature of fishing grounds, the resources exploited, the marketing and processing of catches and the incomes of fisherfolk from fishery activities. The socio-economic conditions of the

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fisherfolk and the social infrastructure are being studied by a BOBP socio-economist. The data is made available to BOBP in a regular format for analysis by computer.

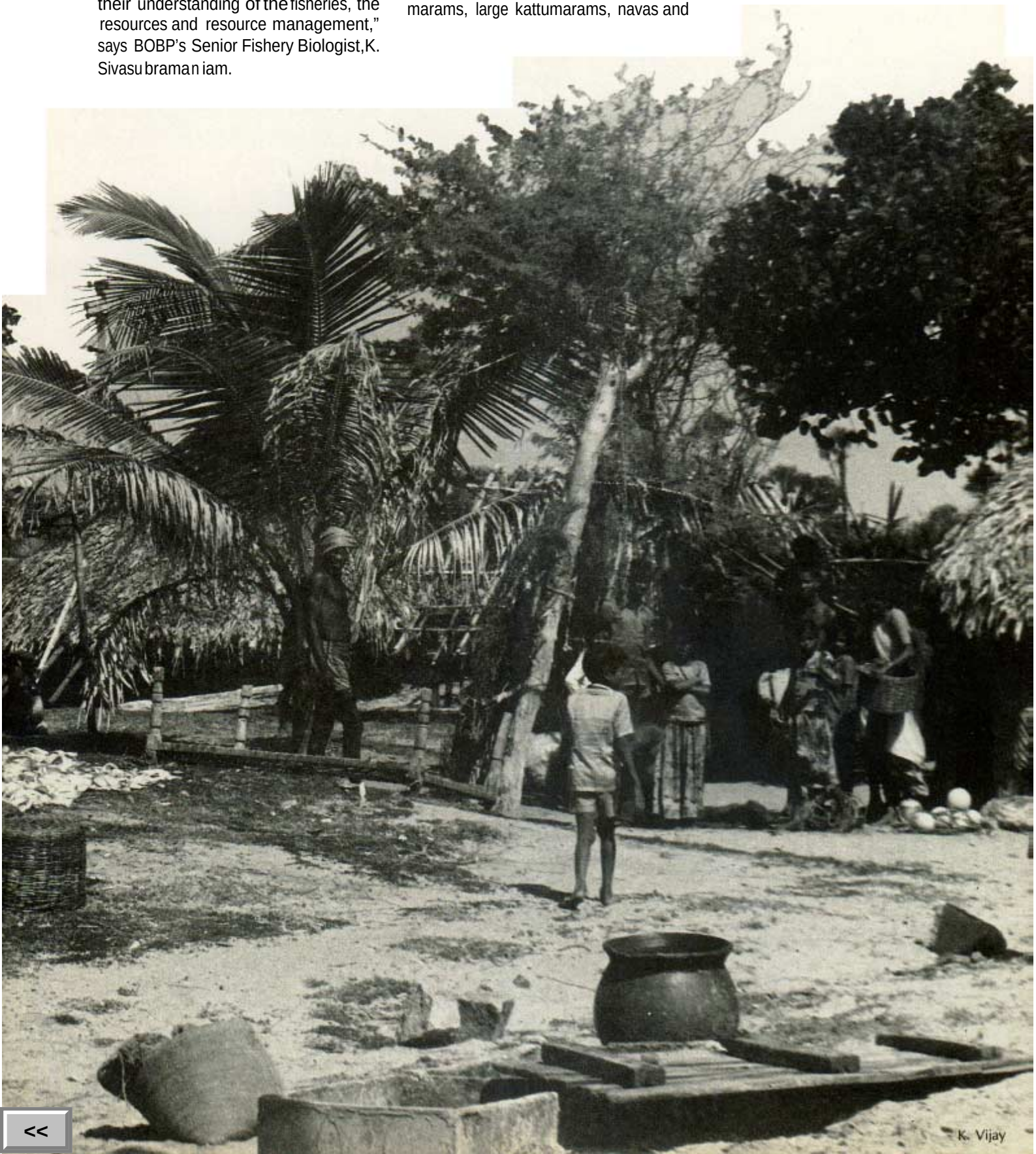
*What was the "Field Day" meant to achieve?*

"We wanted to exchange facts, views and ideas with the Kothapatnam fisherfolk and secure their co-operation and participation in activities to improve their understanding of the fisheries, the resources and resource management," says BOBP's Senior Fishery Biologist, K. Sivasubramaniam.

*What was the poster display about? What was the reaction to it?*

The posters were meant to facilitate communication by highlighting some of the findings of the investigation. The fish auction hall in Pallipalem, which presently serves as the village school, was used for this purpose.

Three posters showed the average catch per day and earnings for various craft-gear combinations. Small kattumarams, large kattumarams, navas and BLCs were featured. Two posters on area characteristics showed a very wide continental shelf, a distant shelf edge and river mouths in the neighbourhood which contribute to a shrimp fishery. Fishermen have to go far in search of good species. (To reach a depth of 50m, the fishermen have to go 12 miles out). A poster on resource distribution



K. Vijay

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highlighted the fact that fishermen are presently fishing in low-resource grounds in very shallow waters. A poster showing the relative percentage of earnings from fisheries and agricultural activities was also displayed.

*Apart from BOBP staff, who took part in the "field day" dialogue after the poster display?*

There was a phalanx of officials: the Joint Director of Fisheries, Mr. Pothraj; the Assistant Director of Fisheries for Prakasam district, Mr. Radhakrishnamurthy; the Manager of the Syndicate Bank at Kothapatnam, Mr. C. Johnsson; the General Manager of the Fisheries Cooperative Federation, Kavali, Mr. Ratnama Chary; the vice chairman of the local panchayat, Mr. P. Lakshmiah; the presidents of the two fisheries co-operative societies at Pallipalem – Mr. Vollupam Bangariah and Mr. Thommu Raghavulu.

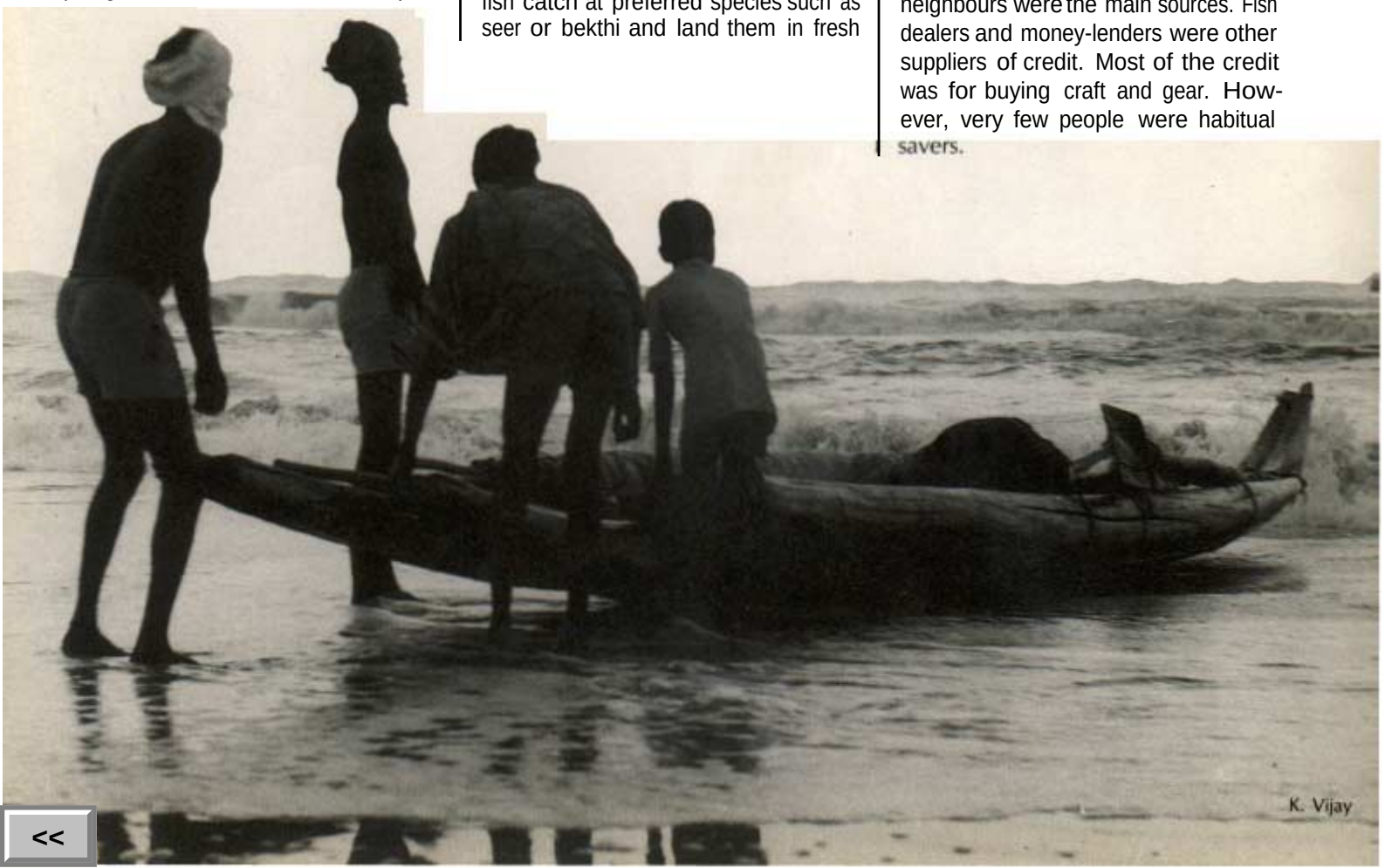
On behalf of BOBP, Dr. Sivasubramaniam said that Kothapatnam craft – most of which are small kattumarams – catch mainly small anchovies, croakers, ribbon fish and some shrimps and mackerels. They could get more of Indian mackerel and some mullet if they ventured out a bit further. Navas and BLCs (beach craft developed by the BOBP) should venture beyond the 50 m depth zone so that they tap large pelagic sharks, seerfish and dolphin fish; and also perhaps large demersals like bekthi, skates, shovel nose sharks and even shrimp. Referring to one of the posters, he said that the depth ranging between 40 and 70 m offered demersal resources such as pomfrets, ribbonfish, catfish, threadfin, bekthi, shrimps, croakers, skates and rays.


*Fish market scene at Kothapatnam.*

Mr. David Walker, Post Harvest Fisheries Adviser, informed the fishing community that large urban centres in India are commonly undersupplied and have substantial purchasing power. Those kattumarams that can target their fish catch at preferred species such as seer or bekthi and land them in fresh condition will be in a position to take advantage of these markets.

*What socio-economic information has the data revealed so far?*

Of the 600 households in Kothapatnam, detailed interviews had been conducted – till the field day – with members of only 28 households, of whom 10 represented fishing craft and gear owners, 17 consisted of labourers without assets and one was a merchant. On average, the incomes from agriculture were one fourth that from fishing. As for credit, relatives and neighbours were the main sources. Fish dealers and money-lenders were other suppliers of credit. Most of the credit was for buying craft and gear. However, very few people were habitual savers.

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*What was the audience response to the presentations?*

The audience was exceptionally orderly – it listened in rapt attention. The fisherfolk agreed that bigger kattumarams could yield better catches, and that there were good species to be had "further out." They wanted to know how they could upgrade their craft, and get credit for fishing craft and gear. Further, they wanted BOBP or government to demonstrate the viability of fishing gears for large kattumarams, so that they could confidently seek loans. They also sought guidance for income-generating activities, particularly for non-owners of assets. The bank manager told the audience that a savings account was essential for a loan; it was proof that a loan-seeker had the inclination and ability to save.

Fisheries officials present explained the annual development plans for the area – such as the issue of boats, kattumarams, BLCs, outboard motors etc...

*What was the consensus from the meeting? What conclusions emerged?*

– The fisherfolk agreed that small and old kattumarams should be replaced with bigger ones, and that large kattumarams could tap resources better if they were motorized. They requested advice and assistance to ensure that these developments became a reality.

– It was agreed that navas and BLCs ought to aim at resources in the 50-100 m depth zone and beyond, so that they did not hurt the livelihood of kattumaram fisherfolk.

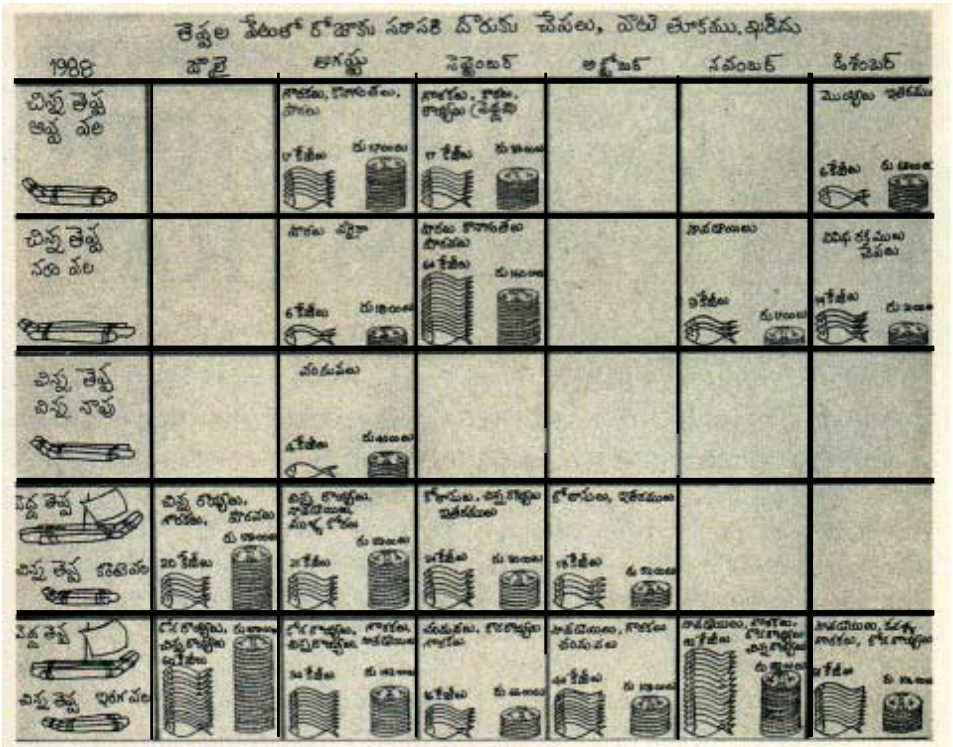
– Fishing gears which mainly catch juveniles in shallow waters should be avoided. The need for diversifying fishing methods in depths greater than lOm was agreed on.

– The fisherfolk urged demonstrations of effective gears for large kattumarams, so that they could confidently seek credit for the craft or the gear. The fisherfolk wanted investigations of activities to improve the earnings of people without assets. The bank saving habitS was urged on fisherfolk to improve their creditworthiness.

– Fisherfolk agreed that they should be vigilant and energetic about availing of various government schemes. For example, during the good fishing season, they could deposit a small amount – say Rs. 30 per month – in any of the nationalised banks for nine months. The Government will contribute a matching Rs. 270; the fisherfolk household concerned will then be eligible to receive Rs. 540 during the lean season.

– Another useful scheme was registration with the Fisheries Department or Fisheries Cooperative Society which makes the fisherfolk eligible for insurance cover for accidental death (Rs. 15,000).

– The fisheries department can organize a fish curing tank for a village if it wants one – another benefit that can be availed of.




*Above : One of several posters displayed during the "field day". This one highlights the earnings from various craft-gear combinations.*

*Below: Fisherfolk at the "field day" meeting against the backdrop of the poster display.*

*In retrospect was the "Field Day" a useful exercise? Is it likely to be repeated?*

It was certainly very useful and revealing. The fisherfolk now have a better idea of what BOBP is trying to do, and future work is facilitated to that extent. Further, the direct contact established between officials and the fisherfolk by the "Field Day" is a positive feature. The Field Day may be organized again after a few months, when more data becomes available.

## BOBP-NGO co-operation in post-harvest technology:

# CAN WE IMPROVE ON THAT PALMYRAH BASKET?

*by Antony Sanders*

*NGOs of Kanyakumari district, Tamil Nadu, India, may with BOBP support try out two innovations among fishing communities there: a better fish container than the ubiquitious palmyrah baskets, and anchovy-drying during the monsoon. Both innovations have wide relevance and application.*

The BOBP has recently been looking at the work of NGOs (non government organizations) with marine fisherfolk in Bangladesh, India and Sri Lanka. Aim To learn more about the NGOs and identify a few whom BOBP can support in extension and training activities for fisherfolk. This is in pursuance of a recommendation in 1988 at the 12th meeting of the BOBP's Advisory Committee – that priority should be given to the training of trainers, including NGOs.

Work in India began with a shortlist of NGOs in Andhra Pradesh and Tamil Nadu. A multidisciplinary expert team (aquaculture, extension, fishing technology and post-harvest technology) met and discussed with selected NGOs and fisherfolk they are working with.

NGOs and the BOBP have a common aim – the betterment of small-scale fishing communities – but their strengths and skills differ. The BOBP has experts in fisheries technology and sociology with experience around the world. NGOs on the other hand offer a vast supply of enthusiastic field workers. Some of the NGOs empathize very well with fishing communities and enjoy a close trusting relationship with the fisherfolk.

Though the number of NGOs is growing, there are very few who work with fisherfolk, and they need technical orientation in fisheries. Many NGOs have assisted fisherfolk in the areas of socio-economics – helping them obtain bank loans and government development grants, for instance – but few have been able to help in the capture, utilisation and marketing of fish.

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To this end, BOBP teams have visited several NGOs within Tamil Nadu and Andhra Pradesh, and together with them identified potential areas of collaboration. On post-harvest fish technology, fishing communities of Tamil Nadu and Andhra Pradesh face some common problems. These relate to handling and hygiene, transportation, and marketing.

The non-availability of ice or the reluctance of fisherfolk to use ice makes imperative the quick movement of fish from landing centre to market if the fish is to be sold fresh. But on its route to the market, fish is often carelessly thrcM'n about, stepped upon, left in the direct sun for long periods and physically abused; all this reduces the economic and nutritional value of fish. When market and processing sites are located many kilometres away from landing centres, the problem of abuse gets aggravated. The fish can't be sold fresh, it has to be cured. Many of these difficulties arise from the absence of a cold chain.

Initial BOBP activities with NGOs in the area of post-harvest technology bear these factors in mind. The main development priority has to be in education; BOBP intends organising a series of training courses for NGOs and the fishing communities they represent. These courses will aim at a broad understanding of post-harvest technology : quality control and hygiene, good handling practices, effective use of ice, improved curing practices, control of spoilage losses during curing, a comparison of the marketing chains of various fish products.

From this generalized course, it is hoped that specific areas of need, both within NGOs and the fishing communities they represent, can be recognised and further courses proposed. For instance, training in making fish products from species not normally utilised e.g., the production of pickles. In addition, this venture offers an excellent opportunity to link the activities of NGOs with government departments. It is intended that most of the training will be managed by BOBP but carried out by staff of government institutions, local and central.

It is very difficult to introduce innovations among fishing communities which are not organised, in which capture and marketing are done individually. NGOs are striving valiantly to organise communities into effective societies. A few have succeeded in setting up groups of fishermen and fisherwomen. Such an arrangement enables fisherfolk to secure greater control of the auctioning of their catch and obtain better prices. This practice also loosens the hold of the fish-merchant-cum money lender on the fisherfolk.

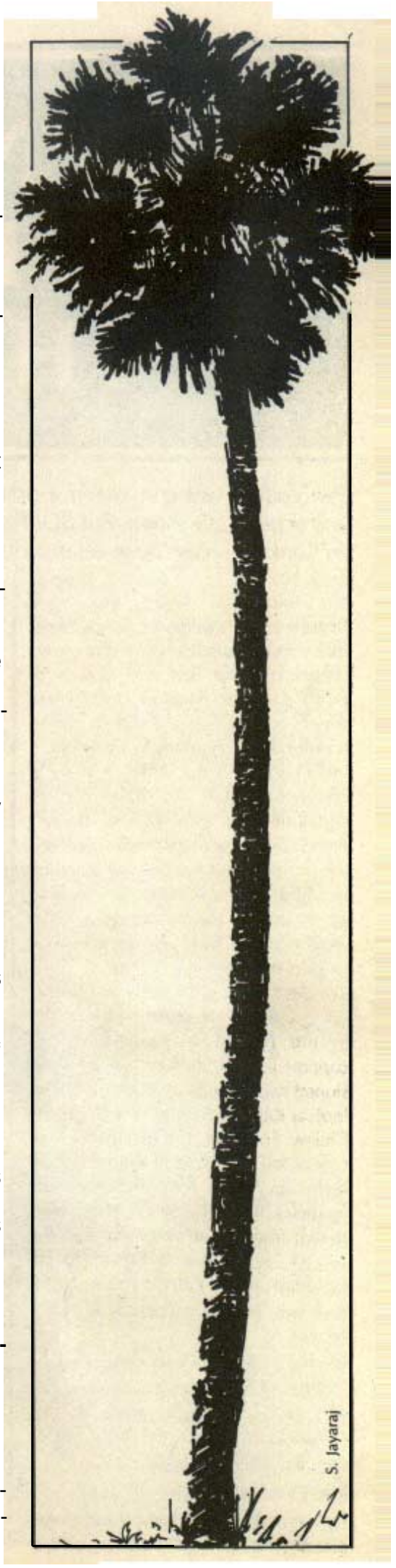
One place where fishing communities are organized, and where improvements to post-harvest fisheries can be tried out, is Kanyakumari District in Tamil Nadu. A series of BOBP initiatives is proposed in co-operation with a few NGOs, to be taken up by other NGOs if feasible. These initiatives will attempt to develop a better fish container for fisherwomen vendors; and a new system for drying anchovies during the monsoon.

A better fish container than the traditional palmyrah basket? Many have dabbled with the idea in the past, no one has yet succeeded. Reason : The opinion of the fisherwomen have not been taken into account. In consequence, the designs developed are technically feasible but impractical high cost, short working life, wrong shape, etc. To avoid this customary error, BOBP has collected data — facts and opinions — from approximately 600 fish vendors in Kanyakumari district about a new container — its requirements and limitations. This information is being analysed before being passed on to design consultants and technology institutes in India, together with information about the internationally recommended code of practice for manufacturing fish containers.

The idea is that sample containers will be produced, introduced and tried out in Kanyakumari district. If the containers are a hit, they will be released on a wide scale in India, since many NGOs at many places have already expressed interest in an improved fish container.

**Anchovy-drying during the monsoon:** **The second area of BOBRNGO co-operation covers the design and setting up of an improved system for drying** anchovies during the monsoon. Since anchovies are traditionally beach-dried in India, the heavy anchovy landings during the monsoon result in vast economic loss from spoilage and down-

*(Continued on page 15)*



# PEN CULTURE THE TECHNOLOGY THAT FAILED

by Charles Angelt

*Pen culture was considered a promising technology for small-scale fisherfolk, because it is low in cost and ecologically sound. But BOBP's experiments with shrimp pen culture — in Killai, India, and in Chilaw, Sri Lanka — have been disappointing. This article analyzes the reasons.*

Regular readers of *Bay of Bengal News* may recall articles over the years chronicling the ups and downs of BOBP's effort to develop a totally new way of rearing penaeid shrimp and to transfer the technology to fisherfolk in India and Sri Lanka. After six years of concerted effort, we have had to conclude that pen culture doesn't work. Given the initial enthusiasm and the prospect that a successful outcome would enable small-scale fisherfolk to get in on the shrimp bonanza, what went wrong?, Could any one cause be singled out?

We did hit pay dirt once in Sri Lanka, but cOuld not repeat that performance. In the process of terminating our support for pen culture, we commissioned two evaluation missions, one to look at Killai, India, the other to assess Chilaw, Sri Lanka. The two teams were composed of experts in shrimp culture, technology and rural sociology not involved in the project. They were drawn from the government and the private sector. Two BOBP staff were included in the Killai team, but they had not been connected with the project.

On the basis of our experience and the findings of the evaluation missions, we can classify problem areas in pen culture as environmental, biotechnical, managerial, and social.

## the Environment

Unlike pond culture, pen rearing takes place in the open sea where no control can be exercised over important variables such as salinity, temperature, oxygen content and so forth. One likes to think of an inexorable march of seasons — the progression of monsoons in a rhythmic annual pattern. The reality we faced was frequent unpredictable perturbations in the general climatic regime of the region. In India, the northeast monsoon failed in 1986. Result: prolonged drought and high salinity; conversely the heaviest unseasonal rains in 100 years in Sri Lanka (September 1988) severely disrupted management protocols. Pen culture trials were sited in shallow lagoons and backwaters which are very susceptible to the effects of drought and flood. The influence of freshwater runoff or the lack of it may be rather localized, depending upon the degree to which mixing with more stable open sea water occurs.

Semi-intensive shrimp farming requires an adequate production of natural food, which is readily achieved in a pond but completely beyond control in the open-sea environment of the pen. Declining yields over several years at Killai may reflect irreversible changes in the bottom flora and fauna; the time frame of the project would not have allowed fallow periods.

## Biotechnical Fadors

We can sum up our "biotechnical" problems in three words: pests, seed and feed. In Killai our shrimp farmers had to confront all three — an almost insurmountable exercise. "Pests" encompasses both predators and competitors. Fish like groupers, snappers, ladyfish and conger eels which prey directly on shrimp most probably consume feed meant for the shrimp, as well. Detritus and benthic feeders like pearl spot *(Eutroplus suratensis, Siganus sp.)* readily take to the high protein shrimp feed. Often competitors enter the pens as very small fry impossible to exclude with the 10 to 12 mm mesh pen wall material. Conger eels and crabs were also capable of burrowing under the pen wall even when it was buried 50 cms into the bottom. The species composition of pests varied greatly between seasons and the two sites in Sri Lanka and India. Competition also arose from the entry into the pens of shrimp themselves. Metapenaeids as well as the targeted species often entered in large numbers, competing for feed and space and upsetting management by randomly increasing the stocking density.

Seed: Theoretical calculations indicate that it is possible to profitably rear *P. indicus* by harvesting five crops per year at Killai. Unfortunately natural sources can supply seed of this species only twice' during the year and no hatcheries were reliably producing *P. indicus* during the trials. Furthermore, the nursery rearing of delicate hatchery

produced PL's, as well as assuring their supply, would add greatly to the complexity of management. We did not confront the problem in Sri Lanka, because several private hatcheries, as well as one government installation were always able to fulfill our requirements for *P. monodon* PLs.

Feed : In the Killai trials obtaining an adequate ration to feed the prawns was a very difficult problem to overcome. No reliable prawn feed is manufactured in India, so our farmers had to rely on what they could put together from locally available sources. The result was high food conversion ratios, i.e., high feeding costs. In any event, if extension had taken place there would not have been enough local marine protein sources to support expanded pen culture in the Killai backwaters. In Sri Lanka, we were fortunate to be able to collaborate with a progressive private feed mill interested in developing its capabilities in shrimp feed manufacture. The mill produced feed as needed to our specifications. Our best trial at Chilaw had a FCR of 2.4: 1, quite acceptable considering consumption by competitors. During the last phase of the Killai trials, with *P. monodon,* we tried to fabricate a high efficiency feed but encountered lots of problems trying to find reliable and timely suppliers of raw materials.

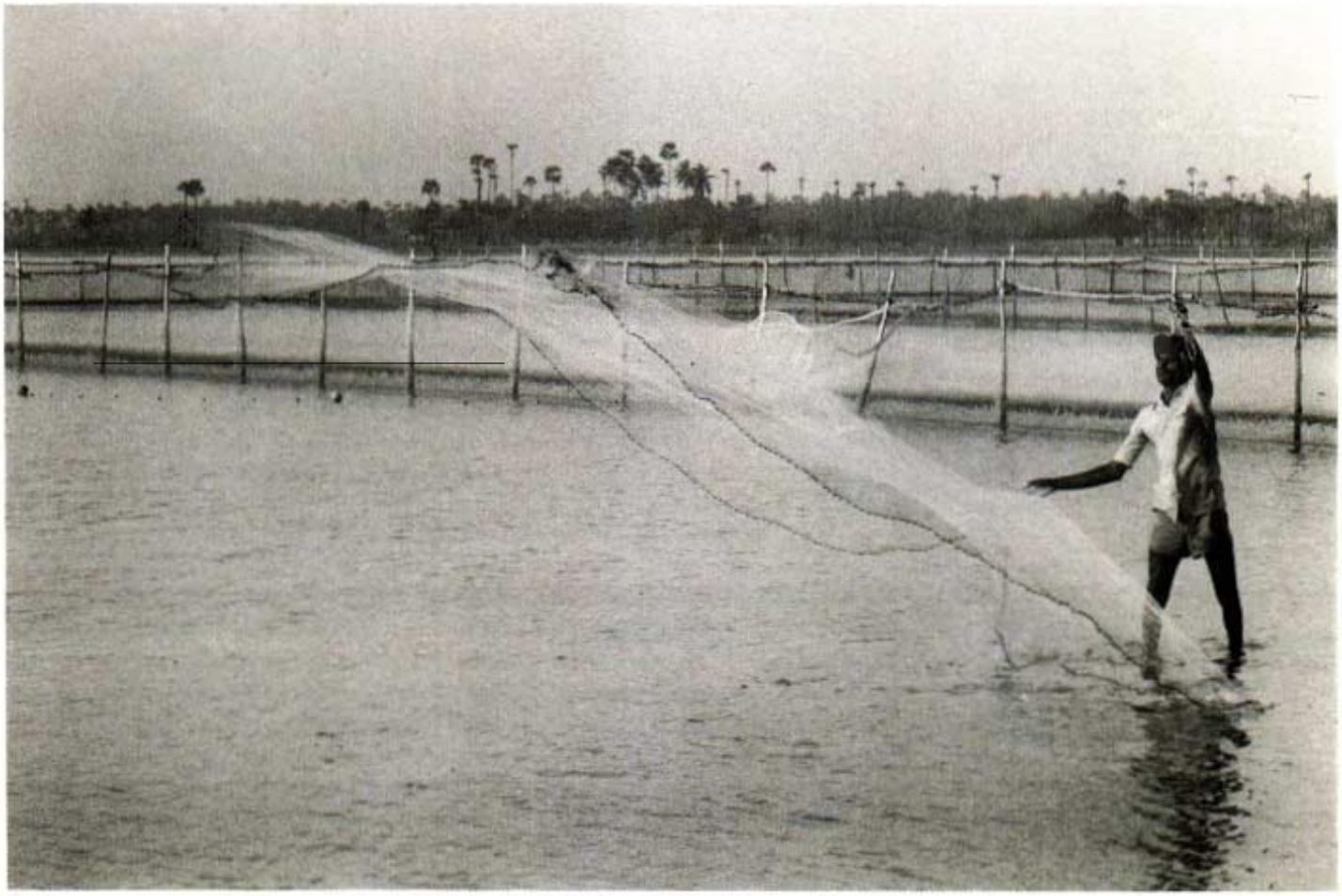
It is no coincidence that most prawn farming projects in tropicai Asia deal with *P. monodon;* it has the growth potential to reach optimum commercial size within 3 to 4 months. After two months, the growth rate of *P. indicus* slows to such an extent that it rarely exceeds 12 g; the increase becomes almost nil if one tries to extend its culture period. This means that your harvest falls mostly in the 80 count range (heads on), fetching a low price. That was, of course, our rationale for giving the tiger prawn at least a try in Killai. The results were abysmal, to say the least. Poor pen wall maintenance was a contributing factor, but the problems with environment and feed must have influenced pens wherever the walls remained intact. Tiger prawns grew well in our Chilaw, Sri Lanka trials when not disturbed by low salinity. Competition and predation were probably the culprits responsible for low recovery rates.

Management

Management success or failure seemed to stem not so much from a complex technology as from relationships between the principals. Although both the Killai and Chilaw projects were implemented by their governments' respective fisheries departments, the nature of the relationship between government staff and fisherfolk engaged in the project was qualitatively different. Rapport between the different actors at Killai declined over the years and must certainly have affected the management of culture operations. There were many staff changes, both on the part of the concerned fisheries department and BOBP; perceptions changed accordingly. During the last year, when the tiger prawn trials were on, deterioration in operations and maintenance was quite evident. One thing was clear — BOBP staff failed to communicate the reasons for the change in culture strategy to DOF field staff and fishermen working on the project. Unfortunately, the fishermen were given little autonomy and understandably perceived themselves as mere employees with little stake in the outcome of the trials.

The situation at Chilaw, Sri Lanka was very different. Three young men were selected from the village of Merawela by the officer in charge of the nearby brackishwater station. After some initial

*Harvesting of cultured shrimp with a castnet at a pen in Killai, Tamil Nadu, India.*



training, they were given considerable latitude in their' work and were encouraged to try their own solutions to some of the technical problems. The three were also paid a share of the revenue from shrimp sales. Although MinFish staff changed during the course of the trials, everyone else saw things through from beginning to end. We feel that management of culture operations and maintenance could hardly have been better at the Chilaw site, and that bio-technical factors were solely responsible for failure there.

Social Aspects

Pen culture was a pilot project undertaken in the environment of a common property resource — the lagoon. The trials were not isolated "laboratory" experiments, separated from the •surrounding community. Indeed, one of the most important objectives was to assess community reaction to the technology. The initial reaction of the inhabitants of both Killai and Merawela was negative — after all, outsiders appear suddenly and propose occupying space in a crowded lagoon traditionally used by fisherfolk.

The initial socio-economic survey in Killai aroused skepticism and outright opposition, mollified to some extent by the efforts of a social worker to communicate the hope that ultimately a technology could be developed that would give the fisherfolk a better livelihood. In spite of these efforts, the negative perceptions persisted right till the end of the project, and it is doubtful if extension could ever have occurred had the technology been economically successful. The village leaders put it in a nutshell: all should benefit or none could participate. Given the limited area available, an estimated 80 ha, it would have been impossible for all of the 600 Killai families to participate. It took gumption for the eight fishermen who worked on the project to do so in the face of opposition from their families and friends.

Merawela, Sri Lanka was a much more positive experience. There were initial communication problems, but once the fisherfolk understood our objectives they became willing participants. Unlike Killai, the intimations of cooperation among the fisherfolk appeared in the form of a fishermen's Social Development Organization. The Merawela SDO hadn't really done much before it got involved in pen culture, but all its members were well aware of the income-generating potential of prawn culture and were anxious to find new ways of improving their livelihood. The three young fellows employed to manage the pens had their personal differences with the SDO leadership which predated our presence in the village, but eventually the SDO accepted their involvement in the project. SDO members were encouraged to visit the pens as often as they wished, an offer they took up with enthusiasm. Eventually, they sought BOBP's assistance in setting up their own pens. We provided the organization with materials for pen construction and funds for their initial trials on the condition that they would be responsible 100% for management. They are presently carrying on their trials although we have given up. The three young men who worked on the MinFish/BOBP pens are starting their own pond culture enterprise; no doubt they will benefit from what they learned during their stint with BOBP.

*At the shrimp pen site in Chilaw, Sri Lanka, local fishermen are constructing Netlon pen walls. A water jet facilitates insertion of the pen wall into the lagoon floor.*

A case could be made for continued BOBP involvement at Chilaw in the light of one successful trial. In fact, the three other trials were so far from profitability that if there had been any chance to get out of the red, it would simply take too many more trials, and we did'nt want to get caught in a Killai-type syndrome where trials went on long after strong indications that the technology would not work. Perhaps the SDO will be able to overcome the constraints in the way of economic success. Should their work show promise, we would certainly be willing to continue supporting their efforts.

The story is not over yet, though. From Thailand comes word of successful culture of tiger prawns in fine-meshed cages. We have received reports that it is spreading rapidly. In countries like Sri Lanka, where the basic inputs of feed and seed are readily available, there may still be a chance for the small-scale fisherfolk to cash in on the shrimp bonanza!

# Making Sri Lanka's offshore fishing boats safer: an urgent challenge

by G. Pajot

*What types of fishing craft in Sri Lanka run into problems at sea? What are these problems? BOBP's Senior Fishing Technologist discusses these questions in the context of the current debate on safety at sea which the September 1988 Bay of Bengal News helped promote. He also discusses the need for better-designed, better-built and better-equipped boats, for better-trained fishermen, and for proper introduction and enforcement of preventive regulations.*

## Development of Fishing Craft

The small-scale fisheries sector in Sri Lanka accounts for about 98 per cent of the total marine production. The evolution and development of this sector merit study.

Up to the late '50s, small indigenous non-motorized craft using traditional fishing gear in the inshore zone accounted for most of the catch. From 1958, indigenous craft were gradually motorized; and small motorized and introduced craft made their appearance too: 5.2 m fibreglass boats with outboard motors (18 footers) and 8m plank-built boats with inboard diesel engines (3½ tonners).

Between 1965 and 1975, the pace of development of fishing craft and gears slackened a bit, but accelerated again from 1975. More and more indigenous craft were motorized; the 5.2 to 6 m FRP open boats with OBMs considerably expanded in numbers; and several offshore boats, one-day and multi-day, ranging in length from 8 m to 11 m and in tonnage from 4 to 11 tons, entered the waters, thanks to government subsidies and bank schemes and support from international development agencies.

The scenario today, thanks to post-1975 developments, is one of a great variety and diversity of indigenous and introduced mechanized, motorized and non-motorized fishing craft. The strength of the fishing fleet is about 26,000 craft.

The composition of the fleet is set out in Table 1. (Source: FAO/Asian Development Bank Co-operative Programme, Fisheries Sector Study, September 1988).

## What types of fishing craft run most frequently into distress?

It is those fishing craft that operate beyond the continental shelf in the offshore zone (the waters from the edge of the continental shelf to approximately 100 miles from the shoreline). Neady 1,000 driftnetters-cum-drift longliners and trollers (3.5 to 11 tonners) come under this category. So do some small open motorized boats (18 - 22 footers) which seasonally operate beyond the continental shelf. Among those boats, larger, better equipped boats (11 tonners) seem to fall less frequently into distress than those day boats (3.5 - 4 tonners) which have been converted to multi-day boats.

The problems of safety, hence of search and rescue, are likely to be more acute in the west, south and east of Sri Lanka, where the bulk of the offshore fishing boats operate round the year, as far as 100 miles from the shore, on voyages up to six or seven days. But the magnitude of the safety problem, even its precise nature, has still to be defined. Information is very limited on how many of the fishing craft that experienced distress in the past were found drifting, how many reached foreign shores, how many sank.

It is said that from 1984 to 1987 some 70 boats encountered distress. How many returned, how many lives were lost, is not known well enough.

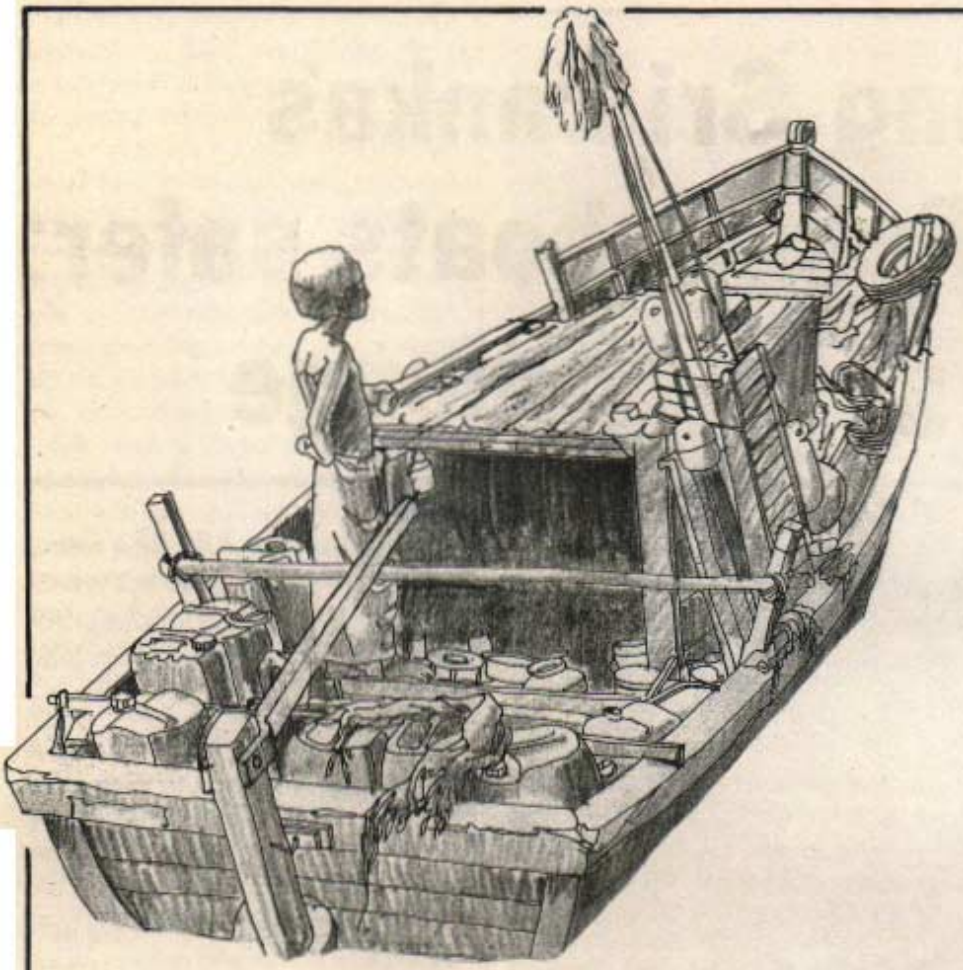
Monitoring the fleet and obtaining such information will help to define various problems concerning the safety of fishing boats.

## Why do fishing boats drift?

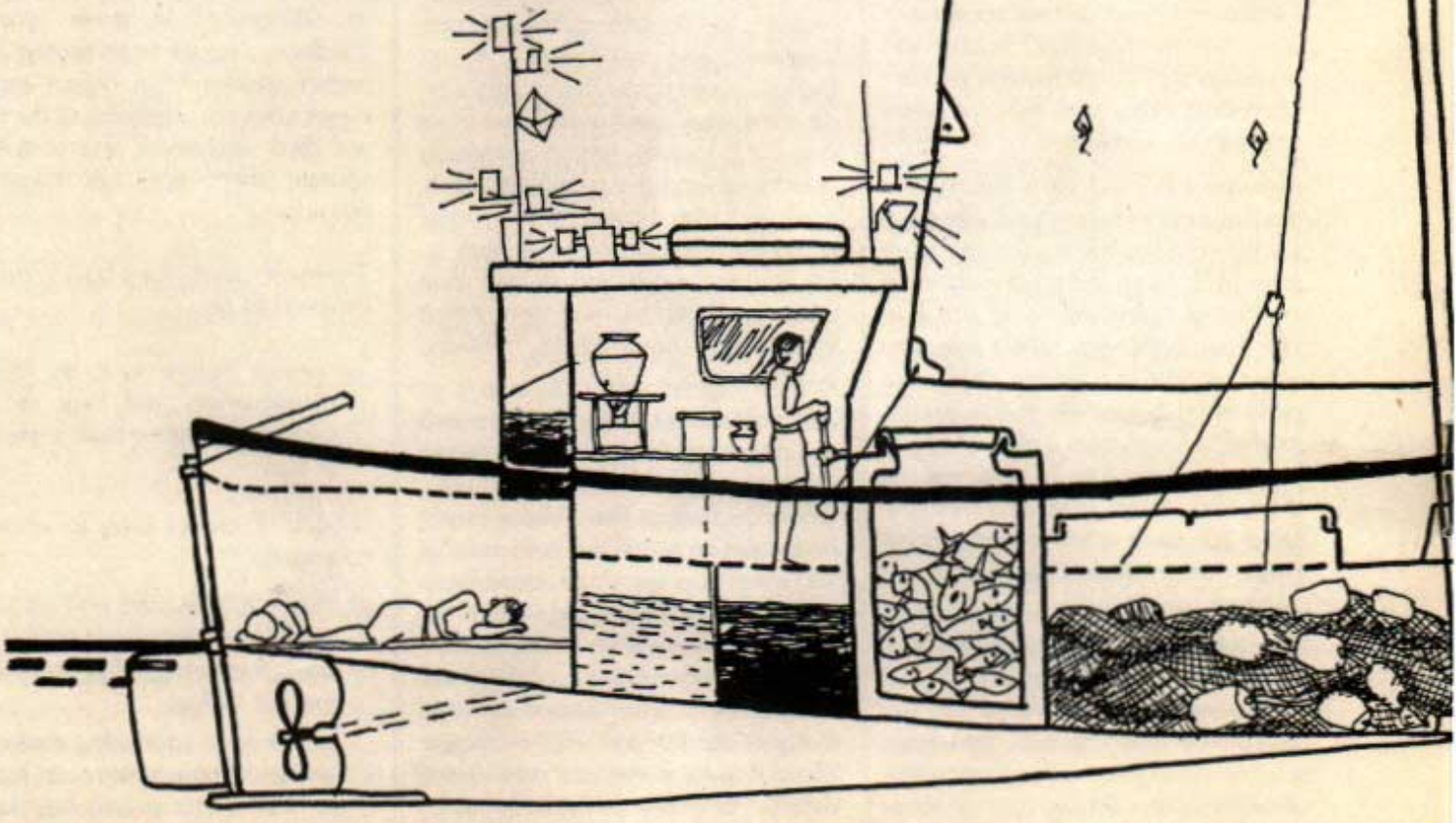
First, too many boat owners and crew overlook the need to keep the boat and its equipment in good working condition. Though boats started going further offshore than before and on longer voyages, upgrading of the boats and their equipment and of skills to operate them was not taken up seriously.

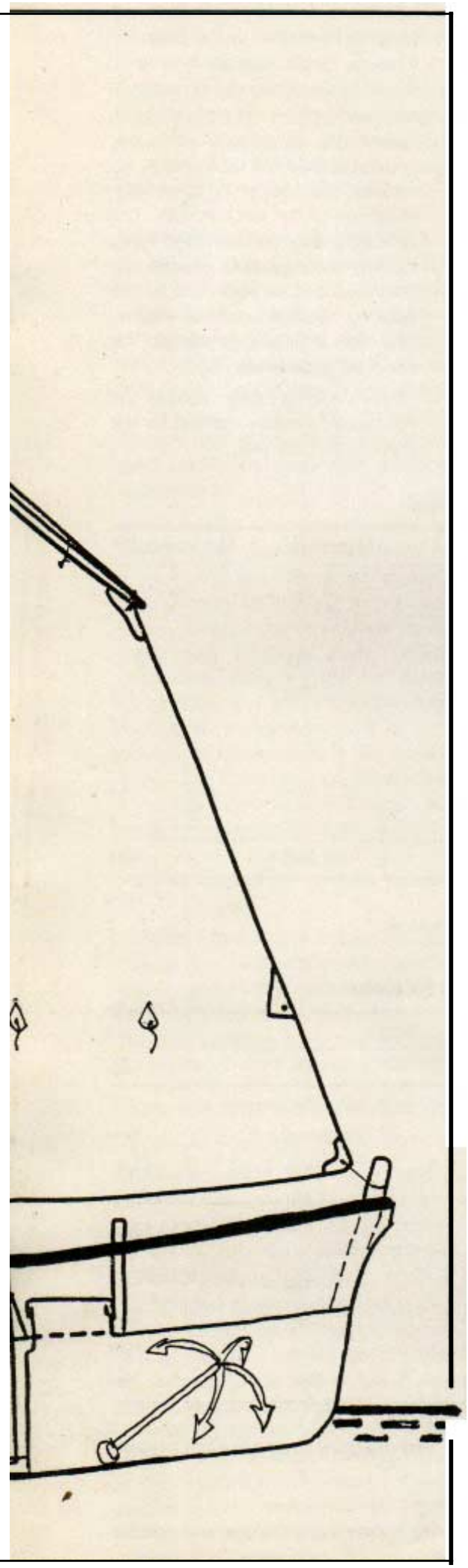
The main reasons for a boat to drift are believed to be:

- engine failure due to lack of maintenance, and lack of skills concerning engine trouble-shooting at sea.
- lack of proper tools to attend to engines
- lack of running spare parts on board.
- lack of fuel; some boats extend their voyage and range of operation, and run out of fuel
- lack of basic positioning equipment and knowledge in their use, leading to inaccurate positioning, hence shortage of fuel to return to base.



*An unsafe and overloaded offshore fishing boat (above), and a safe, well-laid out boat (right).*





When boats fall into distress, they could get irretrievably lost in the event of:

- lack of skill in seamanship and handling of fishing boats in rough sea
- excessive shipping and trapping of sea water, because of heavy deck load (nets, lines, fuel and fresh water jerry cans), low freeboard and small freeing ports
- lack of bilge pump
- lack of communication equipment
- lack of safety equipment
- absence of a proper sail rig and of skill in its use.
- lack of navigation and fishing lights
- lack of proper watch resulting in collision
- fire

**What emergency facilities exist aboard fishing** boats **and on the shore? What's the status of the search and rescue service in Sri Lanka?**

**Most fishing boats** operating **offshore for single day or** multi-day voyages are **very small. Their economic viability does not allow use of sophisticated and** expensive positioning and communication equipment, of the type used in more developed fisheries. In any case, weather conditions in tropical countries do not call for safety equipment year-round as elaborate and advanced as in temperate countries.

Many boats are equipped with medium frequency (MF) radio sets for entertainment, for weather forecasts, also for estimating the geographic position at sea. But not all fishermen are trained to use this equipment to estimate position. The first logical step seems to be to train offshore fishermen to use MF receivers as improvised DF (direction finders). The SLBC radio stations can be used as radio beacons. The next possible step: multiday boats could be provided with low cost DF, which would aid accurate and reliable estimates of position. For the large boats, the ultimate step would be to install a modern satellite navigator for maximum accuracy of geographical positioning. The existing shore radio station operated by the Ministry of Fisheries and the Ceylon Fisheries Corporation has many functions other than ship-to-shore communication. To improve ship-to-shore communication with small fishing boats and to facilitate more efficient rescue at sea, it seems obvious that a separate coastal radio station for maritime and fishing use should be established.

Some ninety 11-tonners and larger boats are equipped with SSB transceivers for ship-to-ship and ship-to-shore communications. These radio sets are rather expensive for smaller offshore boats. Because of prevailing security problems in the country SSB transceivers cannot be installed any more on board small offshore boats. VHF radio communication seems to be the only affordable option for small boats. This would, to a great extent, allow small boats in distress to communicate with the shore or with other boats fishing in the same area, within a 30-40 mile range.

Unscrupulous operators of SSB radio often use the 2182 KHZ distress frequency for routine everyday ship-to-ship communication. This contravenes international procedure. Fishermen may have to be trained in radio operation and obtain a radio telephone certificate.

For locating small boats in distress, the EPIRB (emergency position-indicating radio beacon) unit developed locally has not yet proven to be suitable for search and rescue. It operates on a non-recognized international frequency and its reliability is doubtful. But as a first step in the use of EPIRB and in the use of established DF shore stations for locating fishing boats in distress, the locally developed EPIRB unit could be demonstrated on a pilot basis from a limited fleet of boats operating in offshore and oceanic zones from Galle, Negombo or Beruwela. A 6-month demonstration with commercial fishing boats would show whether the locally produced EPIRB unit is reliable and whether DF stations are feasible. Depending on the results, the local EPIRB units could be converted for operation on 2182 KHZ frequency, pending the establishment of a proper SAR service and introduction of EPIRBs of other recognized international frequencies (406 MHZ)

Design of safe fishing boats

How safe a fishing boat is at sea depends very much on the design, the standard of construction, the boat equipment and the level of skills of the crew. To reduce hazards to fishermen

and loss of fishing boats, the following do's and dont's are suggested

- The boat should be provided with water-tight bulkheads to which the number of openings should be kept to a minimum.
- The height above deck of the hatch coamings and doorway should be at least 300 mm.
- Hatch covers should be constructed to ensure a maximum of water tightness and should be well-seamed.
- The height of the bulwark or bulwark and rail above deck should be at least 600 mm above deck level.
- The size and location of freeing ports should allow effective and rapid draining of water from the main deck.
- The *main deck* should preferably be free of loads (fishing gear, fuel, fresh water cans) which could prevent free discharge of shipped water.
- A minimum GM (0.60m) required for all operating conditions should be ensured.
- Where the main *steering device* is mechanical or hydraulic, an emergency tiller easily accessible for use should be provided.
- Adequate reserves of fuel and freshwater should be carried beyond what's needed for the maximum range of operation of the boat.
- Heating stoves (kerosene or gas) should be firmly secured on a stand, adequately protected and insulated against fire all around. The gas cylinder should not be stored in an enclcsed place but on an open deck or on top of the deck house.
- At least one of the approved types of fire extinguishers should be provided and located next to the cooking facilities and the engine. The fire extinguisher should be checked periodically.
- The sleeping area should be equipped to ensure comfort for the crew to lie and rest.

**Table 1: Composition of Sri Lanka's Fishing Fleet**

| Type | Non-motorized* | Motorized | Mechanized** |
|---|---|---|---|
| **Indigenous type** | **13 455** | **2 827** | – |
| Introduced **craft:** | | | |
| 1. 5.2-6.2m open boats (18-22 footers) | – | **7 231** | – |
| 2. 8.0-10.2m multipurpose deck boats (3.5-6 tonners) | – | 2 750 | – |
| 3. 10.4m boats : drift-netters cum-driftlongliners (11 tonners) | – | – | 70 |
| 4. 10.4m boats: trawlers (11 tonners) | | – | **9** |
| 5. 11 .6-14.Om boats (Trawlers/purse seiners) | – | – | 12 |
| 6. 19.5m boats (trawlers cum-drift longliners) | – | – | 2 |
| | 13455 | 12808 | **93** |

* Some 4000 of these crafts reportedly operate in brackishwater bodies.

** "Mechanized" boats are motorized boats equipped with mechanical hauling devices.

Table 2: Safety **Equipment for Various Boat** Types **in** Sri **Lanka**

| | Boats | | | |
|---|---|---|---|---|
| Equipment | 1A | 1.B. | 2A. | 2B |
| SSB transceiver with distress alarm 2182 KHZ | | Optional | Optional | Yes |
| MF radio | Opt. | Opt. | Opt. | Opt. |
| VHF radio | Opt. | Opt. | Opt. | Opt. |
| Satellite navigator | | | | Opt. |
| Direction finder receiver using EPIRB frequency as recommended | | Yes | Yes | Yes |
| Life raft, approved type | Opt. | Yes | Opt. | Yes |
| National flags | Opt. | Yes | Opt. | Yes |
| & distress flags (N.C) | Opt. | Yes | Opt. | Yes |

1A: 8-10.2m (3.5 - 6 tonners) multipurpose inboard motorized boats operating in coastal zones.

IB : 8-10.2m inboard motorized driftnett'ers cum-drift longliners and trollers (3 - 6 tonners) operating in offshore and oceanic zones.

fA: 10.4 - 11 .6m mechanized trawlers (11 tonners) operating in the coastal zone.

2B : 10.4m and above mechanized driftnetters-cum-drift longliners and trollers (11 tonners) operating in offshore and oceanic zones.

Navigation and fishing *lights* should be provided according to international rules and regulations.

Identification numbers and letters for boat, port and country should be displayed on top of the deck house and on floating life saving equipment (life raft,life jacket, ring buoy).

Safety **equipment for fishing boats**

For fishing boats of less than 25 GRT (gross registered tonnage) – the kind mostly used in Sri Lanka – there are no international safety conventions. There is only voluntary guidelines for the design, construction and safety equipment of small fishing boats. Each country may formulate its own safety guidelines on the basis of local fishing conditions.

In Sri Lanka, the great diversity of fishing craft (and of their level of earnings) makes it imperative that safety requirements be defined in practical terms. They cannot be uniform for all types and sizes of craft. Safety equipment rules cannot be made compulsory for some 13,000 *non-motorized indigenous craft* which operate in lagoons and in the coastal zone. The fishermen of these craft know best when to go out to sea and what they need to do. Essential items such as sail, anchor and oars are standard equipment for their propulsion and safety.

The *motorized (OBM) indigenous craft* operating in the coastal zone reportedly enjoy a good safety record. However, since they use OBM engines from their base of operation, each of those craft should be provided with an emergency sail rig and a set of tools for engine trouble-shooting, an easy-to-stow anchor and a torch.

About 7,000 18-footers operate in the coastal zone, a few of them in the offshore zone. Apart from reported capsizes when crossing the surf, the safety record of this boat is rather good. The basic safety equipment on board should be as follows:

Emergency sail and oars; easily stowable anchor; set of tools for engine trouble-shooting; torch; compass when operating offshore; spare engine and fuel tank when operating offshore; EPIRB when operating offshore.

Safety and rescue problems are reported most frequently with the 8.0 - 10.2m multipurpose inboard motorized boats (3.5 - 6 tons) and to a lesser extent, with the 10.4m driftnetters/ driftlongliners.

The need for guidelines and regulations concerning compulsory on-board safety equipment varies with the type of operation. Table 2 lists the equipment proposed for each type of boat.

Besides, the following equipment should be regarded as compulsory for all the four types of boats

- Magnetic compass; marine chart; charting set; navigation set; navigation rules; safety at sea manual; life ring buoy, approved type; life jackets, approved type; hand emergency flare, approved type; navigation, fishing and deck lights, approved type; torch; mirror; radar reflector; set of tools; set of running spares; extinguisher, approved type; first aid kit; anchor; sail; sea anchor.

**Training of fishermen**

For safer operations in the offshore and oceanic zones, training programmes for fishermen should be upgraded to cover: use of SSB transceiver and distress alarm according to international regulations; use of MF radio for direction finding; use of direction finder; use of VHF radio; use of satellite navigator; use of EPIRB unit according to international regulations.

The fishermen should also be trained in basic navigation, safety and survival at sea, overall management of safety of a boat, and trouble-shooting of engine at sea.

**Regulatory measures**

- Establishment of guidelines for the design, construction and equipment of fishing boats operating in coastal, offshore and oceanic zones.
- Introduction and enforcement of boatbuilding regulations.
- Enforcement of licensing regulations for fishing boats
- Introduction of compulsory safety equipment for every licensed and insured fishing boat.
- Compulsory radio operator certificate for fishermen operating boats fitted with a radio (VHF, SSB transceivers), and satellite navigator.
- Periodic inspection of boat and equipment and issue of a seaworthiness certificate by a qualified surveyor.
- Establishment and enforcement of regulations on the movement of crew and craft for all multi-day boats.

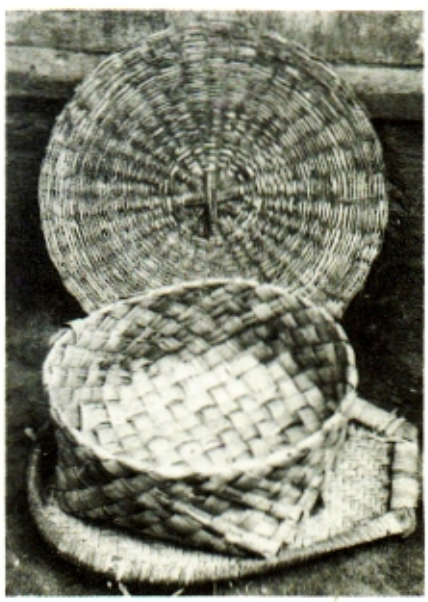
## Can we improve on the palmyrah basket?

*(Continued from page 7)*

grading to fertiliser. Traditionally, beach-dried anchovy remains one of the few cured products which has an export market in Sri Lanka. However, due to competition from Thailand, which produces higher quality platform-dried fish, the market for the Indian anchovy is falling. Therefore there is good scope for a system that will ensure better utilization of anchovies. BOBP proposes to employ a fish technologist to visit the area, study existing devices* for anchovy drying, and if necessary design a new system, which will be tested during the monsoon. If successful, the project has far-reaching potential for other developing fisheries with similar climatic conditions.

These two innovations will not merely benefit fishing communities but also encourage co-operation between NGOs and local governments. Also to be noted is that lessons learned in India could apply to other countries of the region where NGOs are active.

* A mechanical dryer for anchovy-drying, designed by CIFT (Central Insitute of Fisheries Technology), Cochin, is presently being used by the IFP (Integrated Fisheries Project), Cochin.



# Reef Fish in The Maldives - More than A Tourist Attraction

by Martin Van der Knaap

*A UNDP-funded project that explores the reef fish resources of the Ma/dives is being implemented by BOBP. The project's fishery biologist discusses some of the fishing methods for these resources, the species caught, export markets, and future prospects.*

*The exploratory reef fish project tried out the relative efficiency of fish traps (below), bottom longlines and handlines.*

Hassan Maniku

In the mid - eighties, when the Government of Maldives requested help from FAQ to investigate the reef fish resources in Maldivian waters, it was believed that only a small number of fishermen landed their catches at capital Male and that night fishing trips were an organized "tourist attraction". However, it soon became apparent that reef fish fishing was more widespread than presumed. While resort islands close to the capital obtain fish for their needs from Male fish market, more remote resorts contract fishermen for their daily supply of reef fish (most resorts serve their guests fresh fish at least once a day). In fact, fresh fish is one of the great attractions of the Maldives, especially for Italian and Japanese tourists, who 1986 made up 16.7% and 8.3% of the total number of tourists. Some resorts catering to Italian tourists provide two daily buffet meals with a great variety of fish, beef and chicken dishes (but with the emphasis on fish) and then several times per week an extra nightly fish barbecue. It is impossible to catch, so much fish during the weekly tourist night fishing seasons. Therefore the resorts pay fishermen to provide them every day with reef fish and tuna. The fishermen use their own dhonis (fishing boats) and the resorts provide food, fuel and lubricants.

Most fishermen contracted are from An atoll and are well known for their knowledge of reef fishing. They use various methods for catching fish, all based on hook and line. The preferred method is hand lining with live bait known as "muguran" which consists mainly of species of fusiliers (caesionids). Live bait is caught with liftnets — with special rectangular nets,

operated by up to four fishermen, two on board the dhoni and two in the water. They set the net close to the bottom and use ground fish flesh as bait; when the fish appear above the net, the fishermen rapidly haul the net. On board, the fish are removed from the net and kept alive in the bait compartment of the dhoni, where exchange 'of water is possible. Fishing with handlines is done close to the reefs, where jacks *(Caranx rnelapygus, Caranx ignobilis),* dogtooth tuna *(Gymnosarda unicolour),* grou pers *(Epinephelus microdon, Epinephelus fuscoguttatus, Plectropomus areolatus, Cephalopholis miniata)* and rainbow runner *(Elgatis bipinnulatta)* are caught.

Fishermen operating trolling lines use another type of bait — tunas cut into small pieces. It's mainly eastern little tuna *(Euthynnus affinis)* and frigate tuna *(Auxis thazard)* that are caught on trolling line, but rainbow runners, jacks and garfish are no exception. Fish species exploited by this type of fishery are *Lutjanus bohar, Aprion virescens, Lethrinus elongatus, Cephalopholi sonnerati, Plectropomus areolatus, Lutjanus sebae,* and *Lutjanus gibbus.*

In case bait fish is hard to get hold of, the "gaa-vadhu" is used. This is a handline provided with a hook and lure (feather-like structure) to which a piece of coral (dead or alive) is fixed by means of a palm leaf string. The coral is used as a sinker; when the lured hook has reached the depth required, the line is jerked to release the sinker (coral) and the lured hook is hauled to the surface with catches of

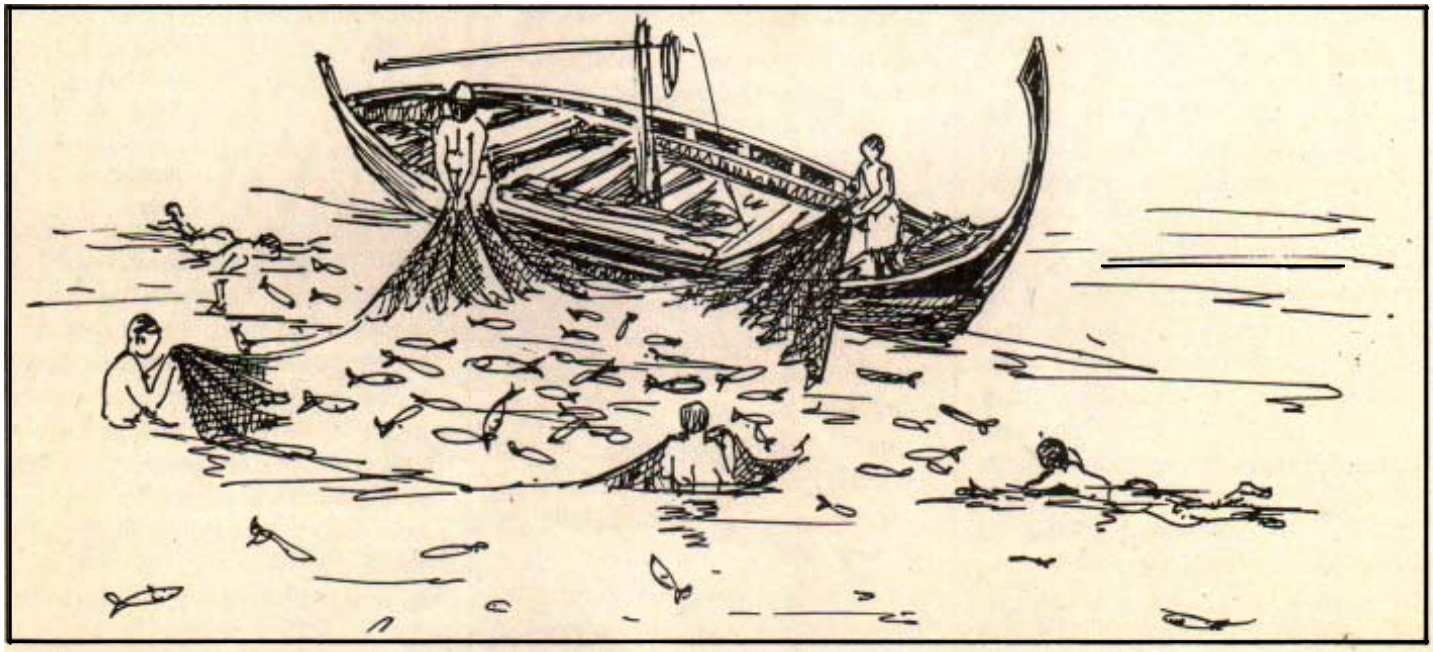
*The ubiquitous dhoni, the traditional Ma/dives fishing craft.*

species such as *Elagatis bipinnulata, Aprion virescens, Caranx me/ampygus, Gymnosarda unicolor, Lutjanus bohar* and, *Aphareus furcatus.*

Some other species — sailfish, wahoo *(Acanthocybium solandri)* and yellowfin tuna — are caught with a mas vadhu (fish as a lure on trolling line) or hemas helun. (Sailfish and wahoo are attracted to the row boat or bokkuraa by wooden fish-like lures and then speared).

Bottom set longlines and gilinets are specifically aimed at sharks, in view of their high-priced fins and relatively low-priced meat, which is exported as dried fish. Beach seining is also conducted occasionally in the shallow waters of some atolls. It is mainly women who "shepard" the fish into the net with braided palm leaves. Diving for lobsters is also carried out incidentally. In recent years sea cucumbers (Holothuria) are being collected by hand in large

*This sketch shows how Ma/dives fishermen catch live bait (reef fish) for tuna fishing.*



numbers, and the dried product (Beche-de-mer) is exported to the far east.

Most of the methods described above are also used by fishermen from other atolls and those landing their catches at the Male fish market.

The Ministry of Fisheries estimated the 1986 production of reef fish in the Maldives, including sailfish, wahoo and mackerels, at 7653 t. This figure, however, does not cover the production at resorts, nor the tourist night fishing catches, nor production for daily consumption. The Marine Research Section of the Ministry of Fisheries has undertaken several projects to assess production and consumption at resort islands (ODA/ Newcastle upon Tyne Reef Degradation Project and the UNDP/FAQ Reef Fish Research and Resources Survey). At present the UNDP/FAO Project aims at estimating the reef fish potential in north Male atoll and later on, in a second phase, in other atolls.

Without sound information about the extent of the reef fish resources, some private parties have invested large sums in sett ng up processing plants, targeting at frozen whole fish or fillets, dried and salted fish, and even live fish (for consumption well as ornamental purposes). At present the most

*Hefty catch of tuna — prime fish of the Maldives.*

importariL way of processing reef fish is salting or drying, with the products being exported to Sri Lanka. Various studies will be carried out in the near future to study other profitable markets for reef fish products.

The big plus point of reef fish from the Maldives is that there is no history of fish poisoning (ciguatera). The very same species caught in other parts of the world (Great Barrier Reef, Australia and many parts of the Pacific) are discarded because of the possible toxicity of these fish. Ciguatera is caused by a dinoflagellate organism *(Gambierdiscus toxicus)* being eaten by herbivore fishes, which in turn are being eaten by carnivore predators. Of the herbivores, it's mainly the parrotfish, doctor fish and mullets that are vulnerable, while of the carnivores, snappers, emperors, jacks, groupers and barracudas are the main contributors to fish poisoning. In Maldives this phenomenon is unknown and if the resources permit, a great and profitable reef fish fishery may develop in the near future.

# Regional Consultation on Fisheries Information

Some 20 fisheries officials, scientists and librarians from Bangladesh, India, Maldives and Sri Lanka took part in a regional consultation on fisheries information held October 3 - 5, 1988 in Madras by BQBP. They discussed common problems in information acquisition, exchange and dissemination concerning fisheries.

It was pointed out that countries in the western part of the Bay of Bengal have access to a centralized fishery information system for Southeast Asian nations — SEAFIS. There are also national fishery information systems that coordinate with SEAFIS. Such cooperation needs to be institutionalized in the Bay of Bengal region as well, in the interest of fisheries development. The consultation organized by BOBP was a first step in stimulating such co-operation.

Participants presented status reports on the activities of their organizations, also on their information resources, the information services they offered and the computer facilities they had. The discussion brought out the need for:

- better cooperation and coordination among fisheries organizations in information/data collection to avoid duplication and to develop exchange systems for data and software.
- standardizing data collection and recording.
- processing and publishing of pending data.
- improving documentation services.
- creating and regularly updating the database on secondary information, i.e. information on information.

The application of microcomputers in information work and library database development was also demonstrated. The integrated use and simultaneous search of various databases — bibliographic, factual and numerical — to provide a comprehensive information service was illustrated. The prototype databases were developed using UNESCO's micro CDS/ISIS version 2.

What did the consultation recommend? The main recommendation was that, to obtain an overall picture of fisheries data sources, a regional agency should design a format which institutions in the region could use to provide information about themselves. BOBP has since suggested to SAARC (South Asian Association for Regional Cooperation), that fishery information should be covered by SAARC's regional information network on science and technology.

# MOONPOWER

There are many ingenious devices for fishing.

Off the shores of Cox's Bazar there's one.

It's called Behundi and is in reality a trawl.

A trawl, that makes 5 knots without a motor.

The tide pulls.

And fish is caught.

This efficient and fuel saving gear has been adapted and improved on by BOBP, but has been there in many parts of the world, for ages.
Even early this century Behundi's kins stood in the streams from French tide-water-basins.

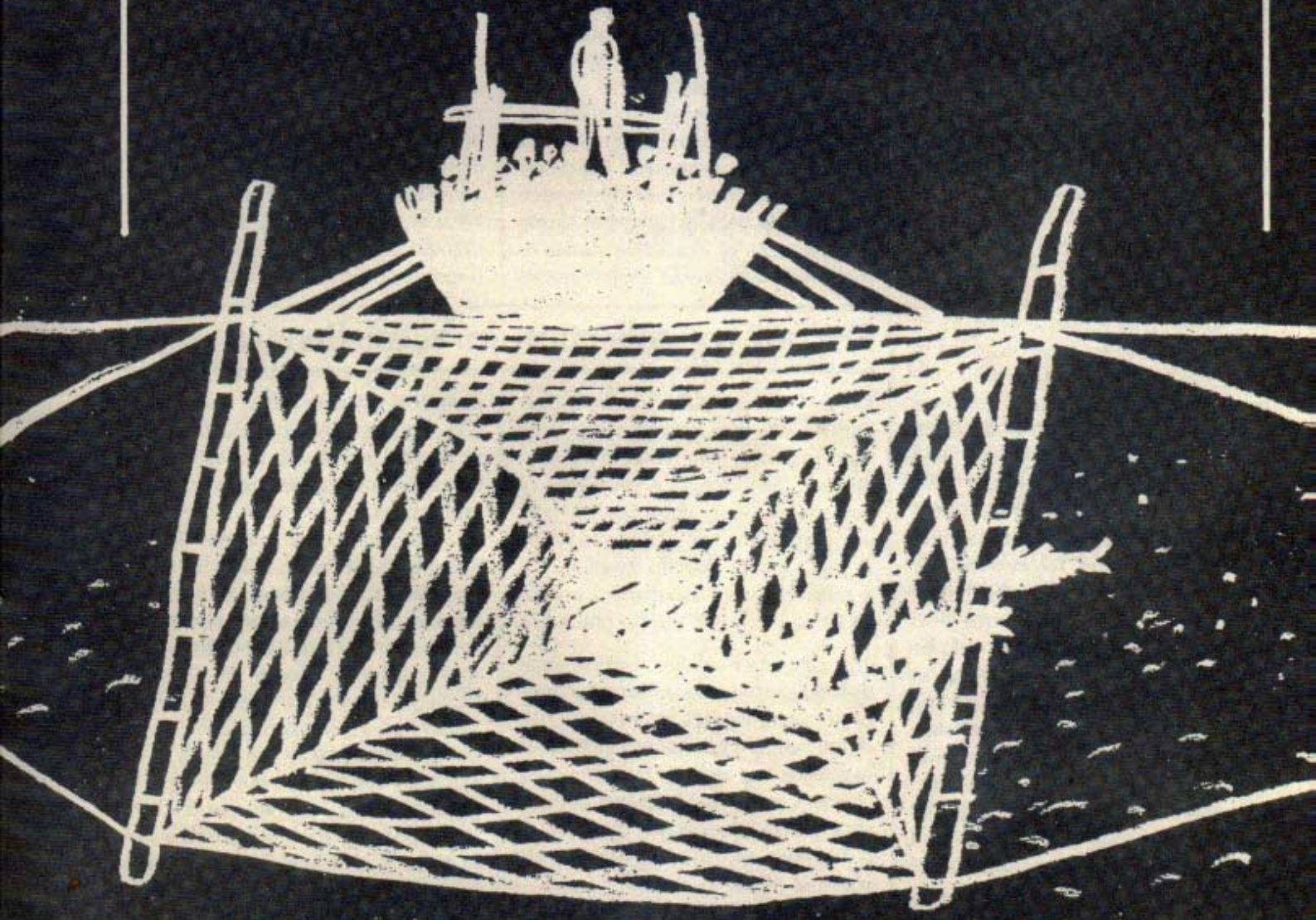
India has her own kind.

The moon is the motor.

The tide swells and fish is caught in the trawl.

In their small boats fishermen harvest the catch.

*Text and sketch by Signar N. Bengtson*
*(Text translated from Swedish)*



# glimpses into BOBP projects

## Training indonesian extension staff in communication skills

Fisheries and extension service staff in North Sumatra Province recently took part in a two-week training course as part of BOBP's extension sub- project in Indonesia. The trainers were from a Jakarta-based NGO, Bina Swadaya, which works on the development of small-scale enterprises among the rural and unban poor. In cooperation which BOBP and the Provincial Fisheries Service of North Sumatra, Bina Swadaya is now focussing on fisherfolk: how they can manage their existing enterprises better, how they can select new, viable, income-generating activities, and how the fisheries and extension services can guide and motivate them in developing their small enterprises.

The training placed emphasis on the role of field extension workers as motivators rather than educators, as links between fisherfolk communities and government technical agencies. In the process, some of the problems of extension workers working within the new World-Bank sponsored extenson system introduced in Indonesia in 1986 were also addressed. Under this system, field extension workers have become "polyvalent"; i.e. they do not specialise in a particular sector such as fisheries, but are responsible for extension in all sectors within their particular working area. Young field workers, for example, now have to be equally competent in pest control in both clove plantations and shrimp ponds. The obyious danger is that they may become jacks-of-all-trades and masters of none. On the positive side, the system encourages an integrated approach to village development which may be particularly appropriate for fisherfolk communities in intensively exploited coastal areas such as the Malacca straits coast of North Sumatra, where purely "fisheries" solutions may not be sufficient.

The approach being developed by the BOBP extension sub-project would redefine the field workers' role. They would concentrate first on motivating and guiding fisherfolk to manage their existing activities and resources better and to seek out new sources of income, and then call in technical help from government agencies when particular problems arise and when fisherfolk are better able to make use of that help.

The key to success in this role of extension workers is an ability to communicate effectively with fisherfolk in an idiom they respond to. The recent training concentrated on this aspect. Communication skills can mean having a ready store of illustrative stories or metaphors which can crystallize the content of a discussion with fisherfolk. It can mean being able to put together "on the spot" a poster which clearly illustrates a problem and its possible solutions. Above all, such communicative media need to be flexible and responsive, giving form and direction to fisherfolk's own ideas and capabilities.

Can such skills be passed on in a two-week training course? Obviously, the course acted as an introduction. The methods and media required to motivate and train fisherfolk in better enterprise selection and management will be developed in the field during six months of pilot activities in three fisherfolk communities in Langkat District, North Sumatra. Given that the two weeks of the course gave rise to a remarkable range of techniques and media, from songs and games to posters and diagrams, we can expect an interesting output in terms of practical communicative tools to be used in the field.

In addition, the pilot activities will provide an opportunity to see how fisherfolk can best organise themselves to develop their own human and material resources, how they can assess and tap new opportunities for improving their livelihood and how the know-how of technical and extension services, as well as NGOs, can be put together to provide an effective response to fisherfolk's needs. P.T.

## Shrimp fry collection in West Bengal

During February-March, the fry of tiger prawn make their appearance in large numbers along river banks of the Sunderbans, West Bengal. A small army of the landless poor, about 20,000 men, women and children, spring into action to catch the fry. Shrimp fry capture is a relatively new occupation, an offshoot of the world shrimp bonanza.

The catchers hunt the riverine areas during high tide, and use different types of net (shooting net, set net, tow net, scoop net). They bring the catch to the river bank and separate tiger prawn fry (Pehaeus *monodon)* from that of other shrimp and fish species. The bycatch is discarded and dies — an unfortunate waste of fishery resources.

The tiger prawn fry is sold to middlemen, who in turn sell it to shrimp farmers at a profit ranging from 200 to 300 per cent. This exploitative practice thrives, because during the lean season fry catchers subsist on loans given by middlemen.

In association with West Bengal Fisheries Department, BOBP has taken up a project aimed at assisting the fry catchers. The idea is to get them to sell juveniles instead of fry and thus earn more. In two villages of Kakdwip district, Moynapara and Steamar Ghat, nursery ponds for tiger prawn fry are being constructed for the benefit of fry catchers, who are also being trained in pond construction. They can stock fry in the ponds and grow them to a size of 40-50 mm. Shrimp farmers prefer to buy juveniles to stock in grow-out ponds, because of their lower mortality, quicker growth, and the possibility of,

*Shrimp fry collector collects his "catch" from a behundi net.*

two crops a year. It is hoped that in this way, the fry catchers will acquire pond management skills, take a more active part in the marketing chain and get a better return for their labour.

Training programmes initiated by BOBP have also focussed on improved and alternative methods of fry catching. These have been conducted in selected villages of Kakdwip and Midnapore districts. The training was imparted by a consultant from the Philippines, Mr Modesto Chavez. He introduced new methods of fry collection with simple equipment. This includes a lure line made of coir (with clumps of grass of rice straw which attract shrimp fry) and the use of battery-operated aerators to reduce shrimp mortality. BOBP also plans a one-year study on shrimp bycatch, in order to obtain information on the volume and the species composition of bycatches.

Large areas of Sunderbans are suitable for brackishwater aquaculture. The sites selected in Kakdwip tidal flats near Steamer Ghat and Moynapara villages, are especially well-suited: water and fry are available nearby, fry catchers live just opposit the tidal flats, and an infrastructure is fairly well developed.

NGOs (non-government organisations) are being engaged by BOBP to conduct training programmes for villages on both the technical and sociological aspects of fry collection, for both men and women.

Another project coming up in West Bengal is a brine-based tiger prawn hatchery in Midnapore district. This interesting technology was developed in Thailand, so BOBP has engaged a consulting firm from that country to evaluate the feasibility of transferring it to West Bengal. H.N.

# Advisory Committee Meeting in Penang, Malaysia

The 13th Advisory Committee meeting of the BQBP, held January 26- 28, 1989, in. Penang, Malaysia, in conjunction with the sixth meeting of the Bay of Bengal Committee, was by common consent exceptionally well organized (by the Department of Fisheries, Malaysia). It was also marked by useful and informed debate and a healthy spirit of regional co-operation.

The Arab Gulf Programme for United Nations Development Organisations, AGFUND, has joined DANIDA and SIDA as BOBP sponsor with a training grant of US $ 400,000 spread over three years. There was strong expression of support for a UNDP-funded regional project on bio-economics of fisheries; UNDP indicated that the project might be approved in the first half of 1989. Also likely to come under the BOBP umbrella is a UNFPA-funded project that will deal with the organization of economic activities for women.

During the discussion of BOBP activities, two subjects that aroused keen interest were extension service methodologies for fishing communities, and the sustainability of fishery resources; a particular concern was the large quantities of by-catch caught by shrimp trawlers and shrimp fry collectors.

The meetings strongly supported proposals that BOBP investigate the adverse effects on fisheries of pollution and deterioration of the environment. Project proposals concerning communication techniques for fisherfolk and strengthening the nutrition status of fisherfolk were also endorsed.

The Advisory Committee recorded its deep appreciation of Mr Lars Augustinson of SIDA, who has been associated with BOBP from its inception and is due to retire this year.

BOBP is engaged at any time in a few score activities in its seven member countries. This new feature reports briefly on facts, findings or experiences from some of these activities.

## *Hauling it up in the Maldives*

BOBP's fishing technology staff recently demonstrated the use of three manual capstans to haul dhonis in Mulaku island in the Maldives. The boats were hauled up easily with the help of rollers.

Demonstration with one capstan will continue in Mulaku, while two other capstans will be demonstrated at Dhiggaru island for two months. The Ministry of Fisheries has already received requests for drawings of the capstans and for demonstrations from various islands in the Maldives.

## *Beachcraft — we want them big!*

A staffer recently visited Kakinada and Pun on India's east coast to study the performance of beachlanding craft (BLCs) developed by BOBP. Nearly 200 of these craft, built at five boatyards (Kakinada, Pun, Balasore, Bhubaneswar, Pondicherty) operate off various east coast locations.

"Three images stand out in my mind," the staffer says. "One is that of BLCs standing choc-a-bloc at the boatyard of the APFC (Andhra Pradesh Fisheries Corporation) in Kakinada. Another is the symmetry of women continually hurrying down the Penthakata beach to godowns, with baskets of fish caught by BLCs and Navas. A third image is that of a dozen men struggling to pull a two-ton boat, a larger version of the BLC, through the narrow streets of Penthakata in to the beach." "This boat is inspired by the BLCs," says its owner Prakash Rao, who has started a private yard in Pun. "It has a fish hold and can do multi-day trips".

## *Canoes in Indonesia*

In Nias island of north Sumatra, Indonesia, BOBP is developing and demonstrating large motorized plank-built outrigger canoes. The canoes have been built and are undergoing technical trials. Offshore fishing trials will be conducted later.

## *Iced fish means higher returns.*

Is it profitable for motorized navas in India to carry ice on board and return ashore with good-quality iced fish? A custom-made insulated fish box is being tried out in Kakinada (see *Bay of Bengal News,* December 1988), and the results are being monitored. Trends so far are encouraging: fish preserved on ice fetches a higher price than non-iced fish and the interest of other nava operators in the area has been aroused. The insulated fish boxes are performing well, and efforts now focus on reducing the cost of the boxes.

## *Know the market*

"We need basic factual fish marketing information before we can attempt any improvement to fish marketing," says Mr David Walker, BOBP's Post-Harvest Fisheries Adviser. Surveys of fish marketing systems have been conducted in West Bengal and Andhra Pradesh, and work is in progress in Tamil Nadu. The aim is to understand the market and thereby identify constraints to better financial returns for fishing communities.

*Left: This 2-ton boat, built by a private Pun boatyard, was inspired by BOBP beachcraft. It is making its way adventurously to the beach. Right: Fish marketing women of Pun — beachcraft have pushed up their incomes.*

S.R. Madhu

# OBP in brief


E. Amalore

*An IMO/SIDA/BOBP project is combating oil pollution in the Vizag fisheries harbour (Andhra Pradesh, India). How? Through a mobile oil tanker and an oil skimmer (both to be acquired), and through two dozen garbage skips (bins) which will deposit their refuse on to the garbage compactor* (above) *for ferrying away to the city's* garbage *dump.*

## *The regional catalyst*

Besides its regular activities, BOBP occasionally co- operates in the implementation of a few national projects in member countries. The donors and the hos.t governments take advantage of BOBP's presence in the Bay of Bengal region for the co-ordination or monitoring of these projects.

In 1988, BOBP implemented exploratory tuna surveys in Sri Lanka and Maldives under FAO/TCP arrangements. TCP stands for: "technical co-operation programme." A FAQ! UNDP reef fish resources survey was executed in the Maldives.

An example of BOBP co-operation with IMO (International Maritime Organization) is a project in Andhra Pradesh. The project aims at reducing marine pollution and improving water quality in the Visakhapatnam fisheries harbour by setting up a tidy and efficient garbage-disposal system for fishing vessels and traders at the harbour. Under the project, a mobile tanker is to be acquired to mop up oil residues from boats. Some 25 garbage skips (bins) have been obtained and placed at various locations in the harbour, so that garbage isn't dumped indiscriminately. An oil skimmer will also be acquired to skim off surface oil. An educational video film is part of the project.

In Kerala, BOBP is implementing a FAOITCP project to develop and demonstrate small fishing craft and tap under-utilized deep water and offshore resources. BOBP is conducting fishing trials with two boats — the fibreglass IND-20 (which also operates on the east coast) and a motorized plywood canoe larger than traditional canoes.

"Our regional character and our inter-disciplinary expertise enable us to catalyze fisheries development on many fronts", says BOBP director Lars Engvall. "We also make possible an integrated and co-ordinated approach to development."

## *Seaweed project — the good, the bad and the ugly!*

How viable is seawed farming for small fishing communities? BOBP hopes have centred on two fishing villages of Ramnad district in Tamil Nadu, India — Vedalai and Chinnapalem. Much time and effort have been spent not merely on the technology of seaweed culture — trials are now on with a Gracilaria species — but also on mobilizing the active participation of the target group.

However, the project has been plagued with problems right from the beginning. The most recent ones are quarrels among the participants, unprecedented low tides leaving the seaweed under culture exposed, arguments between the project watchman and an intruding fisherman from a neighbouring village which threatened to escalate.

Yet, a ray of hope filters through the clouds. Last year there was no harvest. This year, "a few" kg have been cut, dried and stored. Grazing (gobbling up of growing seaweed by rabbitfish) is very much less than last year (perhaps a seasonal phenomenon), and natural spore-setting is noticeable, possibly from the seaweed cuttings themselves. Plans are also afoot to demonstrate a simple village-level technology to extract agar from seaweed, which can be applied to harvests from wild stocks, as wefl as the farmed seaweed. If it works, it will enable the target group of fishing communities to get a much better price for their product. "We could do with some more luck," says Senior Aquacufturist Charles Angell.

## *Bay of Bengal News — an index*

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LETTER FROM THE PUBLISHER

# SUBCONTRACTING OF EXTENSION WORK

A major concern in small-scale fisheries development is the role of the extension service. The conditions of fisherfolk call for multifaceted assistance, covering general education, specific training, motivation, demonstration, organization, facilitation, legislation – and, perhaps most important, mobilization of the fisherfolk to actively participate in development effort.

An effective extension service is therefore a "must". To be effective it must be large, the staff must be motivated and the service must be flexible in responding to needs and problems. Unfortunately, most extension services meet none of these requirements.

Fisheries administrations find it easy to support "hardware" such as boats, harbours, ice plants and houses. Extension work on the other hand is regarded as software: it does not yield quick or tangible results in the short term, and is therefore hardly exciting politically. Finance and planning authorities don't like the extension service either – it costs too much to have a permanent extension "army" on the payroll,

What is the way out? First, we must ensure that any new extension measure is properly justified. It too often originates from politicians, bureaucrats or technocrats, not from the fisherfolk themselves. A thorough need analysis is essential for any extension programme.

Second, we could perhaps break down the extension work into identifiable components and set more specific targets than we usually do. What kind of training should be imparted to whom? What fisherfolk organizations should be promoted? How many should be formed? What education is needed and by whom? What type and amount of credit is required by whom?

A solid justification for the inputs, and well-defined outputs within given time frames, will certainly facilitate a positive response from decision makers – but these may not be enough if many new posts are proposed for Government extension officers or workers.

Would subcontracting of extension work be a possible solution? A fisheries administration will of course keep a skeletOn extension service comprising representatives in the various geographic locations it covers. But how about the development work among fisherfolk, the training? Couldn't a lot of that be subcontracted to specialized institutions. private consultancy groups, NGOs, etc?

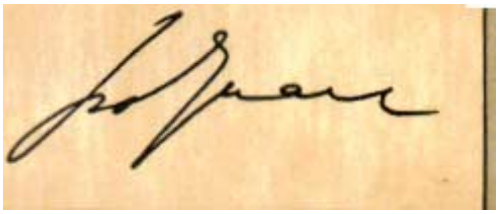
When it concerns hardware (harbours, roads, boats, houses), administrations very seldom undertake the work themselves. When they do, often fail. The software, i.e. extension work in all its facets, could equally well be subcontracted. Generally, fisheries administrations know as much – or as little – about rural sociology, credit, training techniques, education methodologies, etc., as they do about harbour construction.

The principal advantages of the subcontracting would be (a) better need analysis and planning, since a subcontract has to be spelled out in some detail (b) the work will be done by specialists (c) the governments need not enter into long term staff committments (d) the approach might attract external funding agencies.

*A post-script:*

Extension services under subcontracts were briefly discussed at BOBP's recent Advisory Committee meeting in Penang. The pros and cons were aired. We invite readers to comment too – about subcontracts for extension services, or about the extension approach in general.

LARS O. ENGVALL



BAY OF BENGAL NEWS

*Bay of Bengal News* is a quarterly publication of the Bay of Bengal Programme (BOBP), a regional fisheries programme which covers seven countries bordering the Bay of Bengal – Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka, Thailand. The BOBP's main project is "Small-scale fisherfolk communities in the Bay of Benga" *(GCP/RAS/1* 18/MUL). Executed by the FAO (Food and Agriculture Organization of the United Nations) and funded mainly by Denmark and Sweden, the project develops techniques, technologies and methodologies through pilot activities to improve the conditions of small-sca'e fisherfolk in the seven member-countries. The project began in 1987 for a duration of five years. it succeeds an earlier BOBP project, 'Development of small-scale fisheries in the Bay of Bengal", which terminated 1986. A five-year post-harvest fisheries project, executed and funded by ODA (U.K.), is also part of the BOBP.

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