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THE BECHE DE MER IN THE MALDIVES

THE BECHE DE MER FISHERY IN THE MALDIVES

Only a few years old, but already in need of management

by LESLIE JOSEPH AND HASSAN SHAKEEL

The Maldives, in 1988 and 1989, exported \$ 6.7 million* worth of sea cucumbers, mainly to Singapore and Hong Kong. This was about 70 per cent of the value of all marine products (non-fish and fishery) exported by the country. Yet this is a harvest whose value these islands did not seem to be even aware of as late as the early 1980s. Now, however, they seem to be making up for lost time and disturbing danger signals are being noticed of the threat to the resource. Though production in 1990 was the highest recorded, 745 mt, its export fetched only \$ 3.3 million, mainly because low value species had become predominant in the catch, with the depletion of high value species. (Table 1 & 2)

This is a report of how this came about.

The Maldivians call the sea cucumber — or beche de mer — *Hujfilanda* in Dhivehi, but to the vast Chinese population in Southeast Asia they are *trepang*, a table delicacy, particularly on festive occasions.

Beche de mer, or *trepang*, is the trade name given to processed sea cucumbers, or holothurians of the *Phylum echinodermata* — a *Phylum*, which also includes the more interesting and better known sea lilies, sea urchins, star fishes and the sand dollars.

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* All monetary values expressed as \$ are in U.S. \$, unless stated otherwise.

Our cover picture is of processed Lollyfish (*H. atra*) in the Maldives, with a particular focus on sun-drying of beche de mer on platforms (on Hithaadhoo island, Baa atoll)

Trepang is an exotic delicacy used to flavour soups, noodles and other dishes. It is prepared from the body walls of certain species of large holothurians. It is rich in protein (soluble in pepsin and, therefore, highly digestible) and has a low fat content. Beche de mer is also credited with having curative powers for such ailments as high blood pressure and muscular disorders. The *cuvrierian*

TABLE 1

Quantities and value of exports of beche de mer from Maldives — 1986-1990

Quantity (t)	FOB value (US \$ m)
1986 - 2.56	0.026
1987 - 33.89	0.338
1988 - 553.11	4.496
1989 - 410.29	2.241
1990 - 745.93	3.307

TABLE 2

Beche de mer species and quantities exported from the Maldives annually - 1986 to 1990

Species	Qty (t) ¹⁹⁸⁶	%	Qty (t) ¹⁹⁸⁷	%	Qty (t) ¹⁹⁸⁸	%	Qty (t) ¹⁹⁸⁹	%	Qty (t) ¹⁹⁹⁰	%
T. ananas	2.28	89.3	12.44	36.7	61.40	11.1	17.23	4.2	18.65	3.5
H. nobilis	0.28	10.7	10.74	31.7	67.48	12.2	54.16	13.2	99.21	13.3
S. chloronotus	—	—	4.51	13.3	60.29	10.9	46.36	11.3	107.41	14.4
A. mauritiana	—	—	5.08	15.0	155.42	28.1	37.34	9.1	49.23	6.6
B. marmorata	—	—	1.12	3.3	71.90	13.0	53.75	13.1	65.64	8.8
Actinopyga sp.	—	—	—	—	69.69	12.6	133.75	32.6	123.82	16.6
H. atra	—	—	—	—	44.80	8.1	38.16	9.3	213.34	28.6
H. axiologa	—	—	—	—	17.70	3.2	17.23	4.2	32.82	4.4
T. anax	—	—	—	—	4.42	0.8	12.31	3.0	28.35	3.8
Total	2.56		33.89		553.11		410.29		745.93	

tubules of certain species of beche de mer have been traditionally used by fishermen in Cebu and Maldives as a plaster for minor wounds and sprained wrists. Its reputation as an aphrodisiac has also undoubtedly enhanced its popularity.

The sea cucumber has long been recognised as a source of income, especially in the Indian and South Pacific regions. The fishery is over a century old in India and Sri Lanka. But the Maldivian fishermen appear to

have been unaware, until the middle of the last decade, that they had a major resource waiting to be harvested practically at their doorstep. However, when they finally got down to harvesting it, the fishery began to show signs of being in trouble within five years. A study was therefore undertaken, in 1991, by the Marine Research Section of the Maldives with support from the Bay of Bengal Programme (BOBP) to suggest ways to safeguard and regulate this profitable fishery.

During the course of the study, many fishermen agreed that some kind of management of the fishery was necessary, without which the fishery, according to their reckoning, would not last for more than a few years. Both they and the majority of the exporters were receptive to most of the proposed recommendations, which included several strict control measures.

The background

The beche de mer fishery in the Maldives commenced in 1986, after a trial export to Singapore of a small quantity in late 1985 by a Maldivian marine products exporter. The fishery commenced with selective harvesting of the two most commercially valuable species — *Thelenota ananas* (Prickly redfish) and *Microthela nobilis* (White teatfish). This collection, it is reported, first began in Raa atoll in late 1985 and then extended to Haa Alifu in the north. A second exporter, who joined the fishery in late 1986, obtained his supplies from the southern atolls — Gaafu Dhalu, Gaafu Alifu and Laamu atolls. The fishery thus extended to many atolls across the country within two years of its inception. With the exporters coming into contact with more and more foreign buyers with varied demands, the number of species harvested from Maldivian waters increased to five. *Stichopus chloronotus* (Greenfish) were also exported in 1987, but the bulk (68 per cent) of the nearly 34 mt exported still consisted of Prickly redfish and White teatfish (Table 1). The bulk of the exporting is now done by six exporters who also export other marine products.

A dramatic increase in beche de mer production took place after 1987. Production rose to over 500 mt in 1988, harvested from throughout the archipelago. Processing also expanded to nine species. Production has kept increasing ever since. Today, Maldivian fishermen throughout the archipelago are involved in the fishery in varying degrees.

In the 17 islands visited during this study, 5 - 6 per cent of all fishermen are involved in this fishery on a full-time/year-round basis. Others are mainly involved with it during the non-tuna fishing season. It has now

replaced the reef fishery as the Number One fishery during the non-tuna season in most of the islands. In fact, beche de mer is even fished during the tuna season if tuna catches are poor.

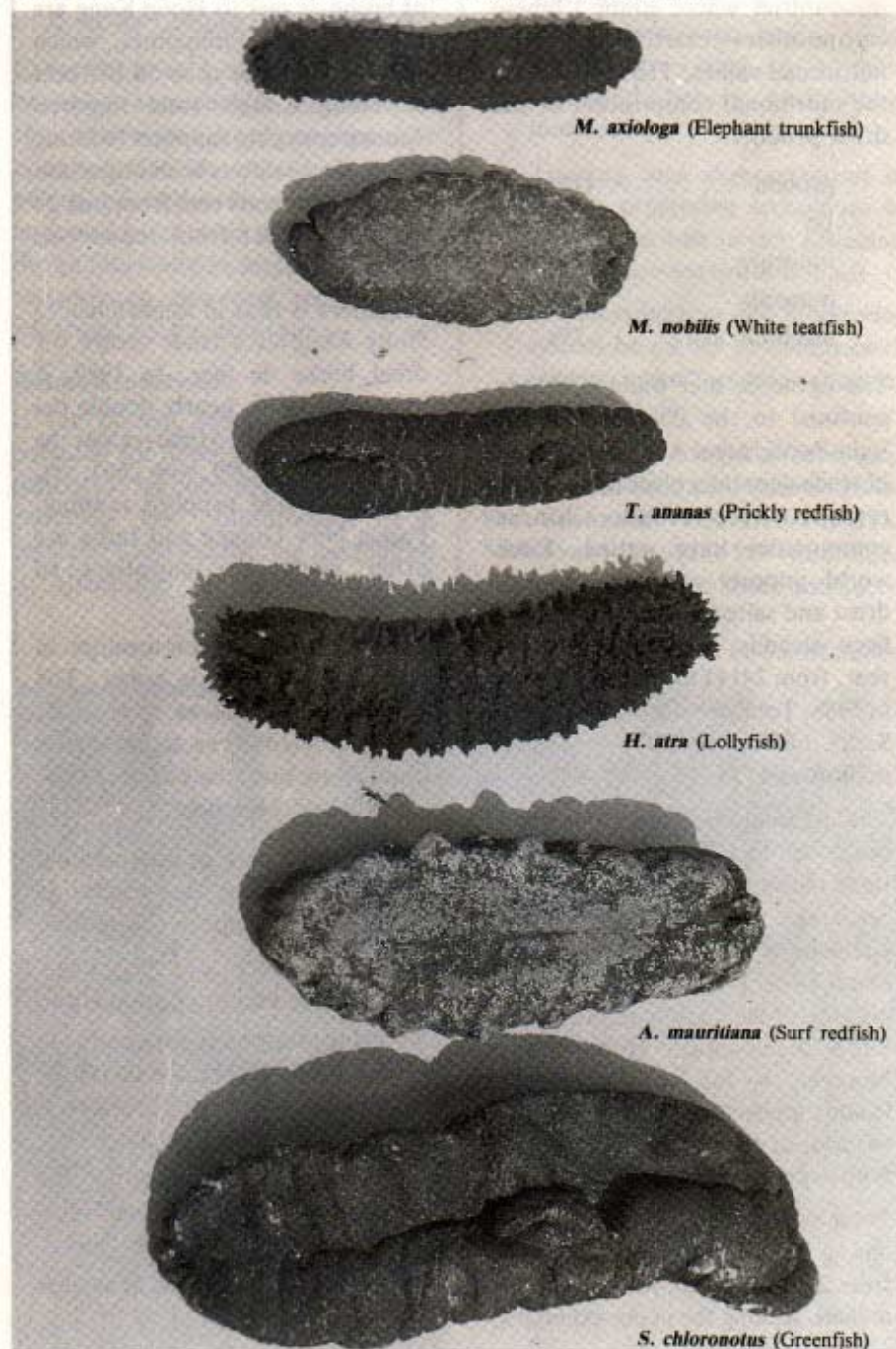
Fishing methods

At the beginning of the fishery, sea cucumbers were picked by hand during low tide from the intertidal region and from shallow water lagoons of less than 1 m depth. As resources in these waters became less abundant, snorkelling and other methods began to be used to exploit the resource in waters up to 20 - 25 m. A pointed metal spear mounted on a long wooden pole and a fishing hook fixed to a block of lead and attached to a

fishing line are popular amongst Maldivian fishermen. Scuba diving for sea cucumber commenced in 1988 and has been increasing rapidly, targeting high valued species (*T. ananas* and *M. nobilis*) in deeper waters.

While some fishermen prefer to operate within their own atolls, making day trips, others indulge in extensive migrations to other atolls, lasting one week to one month. During these trips, sea cucumbers are processed in other islands (preferably uninhabited ones). Fishermen in many islands were concerned and apprehensive about this type of exploitation of an atoll's resources by fishermen from other atolls.

Some varieties of processed beche de mer from the Maldives.



Growth, but

The monthly income of a fisherman from the beche de mer fishery varies from Rf. 500 to Rf. 3000, depending on the fishing effort and availability of resources. It has gone down in most

islands, compared to income generated previously. Income from beche de mer fishing exceeds that from tuna fishery in some islands. The extra income has certainly helped many fishermen to improve their living standards. As a

fisherman from Landhoo (Noonu atoll) summarized it, "We have been able to build or renovate our houses, construct attached toilets and water tanks, purchase household items and even reclaim land from the sea with the income from *Huifilanda*".

A growing world trade in a traditional delicacy

An article in INFOFISH International (July/August 1991) by N. Krishnasamy, a Marketing Officer attached to the Trade Production Unit of INFOFISH, provides some significant insights into the international trade in beche de mer. Some of his findings are reproduced below:

Beche de mer, a traditional delicacy in countries where ethnic Chinese communities exist, has many nutritional values. The following is the nutritional composition of the dried product:

protein	43%
fat	2%
moisture	27%
minerals	21%
insoluble ash	7%

The beche de mer trade is mainly confined to the countries of the Indo-Pacific area. A limited amount of trade does take place outside this region, where ethnic Chinese communities have settled. Total world imports of fresh, frozen, dried and salted beche de mer have been steadily increasing year by year, from 2414 t in 1980 to 13,161 t in 1988. Total value picked up from \$ 9.7 million in 1980 to \$ 42.9 million in 1988.

The international trade in dried beche de mer is concentrated in three major markets, Hong Kong, Singapore and China, these three countries together accounting for about 88 per cent of the total world imports of beche de mer in 1988 in terms of quantity. Hong Kong, however, is by far the world's leading market, recording about 60 per cent of the imports in terms of both volume and value.

Total world exports reached 12,450 t during 1988, valued at \$36.1 million, from 2488 t in 1980, valued at \$ 8.5 million. Among the major exporters,

Indonesia topped the list in 1988 with 3480 t (28 per cent) followed by Hong Kong, Philippines and Singapore. Hong Kong and Singapore are mainly re-exporters, after giving some added value to the products.

The average value of imported beche de mer increased from 23.60 HK\$/kg in 1981 to 29.70 HK\$/kg in 1989. The major suppliers of beche de mer to Hong Kong are Indonesia and Philippines, which account for more than 50 per cent of Hong Kong's total imports. Among emerging suppliers to Hong Kong, the Maldives is an important source; shipments rose from just 2 t in 1987 to 268 t from January to August 1990.

Singapore is next in importance to Hong Kong as a trade centre for dried beche de mer. In 1989, it imported 1043 t, nearly double the 1984 imports. The Maldives was the top supplier in 1989, with 266 t; yet, in 1984, it had supplied nothing. Papua New Guinea and India are other important suppliers to Singapore.

Since 1985 a sudden upsurge in international trade is noted. The Pacific island nations have made notable contributions to the export trade. New markets include USA, Canada and Myanmar.

The recent trends in international trade show that the beche de mer industry appears promising due to:

- growing consumer population;
- rising incomes, especially in Southeast and East Asia (Hong Kong, Singapore, Malaysia, Taiwan);
- growing appreciation of the product in non-traditional markets, such as the USA; and
- increasing acceptance of its high nutritious value.

Despite such impressive statistics, the study reveals many disturbing features prevalent in the industry - danger signals that need to be taken note of and addressed immediately for the promotion of long-term sustainable exploitation of the fishery.

Although the volume of all beche de mer exported from the Maldives has increased extremely rapidly, the value of exports has decreased - the average export (FOB) price per kg dropping from \$ 9.99 in 1986 to \$ 4.43 in 1990. The proportions of high valued species in the exports has also decreased in recent years, resulting in a drop in average income per kg.

Production of many high value species, such as *T. ananas* (12.70 \$/kg), *A. mauritiana* (6.80 \$/kg), and *B. marmorata* (4.80 \$/kg) have declined since 1988. Production of *M. nobilis* (10 \$/kg) is being maintained largely due to the development and expansion of scuba diving since 1988 with its target *T. ananas* and *M. nobilis*. The fact that *T. ananas* production is very low even with scuba diving is clear proof that this species is over-exploited. Resources of

Cleaning of Lollyfish (H. atra) on Feeli (Dhaal)



M. nobilis may follow suit in a few years, with scuba diving depleting the spawning populations in the deeper waters.

As resources of high value species get exhausted, fishermen are taking more and more of the less valuable species (Table 2). For example, catches of Lollyfish, *H. atra*, (4.50 \$/kg), now constitutes the largest share (28 per cent) of beche de mer produced in the Maldives. Fishermen in some islands are totally dependent on this species for their beche de mer fishery, while in many others there is indiscriminate harvesting of small ones of less than 4" length (processed). These fetch very low (1.50 \$/kg) prices in the export market. While *H. atra* is fast becoming the 'bread and butter' of the industry, this indiscriminate harvesting of small ones does not augur well for the future of the industry. It also represents under-utilization of the resource.

Processing

When processing is done in the fishermen's own islands, women too participate in all activities after the sea cucumbers are de-gutted and cleaned. Smoking of the cooked beche de mer is often done in the kitchens. Techniques for cleaning and processing sea cucumber have not been demonstrated to Maldivian fishermen. Instructions received by the local exporters from foreign buyers have been passed on to the fishermen through leaflets, radio announcements

and word of mouth. Considerable differences were, therefore, observed in the processing techniques adopted by fishermen in different islands.

The quality of beche de mer produced in some islands appeared to be very poor. Processing of sea cucumbers needs only simple equipment and the processing is also very simple, but needs to be carefully carried out if a good quality product is desired. The Ministry of Fisheries and Agriculture in the Maldives has received complaints from overseas buyers regarding the poor quality of beche de mer exported from the Maldives. Two exporters estimated that 10-20 per cent of the beche de mer brought to Male by fishermen is of very poor quality. Exporters have to improve the quality of these by cleaning, sun drying etc.

Export of poor quality beche de mer represents uneconomic utilization of the resource. Another exporter contends that the revenue from the export of beche de mer could be increased by as much as 30 per cent if the quality could be improved. This is certainly an area that needs to be addressed by the authorities.

Recommendations

If the present trends continue, the potential for developing a sustainable fishery for sea cucumber appears to be extremely low. Introduction of a regulatory and monitoring mechanism is, therefore, an urgent need to

consolidate this fishery. The survey team has proposed that.

- A moratorium on the catching and export of *T. ananas* for 4-5 years, in order to rehabilitate the resources depleted by the heavy fishing pressure;
- A complete ban on the collection of all beche de mer species by scuba diving, in order to protect the spawning populations of high valued *T. ananas* and *M. nobilis* in the deeper waters;
- A minimum size limit be placed for *H. atra*, so that maximum economic benefits can be derived from the resource;
- Fishermen in different atolls be allowed exclusive use of resources within their own atolls, which would also lead to a more regulated fishery with better monitoring;
- Training and demonstration of proper processing techniques be given fishermen so that economic benefits are maximized; and
- A data collection and monitoring system be set up to obtain catch (export) and effort data pertaining to the fishery.

The survey team is hopeful that if these recommendations are implemented the sea cucumber resources of the Maldives could be managed successfully and even more profitably.

roll).



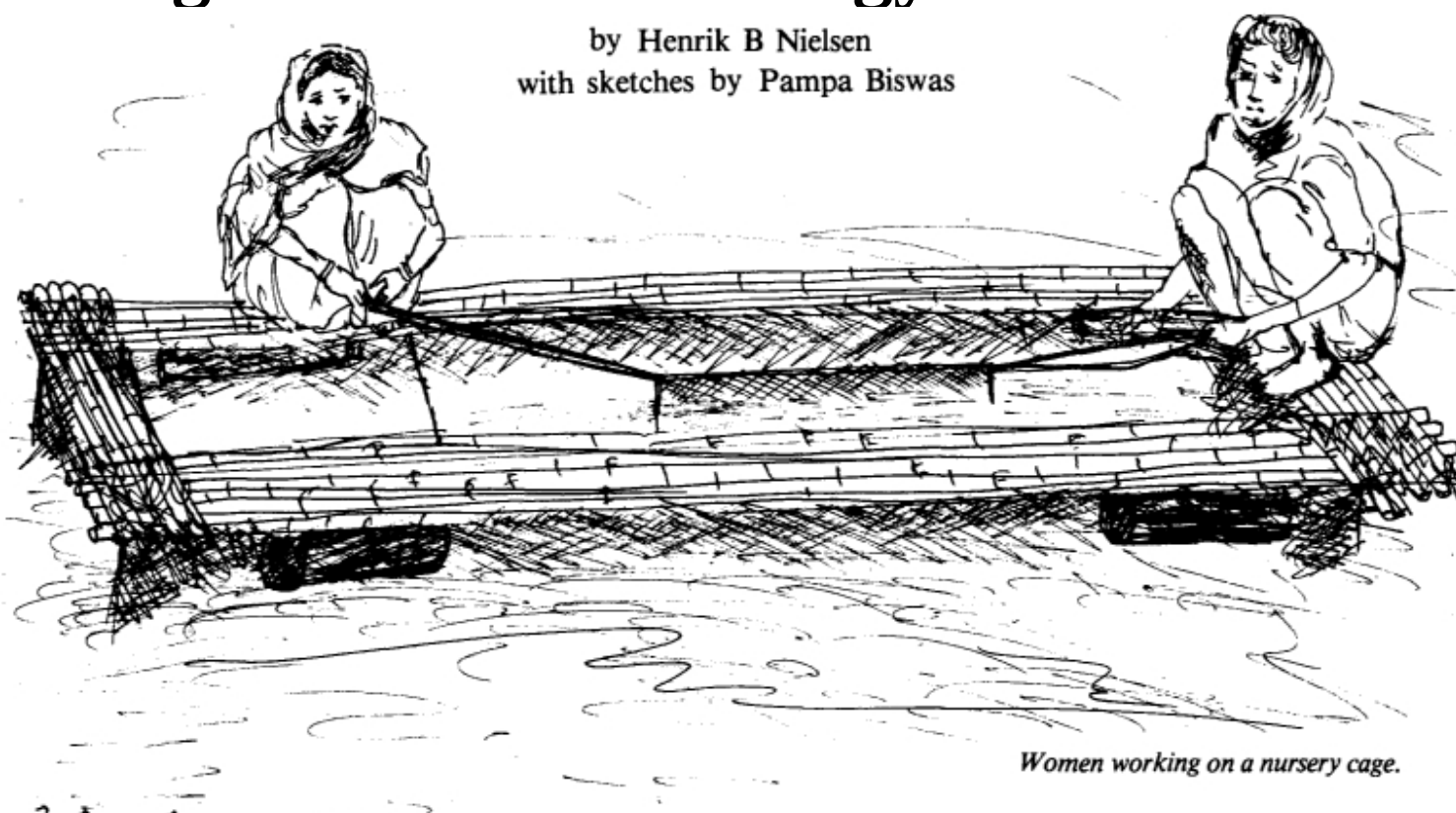
Sorting and packing of beche de mer for export in the Maldives.



SHRIMP FARMING IN WEST BENGAL

Seed collectors find locale-oriented cage culture technology worthwhile

by Henrik B Nielsen
with sketches by Pampa Biswas



Women working on a nursery cage.

Shrimp farming in Asian countries has been enjoying a boom these past 10-15 years. Of all the different species, it is the penaeid shrimp, *Penaeus monodon* or Tiger prawn, which has been the prime target of farmers and governments, due to its high market value in the first instance and its export and, consequent, foreign exchange potential in the second.

Some shrimp-producing countries have developed their hatchery business to such an extent that they can even meet all the needs of their farms for shrimp fry. On the other hand, countries like Bangladesh and India still rely mainly on seed from natural sources. The huge delta of Bangladesh and neighbouring West Bengal, with its numerous rivers and channels, offers an excellent brackishwater environment for post-larvae of *P.monodon*. Shrimp seed collection has, consequently, developed as a major income-

generating activity for thousands of people living in these areas of Bangladesh and West Bengal.

Most of the people engaged in shrimp frycatching in these parts of Bangladesh and West Bengal are landless peasants and poor fishermen, who often have very limited alternatives for subsistence income. Equipped with scoopnets, shootingnets and setbagnets they collect the tiny and fragile post-larvae of *P.monodon*, from brackish-water sources, and sell their catch to middlemen at prices determined by the latter. Needless to say, the frycatchers' desperate need for money makes them an easy target for exploitation.

Before the post-larvae are stocked in the grow-out farms, they usually go through the hands of one or two more middlemen, are stored for 6- 12 hours and counted for a second time before liberation in the shrimp ponds. Hence,

mortality, due to stress and release into an unprotected environment, often soars to 50 - 70 per cent. The loss can only be compensated by additional fry, and this eventually puts pressure on the natural resource and the few existing hatcheries.

In late 1989, the Bay of Bengal Programme (BOBP) initiated a shrimp nursery cage culture trial in West Bengal to test the economic viability of cage cultivation as a means of improving the income of the shrimp frycatchers in this region. The idea behind cage culture makes sense in more than one way:

- Nursery rearing of post-larvae to juvenile size greatly increases their viability in the grow-out ponds. The farmer would not require such a large number of fry to compensate for loss, and since the grow-out time for juveniles is less,

compared to post-larvae, extra crops could be harvested within the same season.

- Instead of selling the fry right away to middlemen for a pittance, the nursery would give the frycatchers the opportunity to raise post-larvae up to juvenile size in floating cages, before selling at a price that is reasonable. At present, juveniles fetch a price 2 - 3 times that of post-larvae.
- Nursery culturing provides a profitable link between upcoming hatcheries and shrimp farms. Hatcheries could sell younger post-larvae to nursery operators, which would improve hatchery efficiency.

Project components

Based on salinity analysis, water depth and availability of *P. monodon* fry, two channels in Ramnagar, Midnapore District, West Bengal, were identified as suitable for cage culture of shrimp fry.

SANLAAP, a local NGO, assisted BOBP in the identification and selection of participants for the trial. Making use of an earlier study by the

Indian Institute of Management, Calcutta, on coastal shrimp seed-collector communities, a few villages around Ramnagar were identified by a team from SANLAAP. Door-to-door surveys of the frycatchers' households were carried out to evaluate their socio-economic status, their daily work tendencies and character. Finally, twelve families were selected because of their poverty and their experience in natural shrimp seed collection. After approval by the government extension worker and panchayat members, the participants were provided with material and equipment for the construction of floating cages — one for each family. On-the-job training in cage construction, nursery rearing and management were also provided.

The floating cage

The basic design of the floating cage consists of a frame of four narrow bamboo platforms. The sides (measuring 0.45 x 6.00 m) and the end pieces (0.45 x 3.00 m) are attached to one another by rope to form a rectangular frame with an inside dimension 2 x 5 m. Four to six 100 l plastic barrels are attached under the

raft as floats. Two nylon *happas* (net enclosures) of 1mm mesh size and measuring 2 x 1 x 1 m and one *happa* of 2 mm mesh size and dimension 3 x 2 x 1 m are fixed inside the frame. To prevent folding during tide water movements, the *happas* are stretched out by frames of galvanized wire and stone sinkers attached to the bottom line. Feeding nets are suspended vertically in the *happas* and small shrimp and trash fish are minced and applied on them once or twice a day. The entire rearing volume is approximately 8 m³ when the upper 20 cm portion of the *happas* is above the waterline. Stocking capacity is up to 20,000 post-larvae, distributed according to size in the three *happas*.

The cost of one cage in late 1990 was Rs 3200 (\$ 180). Several variations in design and choice of materials exist. The floats, for instance, may be made of styrofoam or PVC tubes, the bamboo frame could be exchanged for wood or galvanized water pipes, and there are different net qualities available. BOBP, however, has been trying to use low-cost, locally available material to make replication easier.

Problems encountered

Two of the technical constraints met during the culture trial have been

- Net cuttings in the *happas*, made by mudcrabs that live in the bottom of the channels. Low tide makes the distance from *happas* to bottom an invitation for mudcrabs to enter the nets and cut holes, if necessary, to get part of the feed offered the post-larvae. This problem has been solved by using *happas* made from thick threaded nylon net and placing the cages at particularly deep locations.
- Sudden and heavy rainfall that occurs from time to time and changes the brackishwater to almost freshwater. The swift change in salinity has been reported as a cause of fry mortality.

Other problems faced while conducting the cage culture experiment are more of a social nature, such as theft of fry materials from the cages, careless cage management and lack of comprehension of the importance of recording data during culture trials.



Women are involved in fry catching from their childhood.

Results

Table 1 (right) presents some of the data collected during the nursery cage culture experiment.

Five culture trials in succession have been carried out by the participants and these are designated by the letters A - J. Price at stocking is the price the frycatcher would get for one thousand larvae if he chose to sell them at the time of catching, and price at harvest is what he obtains for the bigger size post-larvae/juveniles after a certain culture period. Revenue is earnings from the sale of juveniles less the cost of post-larvae. Depreciation and labour have not been considered.

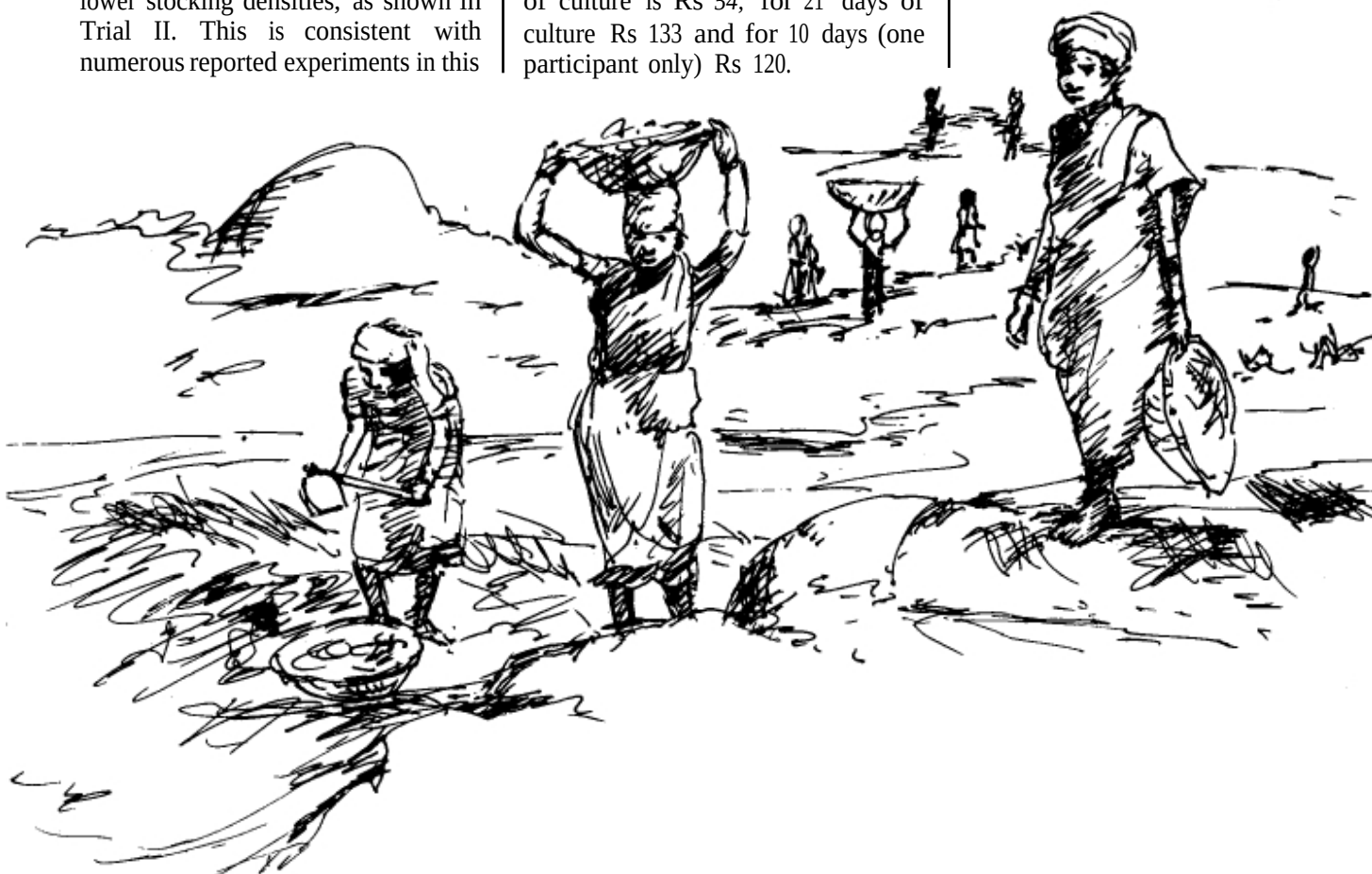
The data shows a great variation in survival rates, ranging from 10- 84 per cent. The low survival from Trial V and the somewhat poor result from Trial IV were caused by heavy rainfall. The results from Trial I reveals a survival rate from 25 - 67 per cent with the same stocking density, which could suggest differences in rearing and culture management by the individual participants. The data also indicate a higher survival rate of the fry with lower stocking densities, as shown in Trial II. This is consistent with numerous reported experiments in this

Table 1

Trial	Participants	Culture days	No. stocked	No. harvested	Survival rate %	Price at stocking Rs/1000	Price at harvest Rs/1000	Revenue Rs.
I	A	40	6500	1600	25	50	120	-133
	B	—	6500	4300	66	50	120	91
	C	—	10000	2800	28	50	120	-164
	D	—	6000	4000	67	50	120	180
	E	—	10000	3490	35	50	120	-81
	F	—	9000	3940	44	50	120	23
	G	—	6500	2536	39	50	120	-21
	H + I + J	—	3x10000	17064	57	50	120	548
II	D	21	15000	8402	56	50	100	90
	H	—	1200	4800	67	50	100	120
	I	—	7000	5003	71	50	100	150
	J	—	5000	4200	84	50	100	170
III	J	10	4000	3200	80	50	100	120
IV	D	14	8944	4300	48	50	100	-17
V	D	4	6712	700	10	50	100	-265

respect. In terms of economic gain, the outcome demonstrates that the faster turnover rate of post-larvae is more profitable; for example, the average gain for the participants after 40 days of culture is Rs 54, for 21 days of culture Rs 133 and for 10 days (one participant only) Rs 120.

Though the fry reared for 10-20 days may not have reached juvenile size, it would appear that such bigger size post-larvae are desired and valued by the farmers. The higher price obtained



Women at work in a nursery pond

for juveniles after 40 days of culture is not worth going for, in view of the overall increased mortality and risk involved.

Repayment of the cost of investment would be as follows, based on the example of "lucky" frycatcher J in Trial III

He utilizes the maximum capacity of a cage involving three *happas* by 4000 fry. On the basis of prices given, he will be able to repay the cage within three months at his present, 10-day turnover rate. On the other hand, if he overstocks his cage, keeps the fry too long in the *happas*, or puts the cage out at the onset of the monsoon, he will probably lose money.

The tentative results indicate that nursery culture of tiger prawn fry in cages of the present design and with the prevailing market is an economically viable activity for frycatchers. But motivation is crucial. For this reason, a village motivator, Ms Pampa Biswa, has been involved with the BOBP shrimp fry project. She stays in Ramnagar for long periods and assists and encourages the frycatchers to undertake cage culture. She also serves as a link between the technical staff of BOBP and the participants.

As the project has stressed the importance of women's participation, the involvement of a woman as motivator is a definite advantage. Throughout the project period, the women participants have found that they have a trusted representative with whom they can frankly share their problems and hopes.

Though there have been a few drop-outs from the trial, the remaining participants have been remarkably united as a group, an achievement for which Ms Biswas must take much credit.

While it doesn't require sophisticated skills to nurse tiger prawn fry, it does help if a little art, science and some comprehension for husbandry are applied, and motivation and encouragement are offered.

Besides assisting the participants and obtaining data from rearing trials, Ms Pampa has also proved to be a skilful artist, which is reflected in the drawings presented with this article.

The future

It is evident from Table 1 that the participants who are continuing are those who gained most during the first trials.

The coming season will be used to consolidate the results of the last season and convert the trials into a more continuous and steady production of post-larvae. Since most farmers prefer large numbers of post-larvae at one time, more emphasis will be taken to organize the nursery cultivation in such a way that the participants stock and harvest their cages simultaneously.

As the simple, locale-oriented technology has proven worthwhile, interested local NGOs will be invited to train in shrimp fry nursery rearing and use the learning to extend the concept in their respective areas of operation.



Women's direct involvement — working in the nursery ponds, clearing land and doing earth work.

People's participation makes a success of small-scale oyster culture

by Dewakie Nair

(Biologist Fisheries Research Institute, Malaysia)

Success, but not without some problems with human resources and marketing, has attended a small-scale oyster culture project that the Department of Fisheries (DOF), Malaysia, has been conducting on the west coast of Peninsular Malaysia with technical assistance from the Bay of Bengal Programme (BOBP). The result is that oyster culture has proved of considerable interest to other communities on the rest of the coast of Malaysia and the DOF has now begun to encourage them to generate additional income by such aquaculture.

The DOF-BOBP project began in 1988 with the identification of a few areas as being suitable for oyster culture. Batu Lintang in Kedah, Kampong Teluk and Telaga Nenas in Perak and Sg. Muar in Johore for *Crassostrea bekheri*, and P Langkawi in Kedah for *Ostrea folium*.

To manage the project, the Fisheries Research Institute (FRI), with BOBP support, initially employed four biologists in Pulau Langkawi, Muar, Penang and Terengganu. Working with fishermen and State Departments of Fisheries, the biologists selected participants in each area who showed interest in such aquaculture. Most of those chosen were engaged in some kind of fishing activity or the other near the project sites.

Those chosen were supplied all materials and paid by BOBP to construct and launch rafts and longlines, prepare culture materials and harvest the oysters. Then, the fishermen were trained for at least one complete cycle in all aspects of the culture operation before the farms were handed over to them. Field biologists and FRI officers, thereafter, continued to provide technical advice on the culture and marketing of the oysters.

Culturists working at Batu Lintang, Telaga Nenas and Kampong Teluk have developed viable grow-out systems and are marketing their production on a regular basis. Seed supply from natural local sources has been a constraint, but spat of *C.iredalai* are now brought in from Terengganu and have adapted very well to their new environment. In fact, the soft, tender white flesh of this species is preferred by consumers to the local *C.belcheri*.

The road was rougher at Langkawi Island. One problem was finding suitable culturists who could maintain the same enthusiasm before as well as after success was assured. Another problem was that oysters of marketable size were not harvested in time,

resulting in high mortality. Due to the weight of the oysters and also bio-fouling, a number of rafts were damaged and partly sank. Clearly quite a bit of backstopping from DOF staff, as well as encouragement, were needed if the enterprise was to be successful.

Marketing the Langkawi oysters also posed problems. If sold on the island, they sold below the break-even price. In order to resolve the marketing problem, DOF staff continue to help the culturists to seek alternative outlets where higher prices could be obtained. Several farmers were not able to employ workers during the harvesting period. BOBP provided soft loans for labour charges in these cases, but recovered the loan immediately the oysters were sold.



To promote oyster farming after this experience, a training course was conducted for 13 fishermen from various states. Two more short-term training courses, each of four days duration, will be held this year for interested fishermen. All participants attending the course will be assessed six months later on their interest and performance.

The development work carried out so far has generated interest among several fishing communities. Several more fishermen have been recruited by the DOF to participate in oyster culture in Sg. Merchang, K. Setiu, Batu Lintang, Kg. Teluk and Telaga Nenas. The new recruits have been provided with materials to start culture operations.

Where the farms have been handed over to the culturists, materials to maintain the culture operation continue to be provided. This is to enable the participants to complete one cycle by themselves, with the help of their families, before undertaking the next culture operation on their own. The operations continue to be closely monitored by DOF biologists in order to immediately resolve any problems or difficulties that may arise.



*Raft culture of *Ostrea foliunc* (above) as practised in P. Langkawi, Kedah, Malaysia. Note the oysters on the net panel in the foreground. In the two picture below, shore-based participants shuck the oyster.*



EXTENSION

An Article of Faith

A report on a desk study by Sebastian Mathew, BOBP Consultant

Important policy-making members of government (especially those who control the pursestrings) often see extension as a non-productive activity and, therefore, are reluctant to make adequate budget allocations to it. This was a common concern voiced at a regional consultation the Bay of Bengal Programme (BOBP) organized in Medan, Indonesia, in 1990 to look into approaches, methods, strategies and organization of fisheries extension activities.

The participant country representatives felt that there was a need to examine the literature and experience of extension to see if a positive causal linkage can be shown between extension on the one hand and increased production, leading to a better quality of life for fisherfolk, on the other. Following up on this the BOBP got a consultant to undertake a desk study and his findings indicate that though the impact of extension cannot be quantified its catalytic role should be accepted in "good faith".

Defining 'Extension'

What is extension? The term 'extension' has its origin in agriculture. It was first used in connection with improvements in agriculture in the mid-19th Century. Organized extension activities in fisheries is a post-World War II phenomenon. It started with the mechanization of traditional fishing craft and the introduction of new harvesting technologies under bilateral or multilateral aid programmes.

Given BOBP's context of working with fisherfolk communities, the Consultation defined extension as "all organized communication efforts by which an individual or agency tries to bring about changes in knowledge, attitude, skills and/or behaviour of a client population, in order to reach one or more objectives that have been established within the framework of an overall development policy" a rather broad and general definition. In

practice, extension usually refers to the provision of technical advice to fishermen/fish farmers, either to improve productivity of existing fishing units/fish farms, or to use new production techniques. The implicit assumption in extension is that, with increased efficiency, higher levels of production can be achieved and that the incremental output can be successfully marketed, leading to better marketing incomes, and, therefore, a better quality of life for the fisherfolk. Less frequently, extension also refers to advice on issues related to resource management and fisherfolk development.

Costs and returns

Extension services are provided by both public and private agencies, but the study's main concern was those provided by the State. Examining the costs and returns of investments in extension made by the State, the study points out that the expenditure on research and development, the cost of introducing the innovations and the expenditure borne by the fishermen while putting the innovations into practice are the main costs. The returns are higher income to the fishermen, additional tax revenues, foreign exchange earnings (in the case of exportable species), better supply of protein to the people, and, sometimes, more employment opportunities.

Quantification of how much of the extra returns can be actually attributed to public expenditure on extension is, however, difficult. In fact, whether returns always accrue or not is often a question.

Since the increase in production on account of innovation depends on technical, economic, social, cultural and political factors, it is almost impossible to isolate the role of extension in increasing production. But in certain situations, it is possible to show a positive relationship between extension and production. For

example, if the gap between the actual level of production and the maximum sustainable yield (MSY) is sufficiently wide, and if product and credit markets are adequately responsive, the return on investment in extension can be high. On the other hand, the relationship between extension and production can be negative if the resource conditions are unfavourable, the markets non-responsive, the fishermen indifferent and the extension network inefficient.

What this indicates is that there is no universal relationship between extension and production. Investment in extension may yield either good or poor returns depending on the nature of prevailing conditions, irrespective of whether the extension network is well organized or not. To quote Orivel in a World Bank Staff Working Paper (No. 564), "the problem is thus less one of showing whether (agricultural) extension services can have an impact, positive or otherwise, than of determining under what conditions a particular extension project has a reasonable chance of success".

Even in situations where extension activities have contributed towards an increase in production, it is hard to assess the impact of extension because of the difficulty in estimating the proportion of benefits attributed to extension alone. The catalytic role of extension has to be accepted in good faith assuming that there are direct and indirect returns to investment in extension in areas where there is a positive atmosphere for such an intervention. This act of faith seems to have crept into practice, to quote Baxter regarding World Bank practice in one of the Bank's technical papers (No.87): "Among recent pure extension projects (supported by the World Bank), most, 13 of 17 do not calculate a rate of return in this way. Five do not calculate one at all".

In situations where extension can facilitate speedier diffusion of

innovations, the efficiency of its organization can have a bearing on the rate of diffusion. This would depend

- (i) the coverage of fishermen
- (ii) the type of fishermen reached by the extension services;
- (iii) the sensitivity of the approach; and
- (iv) the motivation of the extension personnel.

(i) *The coverage of fishermen*

The intensiveness of the coverage of fishermen is important for the effective performance of the extension services and one agent for every 500 fishing families has been suggested by some. Although the fishermen-to-extension agent ratio is not immutable, it has to be realistic and according to the needs of the clientele, communications, staff availability and the possibility of mass media complementing extension field activities.

(ii) *The type of fishermen reached by the extension services*

Since adoption of new, capital-intensive fishing techniques often involve higher levels of risk *vis-a-vis* agriculture, it is possible that the ones who take the initiative are those who can afford to take the risk; often the elite in the fishing community. Although, from the point of view of return on investment in extension, these people are desirable, they are, from the equity point of view and from the point of view of sustainability of the resource, perhaps not the best of targets. Unlike in agriculture it cannot be assumed that the poorer fishermen will, in the long run, adopt the innovations, because the sustainability of innovations with a strong efficiency bias is severely limited in tropical waters.

(iii) *The sensitivity of approach*

Instead of resorting to a 'top-down' approach, a 'bottom-up' one could be resorted to in situations where the fishermen themselves articulate the need for a specific type of technology, provided it is not disruptive of the labour market and destructive of

the resource base. In such cases, the clientele need not be from the village elite; they could be from the poorer sections. Development and introduction of plywood boats by the Intermediate Technology Development Group and the Centre for Appropriate Technology in southwest India, in response to a demand from *kattumaram* fishermen for a better craft, is a good example of how a client-sensitive approach can benefit poor fishermen.

(iv) *Motivation of extension agents*

The type of extension agent with whom the clientele comes into contact is important. Unless these extension agents are highly motivated, the effectiveness of extension services can be negatively affected. They should be well paid, should be provided with adequate means of transport since they have to live and operate under difficult conditions, and should be adequately trained to propagate the desired innovations as well as to effectively understand the needs of the clientele in their context. The extension agent should become the effective link between the clientele and the research centres, particularly in the process of making possible adaptive research, that oft-neglected area in technology transfer.

The efficiency of an organization in introducing innovations and have them accepted depends on four factors. The factors are discussed in some detail below.

Evaluating economic impact

As already mentioned, there are several difficulties in measuring the impact of extension on production. However, there are methods, rather inelegant though they be, to evaluate the impact. Four methods usually used in this respect are

- (a) Measuring the internal rate of return;
- (b) Correlating the expenditure on extension and the increase of production/productivity;
- (c) Comparing output (between areas with and without the extension input, or, within the same area

before and after the introduction of extension services); and,

- (d) Assessing the microeconomic production function.

It must, however, be emphasized again that, since the extension input is only one among many causative factors contributing to an increase in production, these methods cannot be relied upon to provide any rationale for, or against, investment in extension.

Time lags in impact

The time horizon of decision-makers or project evaluators to assess the impact of an extension project and its viability is, often, shorter than the time needed for the project to tailor and adapt to the conditions prevailing in a locality or in relation to the activity. A particular extension programme considered a failure by an economist could well show success in a timeframe broader than the one used by decision-makers — e.g. an American rural sociology study on hybrid corn adoption showed that the majority of adoptions took about twelve years.

This is true of many technological adoptions in fisheries too. Thus, while undertaking an impact analysis of extension, it might be worthwhile to choose a timeframe different from the one used by planners and it should be carefully chosen with the social and cultural characteristics of the clientele in mind.

Conclusion

The literature on the impact of extension projects is of fairly recent origin and none exists on fisheries extension projects. Various difficulties arising from the approach to extension, its organization, methodology and, more importantly, the problems posed in isolating the impact of extension underscore the limitations of the exercise. In fact, before excluding financial support to extension activities, even multilateral agencies like the World Bank rarely seem to resort to feasibility studies knowing fully well the limitations of such efforts.

However, if the resource situation is favourable, factor markets reasonably dynamic, and, the particular extension activity specifically caters to the needs of fisherfolk, it can and should be assumed that extension will have positive effects and its catalytic role can be accepted in "good faith".

LEAFLETS TO IMPROVE QUALITY

Attractive extension leaflets, to help fisherfolk improve the quality of fish landed and of fish products, and thereby increase the market value of both, are now available with the Bay of Bengal Programme. They have been prepared in English and the local languages of the east coast of India, by BOBP's Post-Harvest Fisheries Project, sponsored and executed by the Overseas Development Administrations (ODA), U.K. The leaflets are widely distributed in several areas in South India during demonstration visits to fishing villages, at meetings and workshops organized for fisherfolk, and through officials of state fisheries departments.

The leaflets, complete with simple illustrations and explanatory notes, have been conceived with the purpose of reaching as many of the simple artisanal fishing community as possible. At present they deal with four activities carried out in India and which have generated great interest and 'fairly wide acceptance among the fisherfolk communities and NGOs:

How to use an Ice-box on a Nava

This leaflet briefly describes how to install (as a semi-permanent fixture) the box in the boat, below and in-between the thwarts for easy lifting of the lid and with the drain plug

Some of the Post-Harvest Fisheries Projects leaflets; they will ensure the marketing of fish of improved quality.

backwards for easy flowout of melt water. It also describes the quantities of crushed ice to be taken for a fishing trip and advises on the handling and packing of fish with the ice. In addition, it provides information on the maintenance of the box.

Stationary Ice-box : Construction specifications

The construction and material specifications for a 2 tonne shore-based ice-box are furnished together with diagrams and a design drawing. An approximate cost and the details of constructing the box and the lid are also provided. Advice on how to use the box to the best advantage states: Keep only quality fish and properly arrange them between layers of crushed ice; ensure proper maintenance by draining melt water, keeping the lids properly closed, checking on stock and ensuring rotation; and scrub clean the box.

How to make dried Anchovies

A compare-and-contrast technique is used to describe the advantages of the new method of using drying racks as against the old method of drying on sand. Sample specifications on material requirements (approximate cost is indicated) and information on the method of constructing drying

racks are provided. The advantages — financial and hygienic — are stressed.

A new & better Fish Marketing Container

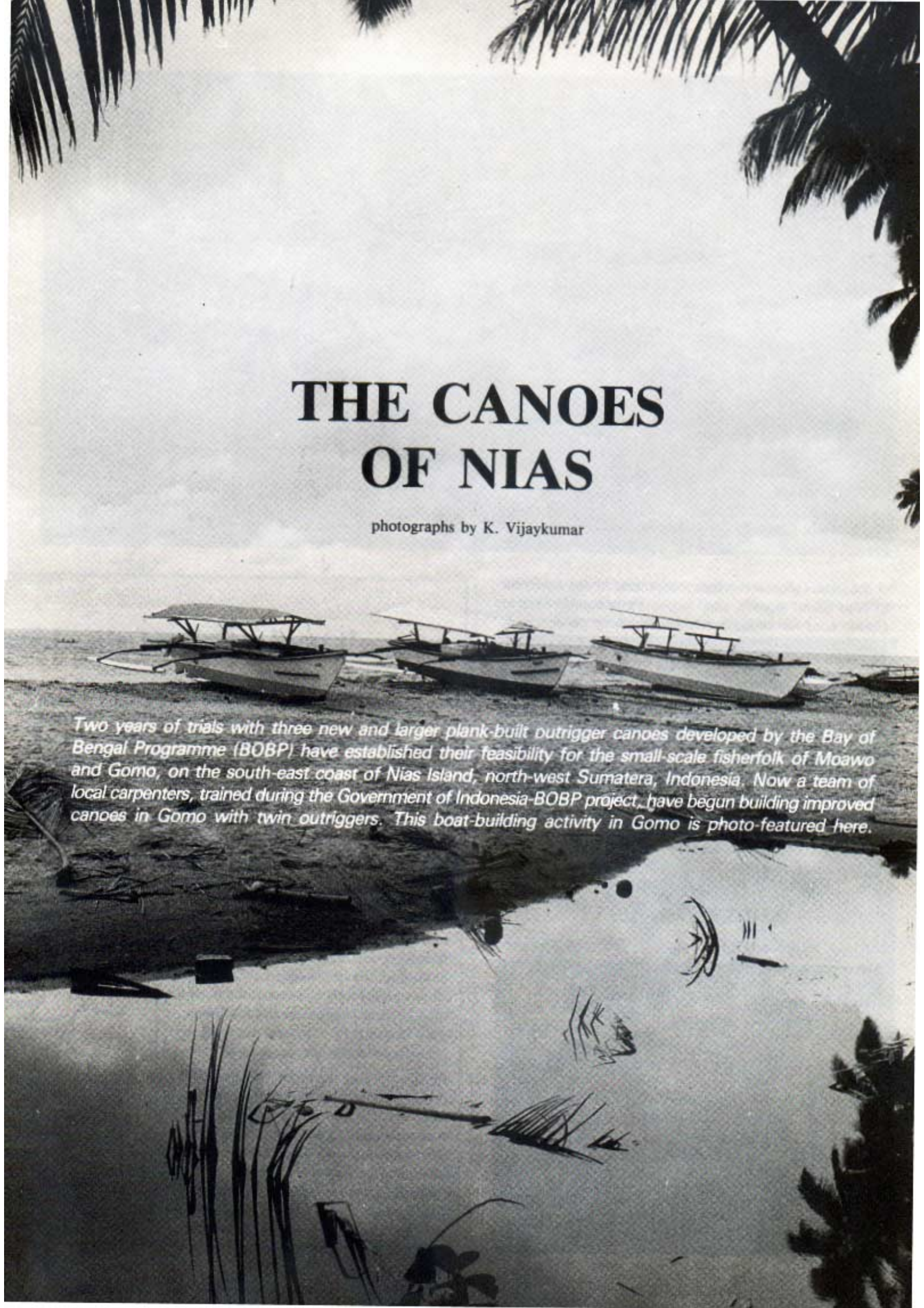
How the travails of retail vending fisherwomen, using old type fish baskets to transport fish as headloads or by bus for retail marketing, can be brought to an end with the new type of Aluminium Fish Container is the theme of this leaflet. The further advantages of these containers — long lasting, clean and attractive in appearance, non-leaky, easy and non-objectionable for transport by bus under passenger seats, and keeping fish in good quality — are all highlighted.

Several more leaflets have been planned as part of the Post-Harvest Fisheries Project's activities. This project has the overall objective of achieving a reduction in post-harvest losses and an improvement in the utilization of fish by small-scale fisherfolk communities in the Bay of Bengal, in order to enhance the incomes of those involved in fish capture, handling and marketing. This, it envisages, will also optimize the distribution of fish to the consumer. The project's activities are currently underway in India, Bangladesh and Sri Lanka.

The importance of the leaflets arises from the important position fish occupies in the diet of much of the population living in the Bay of Bengal Region. It is often the most favoured, yet least expensive, form of animal protein available. Poor post-harvest techniques, however, cause substantial material and nutritional losses in fish. Most commonly, bad handling of fish after capture leads to rapid spoilage and inevitable downgradation in value. Subsequent poor, or inadequate, processing, marketing and distribution practices tend to lower quality and bring about low market values. The BOBP Post-Harvest Project is designed to change this situation.

A D ISAAC RAJENDRAN.

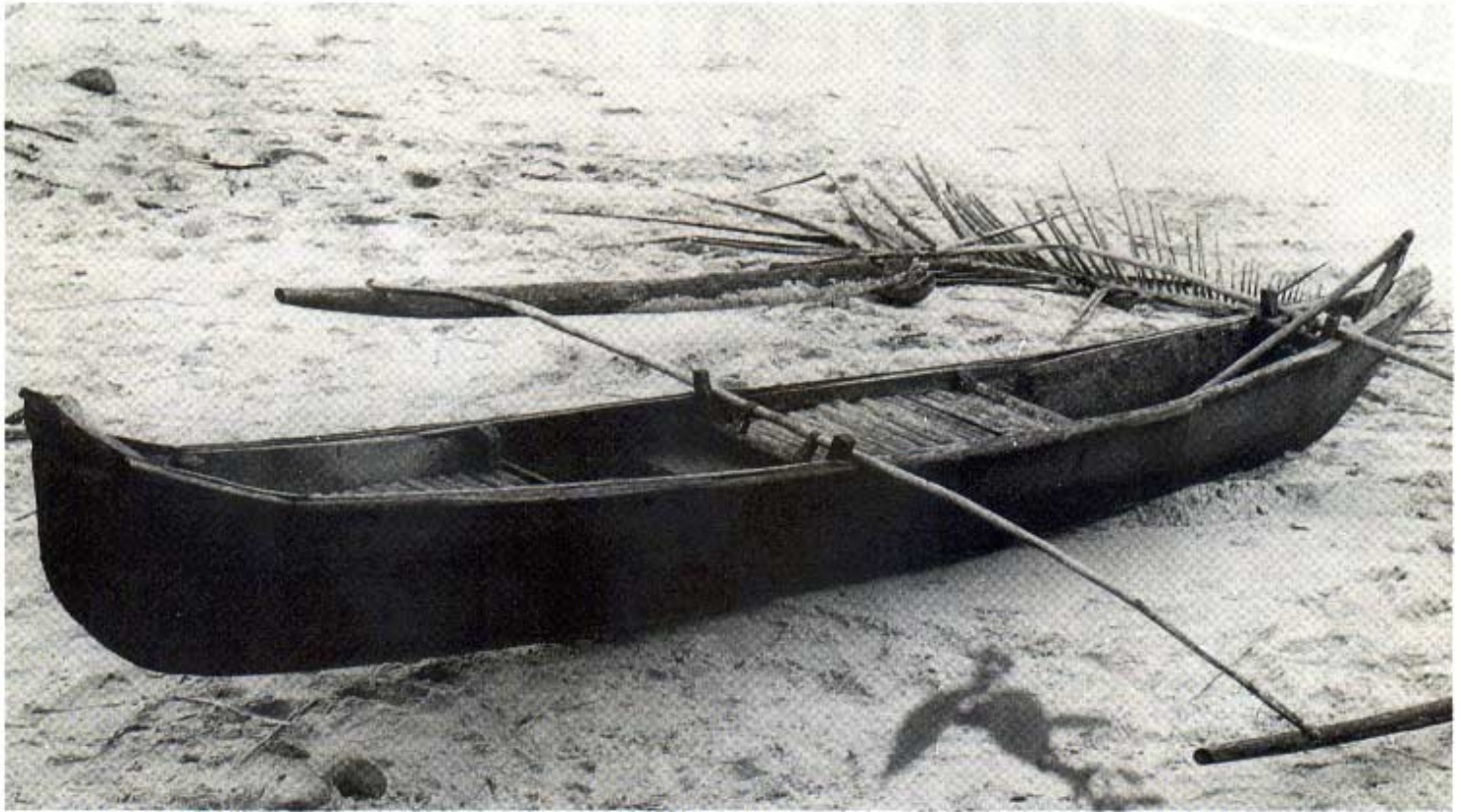




THE CANOES OF NIAS

photographs by K. Vijaykumar

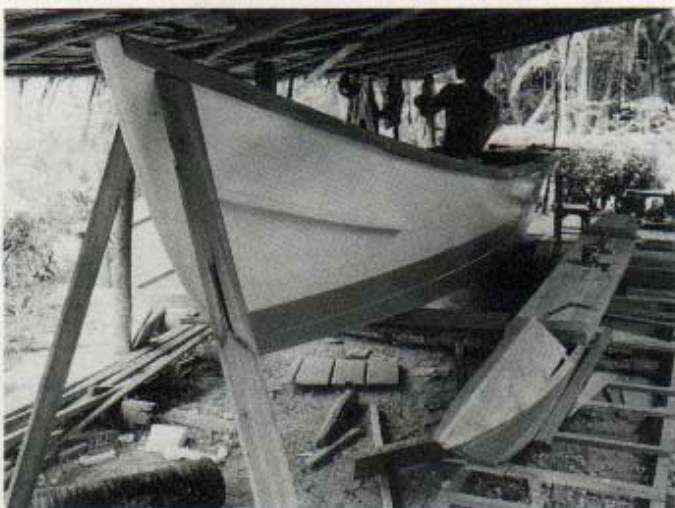
Two years of trials with three new and larger plank-built outrigger canoes developed by the Bay of Bengal Programme (BOBP) have established their feasibility for the small-scale fisherfolk of Moawo and Gomo, on the south-east coast of Nias Island, north-west Sumatera, Indonesia. Now a team of local carpenters, trained during the Government of Indonesia-BOBP project, have begun building improved canoes in Gomo with twin outriggers. This boat-building activity in Gomo is photo-featured here.



A traditional dugout outrigger canoe used by the fisherfolk of Nias Island (above), and, below, the makeshift shed in Gomo, used for village-level construction of the canoe.



At work on the new timber outrigger canoe in Gomo.



Small-scale fisherfolk do

A pilot project was launched in 1988 in Nias Island to assess the technical and economic feasibility of a new type of outrigger canoe and its acceptance by the local fishermen. During the extended technical trials of prototype canoes, several selected fishermen were given the opportunity to demonstrate the feasibility of the novel craft, which was provided with an insulated ice box enabling it to fish in more distant fishing grounds where the resources are less exploited.

Two years of commercially-oriented fishing has demonstrated increased landings in the village and considerably greater earnings for the fishermen. The feasibility of the new outrigger canoe was evident. The fishermen were also comfortable with the motorized canoes. Their earlier worries about performance, seaworthiness and safety, while engaged in distant fishing, quickly vanished and were replaced by confidence in the new craft.

Besides meeting the initial objectives, the project was consolidated with the training of local carpenters in the construction of such outrigger canoes. The training of these carpenters at village level was made possible with funds generated for two more outrigger canoes. These funds came from savings, put by during the operations of the prototype outrigger canoes,





A view of the new outrigger canoe, ready for launching, on the beach at Gomo (above), and, below, an artisan making last-minute adjustments on the new canoe.

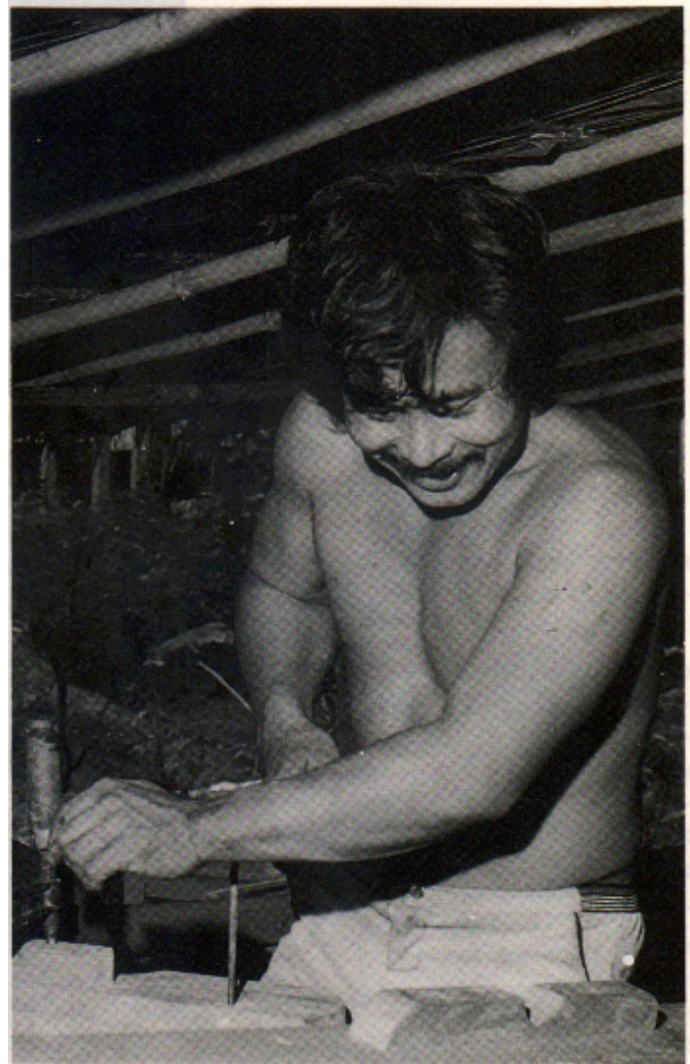
eli with the new outriggers

and through a bank loan from the local provincial bank (BPDSU).

After construction of the first two new outrigger canoes under the guidance of a master carpenter, the two carpenters of Gomo were confident enough to undertake the building of a third outrigger canoe on their own. Its completion and launch will make the local community more self-sustained.

The success of the fisherfolk of Gomo with the first few outrigger canoes is not enough and needs to be replicated in other parts of Nias. Fishermen of Serumbu fishing village, on the west coast of Nias, who visited Gomo to study the outrigger canoe development, expressed confidence that this new outrigger canoe could be used on the west coast as well, where the continental shelf is wider. However, conditions on the west coast being somewhat different, trials with the new canoes should be carried out before planning any introduction on a larger scale.

The entire project is only in its infancy, so it is still not the complete answer to the problems of the small-scale fisherfolk in Nias, leave alone North Sumatera. But it is a small step in the right direction.





Clockwise from above:

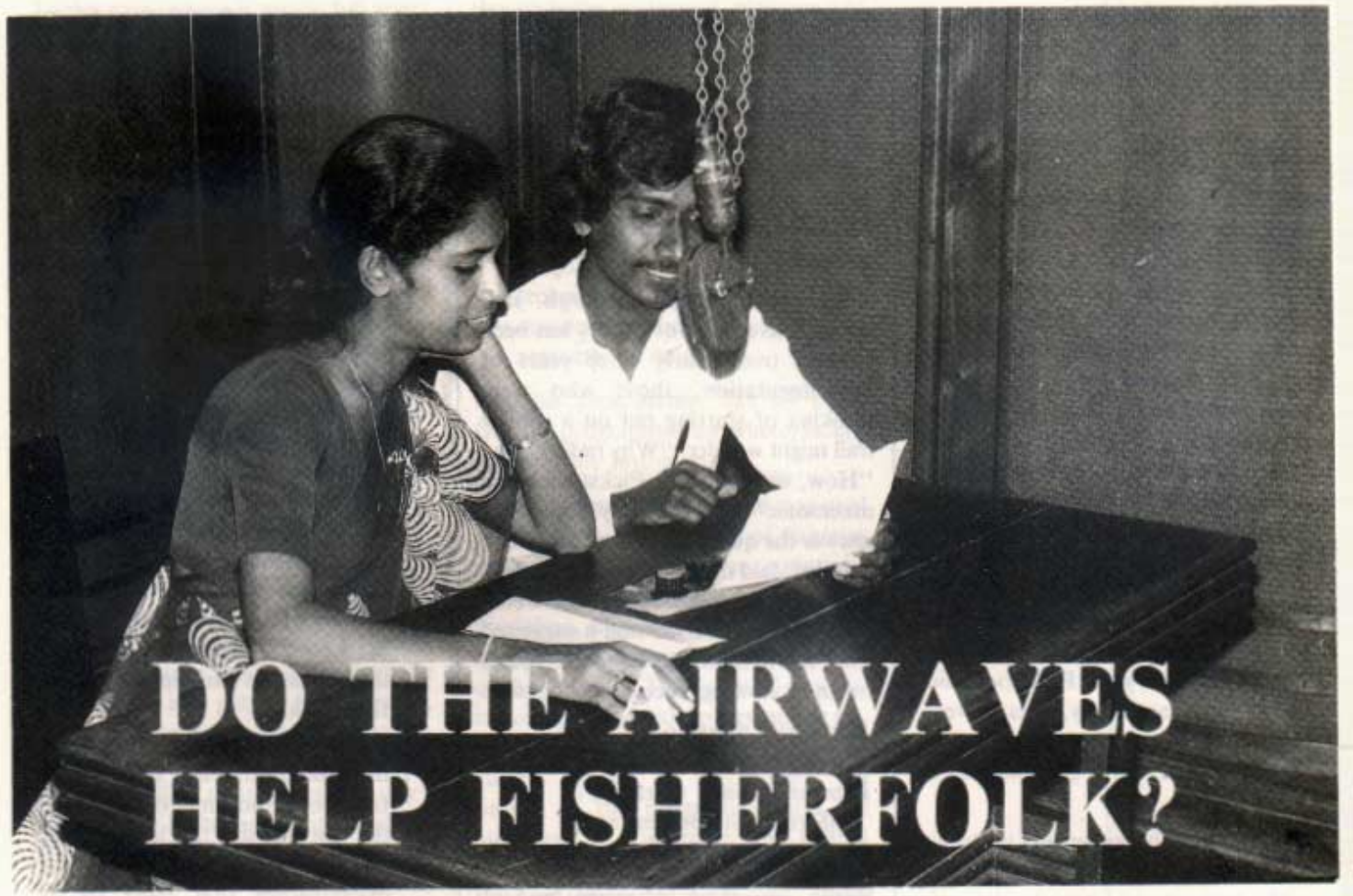
The villagers of Gomo gather at the construction site for a close glimpse of the new craft.

Almost the whole of Gomo turns out to take the new outrigger canoe in procession for its launch.

The new outrigger canoe at anchor off Gomo. Note the twin outriggers.

Traditional fishermen who will be the beneficiaries of the new outrigger canoes.





DO THE AIRWAVES HELP FISHERFOLK?

Fisheries radio is not new. Many countries have long used it to disseminate fisheries information. But can fisheries radio be put to better use? Does it have a better future as an adjunct to extension? Should it be considered a tool of fisheries extension and fisherfolk development rather than as a fount of fisheries information? Is it meant for fishermen out at sea, especially now that new craft enable even small-scale fisherfolk to go further out, or is it meant for the fishing community as a whole, to be listened to in their homes in coastal villages? These and many other questions were the focus of a regional workshop sponsored by the Bay of Bengal Programme and held in Colombo, Sri Lanka, from August 27th to 29th. S. MUTHIAH, who was present, reports on the deliberations which, he says, may have been inconclusive but nevertheless provided much food for thought.

- * Thailand is, with Japanese assistance, planning a fully-equipped radio station that will devote its time entirely to fisheries broadcasts.
- * Malaysia has a special programme for fishermen once a week, which is a 'talk show' highlighting development and progress made by them.
- * Indonesia offers some fisheries information through its agriculture-oriented broadcasts which are aired from regional stations, both government announcements as well

as information on technology being featured in several languages.

- * Bangladesh offers information on fisheries and pisciculture as part of its farm programmes which are beamed for about 45 minutes every day.
- * India too uses its 'Villagers' Forum' and 'Farmer's World' programmes to disseminate similar information daily, but a few regional stations, for instance those in Orissa, broadcast four days a week a special programme for fisherfolk, 'World of Fishermen',

providing them with information on fish farming practices, technology and government plans.

- * The Maldives offers Radio Haveerua Community Education Programme—which broadcasts five days a week, its Friday programme, 'Seaworthy, Seafaring', being targeted at fisherfolk and giving them a greater voice through participation and drama.

None of these, however, is quite like the programme Sri Lanka offers SEVEN days a week and which former BBC agricultural broadcaster Michael

Pickstock described in his keynote address as “a unique success story despite its ups and downs”. Pickstock, who now heads World Radio for Environment and Natural Resources and who specializes in the training of personnel in developmental and agricultural broadcast programming, pointed out that the Sri Lanka Fisherfolk Radio Unit (SLFRU), offering fisheries and fisherfolk news and features for five minutes at peak time every day and providing entertainment as well in its 15-minute Sunday programme, had probably set some kind of world record by not missing a programme since January 1989. The experience of this radio unit of the Sri Lanka Ministry of Fisheries and Aquatic Resources (MFAR), which has been sponsored as a three-year trial project by the Bay Of Bengal Programme (BOBP), was, Pickstock said, ideal for case study, as it went beyond the scope and extent of all other fisheries radio programmes in the region.

Drawing from his experience in Britain and the considerable work he had done with agricultural broadcasting in African countries, Pickstock presented the thirty participants with an overview of rural radio, but through his experience with SLFRU was able to highlight the strengths and weaknesses of broadcasting aimed particularly at fisherfolk. Such broadcasting, he emphasized, is an integral part of EXTENSION activity, but it in no way replaces the extension officer; rather, it extends and supplements the extension worker's work and it is, therefore, essential for both radio and extension worker to work closely together on several aspects of the programming.

The AIMS of such programming, Pickstock pointed out, were to

Inform, in order to
Motivate, and, when change thereby
occurred, to
Satisfy.

But this would not be possible unless the programme was, in the first place, geared to Attract. If those whom the programme was AIMed at were Satisfied, then they would want more. Which is why the SLFRU programme appeared to be proving a success; listeners he had spoken to appeared willing to even PAY to keep it going.

Joseph Michael Perera, Sri Lanka's Minister for Fisheries and Aquatic Resources, was to respond at the closing session that he was determined to ensure that the programme would continue after BOBP's assistance to it ended in December this year, but the funding for it, he added, still had to be found.

While this happy, though still inconclusive, state of affairs has been reached over nearly three years of experimentation, those who were thinking of starting out on a similar trail might wonder, “Why radio?” and “How, with radio?”. Pickstock had a mnemonic that not only helped to answer the questions but which, when detailed, laid the very foundations for such programming. Aptly, the word-reminder was RADIO and it suggested that, if the right answers were found for the following, success could result:

Rationale of radio;

Aims of radio;

Dos and don'ts of radio;

Information sources; and

Organization of the unit.

Radio, targetting fishermen, and/or their wives or, in fact, the wholes coastal community., Pickstock felt, was likely to be selected for two-way communication with fisherfolk because of its low cost and its ability to reach a scattered, mainly less literate, audience, rapidly and get quick feedback.

Aims of such programming must be clear, comprehensive and prioritized. These might include: Increasing productivity; improving marketing; adding value; enabling safety; motivating education, nutrition, hygiene and health; managing resources; introducing new technologies; and developing alternative avenues of employment.

Do's are the positive features of radio; it is good for: Speedy communication with a wide audience; getting messages across in a personalized fashion; introducing ideas and getting discussions going on them, followed by feedback. On the other hand, the **Don'ts** indicate that the medium is not suited to: Giving detailed information at length; describing “how-to-do”; and listing figures

and statistics. Radio, be warned, said Pickstock, has a very loose hold on the listener's ear and the listener can easily lose interest; so you have to attract the listener, keep what you say pithy and interesting, and provide him variety.

Information is that variety and it comes from: The Ministry of Fisheries and other Ministries, such as Health, Welfare etc, which play daily roles in the lives of fisherfolk; research institutes and training establishments; NGOs in fisheries and welfare; banks, cooperatives and other credit agencies; fish markets and traders; the meteorological office; and, above all, the fisherfolk themselves. The strength of the Sri Lanka programme has been the amount of participation by the fisherfolk.

Organization is often the first thing **thought about when setting up a** fisheries radio unit. It should be the last but not the least. These are some of the areas of organization that need to be examined initially: Is the unit part of the Radio Organization or the Fisheries Organization and what is its relationship with both? How should it be structured and with how many and of what sexes? How should they be recruited, what qualities should they have and how should they be trained? How should their morale be sustained in a 24-hour job which involves travelling to barely accessible places with inadequate accommodation? What equipment should be acquired? And how is the programme that results from all this to be advertised?

RADIO, it may be seen from the foregoing, Pickstock held, could be introduced at any time and would prove an effective tool in development, **provided** it was introduced and implemented **in a planned manner and** supported with adequate training in the use of equipment, in speaking into the microphone, in conducting interviews, in recognizing stories and in writing and editing scripts in a manner that would make them colourful and attractive. But, he warned, **RADIO** is very fragile when it is young and has to be carefully nurtured — as in the Sri

Lanka case, where it nearly fell apart at one point in time — but, if nurtured well, it would throw good roots, he was confident.

The Sri Lanka team supplemented Pickstock's address by discussing its own experience. The Fisheries Ministry decided to select FRU personnel from within its confines and kept the FRU as part of the Ministry because fisheries is the business of both Minis4y and the selected staff, thereby making access to information and comprehension of it easier, the team explained. Coordination with extension would also be better, it had been felt, they added.

But for all that, it was the fisherfolk themselves who had widened the team's horizons and "they, more than anyone else, helped us in developing the programme to its present stature". Training during the latter half of the programme also played a major role; it not only "got us working as a team, instead of as a group of individuals, but also helped us improve our work through the better use of time and the kind of team criticism we would not have tolerated in the beginning". Now, not only are we finding creative fulfilment in the work, but by teaming with the fisherfolk we are able to reach a wider audience, the SLFRU producers asserted.

The SLFRU team had in the past 2½ years found that the fisherfolk wanted: Prices of fish, dried fish, gear and equipment; weather information; new ideas for fisheries; how to improve fisheries; what others in the fishing community were doing; and entertainment. Technical information they provided, however, did not really reach the audience, which preferred demonstrations; on the other hand, issues relating to social awareness reached the audience well. This was a limitation that other participants were to emphasize during the workshop and even suggest that it might be worthwhile thinking of closer links with television for this very purpose.

The Sri Lanka experience was followed by a word from Jean-Claude Le Berre of Radio Animation Peche of France on the 'Radio Experience in a Developed Fishery', which only indicated that the problems faced and the programmes offered in developed countries were not too different from those found in developing fisheries,

though better equipment, planning and trained staff made life a lot easier. Of particular note was Le Berre's list, of inputs for a good programme. What is needed, he said, was

GOOD

fishing experts,
journalists,
technicians,
equipment, and
amounts of money.

And his programme, like all other fisheries programmes anywhere, lacked most on the last count!

After presentations by the national participants, on the state of fisheries radio in their respective countries, concluded the first day of the workshop, the second day was spent in animated discussion on the statements of the first day. The issues of explaining complicated technology on the air, the entertainment angle, and particularly the use of folk music, the timing of the programme and the audience — fishermen or fishing community — sought to be reached, the need to identify the purpose of the programme, on which training would depend, the difficulties of interviewing fisherfolk, the need for radio felt by fishermen on multiday trips, the necessity for constant feedback from audiences, the best content list and



During a break in the proceedings, Suman Latthuwahandhi, sporting the Sri Lanka Fisheries Radio Unit T-shirt, interviews Vernon L Pietersz of Sri Lanka, who chaired the BOBP-sponsored 'Radio for Fisherfolk' workshop held in Colombo in August.

Lessons in better programming

The greatest gift that a parent could give a child is education, a fisherman from Negombo told us, proudly revealing that his daughter would soon qualify as a doctor. We came across this piece of news because of S. Muthiah, an Information Consultant with the Bay of Bengal Programme who came to Sri Lanka to train the producers of the Fisherfolk Radio Service in news-gathering and script-writing.

During his week-long training stint, we visited several fishing villages with him to collect news and features for our programmes. In a village near Negombo, we were interviewing some fisherfolk in a lonely spot by the lagoon on lagoon fishing when we noticed Muthiah speaking to an elderly man. When he discovered that this old fisherman's daughter was a medical student, he called us over and we found that this tiny village had a second story for us.

With this incident, Muthiah impressed on us the point that there is "news" all around us; all it needed was an effort on our part to identify the news stories and present them in a simple and interesting way. Simplicity of communication, a language the listeners could understand easily, is what we should use, was another point Muthiah repeatedly stressed.

We collected several stories on these trips and we prepared a number of radio scripts based on them. With

These reports, on a Training Programme conducted recently by S. Muthiah, a Madras-based Information Consultant with the Bay of Bengal Programme, are by two producers of the Sri Lanka Fisheries Radio Unit. Their reports have been translated from the Sinhalese.

Muthiah's guidance, we were able to write these stories much better than we used to do earlier. One important thing he taught us was the art of writing the first paragraph or the first sentence of a news report, in a way which would attract the listeners.

Muthiah also arranged for us to meet Wijesoma, the famous cartoonist of the *Diwayina*. He interviewed Wijesoma on cartoon art and demonstrated to us the techniques of interviewing. This was yet another experience which helped us to spot our deficiencies and weaknesses. It was these Muthiah worked on and helped to make us better programme producers.

Mahesh Perera

The Fisherfolk Radio Programme is broadcast for the benefit of the fisherfolk themselves and it is necessary that they should be able to understand the contents of the programme easily. Therefore, the language to be used should be simple enough and colloquial enough for them to understand what is said.

This was stressed by S Muthiah, an Information Consultant with the Bay of Bengal Programme and no stranger to journalism and communication in Sri Lanka. "If you use language that can be easily understood by a student in the 5th grade, you can be sure you will be able to communicate with your listeners," he amplified.

After defining News and discussing this definition with us, Muthiah encouraged us to make our own selection of news for use in our programmes, getting us to distinguish between the significant and the insignificant. He sat with us and participated in the review of each selection.

On a team trip to Beruwela we met the fisherfolk and visited a new primary school for their children. We saw the children learn to sing and write. Muthiah's watchfulness soon made us realize that we had missed a number of important things in our observations. We soon learnt that certain things which are not obvious could often be much more important than what is obviously visible.

In Negombo, we met a poor fisherman and discovered his daughter would soon qualify as a doctor. Muthiah was even more happy than us. He suggested we produce a programme based on the opportunities fisherfolk's children now have, from nursery to university, if only their parents encouraged them. He taught us how we could link interesting stories from places as far apart as Beruwela and Negombo

Suman Latthuwahandhi



several others generated lively discussions during the day-long proceedings.

On the third day, an *aide memoire* of the proceedings was prepared and discussed after which the Minister's valedictory address was read by the Secretary, Sri Lanka Ministry of Fisheries and Aquatic Resources. The highlights of this *aide memofre* were as follows:

The participants agreed that radio broadcasts can be used effectively as a development and extension tool in fisheries, and professed commitment to developing such programmes. However, it was recognized that certain basic criteria must be met to ensure success, and these include

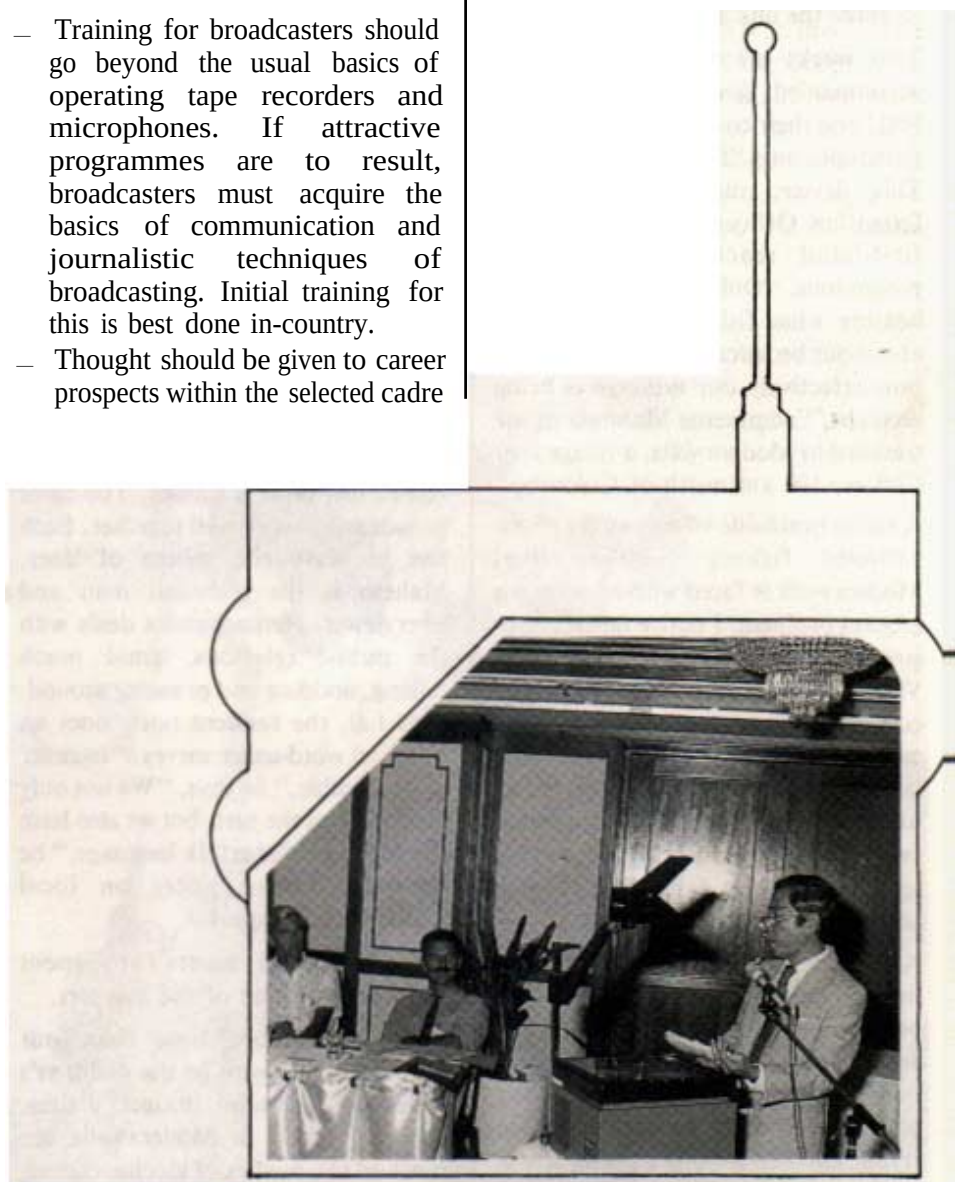
- Radio broadcasts for fisheries cannot be effective unless planned and operated within the broader context of development and extension activities. Extension staff should consider themselves as a part of the target audience in order that they may supplement the radio broadcasts in their contacts with fisherfolk.
- The target audience needs to be clearly specified and the subject matter of radio broadcasts should reflect the needs of this target group.
- Radio programmes should be designed to complement other media and extension services. Judicious scheduling and attractive programmes will ensure a committed audience despite the availability of other media options.
- Radio programmes will be more attractive and effective when fisherfolk themselves participate and are interviewed while engaged in their normal activities, on location.
- Important programmes should be repeated to give wider opportunities to listeners.
- Radio, a medium with personal appeal, is excellent for introducing new concepts, promoting debate and enabling grassroots feedback in a very cost-effective manner. It does not lend itself to "how-to-do" instructions of a highly technical nature, which are better demonstrated on the ground.

- While the fishery radio broadcast unit may be located either within the fishery agency or the national broadcast organization, the majority of country delegates favoured the location of such units in the national broadcasting organization. However, it was felt, there must be strong technical information links with the fishery agency and that, preferably, the funding for the broadcasts should be channelled through the fishery agency.
- Considering the creative nature of the medium and the technical nature of the subject matter, it is important that the team recruited should reflect both these qualities. It is also desirable to include women broadcasters.
- Training for broadcasters should go beyond the usual basics of operating tape recorders and microphones. If attractive programmes are to result, broadcasters must acquire the basics of communication and journalistic techniques of broadcasting. Initial training for this is best done in-country.
- Thought should be given to career prospects within the selected cadre

to avoid staff turnover and the resultant wastage in training investment. Since broadcast staff are required to work creatively and often outside normal working hours, there is also need to consider appropriate adjustment of salaries and allowances.

- Where donor support is envisaged to initiate fisheries broadcast services, it is essential right from the planning stage to ensure the financial sustainability of the programme after the cessation of donor support.

This *aide memoire*, it is hoped, will help every country in the Bay region review its radio reach to fisherfolk and enable it to consider expanding such programming.



Seen at the BOBP-sponsored 'Radio for Fisherfolk' workshop in Colombo, Michael Pickstock of World Radio for Environment and Natural Resources (left) and Jean-Claude Le Berre of Radio Animation Pêche of France listening to Robinson Sihite of the Extension Division of the Directorate of Fisheries, Indonesia, describe how Indonesia uses radio for fisherfolk.

On the road with the FRU

DAY ONE

One Sunday in this year, the FRU broadcast a news feature on the merits of pre-school education. It focussed on two stories — one, a primary school on the beach, the other on a fisherman from a village near Negombo who kicked his arrack habit and thus found the extra money and time to spend on his children's education. One of these children is a naturally self-disciplined and gifted girl who, with her father's help, will now graduate next year from medical school. That's where the tale stopped, leaving listeners the freedom to make the link and get the message.

Two weeks after this broadcast, I accompanied three members of the FRU and their co-ordinator, Mahinda Fernando, on a "feed-back field trip". This device, suggested by BOBP Extension Officer R N Roy, gauges first-hand reactions to a given programme. "Only through seeing and hearing what fisherfolk have to say about our broadcasts can we really tell how effectively our message is being received," comments Mahinda as we travelled to Moderawella, a village near Chilaw, 100 km north of Colombo.

A sandy beachside village, where about 140-odd fishing families live, Moderawella is faced with a severe sea erosion problem. I notice fallen palms strewn the water's edge. Marcus, the Vice President of the 106-strong village co-operative society, follows my gaze and comments, "We would also benefit from a radio programme telling us how to cope with all this", a broad sweep of his hand taking in the up-rooted palms, a heap of rubbish and a leaking water-pump.

After lunch, about 40 to 50 people listen to the play-back of the education programme. Roughly a third of them are children, who seem to enjoy the musical interludes and giggle at the background noises on tape: a baby crying, children reciting a poem, school bells clanging — all sounds they relate to easily.

As the tape ends and the audience shuffles expectantly, radio producers Mahesh, Lal and Hemachandra get to

Sri Lanka's Fisheries Radio Unit (FRU), broadcasting these past 2-1/2 years with the help of the Bay of Bengal Programme (BOBP), is a little known activity of the island's Ministry of Fisheries and Aquatic Resources (MFAR). When it started as a means of communicating with the fisherfolk, there was much scepticism about its role in extension work, but as its audience grew, MFAR became convinced of the considerable part it could play in providing two-way communication between those on the beach and the trainers as well as those in the fisheries offices.

What better way is there to assess the FRU's ability to create a meaningful dialogue, while, at the same time, getting a feel of rural participative broadcasting, than to join the FRU bandwagon on a weekend field trip? That is exactly what a post-graduate Communications student, from London, did recently and this is what she reported.

work setting up microphones and Uher reel-to-reel tape machines. The three broadcasters work well together. Each has his favourite sphere of duty. Mahesh is the technical man and interviewer, Hemachandra deals with the public relations, amid much talking, nodding and prancing around. And Lal, the resident poet, does an informal word-usage survey. "In order to be credible," he says, "We not only have to dress the part, but we also have to use proper fisherfolk language," he explains, taking notes on local Sinhalese fisherspeak.

The next two hours are spent interviewing some of the listeners.

"We have more time than our husbands to devote to the children's education," Anna Bridget claims, though women in Moderawella are involved in a medley of income-earning activities, ranging from fish-drying and poultry-rearing to working in the newly-established all-woman batik factory. Children chip in after school and during holidays, but when they are

old enough, it's either out to sea, or starting families if they are women, or, increasingly, slipping into the employment mainstream of much-sought-after state jobs.

"We don't want our children to be exposed to fishing immediately," says grandmother-of-three Charlotte Fernando. For this reason, sacrifices are made to arrange for school uniforms, transport and exercise books — so that "our young ones can get a better chance in life than we ever did," she adds, sniffing emotionally.

The prospect of fishing, however, cannot be eradicated from the lives of most villagers, or their children. "Not everyone can become a doctor or an engineer. "Someone has to do the fishing," laughs Rita Grace. "We must be educated, though," she adds seriously.

The audience agrees vociferously on this last point. When Rita goes on to explain the vicious circle created by the illiterate fishermen being forced to sell to *mudalalis*, or middlemen, to bypass the red-tape involved in securing loans, there is a minor uproar in the community hall where we are sitting. She has touched upon a raw nerve. Many of these fisherfolk experience oppression stemming from illiteracy or semi-illiteracy. They do not want their children to share a similar fate.

Sumith Pieris, a 28-year-old private sector worker, is lucky. He has ordinary, "O", levels but cannot get his advanced, "A", levels. Quitting his job for further studies is out of the question, and he has no time for evening school. His parents cannot help.

The angle has shifted from the merits of pre-school education — relatively easy to appreciate and gain access to — and swings towards the difficult, often frustrating, area of secondary education.

Financial restraints are often the common denominator to family choices. Though the popular co-operative networks enable even the smallest fisherman now to gain access to some

solvency, something subtler than mere restraints is at work. While the advantages of education are recognisable by the villagers, long-term investment on education is not cost-effective in the short-term. Marcus voices the age-old complaint : “I need my eldest boy at sea, so what can I do?” We are stalled in a quandary larger than the FRU interviewer anticipated.

Deftly, Mahesh changes track, asking Mathilda whether alcoholism and education go together. “Of course they can’t — a drinking father upsets the children and causes worry to the mother. The little ones can’t study because their father is disruptive, and their mother can’t save for school books, or even dowries,” she says indignantly.

The atmosphere lightens again with the laughs that follow Mathilda’s frankness. Some nod in agreement. Sumith Pieris stands up defensively. He is not married, but speaks on behalf of some married fathers who drink, “but in moderation”. “In this way they relax,” he claims.

At this invisible cue, interviewing stops and bottled drinks — strictly non-alcoholic — are passed round. It is very hot, yet the crowd isn’t thinning. I detect interest, pride and goodwill in the people of Moderawella for the radio experiment. “We’ve always been badly looked-upon by other non-fishing communities,” someone says, “but at least we’ve now got our own radio programme. It is a beginning.”

DAY TWO

The next morning we begin the drive home. But on the way stop at St. Anthony’s Cooperative in Thoduwewa, 10 km south of Moderawella. Cooperatives are the current rage in Sri Lankan fisheries. Over the past three years, at least 300 have been established in villages along the island’s western coast. The FRU had, therefore, decided to feature a model cooperative. St. Anthony’s, started in 1989 and growing from strength to strength, was chosen for the *Dheewara Udanaya* (Fisherfolk Uplift) programme.

Vincent Mendis, President of St. Anthony’s, is no longer a boat owner. Now a small-scale entrepreneur, he is a benevolent *mudalali* who wanted to improve the village by getting the co-operative established.

Recounting the early difficulties he had in recruiting members, let alone collecting from them the initial Rs 100 fee, he recalls, “The fishermen didn’t know anything about pooling money and joining forces. The cooperative concept was alien to what they had been used to”. Nevertheless, St. Anthony’s got underway with 30 to 40 suspicious fisherfolk. Only when the Bank of Ceylon granted them their first loan, at the beginning of 1990, did membership soar — to 167.

This loan enabled them to purchase ten 18-ft boats with motor and fishing gear for each boat. Those who invested the largest amounts in the cooperative, using it like a ready-made post-office account, got priority. The rest had to wait another six months before the co-op could afford to invest in 40 traditional *teppam*, each costing Rs. 5000.





Cyril Fernando, another cooperative office-bearer, explains how, thanks to financial acumen, they stretched an additional Northwest Provincial Council loan of Rs 50,000 — ostensibly for boat repairs and village infrastructure — to line-up collateral for a further bank loan and the establishment of small net shops in port towns such as Chilaw.

“We really function as a team,” says Camillus Silva and expands, “It is a very fair system. We pick our representatives through informal discussions, according to their abilities.”

Women also make use of the various small-scale loan facilities organized by the cooperative. Mary Catherine, for instance, recalls that her living standards were deplorable before receiving help from the scheme. “I had to find a way out of the trap,” she says, “so I asked St. Anthony’s for an initial loan of Rs 2000 to start a dried fish business”. Mary smiles when she says the entire sum was refunded in two months and a further Rs 5000 was secured. “I now buy fish from my husband, dry it and take it to market.

My income has shot up to between Rs 1000 and 5000 a month,” she claims.

Everyone listens attentively. There are smiles all around. But suddenly there’s a stir in the audience of at least 70 to 80 people assembled under the damp monsoon sun. A raw spot has been touched when Vincent Mendis announces dramatically into the microphone: “We want mooring facilities for Thoduwewa.” This village has been waiting since 1947 for the official go-ahead and funding for what its fisherfolk perceive to be a necessity for community development.

As things stand today, fisherfolk must use Chilaw port, 12 kms away, as mooring base. Aside from incurring daily fuel costs, which, during a poor fishing season, forces them to stay on land up to three times a week, they have to pay Chilaw local council taxes. The situation rankles.

Port facilities are not a panacea for all ills, but “getting to use our 18 footers daily” is what Tennyson Fernando, an erstwhile boat labourer-turned-owner

wants for the immediate future. As things stand today, “we can’t afford to,” he complains. Cyril Fernando adds, “If mooring doesn’t get underway, then this,” and he looks around at the hotch-potch of fishermen’s huts and scattered red-brick houses, “is all we can aspire to.”

Perhaps this cooperative, like many others, seems constantly on the one-sided “what they can get track”, it is suggested as we walk towards the FRU’s Toyota van. But credit schemes and money-lending are not the only activities it promotes. It has a youth alcohol rehabilitation scheme and now plans on organizing a Christmas concert, to which I have already been invited, and a children’s fisherfolk poetry contest. By then the BOBP may well have ended its radio mandate. Will the FRU then be around to report these events? The Sri Lanka Ministry of Fisheries and Aquatic Resources seems determined to keep this success story going. Will its determination translate into reality?

LISA C DURANTE

glimpses into BOBP projects

Consulting on fisheries planning

Urging the Bay of Bengal Programme (BOBP) to promote Technical Cooperation programmes between Developing Countries (TCDC) in the region, a group of senior fisheries planners recently recommended that TCDC should be listed as a separate agenda item future meetings of the Advisory Committee of the BOBP. Suggesting that BOBP should work as a promoter, facilitator and a clearing house with respect to TCDC activities, the group recommended that implementation arrangements for TCDC activities be kept as flexible as possible in order to enable easy expansion of its activities.

These were among the major suggestions made by the group of planners from the BOBP member countries, i.e. Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka, and Thailand, who met in Madras in July at the invitation of the BOBP. The main purpose of the meeting was to discuss some of the more important recommendations on Fisheries Development Planning made by the Advisory Committee of the BOBP, which met in Colombo, and provide detailed guidelines for BOBP to prepare a programme of action for the immediate future.

The recommendations that were discussed in detail related to the linkage between the national economic development plans, the plans of other related sectors and the fisheries sector development plan, the strengthening and upgrading of fisheries planning skills, the identification of fisheries projects, the strengthening of the fisheries information/data bases, inter-agency co-ordination in fisheries planning and the possibilities of technical cooperation between developing countries (TCDC) in the BOBP region.

Besides the recommendations on TCDC, the group made several specific recommendations for the future work programme of the BOBP's Development Support unit. Among these were the following

- BOBP should, at the request of members, provide assistance in the preparation of inter-sectoral discussion papers which would analyze the (inter-sectoral) linkages, identify inconsistencies and suggest remedial actions as well as suitable coordination programmes of action in the member countries.
- Undertake in a member country a study on the training needs for fisheries planning in order to better understand the usefulness of training needs analysis.
- Assistance should be extended to member countries for updating their General Descriptions of Fisheries. In the first instance, the updating should be done in one

member country to test the usefulness and applicability of the new format prepared by the BOBP and improved upon with the guidance of the Group.

- A regional data base on Pelagic Shark should be established, taking into consideration the importance of developing an information base relating to fisheries at a regional level.
- BOBP should facilitate inter-agency coordination by arranging meetings of agencies which contribute to fisherfolk development at the national level, and also use case studies and inter-sectoral papers to raise the relevant issues in the context of the need to improve inter-agency coordination in planning.

The work programme of the Development Support Unit of the BOBP will, until the end of 1992, be based primarily on these recommendations. The fisheries planners also provided guidance to BOBP during the two-day meeting by indicating certain specific activities which they would like BOBP to undertake in order to support fisheries planning in their countries.

The formal proceedings apart, the informal atmosphere that prevailed provided a useful and rare opportunity for the fisheries planners in the BOBP member countries to meet their counterparts and exchange views and experiences on matters and issues of common concern relating to fisheries planning.

Who will support the Fisherfolk NGOs?

Who will fund NGOs willing to work with fisherfolk? And how can they be sure they are, if willing, funding a worthwhile project? These were key questions discussed at one-day meetings organized recently in New Delhi and Bangalore by the Bay of Bengal Programme.

Ever so often, BOBP itself gets requests for assistance from NGOs working with fisherfolk. And, depending on its capacity and involvement in the areas of the particular NGO's interest, BOBP does help. But, when the request is for funding support, BOBP finds itself in an awkward situation. It is a technical

assistance agency and not a funding agency. It has in the past, and continues to, occasionally, contact or cooperate with NGOs, but only to undertake particular activities, such as studies or pilot activities from which learning can be extracted.

On the other hand, BOBP is convinced that NGOs with appropriate understanding of fisheries and fisherfolk concerns and needs, and who have the organizational capacity to absorb inputs, can do a useful and necessary job of providing fisherfolk with extension and development assistance.

Since BOBP considers the whole question of support to fisherfolk

NGOs as an important one. (See Bay of Bengal News No. 34, June 1989), it decided, earlier this year, to invite several funding agencies who support NGOs to discuss the role of NGOs in fisheries and fisherfolk development, and, especially, what, if anything, can be done to support them in what BOBP believes is a vital area. Seven agencies (OXFAM-America, IGSS, HIVOS, Action Aid, OXFAM India Trust and ISI) responded to BOBP's invitation for one-day meetings.

These funding agencies, most of whom had had very little experience with fisherfolk NGOs, showed a positive inclination to support fisherfolk NGOs. They had not supported them in the past, primarily because they had not received any requests for such support. They also pointed out that when they did get such requests they had difficulty in appraising them, because most agencies did not have specialist staff with fisheries and fisherfolk development experience. This was suggested as an area where BOBP could help through orientation

and training. However, a chicken or the egg situation prevails: low level of requests for funding does not justify staff training and commitment, and lack of training and appraisal capacity make it difficult to fund fisheries and fisherfolk oriented projects!

The discussions also dwelt on the curious phenomena of how NGOs worked with, and for, fisherfolk. This has been BOBP's learning too, but the explanations that came up were not too convincing. Some felt the logistics of working in remote fisherfolk hamlets put off NGOs; others felt that fisherfolk as a community were very difficult to work with; and, then, there were those who felt the lack of specialist knowledge of fisheries and fisherfolk amongst NGO staff acted as a barrier to their entry.

The question, of course, was what, if anything, could be done about this state of affairs. And some rather interesting ideas came up. It was suggested that BOBP could organize meetings of NGOs regionwise, and use NGOs who are already working with

fisherfolk as resource persons, to expose other NGOs to the needs and problems of fisherfolk (and, in the process, hopefully, persuade them to work with fisherfolk). It was felt that with the experience of NGOs who already work with fisherfolk, such meetings could surface ideas and approaches on how best NGOs could work with, and for, fisherfolk.

To sow seeds of ideas, BOBP could prepare, in cookbook style, fact sheets of project and technology ideas which had potential in fishing communities and distribute them to funding agencies and NGOs. This may not only make the NGOs aware of the possible direction of work but also, from the other end, help funding agencies to suggest areas of work to NGOs whom they are in touch with and support.

Assuming that these two activities trigger project requests to funding agencies, one other thing that BOBP could do would be, if requested, to organize short training and orientation workshops for funding agency staff to make them aware of fisheries and

There is much NGOs can do for fisherfolk such as these. But NGOs themselves need the answers to several questions if they are to commit themselves to working with fisherfolk.



fisherfolk related issues and to discuss criteria and methods of assessing such project funding requests.

We at BOBP, while agreeing with the logic of the suggestions, are not wholly convinced that we really have the central role or, for that matter, the legitimacy to take on the responsibility of promoting fisherfolk NGO action. BOBP hopes to play its part, but believes that success will only grow out of further cooperation between agencies whose role it is to enable

fisheries and fisherfolk development on the one hand and funding agencies on the other. BOBP hopes that it will be able to share with readers of the *Bay of Bengal News* its experience with some of the ideas suggested during the discussions, sooner rather than later. BOBP is grateful to the funding agencies for their interest and clear indication of wanting to help and hope that together we can help fisherfolk through NGO action.

RATHIN ROY

A learning experience that also stimulated ideas and plans

Learning from the experiences of their neighbouring countries was the unexpected lesson learnt by the 28 participants taking part in a Regional Training Course in Fishery Project Formulation. During the four-week course, held from July 8 to August 2 in Bangkok, Thailand, the difficulties of managing migratory tuna stocks, expanding intensive shrimp farming and improving the socio-economic position of poor fisherfolk communities surfaced as experiences, and ideas and plans were spontaneously shared between countries on how to deal with such problems.

The trainees — from departments of fisheries and banks concerned with fisheries projects in eight South Asian countries — grappled with the various analytical tools that were taught them to enable better scrutiny of projects in their respective countries and help them avoid the failures of the past. A large number of the participants found the financial analysis session to be the most valuable for their future work, while almost as many cited a need for a more thorough and integrated approach to environmental issues. The group was somewhat divided on the social component of the course; some regarded it as the most beneficial series of sessions, while others thought it should have been given less emphasis.

The course was directed by FAO Senior Fishery Planning Officer David Insull, and utilized the expertise of Dr. Keith Haywood and Andrew Palferman of the Humberside International Fisheries Institute, University of Hull, U.K., three persons with considerable experience in fishery

project formulation. In addition, BOBP provided six of its experts as guest lecturers, all with extensive knowledge of various aspects of fisheries in the region and who were able to stimulate new project ideas appropriate to the region's concerns.

By the end of the course, all the participants were familiar with the process of project formulation and possessed an array of analytical tools to carry out proper project identification and preparation. It was suggested that while project identification was an art, requiring long and broad experience, project preparation was a craft, and, therefore, the job of a trained technician. It was in that spirit that the trainees were shown various techniques to calculate project values using net present value, internal rate of return, benefit/cost ratio etc and then to make a sensitivity analysis by switching values and examining risk. An introduction to economic analysis was also given which would enable the participants to consider taxation, exchange rates, shadow pricing, social and environmental external costs and benefits while preparing reports in future.

The course programme included lectures and discussions on the relationship between development plans and project identification, the logical framework, management and sustainable exploitation of fishery resources, appropriate selection of fishing technology, developments in aquaculture, social and institutional issues, credit, price theory, environmental hazards from and to fisheries, financial analysis, economic

analysis, monitoring and evaluation, joint ventures and report writing. BOBP's Senior Fishery Biologist, Dr. K. Sivasubramaniam, and Senior Fishing Technologist, O Pajot, presented their concern over the depleting fishery resources in the region, but pointed out that "pockets" of unexploited fish existed and suggested how these might economically be fished.

After Charles Angell, BOBP's Senior Aquaculturist, gave an overview of the historical and present developments in his field, Michael New, Coordinator of the ASEAN-EEC Aquaculture Development and Coordination Programme, highlighted some of the risks to, and from, intensive aquaculture: BOBP's Extensional Training Officer, Ratin Roy, covered correct problem identification, institutional issues and artisanal credit from a social perspective, all deciding factors of project sustainability. And Claude Fernando, BOBP's Development Adviser, described, in the final guest session, the current internationally-accepted formats for report writing.

The course provided an opportunity for three international organizations to cooperate on a subject of common interest. SEAFDEC, the Southeast Asian Fisheries Development Center, one of the region's oldest fisheries institutions, and BOBP, though in touch with each other for many years, worked together on a joint project for the first time in conducting this course. FAO played the catalytic and coordinating role in making this possible.

Participants from the Maldives, Sri Lanka, India, Bangladesh, Thailand, Malaysia, Indonesia and the Philippines, as well as from the SEAFDEC and BOBP secretariats, took part in the course, the first of its kind in the region.

At the closing ceremony, those completing the course were presented certificates by SEAFDEC Secretary-General Thiraphan Bhukaswan. Present on the occasion were FAO Assistant Director-General A.Z.M. Obaidullah Khan, BOBP Programme Director Lars Engvall and SEAFDEC Deputy Secretary General Kazuo Inoue.

ROBERT SHALL

Through the eyes of fisherfolk and those who work with them

'Fisherfolk of the Bay' was the theme of an exhibition of photographs and drawings that the Bay of Bengal Programme and the Alliance Francaise organized together in Madras, India, in late July-August. Comments on the exhibition ranged from "Beautiful" to "Lost our hearts" and from "Eye-catching" to "Excellent".

The exhibition was inaugurated by S Ramakrishnan, Secretary, to the

Government of Tamil Nadu, Ministry of Animal Husbandry and Fisheries. The highlights of the inauguration function were the Therukoothu performance by a fisherfolk group from Pulicat, just north of Madras, and the historical tracing of the importance of fisheries resources by Lars Engvall, Director, BOBP. Therukoothu (literally, street dance-drama) is a traditional folk art form

in Tamil Nadu that weaves the mythology and legends of India into morality plays. Nowadays it is being increasingly used to carry social, educational and political messages.

The Pulicat group, headed by E Subramani, himself a fisherman, is perhaps the only fisherfolk group in the country that uses the Street drama to educate the impoverished small-scale fisherfolk on health, hygiene, environment, social welfare, savings, the fisheries resource and other matters necessary for the improvement of their lot. The group works closely with the Centre for Research in the New



Economic Order (CReNIEO), its first sponsors. This NGO's Integrated Fisherfolk Development Project, Pulicat, works with 52 villages on the shores of Pulicat Lake and has found Therukoothu an ideal way to spread the messages of self-improvement, CReNIEO's main thrust here is to encourage local self-help, the use of appropriate fishing technology and adaptation to the environment to ensure a better and more fulfilling livelihood in the community.

The Therukoothu *We Will Win*, written and directed by Subramani — and in which he played several major

roles as well, using his *lungi* with great versatility to transform himself into a variety of characters — was the first performance the group had ever given in an auditorium before a formal public. Subramani and his players grasped the opportunity to focus the attention of the audience — many of whom were decision-makers — on the plight of small-scale fisherfolk and the problems they faced.

The curtain being raised, so to speak, on the exhibition by the Therukoothu, an array of black-and-white and colour photographs, drawings and water-colour compositions, all focussing on the small-scale fisherfolk of the Bay of Bengal region with whom BOBP works, was on view for over a week. The photographs, ranging from the cyclone-hit of Bangladesh to a fisherman taking a busman's holiday in Sri Lanka, from the atoll-cleaning women's groups in the Maldives to the oyster and fish farms in Malaysia and Thailand, were the work of BOBP staffers, like SR Madhu, E Amalore, S Jayaraj and Vijay Kumar, and project officers and consultants from several countries, all enthusiastic amateur photographers who bring a professional touch — and, more importantly, a human touch — to their work. The sketches and water colours, by Signar Bengtson of Sweden, a fisheries man who regularly visits the region, Hassan Shamyn of the Maldives, and Amalore and Jayaraj, saw the fisherfolk of the region, their lifestyles and their craft through the eyes of artists. Their views may have ranged from the freewheeling to the

meticulous recording, but all captured the spirit of the people to whom the Bay was life itself.

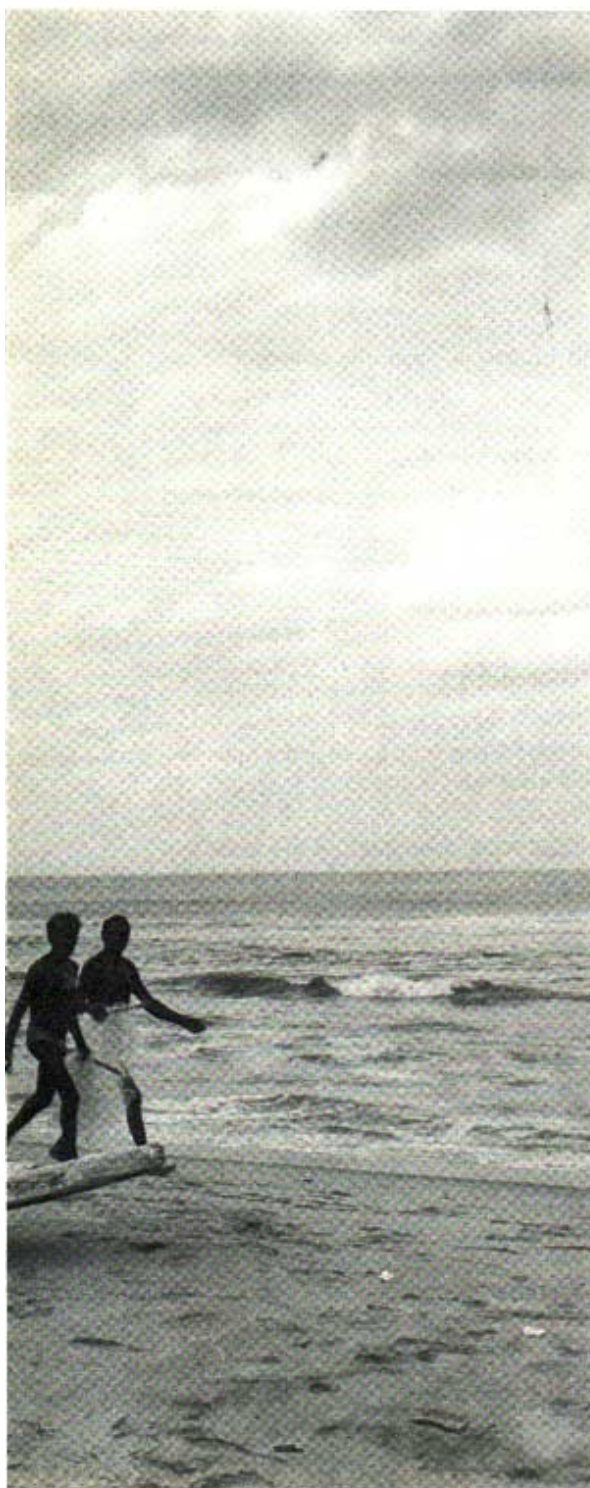
The exhibition received much attention in the Press and unanimously favourable reviews. Art critic Geeta Doctor of the *Indian Express*, Madras, wrote: "The fishermen and women of Pulicat stole the show at the opening of the multi-dimensional exhibition. In the upstairs gallery there is a veritable kaleidoscope of colour photographs and a frieze of black-and-white drawings depicting the many facets of the lives of the fisherfolk (and demonstrating) how art can pick out the very threads and sinews of a community of people and bring them to life

the BOBP is trying to instil a number of schemes for the renewal and management of the resources of the sea. This need for such management was demonstrated with imagination and humour, compassion and hope by the fisherfolk of Pulicat."

And L.V. of *The Hindu*, Madras, added: "It is always a pleasant surprise to come across talent where one least expects it. Such an experience was the result when visiting the exhibition of photographs and drawings titled 'Fisherfolk of the Bay'."

Plans to take this exhibition to coastal cities in the region are being considered. If they materialise, what will be conspicuously absent and sadly missed will be Subramani and his players.

S.M.



Left, announcing the BOBP - Alliance Francaise exhibition in the most appropriate way. Below, moments after the inauguration of the Exhibition by S. Ramakrishnan, Secretary, Ministry of Animal Husbandry and Fisheries, Tamil Nadu, India (right). The Secretary is escorted by Lars O Engvall, Director, BOBP.



Videos from BOBP

The Information Section of the Bay of Bengal Programme (BOBP) has, from BOBP's inception, had a large publication programme. Besides BOBP's quarterly newsletter, the *Bay of Bengal News*, the section brings out, from time to time, reports, working papers, manuals and guides, information documents and books. In the last few years, the section has also started documenting BOBP activities on video tape. Several video films have already been made and at least six more are due to be completed by the end of 1991. Copies of all films are available from the Section at a nominal fee. Video films at present available are

	<i>Title (Year of Production)</i>	<i>Duration</i>	<i>Subject</i>
1.	Small-scale fisherfolk communities in the Bay of Bengal (1991) (Slide presentation converted to video)	20 min	Summary of BOBP work since its inception.
2.	A new market, a new identity(1991)	15 min	BOBP assisted fisherwomen of Besant Nagar, Madras, India, set up a fish market
3.	Helping self-reliance among fisherfolk of north Sumatera, Indonesia (1990)	15 min	A BOBP project encouraging self-reliance among fisherfolk through small enterprise formation
4.	New canoe for Sri Lanka (1990) (Produced for BOBP by Worldview International Foundation (WIF), Colombo)	15 min	A BOBP project which developed and demonstrated new outrigger canoes in Doddanduwa, Sri Lanka.
5.	Sinhala language version of above (1991)		
6.	Towards cleaner fishing harbours (1989)	13 min	Activities of the IMO/SIDA/ BOBP project on combating pollution in the Vishakhapatnam fishing harbour, India.
7.	Seaweed culture in Mandapam (1989)	15 min	A BOBP project which experimented with the culture and processing of seaweed at two offshore locations near Mandapam in South India.
8.	Beach-hauling devices, Maldives (1989)	12 min	A BOBP project that tried out and prbmoted the use of capstans to haul <i>dhonies</i> ashore in the Maldives.
9.	Use of ice aboard fishing boats of Andhra Pradesh (1989) (Shot in VHS, edited in U-matic)	14 min	A BOBP project that promoted the use of ice by motorized <i>navas</i> in Andhra Pradesh, India.
10.	Tamil language version of above (1991) (Shot in VHS, edited in U-matic)		
11.	Sri Lanka's offshore fisheries (1989) (Produced for BOBP by WIF, Colombo)	30 min	Educational film on the evolution of offshore fishing in Sri Lanka and the problems and opportunities that arose from this development.
12.	Therukoothu (1991)	13 min	The traditional dance-drama form of Tamil Nadu (South India) is now being used to educate rural audiences on health, hygiene, environment and social welfare. Here a fisherfolk troupe reaches out to a fishing village audience.

(NOTE: All in English, otherwise stated. *Formal* PAL System — U-matic or VHS)

