

BAY OF BENGAL



JUNE 1982
ISSUE NO.6

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

FISH AGGREGATING DEVICES FAO's Experience in the Maldives

"It was an unforgettable sight," says FAO consultant Charles Peters, gesturing excitedly with both arms. He was talking about the results of one of the fish aggregation devices (FAD) he had installed in the Maldives recently.

"All around the raft, tuna were jumping out of the water. There were nearly a dozen dhonis fishing for the tuna, with birds everywhere.

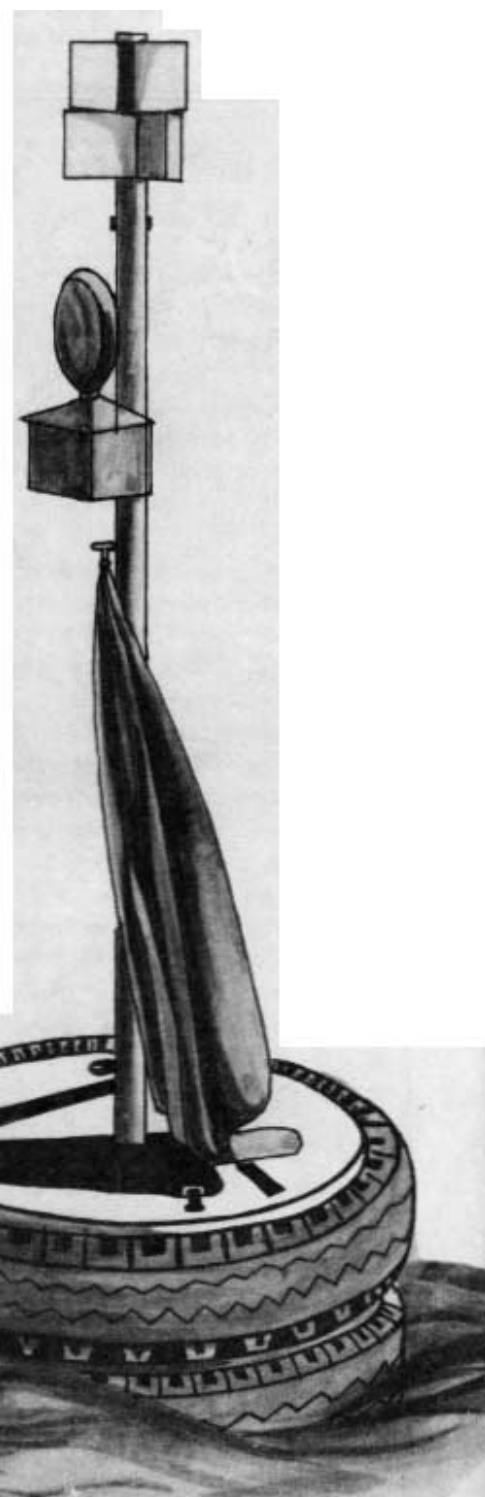
"I spent about a year in the Maldives — November 1980 to July 1981 and December 1981 to March 1982," says Peters, nostalgically stroking his golden-brown beard. "My visit followed recommendations previously made by FAO experts — J Scharfe in particular — that fish aggregation devices had good potential in the Maldives. My assignment was to execute a pilot project to design, build, install and monitor several FADs. The FAD types were specified, but the dimensions and method of construction were left to me to decide.

"I installed nine FADs of various types — two made from oil drums, two from inflatable buoys, three made from rubber tyres, a wooden box and a dinghy type — around various atolls," recalls Peters. All FADs were filled with polyurethane foam except for the inflatable buoy type. "Almost all of them aggregated fish. The fish caught off the FADS included yellowfin tuna, skipjack tuna, little tunny, frigate mackerel, rainbow

runners and dolphin fish. Most of them were caught by pole and line using live bait, the method most Maldivian fishermen seem to prefer. Sometimes handlines were also used."

Charles Peters is intense, articulate and 34. He was educated in San Diego, California, where he secured a B.Sc. in marine biology. Joining the U S National Marine Fishery Service, Peters was associated with a number of projects, such as helping to reduce dolphin mortality in the eastern tropical Pacific Ocean; tuna purse seine fishery; and a skipjack-tagging project in the Caribbean with Living Marine Resources, a private firm of fisheries consultants, for which Peters was cruise leader. Then came the Maldivian assignment.

A young Maldivian fisheries officer, Ali Naeem, was assigned to Peters as counterpart, as were a crew of three for the boat. Full cooperation was extended by the Ministry of Fisheries and the Fisheries Projects Division.



How was an FAD site determined? It had to be a good fishing ground, this being a pilot project. And the Ministry had its preferences too.

A preliminary echosounding survey lasting several hours preceded each raft installation. The first raft to be installed was made from three 200 litre oil drums welded in a frame of angle iron. The drum FAD was taken to the site in a 13-metre motorized dhoni. Accompanying Peters on the dhoni were the Deputy Minister himself, Dr. Ahmed Ali Didi, counterpart Ali Naeem and a crew of three. For anchorage, Peters used two fuel drums filled with concrete; the FAD was secured by polypropylene rope to the anchorage. The upper and lower sections of anchorline were chains.

FAD Pilot Project in Sri Lanka

The experimental work on fish aggregation devices in the Maldives described on pages 1, 2 & 4 was a project executed by the F.A.O., Sri Lanka, in cooperation with the Ministry of Fisheries, Maldives under the FAO's Technical Cooperation Programme (TCP).

Subsequent to this project, consultant Charles Peters was engaged by the BOBP to study the feasibility of a FAD project for Sri Lanka.

After a study tour of 14 south coast fishing villages, he recommended a pilot project for a year to construct, deploy, monitor and evaluate a minimum of six and a maximum of 12 FADs of the truck tyre type successfully tested in the Maldives.

Noting that Sri Lanka's small-scale fishery harvests a variety of fish species including tuna, skipjack and yellowfin, the consultant said "Considerable fuel and time is wasted in the search for tuna, and once a school is located, it can only be fished during one day."

A BOBP-funded pilot project for FADs has now been initiated in Sri Lanka, with Charles Peters as consultant for six months.



FAO consultant Charles Peters in action in the Maldives, deploying a truck-tyre fish aggregation device. Nine FADs were installed in about a year.

To attract fish, Peters cut up an old trawl net and attached segments of it to chain. The raft also had a short mast with a blinking light, a flag and a radar reflector to guide fishermen to the raft and to prevent vessels from hitting it.

"I was told that this should be a low cost project, so I used inexpensive materials," says Peters. "The raft used in the Maldives — each cost about \$ 200 to \$ 500, no more." Mooring costs ranged from \$ 700 to \$1000 — depending on depth.

Dr. Didi was present on almost every FAD installation trip. Didn't the Ministerial presence cramp Peters' style? "Far from it," he exclaims. "Having travelled throughout the Maldives, the Deputy Minister acted as our principal navigator. Further, he knew the island chiefs, he could organise, get things done. He was a highly motivated person and a great help."

Each time a FAD was installed, the news was broadcast over the radio. Maldives has an excellent radio system, and most families have a radio. Through radio and word of mouth, news of the FADs travelled very fast, consequently fishermen got to know about them pretty quickly. They were "quite happy about the FADS." They usually found fish around them and didn't have to waste time and spend expensive fuel looking for fish schools. Sometimes the fishermen were able to make two

fishing trips a day because of the FAD — something unheard of earlier. Recently the Ministry broadcast catch statistics for one of the rafts, and now fishermen everywhere in the Maldives are clamouring for rafts, perhaps one for each atoll.

Was there any dispute about the ownership of FAD fish? None. "They were available to all Maldivian fishermen," says Peters. "There is no way you can restrict FAD fishing rights, they have to be made available to all." The fishermen were made responsible for looking after the FADS — replacing flags or batteries — and for reporting. Sometimes there were 10 to 15 boats around a FAD. On one occasion a line of boats was seen going back from the raft to get more baitfish (since this was the season in which the baitfish supply was meagre) and another line of boats going in the opposite direction toward the raft.

"Pelagic species such as tuna are highly migratory, always moving," says Peters. "But when they come upon a FAD, they usually stop for a period of time, and are replaced by other schools which move into the area."

Did large fish aggregate to the raft to prey upon the small fish? "One can't be sure," says Peters. "This is a complex eco-system, and fish behaviour can't be explained with any degree of certainty."

(Continued on page 4)

A Letter from the Publisher

This issue contains the profile of a fishing technologist who has been with the BOBP for three years and now leaves for another FAQ assignment. His contribution to our work quantitatively and qualitatively has been far above the normal. His departure creates a big gap which is difficult to fill and this leads to thoughts about the availability and quality of technical expertise.

By far the most important factor for successful technical development is the technologist. Theoretical and practical capability, dedication, an open mind and imagination are qualities which will have a direct bearing on results, regardless of other circumstances.

One of the main problems in technical development in most developing countries is dearth of expertise. This is especially so in fisheries; the number of engineers and other technologists active in fisheries development in the world as a whole is remarkably small. Without expertise next to nothing can be done. In the upper and western part of the Bay of Bengal region for example, hardly any change has been or is being generated, except by international technical assistance, and a few successful innovations by private industry (in Sri Lanka).

The usual remedy suggested — and effected to a large extent — is training of national technologists. But is it sufficient? Several national and international training programmes — courses, fellowships, workshops, etc — have been organised in the last two decades, but the effect has been marginal and in fact, the situation is worsening in some countries. Those trained under a fisheries development programme rarely remain active in technical development. A lot of the training effort is wasted unless, on a national level those engaged in technical development are given a working environment in which they can be effective. A suitable organisation not only paves the way for technical development itself but is also instrumental in attracting and keeping the expertise since it provides job satisfaction. Job satisfaction is not, however, enough — there must also be good career prospects and other incentives as in other fields of employment where engineers and technologists are to be found.

In many countries promotion is based on seniority. Exceptions are all too often the result of too high a regard on the part of the employer for purely academic attainments. There is no incentive for field work; the entire system encourages officers to sit in their offices and deal with administrative, theoretical and hypothetical matters. Young, dedicated, practically-oriented persons with initiative soon get disillusioned and leave the service — sometimes to the private fisheries sector — but often to other fields in their own country and abroad.

The role of the international expert is traditionally to transfer technology and thereby supplement national efforts. In a field like small-scale fisheries however there is very little technology transfer possible — it is mostly a matter of technology development. Most BOBP activities refer to the latter category. Standard solutions from more developed situations are seldom available and if so, they are most inappropriate for reasons of sophistication, dependence on imports, high costs, etc.

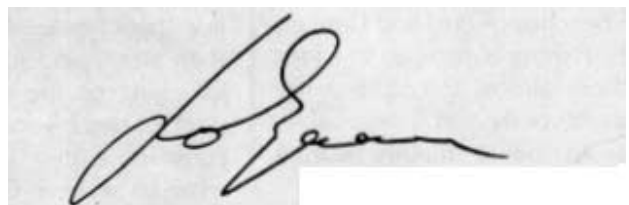
The experts needed are therefore not of the type who bring something from home but those who can analyse and assess the actual situations and on the basis of their varied experience and knowledge initiate and guide local technical development. The experience must be gained on the beaches or in the craft together with the operators. First hand information is essential to understand the problems and to identify the potential for improvement. Fishing craft engineers and fishing technologists must have an open mind and think of solutions which to them are unconventional. They must work with the fishermen, otherwise the latter have no good reason to believe that their proposed new methods and equipment will work.

There is a dearth of such expertise even on the international market. Short term “experts” are of course available but they are too often of the type that have already made up their mind about suitable technology from their home country experience. Their usefulness is very limited. It is also difficult to get bright young people with solid basic knowledge from developed countries. Since the usual contracts are of short term duration they do not want to risk their careers as their experience in small-scale fisheries in tropical countries would be of limited value at home.

The FAO’s “associate expert” scheme which in essence is in-service training of young professionals funded by their own governments has been an insignificant source of recruitment for technologists, because here too no promises about a continued career beyond the associate expert period, usually 2-3 years, can be given. While it is still relatively easy to fill such posts in the social sciences, technologists’ posts are often not filled.

Dedicated expertise is a pre-requisite for successful technical development. It is therefore essential that the matter gets more attention, and urgently. And perhaps some unconventional thinking is called for!

— Lars O. Engvall



Bay of Bengal News is a quarterly publication of the Bay of Bengal Programme (BOBP).

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

The BOBP’s main aims are to develop, demonstrate and promote appropriate technologies and methodologies to improve the conditions of small-scale fisherfolk and the supply of fish from the small sector in member-countries.

The BOBP began in 1979 and has a duration of five years. Bay of Bengal News was started in 1981. This is the sixth issue.

Fish Aggregating Devices: FAO's Experience in the Maldives

(Continued from page 2)

What were the problems faced with the FADs? Rough weather was one. For six to eight weeks, Peters and his crew braved rough winds and storms while installing rafts. Another problem was loss of rafts, mainly on account of storms.

When Charles Peters left the Maldives at the end of his assignment, there were three rafts still operational. The Minister, Mr Sattar, seemed keen on pursuing on FAD project executed by the Maldivians themselves. "They now have the foundation for an FAD project, they have the equipment, the gear, an echosounder and some trained people."

After Peters's departure, counterpart Au Naeem successfully deployed the 10th FAD, "proving the competence of the fisheries ministry."



Inexpensive materials were used to build the Maldives FADs.

The Maldivian experience was rewarding, says Peters. "I learned how a traditional fishery can be modified to increase its efficiency. In future, if I have to design FADs I'll make some changes. And I would recommend that if a FAD is lost, every effort be made to retrieve it,

for much information would be available from it."

After Peters's Maldivian assignment, the BOBP engaged him to explore the feasibility of an FAD project for Sri Lanka. His report was positive and a pilot FAD project for the island has been launched. — S.R.M.

Traditional Marine Fishing Craft of Orissa

(Continued from page 13)

is light, the main species being *Albizia stipulata* and *Erithryna indica*, locally known as *chakunda* and *paldhua*.

The three-log kattumaram ranging from 4.2 to 5 metres and the four-log kattumaram ranging from 4.5 to 5.5 metres are the most common crafts, widely used along the surf beaten beaches of Puri and Ganjam districts. Fishing is done up to 8 kms from shore almost throughout the year, whenever the surf is negotiable, the breaks being mainly during monsoons.

The craft is indispensable, because of such features as low cost, easy handling without infrastructure or harbour facilities, wide coastal dispersal resulting in more extensive inshore exploitation, low operational and negligible maintenance costs. Cost varies from Rs.500 to Rs.1,000, the life being about three years. The two-log kattumaram is a bigger craft from 6 to 8.5 metres in length,

each half being made of two bigger median logs and smaller peripheral logs. Vertical wash strake and accessory stem pieces give the craft a sharp beak point above the general level. The craft costs about Rs. 3,000 but those made of more expensive wood like teak may cost up to Rs. 7,000. Average life of a two-log kattumaram is 5 years.

The bar boat, locally known as *Podhua*, ranges from 7 to 8.3 metres in length and is made from mango planks (*Mangifera indica*). The boat is without frames, stem more vertical than stern, and lifts well, standing knocking of the surf. The boat is used for beach seining in the southern

coastline within 1½ kms from the shore in between October and April. A bar-boat costs about Rs. 1,500 and lasts for nearly five years.

The *nava* is a plank built boat, bought from Andhra Pradesh and is operated from the open beaches from October to February during calm weather. Length varies from 8.5 to 10 metres, the average cost being Rs. 7,000 and lifespan 10 years.

Technical development of the existing crafts is bound to improve the earnings and working conditions of the sea fishermen. Deficiencies and problems have therefore been identified. Possibilities of improving the craft through innovations are being considered by BOBP fishing craft specialists. In this connection, possibilities for mechanisation of such craft as *chhoat*, *patia*, *dingy* and *donga* are being examined, by improvising construction especially on the aft side to suit motorization. The boats used in the southern Orissa coast cannot be motorized or even improved except for minor details; the introduction of new beachcraft is therefore being examined.

Many fishermen are employees of the owners of fishing crafts and own neither craft nor gear, though some participating in shore-seining and gillnetting own nets only. Normally fishermen get an agreed share of the sale proceeds of the fish catch, the arrangements for sharing the earnings varying from region to region and sometimes from village to village. Another area of development is credit and financial assistance for fishing crafts which is being given due attention by the authorities.

Profile



G. Pajot

The BOBP's work in fishing gear development covers several activities in Bangladesh, India and Sri Lanka most of which have, in a relatively short time, led to findings, recommendations and well-documented reports. Behind this many-pronged output is 41-year-old Germain Pajot, who packs into his lean frame a drive, an energy and a stamina that at once arouse admiration and despair.

Germain is French. And proud of his "beautiful language" — unlike the commercial language the British popularised in these parts. There are other things he is proud about — his physical stamina, his penchant for roughing it out with panache in situations that the "burra sahibs" of bureaucracy dread, his own disdain for "working hours" when there's a job to be done. At airports, Germain brushes aside the porter who offers a hand with Pajot's luggage. His own arms will do. If in Chittagong or Tuticorin or Beruwala the fisherman at sea is tardy, Pajot does the job himself — straightening out the gear, lifting a trawl net, or hammering a winch into shape with the nearest tool. His aptitude for working with his hands, for things mechanical, is one reason fishermen respect him immediately. "There is nothing we do that he can't do better," says a Tuticorin fisherman.

Behind Germain's frenetic activity is a zeal for action, an impatience with inertia and an intolerance of red tape. What makes such intoler-

ance acceptable, even right is that it is being done for a good cause, that of the lowly fisherman who needs all the support he can get.

For the fisherman who is eager to learn, there's little Pajot will not do. He explains, demonstrates, and on return to Madras drives the artist-draughtsman at the BOBP office to drop all that he is doing and produce a drawing in quick time so that the fisherman gets it. For Germain a promise — particularly one made to a fisherman — is sacred and woe unto anybody who stands between him and the promise — or the fisherman.

For the record, what does the BOBP have to show for Germain's labours? The record is pretty good. A success story with setbag nets (Bangladesh fishermen taken to Bombay by Pajot have adopted the new design and polyethylene material with a vengeance — and catches have been good!). Heartening results from thintwine large-mesh driftnets, again in Bangladesh. And success with high-opening bottom trawls in India (a new food fishery is now developing in Palk Bay, and in the non-shrimp season trawl bags bulge, cash jingles, and fisherfolk's eyes sparkle — when formerly the story was one of low catches in the shrimp off-season.) And in Sri Lanka, Pajot and BOBP laboured long and hard with the demersal fishery project, and it's been a chequered tale but one with lessons for the future.

Where was this fast-talking Frenchman before he descended on the Bay of Bengal? He was born 41 years ago in Givré, a small town in the west of France — into a family of traders. Germain had his career cut out for him, and he rebelled. "Fisheries is the best profession to

be independent at the age of 17," so he became a fisherman, and bottom-trawled for a year and a half with an inshore fishing fleet. Then he studied navigation, seamanship and fishing technology at Sables D' Olonne for a year. Followed an eight-month tour of Africa and Europe with the Merchant Navy, a short return to fisheries, and two years of military service. In 1962 22-year-old Germain returned to his first love, fisheries. Six months with a medium-sized trawler operating in the Bay of Biscayne and West Africa, and a six-month academic stint in a nautical school at Nantes, where he got a captain's certificate. Soon after, he became first mate on a deep-sea trawler. 2½ years fishing off Portugal, Spain, and the west coast of the U.K. Then a different kind of assignment — captain of an Ivory Coast research vessel.

It was in 1971 that Pajot joined FAO as master fisherman for a pole-and-line project in the Philippines. The following year he moved to Sri Lanka to conduct a live-bait survey. This led to a three-year pole-and-line project for tuna, a two-year gear development project, and then association with the BOBP and with small-scale fisheries, first in Colombo, later in Madras.

Pajot feels that fishermen in the Bay of Bengal region are good at their job. But the fisheries can be improved a great deal. "I don't think the potential of small-scale fisheries has been realized." Before this can be done Pajot is impelled Europe-ward, from where he has been absent a long time. He will look up his family in France, work with the FAO headquarters in Rome for a while, then will be 'rarin to go again to the field where he belongs. — S.R.M.



Coastal Aquaculture, Malaysia

Initially hit by delays, the coastal aquaculture demonstration and training project in Ban Merbok, Kedah state, Malaysia, for which BOBP provides external funding, has now reached the take off stage.

The pilot project seeks to demonstrate the technical and economic feasibility of shrimp and fin fish culture in brackishwater ponds and to provide training in coastal aquaculture to fish farmers from Kedah as well as other states.

The pond complex which was set up after clearing 24 acres of mangrove swamp in the Merbok estuary is complete and the ponds are being stocked with shrimp and fish fry.

The fry is being obtained from private hatcheries as well as from the hatchery at the Fisheries Research Institute, Glugor, Penang. A small experimental hatchery set up at Pulau Sayak has begun operation but is not yet able to supply the fry requirements of the demonstration ponds. Consultants for hatchery technique and management and for fish farming are already at work.

The Thai hatchery consultant, Niwes Ruangpanit, is focussing his attention on the spawning of shrimp and the training of counterpart staff in hatchery operations. His immediate problem is the procurement of a sufficient quantity of brood stock of both shrimp (*Penaeus Monodon*) and fish (*Lates Calcarifer*). While working on the project, the consultant may provide advisory services to other coastal aquaculture projects in Malaysia.

The Indonesian master fish farmer consultant, Kahar Rasul, is initially concentrating on getting a viable pond culture operation under way. He will also occasionally provide guidance for the neighbouring Majuikan coastal aquaculture development project.

A seaweed component has recently been added to the project. In collaboration with the Fisheries Research Institute, the project will test the technical feasibility of culturing *Gracilaria Cylindrica*, a species of seaweed which occurs naturally on the Middle Bank in Penang waters. An officer of the institute is initiating

glimpses into BOBP projects



Earthmoving equipment being used at the Ban Merbok aquaculture project.

culture trials in the sea adjacent to the Pulau Sayak hatchery and in some of the Ban Merbok ponds.

A number of counterpart officers have already received overseas training under the auspices of the project — including a study tour of small-scale coastal aquaculture in Malaysia and Thailand; training in hatchery work at the National Institute of Coastal Aquaculture, Songkhla, Thailand; and in fish nutrition and fish feed technology at the University of Washington, Seattle.

Training Course for Fisherwomen

Twenty one fisherwomen from Chingleput district are taking part in a 10-week BOBP-funded training course on community organisation organized jointly with the Directorate of Fisheries, Tamil Nadu.

The course is meant to make the fisherwomen effective community organizers, to improve their home-management skills, to give them training in fish handling techniques and to improve links between fisherfolk and government agencies. Leadership, communication and group organization skills are also being taught.

The fisherwomen were selected by their own communities and hail from the villages of Thiruchinankuppam, Chemmencherikuppam, Pattipulamkuppam, Panaiyurkuppam, Sulerikattukuppam, Devanierikuppam and Tharaivaikulam. All of them are married, below 40 and can read and write.

Inaugurating the course on May 3, Mrs. Stella Soundarraj, Director of

Training course for fisherwomen in Madras being declared open by Mrs. Stella Soundarraj, Director of Non-Formal Adult Education.



Cod-end clip A useful tool

A simple locally made device to aid trawler crew in post catch operations a cod end clip has been introduced in Tuticorin, Tamil Nadu, by the BOBP

Says BOBP fishing technologist G Pajot The cod-end of the trawl often collects besides fish large quantities of mud and other unwanted matter This adds substantially to the weight of the trawl bag Releasing the cord of the cod end then becomes a knotty hassle

"A cod end clip (for 14-16 mm cord) made in cooperation with a Tuticorin workshop, simplifies the operation The clip has just to be moved up or down Demonstrated to Tuticorin fishermen using high opening bottom trawls it proved to be quick easy to use and effective Many fishermen there are now using cod end clips' The cod end clip is available for Rs 80 per piece with Palghar Industries 158 Linghi Chetty Street, George Town Madras 600 001, and with Miranda Lathe Works 64 George Road Tuticorin 1



Non-Formal and Adult Education, Government of Tamil Nadu, urged participants to make the best use of the opportunities the course had given them. The Director of Fisheries, Mr Sanicara Subbaiyan, thanked the BOBP for its projects in Tamil Nadu. Mr L O Engvall, BOBP Director, said "The training programme is not the end; it is the beginning of a long-term struggle and we hope that the extension workers will work in close cooperation with the state government and with our Programme to the benefit of the fisherfolk."

Field visits (to fish landing centres, to government offices, etc), puppet shows, role plays, slide presentations, case studies, lectures and discussions are some of the teaching tools employed at the course.

Assisting in the conduct of the course are officials of the Department of Fisheries, social workers, bank

managers and representatives from both government and private agencies, such as the Family Planning Association of India; Directorate of Non-Formal and Adult Education; and RUHSA (Rural Unit for Health and Social Affairs). There are two coordinators — one from the Directorate of Fisheries, another from the BOBP. The two coordinators will pursue follow-up activities in the seven villages.

The response of the fisherwomen to the training course and to the instruction tools employed has been positive. A puppet show on the status of women (presented by a leading folk art troupe of Madras) was an example of effective rural communication. Homilies and home truths on women, alternating with witty repartee and folk or film songs, had the audience in splits. "They are not merely taking active part in the

course, they are evidently enjoying it," said one of the social workers helping organize the course.

Long-tail engines to the fore

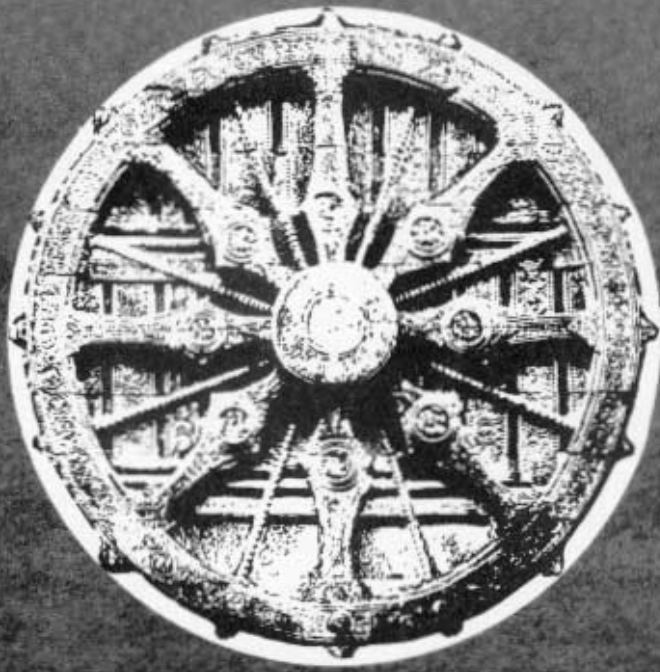
Chandi boats fitted with Thailand-type long-tail engines in a BOBP experiment in Bangladesh have recorded much higher catches than the traditional chandis. The experiment is being conducted in Amanibazar landing centre in Bhola island of Barisal district. (See *Bay of Bengal News*, December 1981, for an earlier story.)

Catch data was monitored between December 1980 and January 1982 for two chandis fitted with longtail engines — a Deutz (6 h.p.) and a Yanmar (9.5 h.p.) — and three non-motorized chandis. The average monthly earnings of the motorized chandis (11,235 taka and 11,360 taka) were nearly twice as high as those of the non-motorized chandis (6,423, 4,906 and 4,938 taka). The expenditure incurred by the motorized chandis on fuel, repair and maintenance was not substantial (694 and 682 taka respectively).

The Chandi motorization experiment has aroused considerable interest among fishermen in the Amanibazar landing centre. Several of them would like to fit long-tail engines on their own craft. Five engines — four Yanmar and one Deutz — are presently available with BOBP in Bangladesh, and may be sold at cost to fishermen. The Bangladesh Fisheries Development Corporation (BFDC) has prepared a project proposal to introduce 200 long-tail engines in Bhola.

Fisherwomen-participants at the Madras training course.





ORISSA : A PRIMER OF MARINE FISHERIES

by G N Mitra

Orissa — symbolized above by the famous chariot wheel of the Konarak sun-temple — is one of the states that border the Bay of Bengal. Its problems in marine fisheries and the conditions of its fisherfolk are described here by an experienced administrator from the state.



1. What is Orissa's marine fish production at present? What is the role of marine fisheries as compared to inland fisheries in Orissa?

The total marine fish catch for 1980 as given by the CMFRI (Central Marine Fisheries Research Institute) was 39,350 tonnes.

With a coastline of 480 kms, which constitutes 16% of the east coast, Orissa produces only 7% of the catch. Per capita production per annum is 3.1 tonnes against 2.5 tonnes in Andhra Pradesh and 5.4 tonnes in Tamil Nadu.

The catch per hour record provided by the Exploratory Fisheries Project (EFP) of the Government of India, using vessels of 17.5 metres with the same horse power and gear from different bases, gives a good indication of fish abundance in the demersal coastal areas of various zones up to a depth of 59 metres. While Andhra Pradesh records 76.6 kg/hr, and Tamil Nadu 97.5 kg/hr, the catch per hour in the Orissa coast has been 153.1 kg per hour. The figures are based on average values for five years between 1976-77 and 1980-81 and the differences are significant.

The demersal fisheries potential in the continental shelf of Orissa (20160 km²) has been estimated at 100,000 to 120,000 tonnes of fish. This is a very approximate figure. However, this indicates that the demersal resources are probably largely under-exploited. Pelagic resources are not yet quantified, so also the deeper zones of the shelf. It is only in 1981 that the EFP used larger vessels to fish in depths beyond 70 m. The catch in some areas has been as high as 399-564 kg/hr.

The water spread of inland fisheries, comprising both fresh water and brackish waters, has been estimated at 1536 km² of rivers and canals, 26,330 ha of tanks and ponds, 2.6 million ha of reservoirs and 80,000 ha of swampy areas for fresh water fish production. Apart from the Chilka lake with an area of about 1000 km², 20,000 ha of brackish culturable water has been located, of which 1064 ha have been surveyed.

The present production is estimated at 32,500 tonnes, of which 10,500 tonnes are from brackish waters.

All estimates regarding inland fisheries production are very approximate. Nevertheless, the potential for production is high. Leaving aside rivers, canals and reservoirs the culturable waters alone are capable of producing over 100,000 tonnes at low investment and anything upto 400,000 tonnes under intensive high cost cultivation.

2. What are the main problems that confront marine small-scale fisheries in Orissa?

As already noted, the small-scale fishermen of Orissa can produce a higher quantity of fish. Problems well identified are insecurity in living places leading to un-social habits, finance at unfavourable terms, inadequate money supply to ensure a full complement of craft and gear, insufficient offtake of surplus population to other industries, lack of ice, want of conveyance for most of the coastal villages to ensure proper marketing, and want of schools, medical aid and other amenities in most places.

The fishermen could spread out over the coastline without any fishing effort, but this has not been possible because of difficult communication and the absence of other infrastructure. As soon as Paradip port developed, a fishermen's village sprang up near the mouth. Fishermen from Andhra migrated to an unfished coastal length near Pun and are doing well.

The vast majority of the fishermen do not possess any land including even their homesteads. There is no insurance against fire or loss of gear, not to speak of crop. The assistance given by the government when disasters strike is not adequate and sometimes delayed. Seasonal fishing does not enable the fisherman to carry him over the lean season; as a result, he is in perpetual debt. Minimal civic amenities like drinking water, health care etc. are absent or scarce. There is no security to attract institutional finance. The fisherman has nothing to look forward to for the future and drinks away his seasonal earnings. There are few subsidiary occupations or offtake to other industries.

Since Orissa is in the cyclone belt, better craft and gear are required. The currents are the strongest in the



Fish from a cooperative society being weighed before sale to trader.

northern Bay of Bengal. The fishing days of the country craft are about 30% less than the fishing days of the mechanized craft. Small mechanized boats have to be equipped with 50% more horse power and have fewer fishing days than similar boats in the west coast or the southern part of the Bay of Bengal. FAO experts recommend boats of at least 120' OAL for deeper waters in the northern part. The cyclone season from October to December reduces the number of fruitful fishing days.

3. Many of Orissa's fishermen are Telugu-speaking. Do they form part of the development mainstream of Orissa?

Almost all the sea-going fishermen belong to the Telugu ethnic group but speak Oriya fairly well. Among the Oriya fishermen, those of Balasore district go out to sea, while some have lately taken to sea-fishing in small pockets like Sonapur. Some of the Telugu fishermen have been trained in mechanised fishing. They do form part of the mainstream of marine fisheries development in the small-scale sector. Apart from stray instances when Telugu fishermen attempted to fish in the backwaters, there has been no conflict between the two groups. Even migration of a

large number of Telugu fishermen from Andhra to Pun has not caused any conflict.

4. Could you describe the conditions of various small-scale fishermen of Orissa? Are there variations from place to place on the coast?

On the basis of 35 years' experience as an observer of Orissa fisheries, it is possible to identify three stratifications in order of economic well being.

At the lowest tier is the labourer on share or contract. He is in the same condition as he was before.

At the middle tier is the lucky fisherman who got some assistance and ventured out on capital formation, owning boats and gear.

And at the highest tier are the more intelligent fishermen who combine production with purchase of the produce of other fishermen and supply it to the merchants. They are the most prosperous.

Fishermen in the northern district who catch quality fish by seining or gillnetting appear to be economically better off as seen from the condition of the boats and gear. Many of them also have subsidiary occupations. Fishermen in the southern part of Orissa, except those around the urban centres, are poor. Mechanised gillnet

tens are not so well off as the boats are over capitalised due to engines of high horse power.

There has been little change in the condition of the remote villages either in availability of civic amenities or incentives for better earning, the only incentive being the higher rates obtained in fish markets due to rising price levels. Most of the fishery roads, where they exist, have gone into disuse for want of maintenance. The fishermen's co-operatives, about 23 in number, transact small business and have not been able to make any impact on the business of the middleman-financier.

5. Can you give an idea of the earnings of small-scale fisherfolk? What is the pattern of distribution of earnings between the small fishermen and the owners of the mechanised trawlers in Orissa?

The income per family of five members ranges between Rs.3,000 and Rs.4,000 per annum on a rough computation. Detailed study is in progress. Mechanised trawlers may earn as much as Rs.1,00,000 and more, and gillnetters Rs.20,000 to

Rs.60,000. Boatowners employ fishermen on the basis of wages and incentives. For the most part, the system is: boat and net get one share each, the labourers get the balance (it is split equally among them). Usually some amount is set apart for the headman and for the deity. The middleman's price may be at least 50% more than the producer's sale price.

Regional differences in earnings are reflected in the fishermen's economic conditions. As already noted, the more prosperous fishermen are in the northern part of Orissa and in urban centres of the southern districts. Mechanised boats are given out on hire or on wages plus incentives. The owner seldom goes out to sea.

6. What are the craft and gear that small-scale fishermen operate in Orissa? Are there any conflicts between the small fishermen and the owners of the mechanised trawlers?

Bengal type dinghies and botali boats operate in the northern coast of Balasore district. They use gillnets and seines, the most profitable catch

being pomfrets, seer and hilsa. Gillnetting with mechanised boats has also been taken up in this area. There is no conflict as yet between the two fisheries although nearly 400 such mechanised boats are active at present, using larger versions of indigenous gear.

In the south, 7,150 kattumarams and podhows operate along with about 350 small shrimp trawlers. The small scale boats use mid-water seines, shore seines and gillnets, catching both pelagic and bottom fish in shore seines and mid-water fish in the other types of nets. Fifty to sixty medium trawlers operate from Visakhapatnam along the Orissa coast. There have been stray instances of conflict whenever local nets have been damaged by the trawlers. Major disturbances are apprehended, however if trawling is intensified, particularly in the indigenous fishing zones.

7. What are the methods of fish handling and utilisation in Orissa? How much of the fish is sold fresh, how much is dried and how much is dried and preserved?

Fishermen making nets in Barajdeuli village, Balasore district. (Pictures by E. Amalore)



There does not appear to have been a detailed study of fish utilisation. It is estimated that 75% of the small-scale sector catch is now marketed fresh, 25% being made into dry or salted fish. 50% of the trawler catch is dried.

Dry fish is mainly purchased in the wholesale markets in the western part of Orissa. It is produced in small quantities by the fishermen, but mainly by dry fish merchants who purchase the raw material.

Till recently 90% of the quality sea fish went to Calcutta, but lately on account of the high price of fresh water fish, consumers in Orissa have begun taking to sea fish. There are wholesalers for sea fish in urban centres but sea fish are quite common in village markets as well. The proportion that is going now to Calcutta has not been determined. Exportable shrimp is processed mostly at Paradip, Puri and Chilka; some of it is done in Visakhapatnam and Calcutta. All these are frozen shrimp, either headless or peeled and deveined. There is no canned product. Japan is the principal export market.

8. Can you give an idea of Government schemes for the welfare of small-scale fisherfolk in Orissa?

Till the beginning of 1980, the governmental expenditure was meagre, consisting of the issue of some boats and yarn. In the sixth plan (1980-85), Rs. 166 million has been provided for infrastructure and supplies. Besides there is a package development scheme estimated at Rs. 20 million for a group of villages with assistance from NORAD. Each marine block now has an extension officer.

Except a small amount of Rs.0.6 million as assistance for nets etc. to fishermen, the scheme will mainly finance roads to fishing villages, jetties and landing places. Link roads, ice-factory, housing and medical aid constitute the total scheme.

9. What is the role of women in small-scale fisheries in Orissa? Do they take active part in fisheries and income-earning activities? Are they amply rewarded?

Women of Telugu origin, in contrast to Oriya fisherwomen, always play a prominent role in helping the menfolk. Before auctions came into vogue, women were the main arbiters



A typical fishing family in Puri village.

of price. Women now sell fish in the hinterland in the village markets. Some of them run fish sale shops in urban centres. It is a common sight to see women dragging shore seines along with men.

10. Could you describe the variations in the degree of exploitation in various areas of the Orissa coastline?

In other words, the state of over-exploitation or under-exploitation in different parts.

156 villages and hamlets of Orissa are grouped around 20 main centres. It is estimated that practically 30% of the coastline is not exploited for want of infrastructure. Overexploitation is suspected around Paradip due to trawler concentration.

The author worked out the regression of the catch per unit effort at Paradip between 1966-67 and 1971-72. It had gone down from 404 kg per standard day per boat (also standardised) to 246. Warnings about the declining unit catch were not heeded, a large number of boats were financed, and the catch per boat day (not standardised) went down to 83 kg in 1980-81. As a large number of boats has since been rendered idle on account of seizure by financiers for non-payment and diversion to gillnetting, the catch has revived to 236 kg in 1981-82. Some boats have also been diverted to other areas.

The fishing villages cluster round marketing centres. On a rough computation, 30% of the coast could be covered excluding river mouths. The northern part with the spread-out continental shelf is underexploited, so also the southern zone excluding Paradip.

Shrimp trawlers are faring well in deeper waters, with 23.5 m. trawlers extending the fishing ground to the sandheads. About 40 of them operate at present but unchecked fishing effort by these boats and by other mechanised boats may ultimately hit the traditional fisherman's bottom catch.

11. What would be your approach to small-scale fisheries development in Orissa?

The story of the Pattisonapur experiment reported to the FAO Indo-Pacific Council bears repetition. This remote village, insulated from communication, was the subject of a direct marketing experiment. It involved four fishermen chosen by personal contact after nearly a year of extension work. In one year they had earned twice as much as they normally do in an average fishing season.

I have advocated an in-depth survey of socio-economic conditions by experts rather than routine statistics collection; and the development of personal contacts for a nucleus of development effort so that it is self-generating. Infrastructure and technical advancement can be taken up at a later stage. Integrated development as a package deal appears to me to be more fruitful than isolated development projects. Another thought: introduction of improved craft and gear must be judicious so that it does not upset the social balance. This is important because small-scale fisherfolk are relatively immobile — they are not generally absorbed by other industries or occupations.

Focus on Orissa

TRADITIONAL MARINE FISHING CRAFT OF ORISSA

by P. Mohapatra



Teppa (Orissa Kattumaram) fishermen return ashore after a stint at sea.

E. Amalore

The Orissa coastline can be broadly classified into two distinct areas: the shallower northern coast extending northwards from Rajnagar in Cuttack district up to Kirtania in Balasore district, which has a broad shelf, gradual slope and greater tidal effect; and the southern coast extending southwards from Paradeep in Cuttack district to Pattisonapur in Ganjam district, which is narrower with broad sandy beaches and open surf beaten shores.

The two areas also host distinct types of crafts, most of the displacement boats being operated from the northern coastline, and the raft-type kattumarams confined to the southern surf beaten areas. The estuaries in the north enable operation of plank-built displacement crafts like the *chhoat*, *patia*, *salti*, *donga* and *dingy* and also the *sabado* boats. Besides the common kattumarams, locally

known as '*teppa*', *podhua* and *nava* are other crafts operated in the south.

All the craft in Orissa, excepting navas, are constructed locally with simple tools. They have been developed over the centuries to suit local requirements and conditions. All the traditional craft are driven by sail, oars or paddles, the range of operation being limited to the coastal belt up to a depth of 15 to 20 fathoms.

The predominant fishing method throughout the coastline is gillnetting, though the shore and beach seine, boat seine, encircling net, small long line and handline are other fishing gears not uncommon. Many of the crafts using driftnet in the north usually operate overnight, leaving for the fishing grounds in the evening and returning the next morning, while others take up day trips only, leaving early in the morning and returning the same afternoon. The crafts offer

practically no shelter to the fishermen or proper protection for the catch. The main constraints to the crafts are low grades of mobility and seaworthiness and insufficient capacity, excepting perhaps the larger displacement boats like *chhoat* and *patia*.

The *donga* is common in the northern coastline and is made of salwood (*shorea robusta*). Stem and stern are nearly vertical. The boat has a full midship section, and the length ranges from 7.5 to 9 metres. It is klinker-built, the fore half being wider and deeper. Fishing is mostly done upto 20 kms from the shore from September to April, though occasional trips are made in July and August during favourable weather. The main gear used is the pelagic driftnets for the hilsa. The craft costs up to Rs. 5,000 and its life span is 15 years. The *dingy* in the northern coastline is also made of salwood. It is carvel-

built with a full midship section, the double ends closed to vertical. Length varies from 6 to 7 metres. Fishing is done up to 10 kms from the shore in good weather in between September and March. The average cost is Rs.2,000, the life span being about 12 years.

The *patia*, a klinker-built boat made of salwood is similar to the *donga*, but larger, ranging from 8.5 to 10.5 metres. Stem and Stern are nearly vertical. Fishing is done up to 20 kms from the shore from September to April, though occasional trips are also made in July and August. Cost varies from Rs. 4,000 to Rs. 5,000 the average life being 14 years.

The *chhoat* is a large-sized craft found in the north Orissa coast. It ranges from 10-11 metres in length. It is a carvel-built double-ender, the aft being more extended. Fishing is done up to 35 kms from the shore in good weather from September to April and because of the suitability, a few *chhoats* have been mechanised indigenously. The average cost of a *chhoat* is Rs. 6,000 the life being 15 years.

The *salti* used all over the northern coastline has a more oval hull with extended and raised ends. The boat, also made of salwood, is carvel-built, the length varying from 7 to 10 metres. It is however less sea-worthy, being used only in calm weather, within 10 kms from the shore. Variations of the *salti* are found in the local *donga* in the Dhamra region of Balasore district, which ranges from 9 to 9.5 metres in length; and also the *dingy* in the Rajnagar region of Cuttack



The *donga* is common in the northern coastline of Orissa.

district ranging from 6.5 to 7 metres in length.

The *sabado* fishing boat is similar to the *salti*, both ends extended and raised, the aft end more than the fore end. The boat is also carvel built with an oval hull, and made of salwood. The overall length ranges from 9.75 to 13.5 metres. Fishing is done within 10 kms from the shore and 25 metres depth. An average *sabado* boat costs Rs.6,000, the life being 15 years.

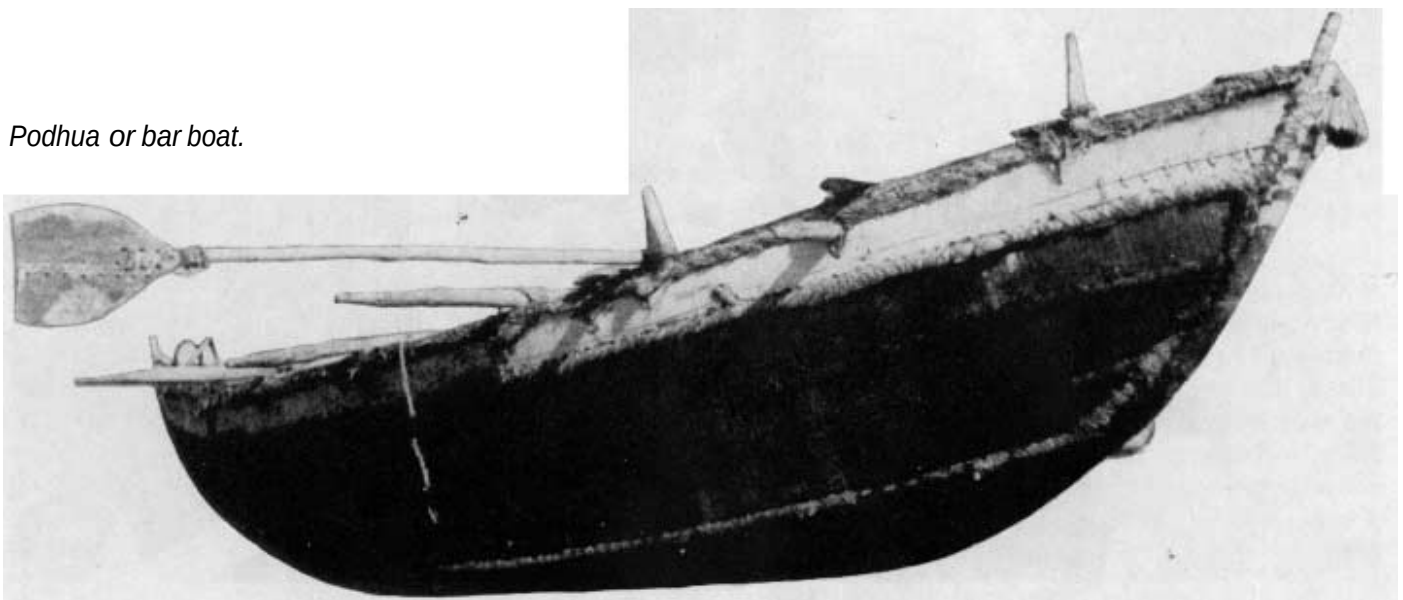
The *flat-bottomed donga* used in the Rajnagar area of Cuttack is primarily an estuarine fishing boat, used in inshore areas within 5 kms from the river mouths in calm weather. Length

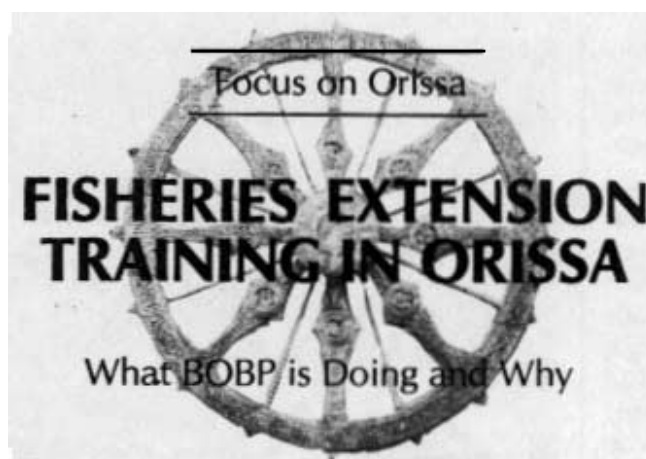
ranges from 10 to 11 metres. Also made of salwood, the boat costs about Rs. 6,000 and the life is 10 years.

The kattumarams, common from Paradeep southwards, range from 4.2 to 8.5 metres in length, being made of two, three or four log pieces, the latter themselves being made by pegging together a number of smaller pieces. The two-logged kattumaram is the larger boat kattumaram and has to be handled by about four fishermen, whereas the smaller three-logged or four logged kattumaram is operated by only two. The entire floatation of these crafts is due to the buoyancy of the logs as the wood

(Continued on page 4)

Podhua or bar boat.





by Uwe Tietze

Orissa has just started a marine fisheries extension service manned by 15 young officers, all under 25. Most of them have been working with the fisheries department for the past three or four years after graduating in zoology. Last year they were transferred to the marine sector. Their job is to assist in the technological, economic and social development of traditional fishing families.

The extension officers have been posted along the coastline, some of them in remote villages or small rural towns such as Raj Nagar or Balasudevpura, a few in tourist centres such as Konarak, Puri or Gopalpur. This is possible because fishing is being done almost everywhere along the coast.

Till now the Orissa Directorate of Fisheries has concentrated its manpower and funds on the introduction of harbour-based mechanised fishing boats for trawling and gillnetting. This has mainly benefited the boat owners, a majority of whom did not belong to fishing communities. The living conditions of the vast majority of the fisherfolk, operating from open beaches, river mouths and creeks have hardly improved and in some cases even deteriorated due to competition from mechanised boats.

The birth of a marine extension service indicates a new direction in the efforts of the Directorate of Fisheries. On a request from the Directorate, the BOBP agreed to assist

in designing and implementing a training programme for the extension service.

Why In-Service Training?

A major problem with development is that lower and middle-level personnel in various agencies in Orissa (and elsewhere) are insufficiently qualified. While the higher cadres often take part in residential courses, sometimes of long duration, the lower and medium cadres hardly receive any training. This is true of fisheries as well.

It is obvious that without qualified field staff neither funds nor technology nor sophisticated planning will help the target group. It is true, however, that residential courses for

BOBP staffer Uwe Tietze and Orissa extension officer S. R. Das examine the gears used by fishermen.



middle and lower cadres would be expensive and time-consuming and affect day-to-day field work.

In some developed countries a solution to this problem has been devised — "in-service training." In short this means a training programme conducted by the company or department itself, and aimed at performance of a limited number of mainly practical tasks. It consists of residential courses of short duration and of guided practical work. Furthermore, in-service training tries to minimize absence from duty.

In order to develop such an in-service training programme for Orissa's marine fisheries extension officers, it was agreed that BOBP would assist the Directorate of Fisheries in drawing up a curriculum, preparing teaching materials and conducting a trial programme during 1982-83.

The first thing to be decided was the question whether the extension officer should be trained as a specialist or a generalist. The decision was made in favour of generalist training. In principle, such a generalist does not have all the answers but knows where to find them. For example he knows who can offer loans, who can fix an engine, who can provide the right kind of yarn and net for a reasonable price, whom to contact and what to do take advantage of various government schemes such as for drinking water, non-formal education, road construction, preventive health care and the like. He should understand fishing communities, their economies, their lifestyle and workstyle, their value system, their traditional technology and their rhythm of life.

The BOBP's one-year in-service training programme for marine extension officers envisages pilot extension services in four areas or modules — credit and financial assistance: community development; fishing craft and gear improvement. Each module, to last three months, includes a residential course, pilot projects and a final workshop.

The residential course is meant to assess the present status and conditions of fisherfolk on the basis of data to be collected by the extension officers before the course. The



residential course also imparts necessary skills and knowledge to participants to enable preparation of follow-up activities — e.g. pilot projects, which form the second part of each module.

Pilot projects, prepared in cooperation with other departments, agencies and institutions, are meant to demonstrate how course knowledge can be put to practical use. They also aim at improving the standard of living of the fisherfolk. Pilot projects are not completed within the period of their module, but will continue after it.

Residential Course on Credit

The workshops at the end of each module are meant to exchange experiences gained during practical field activities and to deal with problems only discovered during practical work.

The first module — credit and financial assistance to traditional fisher-folk — is now in progress. A two-week residential course on this subject was held in March, with host facilities provided by the Orissa University of Agriculture and Technology. Before the course, the extension officers carried out a survey on credit needs and credit sources in traditional marine fishing communities.

Besides the 15 extension officers, seven programme officers of the voluntary National Service Scheme took part in the training. Bank

employees, representatives of co-operatives and other staff of the Fisheries Department attended particular sessions. Lecturers came from the National Institute of Rural Development, Cooperative Training College, Orissa, Agricultural Refinance Development Corporation, State Bank of India and leading banks in the coastal districts of Orissa.

The course began with a four-day introduction to extension work. The extension officers discussed their own expectations from the course. Practical experiences and research findings from agriculture and inland fisheries were analysed. There were lectures on the factors involved in extension and in the adoption of new techniques and equipment; the communication process; the principles of extension programme planning; monitoring and evaluation. The lectures were followed by discussion.

The introduction concluded with a practical session on the use of audio-visual aids and with a case study from marine fisheries dealing with the technical, social and economic feasibility of the introduction of motorized beachlanding craft.

During the second part of the course, data about indebtedness and credit habits among traditional fishermen, collected before the course by the extension officers, was analyzed. It yielded detailed information about present credit channels and needs in various parts of Orissa.

Bank finance in fisheries has so far been extended only for the acqui-



Direct links between banks and traditional fisherfolk of Orissa are being promoted by BOBP and the state's fisheries extension service.

tion of mechanised trawlers and gillnetters, the beneficiaries in most cases being people other than fishermen. Loan utilisation and repayment has been unsatisfactory. Traditional fishermen have secured bank funds only in connection with government subsidies (for fisheries or non-fisheries schemes). These schemes, however, have not taken into account the real credit needs of fisherfolk and regional variations in the lifestyle of fisherfolk. The role of the fisherfolk has only been a passive one, that of gratefully receiving benefits. A direct two-way link between banks and traditional fisherfolk has so far not been established.

As a result, credit is obtained from professional money-lenders, fish merchants, boat owners and relatives, in some cases also from farmers' service cooperative societies, depending on its purpose. The survey carried out by the extension officers revealed that there are different purposes for which credit is used: fishing craft and gear, fish marketing and processing, agriculture, consumption during the off-season, house construction, social ceremonies, accidents, illness, unpredictable social commitments, etc.

Not all of these credit needs are equally relevant to different groups

of the fisherfolk. It was found for example that labourers owning neither craft nor gear take loans mainly for off-season consumption. Loans for social ceremonies are quite common in all groups, while loans for house construction or repairs as well as loans for new craft and gear are limited to boat owners.

According to the survey, the vast majority of the fisherfolk did not know that it is possible to get a loan from a bank. Those who had heard about it complained of long-drawn out procedures, late disbursement of loans, need for security, etc. Bank managers who participated in the training course as lecturers said that they have no competent staff to evaluate the financial feasibility of schemes for traditional fisherfolk and also not enough field staff to establish and maintain contacts with them. Banks needed the assistance of technically competent people such as extension officers to ensure proper utilization of loans.

Therefore during the final part of the course, the extension officers were briefed on bank schemes and procedures. This led to a discussion which improved mutual understanding between bank officials and fisheries extension officers.

As a follow-up to the training course, a pilot proposal for establishing direct links between banks and small-scale fishermen was discussed by BOBP with representatives of the United Commercial Bank, Andhra Bank, State Bank of India, and Agricultural Refinance Development Corporation, and the fisheries department. It was agreed that loans could be given on a trial basis to a representative sample of fisherfolk, some 500 households; they should represent the various credit needs as well as the different groups within the fishing communities. Procedures and formats for loan applications, feasibility calculations, repayment schedules, etc. will be designed, tried out and modified on a pilot basis. A local bank specialist will assist in preparing these schemes and advise the extension officers on how to implement them. The pilot credit project will also study how extension officers can facilitate regular communication between banks and fisherfolk.

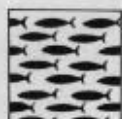
Fact Sheet of Orissa Fisheries



Geographical data

Coastline	480 km
Shelf area (upto 50 m depth)	25,000 sq.km.

Source



Fish production

Marine			Marine Fisheries Information Service, No.32, 1981.
— Pelagic	:	16,502 tonnes	
— Demersal	:	22,873 tonnes	
Total	:	39,375 tonnes	
Inland	:	32,530 tonnes	Directorate of Fisheries, Orissa



Craft

Mechanised	:	764	Directorate of Fisheries, Orissa
— Trawlers	:	455	
— Gillnetters	:	309	
Non-mechanised	:	9,728	
— Plank-built boats	:	3,262	Marine Fisheries Information Service, No.30, 1981.
— Dugout canoes	:	186	
— Kattumarams	:	6,276	
— Others	:	4	



Gears

Trawl nets	:	700	
Drift/gillnets	:	10,427	
Boat seines	:	2,676	
Fixed bag nets	:	2,778	
Hooks and lines	:	15,265	Marine Fisheries Information Service, No.30, 1981.
Shore seines	:	2,893	
Traps	:	515	
Scoop nets	:	37	
Others	:	5,201	
Total	:	40,492	



Fisherfolk population

Status of Active Fishermen			
— Full time	:	20,616	
— Part Time	:	6,262	
— Occasional	:	3,845	Marine Fisheries Information Service, No. 30, 1981.
Total Number of Active fishermen	:	30,724	
No. of fishing villages	:	236	
No. of landing centres	:	56	
No. of fishermen households	:	20,329	



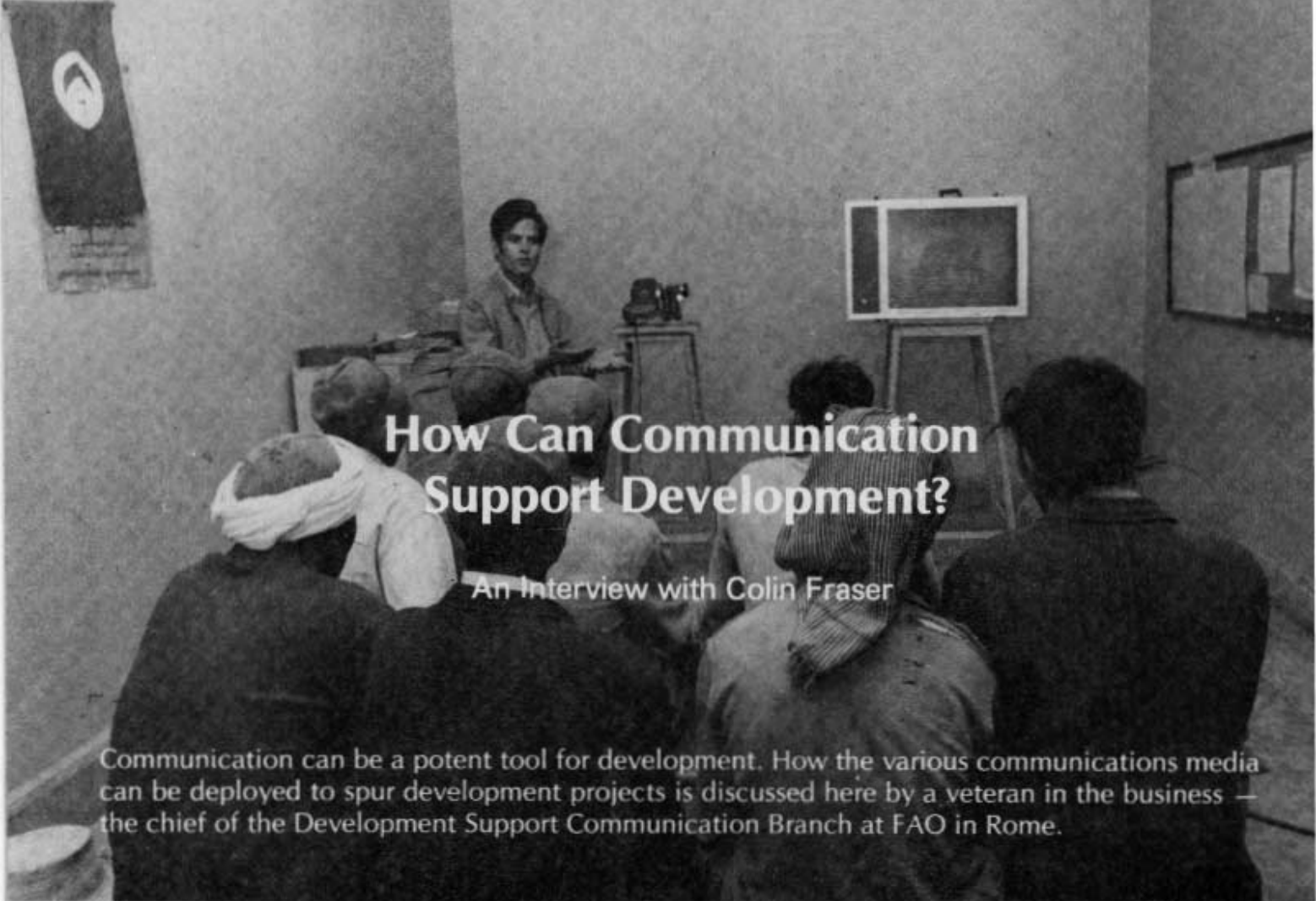
Infrastructure

Ice plants, public sector	:	5
Ice plants, private sector	:	33
Cold storage	:	15
Freezing storage	:	15
Boatbuilding yards	:	10
Net-making plants	:	2
Harbours/jetties — Paradip, Astrang, Chandipur, Dhamra		



Exports

Species	:	Shrimp
Quantity	:	2,409 tonnes
Value	:	Rs.114 million



How Can Communication Support Development?

An Interview with Colin Fraser

Communication can be a potent tool for development. How the various communications media can be deployed to spur development projects is discussed here by a veteran in the business — the chief of the Development Support Communication Branch at FAO in Rome.

Q. Could you describe the work of FAO's Development Support Communication Service? When was it set up and why? What kind of projects do you undertake?

A. FAO's Development Support Communication Branch (DSC) helps Third World countries to make use of communication media to inform, motivate and train rural people. It has become clear over the years that traditional extension and training approaches are unable alone to meet the enormous need in rural areas of developing countries and it is therefore logical to think in terms of using audio-visual media, both to expand and improve the impact of extension and training work, and to overcome the problem of low literacy rates.

FAO's DSC activities began around 1970 and grew out of an earlier FAO involvement with rural broadcasting. Also, in the late 1960's, UNDP identified communication failures as a severe handicap in a number of projects they were supporting, and asked executing agencies, such as FAO, to pay more attention to this element in development projects.

The projects undertaken are varied in nature. They range from helping governments to establish better rural broadcasting services nationwide, to the production and use of simple audio-visual training materials within the context of individual development projects.

Q. How big is the DSC service? How many staff do you have in various disciplines? Do you use many consultants?

A. The DSC Branch is really rather small. We have seven professional officers supported by five clerical staff based in Headquarters, and because of the small number of people, we tend to be communication generalists rather than specialists. Of the staff here in Rome, three people are concerned almost exclusively with producing training materials requested by FAO-assisted projects in the field.

At any one time, we normally have about 25 to 30 people in the field as experts or consultants. As in other areas of technical assistance, there seems to be a tendency towards highly specialized consultants who carry out short assignments, rather than long-term experts.

Q. What are the audio-visual media you work with? Could you spell out their advantages and drawbacks in brief, and the problem/environment each is most suited for.

A. When we first began DSC work in FAO, we kept a very open mind as to the different media that might be effective in given situations. After all, nobody really knew how to carry out communication work with audiences in rural areas of the Third World. We are now able to say, with some degree of certainty, which media are useful in our work. These are: radio broadcasting coupled with pre-recorded cassette tapes for use by extension people; portable video; and slide sets or filmstrips with accompanying commentary booklets.

Radio broadcasting and cassettes are useful almost everywhere and under almost all conditions, but of course,

they lack the visual element. Nevertheless, many Third World audiences have an oral culture and audio presentations alone have a much higher impact than one might expect.

Video is a marvellous and very attractive medium and is excellent for training rural people, provided that there is a reasonable level of electronic technology already available in the country. We would not suggest its use in countries where there is no television repair industry, for example. Slide sets and filmstrips are useful almost everywhere and represent a low-cost approach. However, a great deal of care and thought has to go into the scripting and photography if maximum impact is to be achieved among the audience. As a matter of fact, that applies to all types of media production. Ideally, of course, a multi-media approach is by far the best, if one is to obtain maximum impact in an all-out motivational or educational campaign.

Q. Could you give two or three specific examples of effective DSCS projects? Why were they effective?

A. We have had some notable successes in using filmstrips to introduce new ideas in Tunisia. In one case, in the central and arid areas of the country discoveries of ground water a few years ago led to the possibility of irrigated agriculture for the first time. A SIDA/FAO project was developed to introduce the production of horticultural crops. The project requested our assistance to make filmstrips which could be used among rural audiences. I was present one cold winter night when farmers were being shown a filmstrip on how to use plastic tunnels for the production of vegetable nurseries. There was a lively debate at the end of the projection during which one farmer said: "Next season I'm going to try that."

A second project in Northern Tunisia wanted to introduce silage making for the first time. Again, a filmstrip was made and it certainly played an important role in increasing the area under silage production from 1,300 hectares to 11,000 hectares in a 4-year period.

I would say also that our use of video in farmer training in several countries of Latin America is turning out very successfully. It is too early to know what impact has been made in actually changing farming practices, but certainly 80% of the farmers interviewed have expressed their satisfaction with video-based training and asked for more.

Q. Could you spell out what FAO has learned from its experience in development support communication so far? In what way have results differed from expectations?

A. We have discovered a number of things of a technical nature. One of these is that production of cine films is far too slow and expensive for our sort of work. Secondly, films are also inflexible. What I mean by that is that if you make a film for use in one part of a country, and then want to adapt it for use in another part of the country, the need to go back to the laboratory for re-editing, re-mixing and re-recording is prohibitively expensive, and time consuming.

We have also confirmed our feeling that, in many cases,

an audio-visual presentation based on still photography and slides is a much better teaching medium than film, which goes through the projector at a fixed pace which cannot be altered. Still on the technical side, our gut feeling is that the quality of the photography that goes into, say a slide presentation, plays a vital role in determining the effectiveness of the presentation. By this, I do not mean quality in terms of exposure and focus, but I mean rather the way in which the photograph is set up so that its central message comes across to the audience without any extraneous information that could be confusing. Similarly, the way a sequence of slides is photographed and put together, so that the audience is taken step-by-step through the operation being illustrated, is vital to the pedagogical effectiveness of the presentation.

On the conceptual side, as opposed to the technical side, we have learned how difficult it is to establish participatory communication activities. We have always hoped, and we still hope, that media can be used to establish a dialogue between rural people and the authorities, and between rural communities, along the lines of a famous Fogo Island experiment in Canada in the 1980's. Unfortunately, dialogue is bound to have political implications. And many governments are so beset by problems of every sort that they do not have the inclination or the capacity to enter into a real participatory dialogue with rural people, in order to ascertain their real aspirations and needs, and draw up development programmes based on them. So, at least in this context of participatory communication, our hopes and expectation of 10 years ago have yet to be fulfilled.

Q. Has the DSC helped any fisheries projects so far?

A. We have so far dealt mainly with agricultural projects. In the area of fisheries, DSC has produced film strips for the Java Sea Project. It is currently producing filmstrips, sponsored by DANIDA, on fisheries codes of practice. It has also made a film strip on sanitary control in fish processing plants.

Q. What are the problems you have faced? How have they been overcome?

A. One of the main problems is not so much one that occurs in the field, but rather concerns policy makers. It is that of having the potential of communication media recognized. Very often communication aids are seen as a luxury which are nice to have if funds are available — a sort of fifth wheel on a car. We think that they should be an integral part of development programmes and should not be the first thing dropped when funds are short.

On the technical side, we have had a number of problems with equipment that have been overcome. For example, our project in Peru made an inverter capable of taking 12V Direct Current from an automobile battery and converting it into 130V Alternating Current in order to power some of the video equipment in remote areas. To have bought inverters would have cost \$ 1,200 each, whereas the ones developed by the Peruvian technicians



The FAO has found film strips to be a very effective communication tool for its projects in Africa and Asia.

cost only \$ 200 each. However, the main problems in DSC, I repeat, are institutional. Proper use of, say, radio broadcasting for rural development must of necessity involve all the institutions concerned with rural development, plus the Ministry of Information. It is usually m&e difficult to bring together all concerned into a self-sustaining action programme than it is to handle the technical problems of programme production.

Q. How can a developing country make use of DSC services? What criteria do you adopt for taking up a project?

A. We have a very limited budget here in Headquarters, but we can normally manage to field a fact finding mission or a project formulation mission from our own resources. However, we can take no action without an official request from governments, made either directly to FAO Headquarters or to the local FAO or UNDP office. Frequently, we get requests to provide large amounts of audio-visual hardware. We would attempt to find financing for such a project only if proper plans exist for the use of the equipment and if there are trained people capable of using it. This generally involves sending someone from the DSC to discuss the matter with the government institution concerned. It should be understood that financing of actual projects has to be from sources other than those available to the DSC. In a sense, we often act as brokers in that we help to formulate a project and then help to find finance for it from a multilateral or bilateral source.

Q. Can you give some examples of good communication-for-development projects you have come across in developing countries?

A. Earlier I mentioned a few examples of FAO-assisted activities in DSC which have had definite results. There

are plenty of others, of course. Tanzania carried out a very interesting campaign in the early 1970's called "Man is Health" which used a combination of radio broadcasts and printing materials. One of the results of this campaign was the construction of not less than 750,000 latrines. In Ecuador a one-minute radio advertising spot on prevention of goitre was repeated several times a day over one year. The proportion of families using iodized salt rose from 5% to 98%. A classic and large-scale communication-for-development action took place in Morocco some years ago when the Government decided to begin a sugar beet industry starting from scratch. They used a multi-media campaign in the areas of the country where they were installing sugar factories and wanted sugar beet to be grown. In a relatively short space of time, farmers were growing the beet in the large quantities required.

Q. What accounts for the video boom in the developed world? In what way is video preferable to cinema as a communications tool?

A. Video is a fascinating media. With nothing else can you record image and sound and play it back immediately. Of course, the boom in the developed world is largely due to the fact that people want to be able to record programmes off TV and look at them, or at feature films on video tape, at a time convenient to themselves. The cost of video equipment has been coming down constantly in recent years, and the quality of the picture has at the same time been improving. As a communication tool it is preferable in many ways to cinema. Its speed and flexibility are its main advantages, but another point in its favour which is not so often thought of is that you can use battery power for the play-back unit and thus take the programmes to rural areas without needing the electricity or generator required for a film projector.

Q. Finally, is there any single medium you regard as the medium of the future?

A. I stressed earlier that the best communication for development activities are based on a multi-media approach. However, of all the media there is little doubt in my mind that video is the medium of the future. I can see no reason why video technology will not continue to improve, and become cheaper. From the point of view of a development agency such as FAO, however, we have to be careful to ensure that video projects are only promoted in an environment that can absorb the technology. However, if you really look carefully at the different media in practice, and if you sit-in on sessions using media with rural people, you are struck by the truth of McLuhan's remark about the media being the message. The real thing that matters is not what medium you use, but what social process is triggered off by people getting together to watch, listen and discuss. I am convinced that the majority of decisions taken by rural people on the basis of media presentations emanate more from discussions following the presentation, than from the media itself.