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BOBP beachcraft in India : how is the fishing performance?

Fish marketing women at Besant Nagar, Madras, about to buy the catch from BOBP craft.

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BOBP beachcraft in India how is the fishing performance

Following several years of wide-ranging design and development effort, a few score BOBP beachcraft are fishing in Tamil Nadu, Andhra Pradesh, Orissa and Pondicherry. This article reports on and analyzes catches and incomes from various fishing centres.

The Government of India plans to distribute a few hundred BOBP beachlanding craft (BLC) along the east coast during the Seventh Plan, as reported in the March 1987 *Bay of Bengal News.* The scheme has taken off. At present, 70 BLC are fishing in Andhra Pradesh, Orissa, Tamil Nadu and Pondicherry. They were built at three boatyards — in Kakinada, Bhubaneswar and Pondicherry — and distributed to cooperative societies of fishermen through an NCDC* scheme. Each society paid only 5% of the cost before taking the boat; 45% is to be paid in instalments, while 50% is a grant (subsidy).

Two types of boats are in operation: the 8.45 m IND-20 and the 6.70 m IND-25, both in fibreglass.

What is the fishing performance of the boats? In general, the boats have borne out their potential, and fishermen are enthusiastic about them. Corrective action on various fronts will improve the results much more. Individually, the boat performance ranges all the way from excellent to dismal.

ORISSA

A total of 16 IND-25s have been distributed in the three centres of Paradeep, Pun and Gopalpur.

In *Paradeep,* boats have yet to commence fishing operations. At *Gopalpur* the boats were initially distributed without adequate fishing gear, and the performance was verypoor, with good earnings only during the shrimp season. Bank loans for the purchase of fishing nets were arranged a few months back. Result: a steady improvement in earnings ever since. Though the monthly gross earnings have increased to Rs. 7,000, the low number of fishing trips is a matter of concern. One reason could be that the fishermen traditionally operate from Teppas and are not quite used to long fishing trips. Fishing usually stops for a few days after a day of good catch.

At *Purl* the situation is dramatically different. The beneficiaries are all migrant Nava fishermen from Andhra Pradesh. They have quickly adapted to the new craft and have reported gross earnings of over Rs. 20,000 per month.

Though the craft in Pun were supplied to a fishermen's cooperative society as in other places, the leader for each boat has been made responsible for repaying the loan. He will own the boat once the loan has been repaid. This perhaps is the main reason — apart from good fishing grounds — responsible for the commercial success of beachlanding boats at Purl.

ANDHRA PRADESH

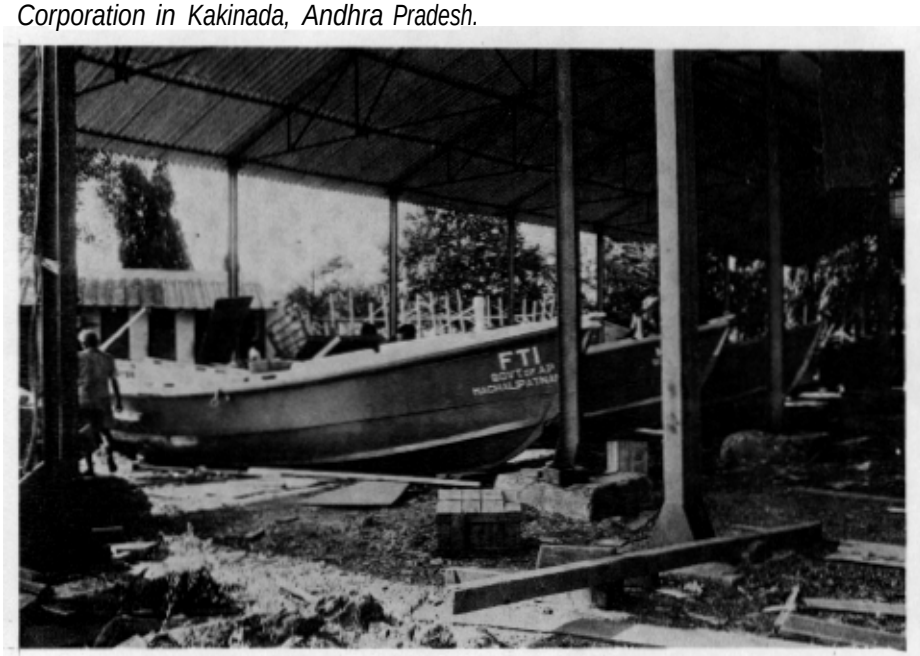
A total of 35 boats, mostly of the IND-20-type, has been distributed in all the maritime districts of the state. Not much recorded data is available for analysis, but visits to BLC centres and spot observations indicate an acceptable level of performance in most centres.

In the northern districts of *Srikakulam, Vijayanagaram,* and *Visakhapätnam* the boats have been distributed to villages where the 'Teppa' is the traditional craft. Only one boat has been given per society and this has bred discord and jealousy. Why should X get the boat, not Y or Z? The possibility of the BOBP craft fishing in traditional grounds has also generated objections. However, the good fishing off Pun has generated some impact in these districts — boats from here have migrated to Orissa or have been acquired on lease by Pun fishermen. In fact the loan amount for one boat was paid in full, presumably from the lease amount. The migrant boats are reported to be performing as well as those from Pun.

East Godavari district is the traditional home of the Nava and it is in this district that the fishermen have adapted readily to the BLC. Though catch records are not available, k$an repayment can be considered as a performance indicator. All societies have collected Rs. 1,500 per boat per month towards repayment, indicating that the boats have been performing reasonably well. A majority of the BLC centres in this district have access to sheltered water, and the boats usually ply from creeks.

* National Cooperative Development Corporation.

BOBP craft under construction at the boatyard of the Andhra Pradesh Fisheries Corporation in Kakinada, Andhra Pradesh.



The southern districts of *Prakasam* and *Nellore* have reported mixed performances. Boats operating from Ongole (Prakasam district) are performing very well, with gross earnings of nearly Rs. 9,000 per month. One centre in Nellore district is popular for shrimp trawling. Here, problems of the nets being cut and lost have been reported. In another centre, two boats are being operated by the society itself, using crew on daily wages. The society is organized and strong, no conflictsoccur and all earnings are credited to it.

TAMIL NADU

A total of 15 IND 25 boats have been distributed. Ten of these boats are yet to commence fishing. The five that are operational are reportedly performing reasonably well. However, they operate from the harbour.

At *Injambakkam,* where two boats had been introduced under an IRDP scheme, the performance is very poor. The boats made a good start, but disaster followed — severe problems arising out of boat allotment — which created friction in the village.

In Besant Nagar, Madras, good catches of flying fish have been reported occasionally during fishing trips to try out a new water-cooled engine box. Two boats are also in operation at Tranquebar,introduced by a development project funded by DANIDA. Catch records show an acceptable performance with average gross earnings of Rs. 6,000 per month.

PONDICHERRY

Four boats were introduced in four villages: in all centres, the performance has been very poor. Unfortunately, three of the boats have constantly had engine problems. The engine manufacturer is rectifying them.

One boat was damaged beyond repair when it drifted to the shore and grounded in the surf zone. Constant pounding by breakers for two days split the hull in two. Further, only one boat was allotted per village. Without access to a winch, the boats are kept at anchor beyond the surf zone as is done with other motorized boats in the area.

* * *

At all centres, the maintenancee of boat and engine has been very' poor. Many of the engine problems could have been avoided by routine preventive maintenance. Most of the boat operators have been trained by BOBP and the state fisheries personnel, but apparently this is not enough. There are a few centres (mainly in Orissa) that do not have easy access to spare parts and trained mechanics.

The majority of the boats are kept at anchor beyond the surf zone after beaching to offload the catch. In some centres this may not be possible during the monsoon months. Provision of a hauling device could solve the problem. However, this can be justified only if the cost of such a device could be spread over a number of boats.

It is appropriate to mention here BOBP's trials and demonstration of offshore fishing with a beachlanding boat (IND 20) at Uppada and Madras. The trials indicate good earning potential for at least four months in a year while fishing for offshore pelagic species such as shark, bill fishes and tuna (Ref. BOBP/WP/56).

Flying fish galore — catch from BOBP craft at Besant Nagar, Madras.

To ensure the techno-economic success of BLCs and their acceptance among the fisherfolk, the following points need to be considered:

- Boats should be distributed in clusters, and not just one per society.
- The operators of the boat must be owners as well
- BLC loans should cover the cost of fishing gear
- Offshore fishing methods should be demonstrated
- A BLC training and demonstration unit should be established by each state
- Fisheries personnel and fishermen should be trained in boat handling, maintenance and the use of sails
- A sound infrastructure for marketing of catch should be set up
- Quality control in boat manufacture should be strengthened.

— R. Ravikurpar

Ferrocement boats: A promising beginning

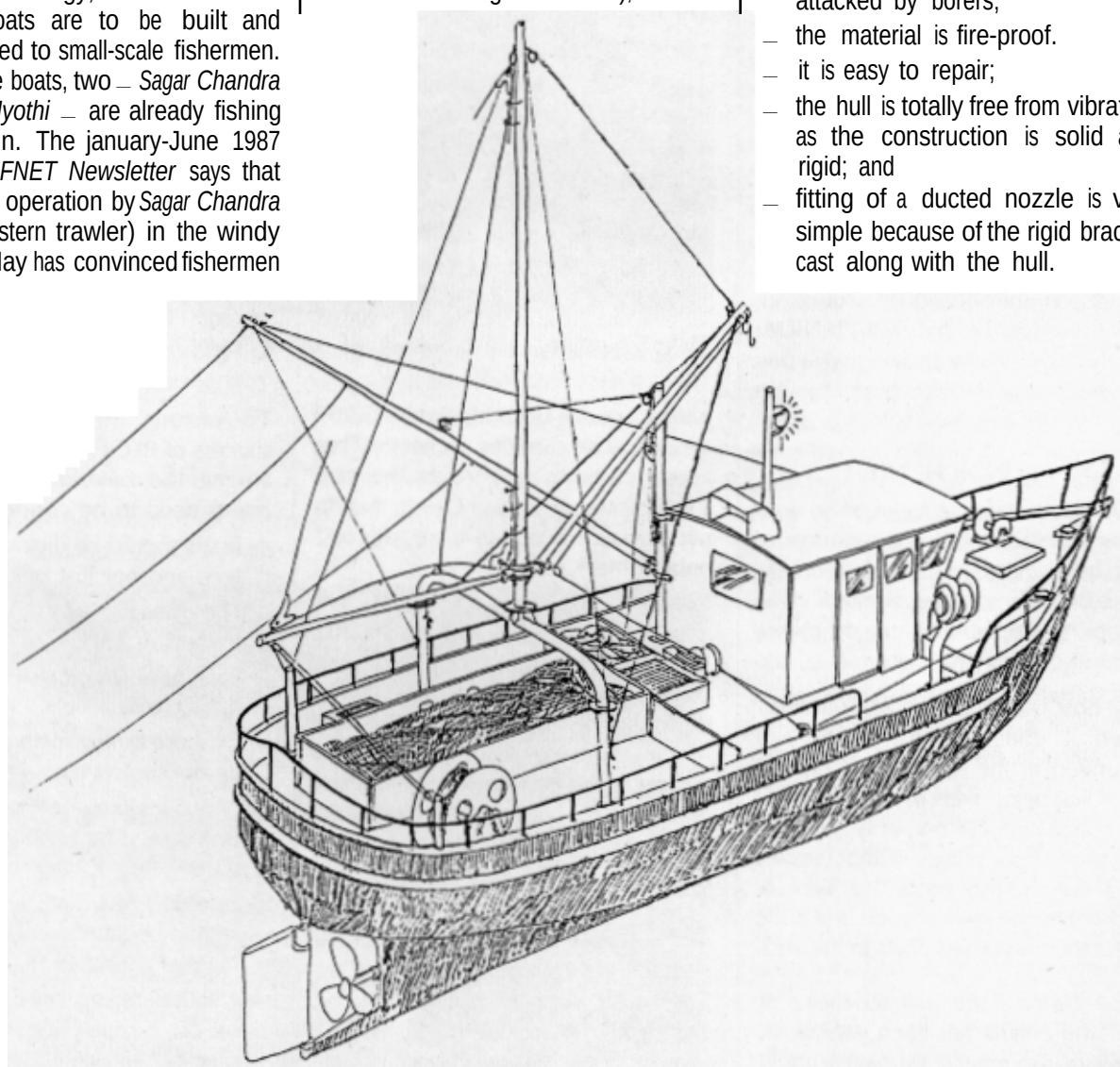
How attractive is ferro-cement as boatbuilding material for small fishing boats, with timber getting scarcer and costlier by the day? (Ferro-cement is the name given to a thin mortar made of ordinary portland cement, river sand and water, reinforced with wire mesh and small diameter steel bars).

The Government of India has initiated a project to try out ferro-cement boats. It is being implemented by CIFNET (Central Institute of Fisheries, Nautical and Engineering Training), Cochin, in cooperation with the FAQ (under a TCP or Technical Cooperation Programme agreement), the BOBP and the Mercantile Marine Department.

Under the project, 15 fishing craft technologists have been trained in ferro-cement technology, and three ferro-cement boats are to be built and demonstrated to small-scale fishermen. Of the three boats, two – *Sagar Chandra* and *Sagar Jyothi* – are already fishing off Tuticorin. The january-June 1987 issue of *CIFNET Newsletter* says that continuous operation by *Sagar Chandra* (a 10.5 m stern trawler) in the windy month of May has convinced fishermen about the boat's dependability. The boat has also earned good money compared to local boats. The 12.8 m *Sagar Jyothi*, an improved and larger version of the first boat, did trial fishing in Cochin, operated successfully in Veraval (Gujarat), returned to Cochin during the monsoon and moved to Tuticorin end-May. The third boat is to be commissioned in October.

The Director of CIFNET, Dr. M. Swaminath, coordinates the ferro-cement project. CIFNET staff in Cochin working on the project are Mr. Dhanraj, Asst. Instructor (Engineering), Mr. Ponnambalam, Instructor (Boatbuilding), and Mr. Lopez (Carpentry Supervisor). FAQ experts who have provided their services to the project include Mr. Jeremy Turner and Mr. R.O.N. Riley (design and boatbuilding consultants), Mr. E.C. Kloetzer (Masterfisherman Consultant) and Mr. Daniel Czekaj (Fishery Industry Officer in Rome). BOBP Fishing Technologist C. Pajot has provided technical assistance on design and construction of deck layout, deck equipment and fishing gear for the two boats. The first boat is fitted with a gantry and a tiltable drum winch, the second with a gantry, two net drums and an automatic-spooling three-drum trawl winch. *CIFNET Newsletter* lists the following advantages of ferro-cement over fishing boats of other materials

- Lower initial cost compared to fibreglass, steel or wood;
- ready availability of material;
- lower maintenance cost and reduced dry-docking periods, as the material neither corrodes not is attacked by borers;
- the material is fire-proof.
- it is easy to repair;
- the hull is totally free from vibration as the construction is solid and rigid; and
- fitting of a ducted nozzle is very simple because of the rigid bracket cast along with the hull.



A perspective drawing of the third ferro-cement boat being built in Cochin. It will use energy-efficient methods: longlining, trolling, drift gillnetting. Three ferro-cement boats are being tried out by CIFNET with FAO/BOBP technical support.

Abstracts of BOBP publications

Abstracted here are BOBP's publications out in recent months.

BOBP/REP/32: *Bank Credit for Artisanal Marine Fisherfolk of Orissa, India: U.* Tietze, *Madras, India, May 1987.*

This report describes and analyses a credit project for artisanal marine fisherfolk of Orissa, India. During the project, which was on from March 1982 to March 1986, nearly Rs. 6.5 million were distributed as loans to 2,500 fisherfolk households in four coastal districts of Orissa. The loans were funded by commercial banks with refinancing from NABARD (National Bank for Agriculture and Rural Development). The report outlines the rationale and the philosophy of the credit project and discusses the preparatory work,' the economics, the implementation and the results. The report concludes that non-subsidized loans to marine fisherfolk can be viable, if commercial banks combine the best features of commercial and development banking.

BOBP/REP/36: *Hilsa Investigations in Bangladesh, Colombo, Sri Lanka, June 1987.*

This report describes the findings of BOBP's investigations into the hilsa resources of Bangladesh during 1985/86. The investigations covered the three environments in which the hilsa thrives — marine, estuarine and riverine — and involved four sampling stations. The investigations focused on catch statistics, biological studies, racial studies and experimental fishing.

BOBP/REP/36: *Report of the Eleventh Meeting of the Advisory Committee. Bangkok, Thailand, March 26-28, 1987. Madras, India, June 1987.*

This report records the recommendations of the Eleventh Meeting of the BOBP's Advisory Committee, held March 1987 in Bangkok. The meeting endorsed BOBP's workplan for 1987.

BOBP/WP/49: *Pen Culture of Shrimp by Fisherfolk: The BOBP Experience in Killai, Tamil Nadu, India. Edeltraud Drewes and* C. *Rajappan. Madras, India, April 1987.*

This paper describes a shrimp pen culture pilot activity at Killai, Tamil Nadu, India, under which selected fishermen operated small-sized shrimp pens, applying a technology package for Killai conditions devised earlier during 21 months of technical trials by BOBP. The paper discusses the project's socio-economic and technical approach, problems faced during the implementation, the results and some recommendations for better profitability.

The paper concludes that further technical improvements are necessary to make shrimp pen culture technology economically viable for fishermen. It suggests the stocking of pens with *Penaeus monodon* instead of *P. indicus.*

BOBPNVP/52: Experimental Culture of Seaweeds (Gracilaria sp.) *in Penang, Malaysia. Maxwell Doty and Jack Fisher. Madras, India, August 1987.*

This paper reports on a one-year project for seaweed culture in Penang, Malaysia, in cooperation with the Fisheries Research Institute, Glugor. The work was done during a 12-month period in 1983-84. The project aimed at determining whether and which species of *Gracilaria* could be cultured, the most feasible methods of culture, the selection of some typical culture sites with suitable characteristics and the training of counterpart staff. The report is valuable for its detailed discussion of these aspects. It concludes that there is good scope for developing seaweed cuture in Penang.

BOBP/WP/56: *Fishing Trials with Beachlanding Craft at Uppada, Andhra Pradesh, India. L. Nyberg. Madras, India, June 1987.*

This paper discusses the conduct and findings of fishing trials carried out with the BOBP beachcraft IND 20-C at Uppada, Andhra Pradesh, India, between August 1985 and July 1986. The beachcraft was equipped with fishing gear designed to catch large pelagic species. The idea was to investigate the craft's fishing potential in offshore areas, earlier fishing trials having been confined to inshore waters.

The paper concludes that BOBP beachcraft are capable of fishing in offshore waters up to 35 nautical miles. Catch performance and profitability can be improved with better organization and refinements to the craft's propulsion unit. Year-round offshore ftshing would require a larger boat than the IND 2óC. This craft should restrict its offshore fishing to four months in a year.

BOBP/WP/57: *Identifying Extension Activities for Fisherwomen in Visakhapatnam District, Andhra Pradesh, India. Diana Tempelman. Madras, India August 1987.*

This paper discusses the findings of a 1984-85 study of fisherwomen in four coastal villages of Visakhapatnam district, Andhra Pradesh. The study was meant to identify pilot projects to improve their living conditions. The paper's socio-economic data is detailed and comprehensive. On the basis of the fisherwomen's stated needs and priorities, the paper recommends a bank credit project for fisherwomen on the lines of projects run by the Grameen Bank of Bangladesh, which promotes self-reliance through savings and group action.

Rich harvest of seaweed from pilot farm at Penang, Malaysia. (BOBP/WP/52).

Marine fishery resources research in the Bayof Bengal: Factsheet on Indonesia (Sumatra)

Though bottom trawling has been banned in Indonesia since 1980, bottom trawl surveys are being conducted regularly to assess improvements in stock density. Pelagic surveys are however, very limited; the one noteworthy survey was by *Nippon Maru,* which conducted purse seining for tunas off the west coast of Sumatra. The Sumatra Fisheries Development Project (ADB-assisted) and the Area Development Project (GTZ-assisted) are also conducting investigations for improving marine fisheries (crafts and gear).

Fisheries statistics from this area is derived solely from the data collected by provincial fisheries officers. The Research Institute does not have a regular sampling programme in this area, apart from special investigations at Padang. A special biological sampling programme for mackerels and tunas, assisted by BOBP, was limited to about two years (1984-86).

The absence of a research sub-station in Sumatra is a serious constraint to the biological investigation and to regular research sampling here. Most scientific officers are based in Jakarta and Semarang. As a result, resources studies around Sumatra are relatively poor compared to those for western Indonesia. Since this is an area with potential for further marine resource development, more facilities and scientific personnel are required.

Table 1 — Resourtes Surwys and **Exploratory Fishing**

Period	Vessel	Type **of survey**	Limitation	Remarks
1973	**Mutiara I**	**Trawl survey**	**<** 40m	—
1973	**Mutiara II**	**Trawl survey**	**<30m**	—
1975-76	**R.V. Lemaru**	**Sonar, trawl & purse seine**	**Midline to 10 m**	One **survey in Malacca Straits Sunda Strait & off SE. Sumatra**
1975-77	**Mutiara IV**	Bottom **trawl**	**Midline to 10 m. Species not** sorted **in Malacca Straits**	**One full systematic** survey of **Malacca Straits**
1977	**Research II**	**Mixed gear**	**Indian Ocean off Sumatra**	**Joint Thai — Indonesian survey**
1977	**Mutiara III**	Bottom **longline**	**Indian** Ocean **off Sumatra**	**First** survey **of this** kind **in this area**
August 1980	Dr. **Fridtjof Nansen**	**Acoustic,** bottom **trawl pelagic trawl**	**>** 20m	**First acoustic** survey **off N.W. Sumatra. Very limited coverage.**
1981	**Jurong**	**Acoustic and trawl**	**Dangerous** reefs	**South of area covered by Dr. Fridtjof Nansen.**
April-May 1983	**Bawal Putih I**	Trawl **survey**		—
Sept-Oct. 1985	**Bawal Putih II**	**Trawl survey (finfish)**		**Malacca Straits — monitoring survey**
March 1986	**Bawal Putih II**	**Trawl survey (finfish)**		**Malacca Straits — monitoring survey**
1973	**Hakurgu Maru**	**Puse seining for tunas**	**Only in December only 2 operations**	**Poor** results **due to** bad **weather** (JAMARC sponsored)
1978/79	Wakaba **Maru**	Purse **seining for tunas**	**8 trips. Favourable results**	**Kyokugo company vessel** sponsored **by Fisheries** Agency **of Japan**
1979	Nippon **Maru**	**Purse seining for tunas**	**May** - **July 5°N 3°S** off **Sumatra. 3 operations**	**Operations** not **smooth due to** bad **weather** (JAMARC sponsored)
1980	Nippon Maru	**Purse seining for tunas**	**Jan** - **August 3°N 2°S off Sumatra. 60 operations**	Good **results in January — February. Poor in March** - April, good **in** May - **June,** poor **during July** - **August in international** waters.
1981	**Nippon Maru**	**Purse seining for tunas**	**Oct** - March 90°E ridge, **6 operations**	With payaos during Oct/Nov. Very good **result, SOt in one set**
1982	**Nippon Maru**	**Purse seining for tunas**	**Nov** - **March**	**Poor result** even **with Payaos**
1983	**Nippon Maru**	**Purse seining for tunas**	**Jan** - February **12 operation**	**Catch fair. All payaos lost.**

Table 2 — Statistics: Review **of** Present System **for Marine** Asheries

Institute	System used	Collection of basic **data**	Processing place **and method**	Species	Effort/Data	Publication/ **Remarks**
Directorate General of Fisheries and Central Bureau of Statistics	Frame survey; cluster sampling by means of probability proportional to **the size of marine fishing villages**	Staff, Fisheries Directorate at provincial level; Enumerators at important places **and** auctioneering personnel	Preprocessing at provincial level; standard forms finally analysed in Jakarta, by Central Bureau of **Statistics**	66 groups **by** gear, area, season and craft classification	29 groups of gear and effort by class of vessels	Provincial fisheries statistics bulletin; General fisheries statistics bulletin; and census reports
BPPL — Marine Fisheries Research Institute	**Systematic sampling, particularly on tunas**	**Biologists and samplers collecting catch,** effort **and** length frequency **data at Padang and Banda** Aceh	**Processing partly at the sampling stations and finally at the BPPL Jakarta using a microcomputer**	About four species	Available	Occasional technical reports

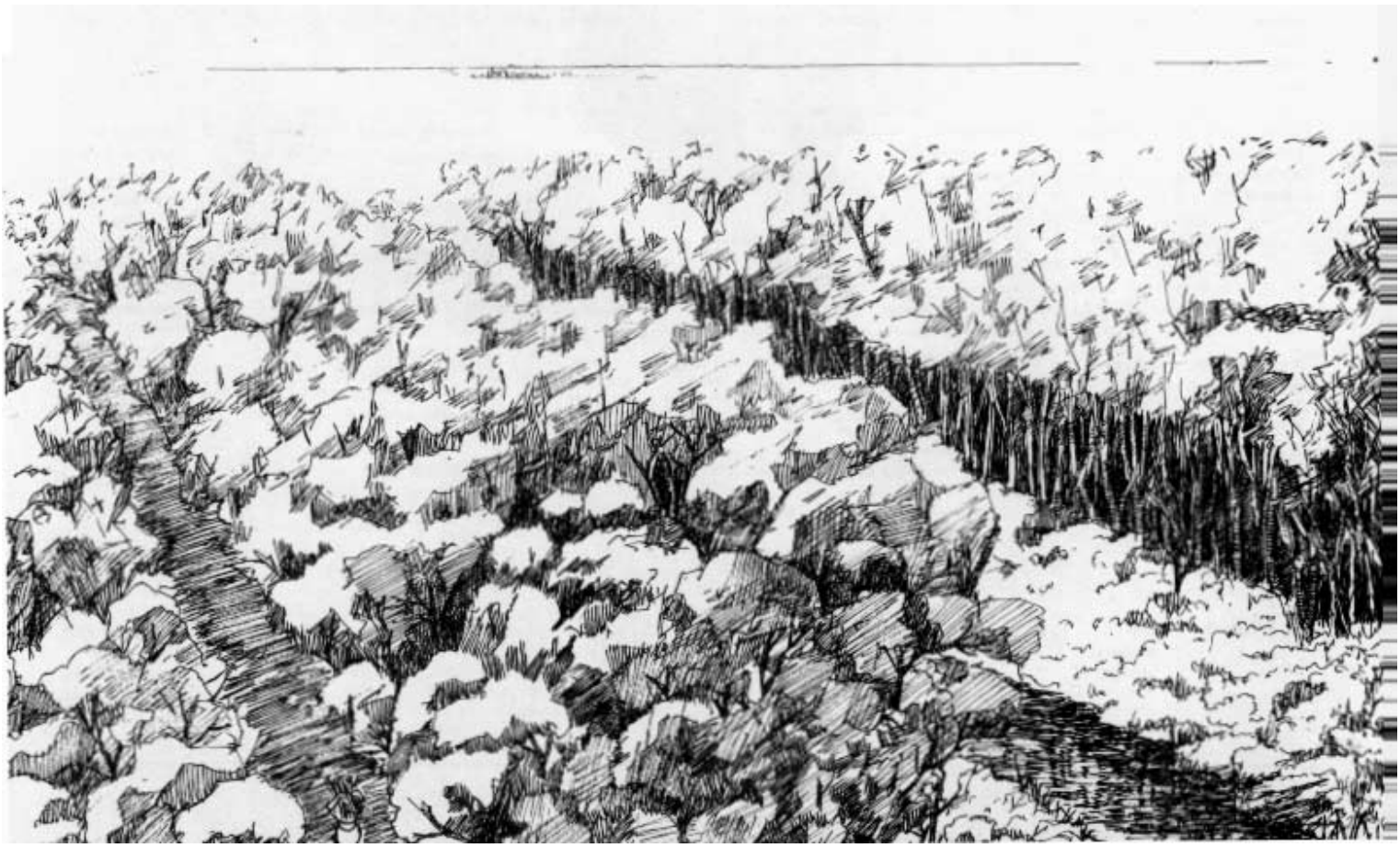
Table 3 Marine Fishery Resources Research Facilities

National Institute	Location	Type of Research	Biologists	Gear Technologists	Acoustics Technologists	Coverage of key areas	Research Vessels	Remarks/ Publications
BPPL Marine Fisheries Research Institute; Agency for Agriculture Research and Development, Ministry of Agriculture	Jakarta main Semarang (Surveys) Banten (Mariculture)	— Stock assessment — Fisheries biology — Gear research — Trawl surveys — Acoustic survey — Small pelagic fish survey	25	3	3	Description of existing facilities Resources surveys Sampling of tuna & pelagic species Limited environmental studies Fishing gear studies and development Stock assessment plus management and development advice Biological studies, experiments	BAWAL PATIH I PENELITAN I	Regular biological investigation limited in Sumatra. No substation in Sumatra, work covered from Jakarta
Directorate for Luring Resources Management, Directorate General of Fisheries	Jakarta	Evaluation of stock assessment and survey reports for management advice	20	NA	NA	Resources surveys Stock assessment plus management and development advice	TENGGIRI	ADB-funded Sumatra Development Project conducts tuna sampling in Padang. German-funded area development project based at Passaman includes some biological and exploratory fishing investigation.
Directorate for Planning, Directorate General of Fisheries	Jakarta	Statistics	NA	NA	3		—	
Central Research Institute for Fisheries, Ministry of Agriculture	Jakarta	— Fisheries research planning	10	NA	NA	Planning		
Fishing Technology Development Centre (BPPI)	Semarang	— Extension — Gear research — Exploratory fishing	10	NA	NA	Resources surveys Environmental studies, Fishing gear studies & development Stock assessment plus management & development advice.	BAWAL PUTIH II	Assisted by USAID project for management measures. No base station in Sumatra which is covered from Semarang.
Oceanographic Research Institute	Jakarta	— Oceanography — Marine biology	NA	NA	NA	Description of existing fisheries Resources surveys Fishery statistics Sampling of tuna species Environmental studies Biological studies, experiments, etc.		
Riau University	Riau Province, Sumatra	NA	NA	NA	NA	NA		Active interest in fisheries research in the Malacca Strait and the Andaman Sea

A cornucopia from mangrove land: Silvi-pisciculture in the Sunderbans

A SIDA-assisted, BOBP-supportedpilot projectis trying to demonstrate the abundant potential of silvipisciculture (forestry-cum-fisheries) for socio-economic good in the Sunderbans, West Bengal, India. It is a system that can simultaneously enrich the ecology, the economy and the people of the Sunderbans. ("Silvi" stands for trees, "pisci" means fish.)

The SuQderbans is an exciting forest area of West Bengal, celebrated for its tiger arTd crocodile sanctuaries and for its lush greenery criss-crossed by creeks. It may also well become a showpiece of silvipisciculture, a unique system of land management. In material terms, silvipisciculture means more forest trees, more fish, more productive land, more jobs and incomes for the poor. In short, it is an



ingenious way of harnessing nature and enhancing its bounty.

The work on silvipisciculture (SPC) is one of the two main components of a Swedish-assisted pilot project on Intensified land use" in West Bengal which began in 1983. The other component is agro-silviculture in north Bengal.

SPC is considered feasible in some 20,000 hectares of the Sunderbans. Under the SIDA-assisted project, SPC is to be demonstrated in 1,000 hectares — 25 units of 40 hectares each. When completed, each SPC unit would have acaCia, peepul, neem, tamarind or cocoanut trees swaying atop ridges on either side of a brackishwater channel, mangrove forest on the toes of the ridges, and cultured shrimp and mullet luxuriating in the channel's nutritious waters. Setting up and running these units would generate jobs and incomes for a few thousand of the landless poor.

Is this cornucopian vision too good to be true? A garden of Eden in the Sunderbans? "No", says Dr. A.K. Lahiri, Conservator of Forests, West Bengal. "It's just innovative technology in response to specific problems."

Progress on the project has been slow but sure. Of the 25 projected SPC units of the pilot project, construction work has been completed for nine, which extend over 360 hectares. That means bunds are on view, tree species have been selected and trees planted are shooting up. The forestry side of the technology is clear. Experimentation on the fisheries or the pisciculture aspects is on. This is where the BOBP has been involved from 1986, through its aquaculture specialist, Charles Angell.

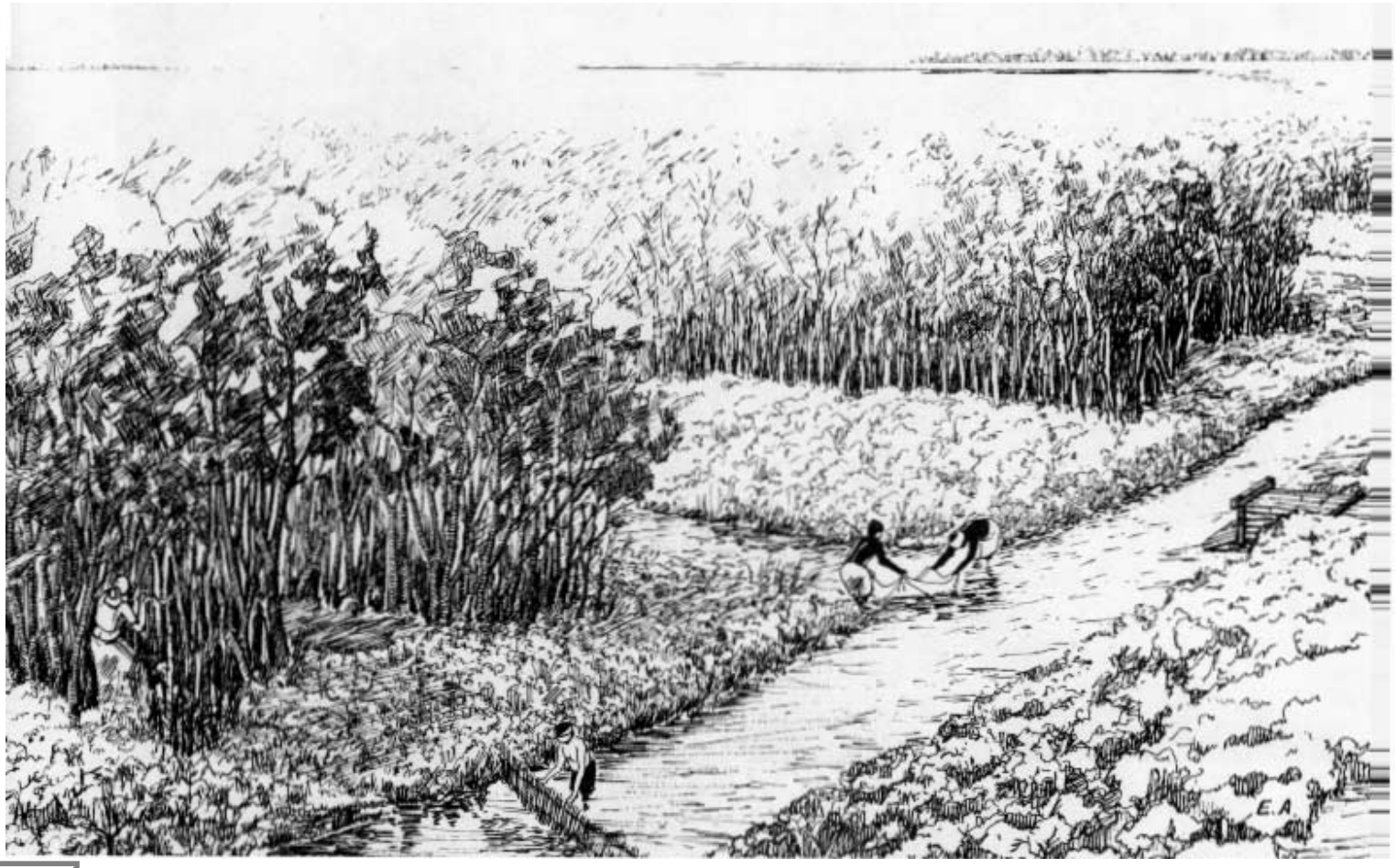
Mr. Angell is enthusiastic about SPC's development challenges and its potential for socio-eConomic good. He says "To improve the living conditions of people in the saline zone of the Sunderbans, the technology developed must be sound both ecologically and economically.. Silvipisciculture is exactly such a technology." How so?

Spread over the southern most fringe of West Bengal, the Sunderbans was virgin forest — and fearsome with its wild life — till the, British established their presence and settled in a few islands. People from adjoining northern areas like Midnapore also settled here, attracted by the fertile soil in the Sunderbans. Blocks of land were later leased out to private individuals for reclamation and cultivation. They built small emhankments fo prevent saline water inundation from the numerous tidal creeks in the area. In 1955, the Government of West Bengal acquired all estates, taking over embankments to the extent of 3,500 km in the Western Sunderbans. Thus the Sunderbans today is a combination of forest, creek, embankment and little village settlements.

The mangrove area of the Sunderbans extends over 4,262 sq. km. More than one third, 41 per cent in fact, serves an national park and tiger-cum-crocodile sanctuary. The remaining land **(59%)** is of mixed vintage. As much as 15% consists of denuded or poor-vegetation land, a result of natural or biotic disturbances. How can this land be made productive? Afforestation is prohibitively expensive, while shrimp mono-culture might devastate the environment. A combination of forestry (both trees and mangroves) and fish culture is the best technology because:

— Salt-resistant trees can provide fodder, fuel and timber to meet the

Silvi-piscicu!ture in the Sunderbans — a typical 40 ha complex, as depicted by artist E. Amalore. It consists of salt-resistant trees, mangrove plantations and water areas for cultivating shrimp and mullet.



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needs of the local population. This will save the main forest area in the Sunderbans from assault to provide these needs.

- Mangroves will provide food, a nursing ground for prawns and a protective cover against soil erosion, thus ensuring multiple land-use. The detritus from mangrove leaf fall plays an important role in the estuarine eco-system.
- Conditions in the Sunderbans favour brackishwater culture. The estuaries carry a rich, supply of seeds of high-value fish and prawn.
- Forestry and fish culture provide jobs and incomes for the local population – a boon in winter which is normally a period of job-lessness and deprivation for the Sunderbans communities.

This then is the rationale for silvipisci-culture. Dr. Lahiri describes it as a "sociologically and economically sustainable land management system that raises the value of land, combines forest and fish crop on the same land unit, and applies practices compatible with those of the local population."

Dr. Lahiri and Mr. Angell discuss potential, progress and problems concerning SPC in the Sunderbans.

Q: *What's the role of the various agencies concerned with SPC?*

A: The forest department of the West Bengal Government has overall responsibility for the project. SIDA meets 70 per cent of the project cost for the period 1983-87. The BOBP provides technical advice for the pisciculture and "people's participation" components of the project – through its aquaculturist and a sociologist consultant.

Q: *Could you describe a typical SPC unit? How is it manned? What's the present status of the project?*

A: A typical SPC complex covers 40 ha; it has forest trees and mangrove plantations on the land area and shrimp-mullet polyculture in the water area – which is a channel between ridges.

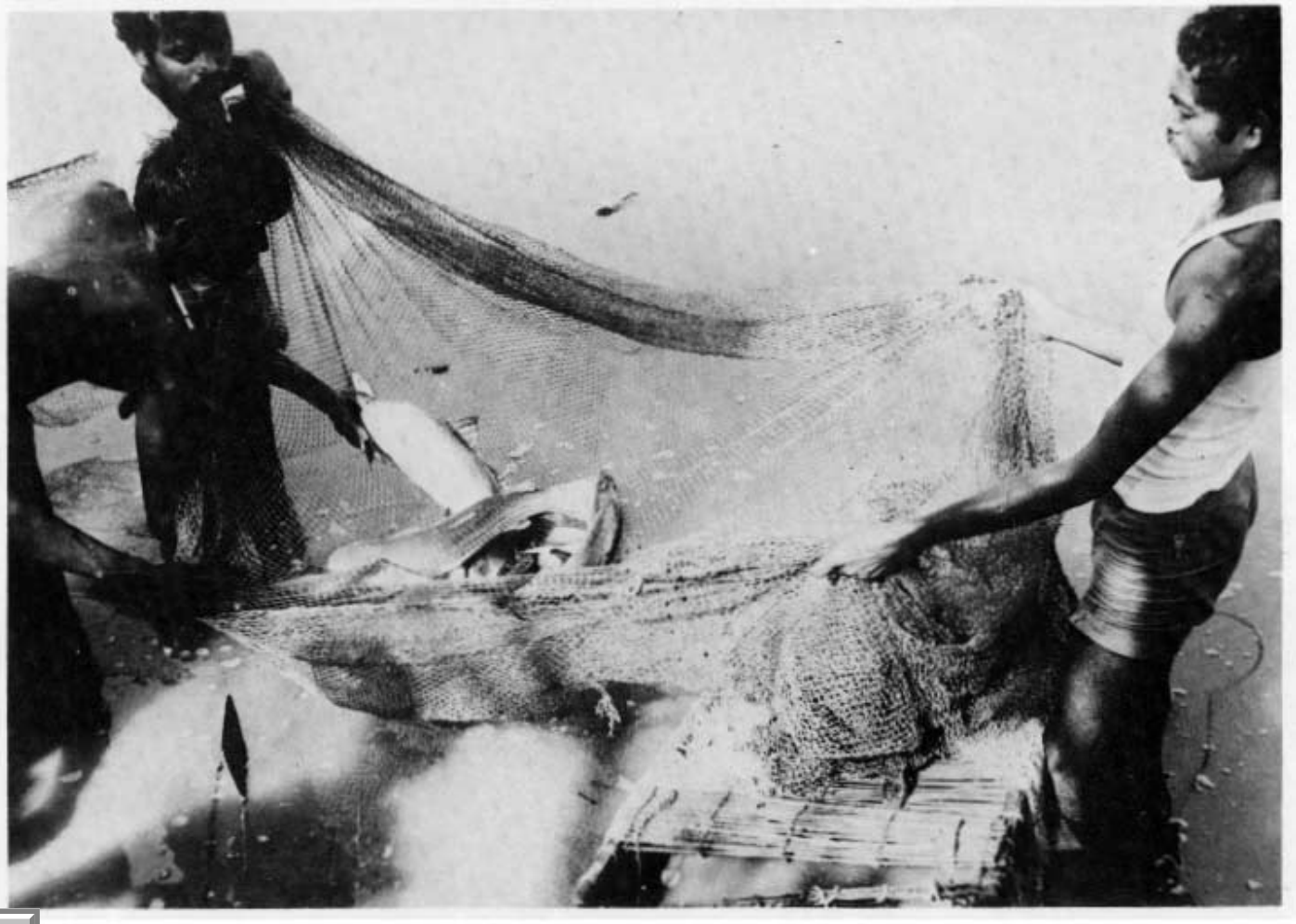
The tree varieties include acacia (babul), neem, tamarind, peepul, cocoanut and date palm. (Technical names of the tree species : *Acacia nilotica, Prosopis juliflora, Leucaene leucocephala, Tamarix aphylla, Cocos nucifera, Phoenix.* The mangrove species on the toes of the ridges are *Avicennia spp., Phizophora spp., Bruguiera gyrnnorhiza).* The trees take 10 years to attain peak production. An intermediate yield, mostly of firewood and fodder, is available after five years. This ensures that people don't invade the forestry area for firewood.

Each SPC unit is manned by a forest ranger, three foresters and six guards. They look after regular field work of the SPC unit. Most of them have some knowledge of fish culture, of which there is a strong indigenous tradition in the area.

SPC complexes have so far come up at three locations – Bhagabatpur, Saptamukhi and Dhanchi – and cover eight vill'ages. Each complex has its peculiarities based on land elevation, soil salinity and vegetative cover. So there are differences in the layout of each complex. But ridges have been constructed in all three complexes and trees are coming up. Fish culture is being carried out by the local population; several recommendations

(Continued on Page 16)

Harvested fish in the water areas of an SPC unit. There is good scope for improving yield through better fish culture practices.



Towards people's participation in fisheries development: lessons from BOBP study

BOBP's one-year study on people's participation in fisheries development projects has just concluded. This article discusses some of the ideas, concepts and directions that emerged from the study.

A whole year's learning about people's participation in small-scale fisheries, funded by SIDA, was put to test at a Consultation held in Bangalore, India, in May, which brought together 45 participants from the seven participating countries of the BOBP *, FAO, the development agencies of Norway, Sweden and UK, ICLARM and some NGOs.

The consultation was inaugurated by Mr. B.C. Sarma, Joint Secretary of Fisheries, Government of India. Prof. Richard Pollanac of the University of Rhode Island, USA, delivered a keynote address.

The consultation helped sum up the learning from several activities:

- appraisals of BOBP's activities in aquaculture, extension and fisheries technology,
- appraisals of the participatory efforts of governments and other international and non-government agencies,
- action research in experimental field projects of the BOBP,
- desk studies which tried not only to review the existing state of the art but also focused on the key issues of participatory development.

Undertaken in small groups, the Bangalore discussion provided deep insights into the needs, possibilities and problems of applying the concept of people's participation in small-scale fisheries development projects. What emerged were some ideas, concepts and directions which agencies could take note of in evolving people's participation approaches in their own context.

* **Maldives,** Sri Lanka, India, Bangladesh, Thailand, Malaysia **and Indonesia.**

What is participation?

The primary objective of the consultation (while it set out optimistically to come up with methods, strategies and techniques to enable participation) really was to make the delegates think through the problems associated with participation and to enable reflection, so that each agency in its own specific context could evolve processes of not "doing" development but working with people towards development. The reflection began with trying to define participation. The phrase seems to mean many things to many people; it ranges all the way from surveys to identify people's needs to political mobilization to empower communities to take control of their destinies. Such diversity tends to confuse, but on the positive side, it also allows the concept to be used in a wider variety of circumstances than a more precise definition would. Nevertheless, unless agencies are clear about the levels and aspects of participation necessary to achieve the goals of a specific programme, they may run into confusion when implementing the programme.

Central to specifying the meaning of people's participation is the meaning of development itself, since the former is a means of enabling the latter. The purpose of development goes beyond merely increasing incomes or building assets – it is to enable people to critically understand their condition and their predicament, to identify needs and prioritize them, to evolve methods of resolving their needs and problems, to mobilize local resources to such ends, to implement the activity through organization, to learn from experience, and to do all this in a self-reliant manner.

The keynote speaker, Prof. Richard Pollnac, attempted to clarify the definition of people's participation. Seven levels of participation were identified.

- carrying out orders in implementing an activity,
- choosing between predetermined alternatives,
- providing minimal or extensive input in the form of information and suggestions during a survey,
- participation with planners to collect information,
- interaction in creating development plans as well as in project monitoring; evaluation during implementation,
- groups of fishermen creating their own development plans with the assistance of scientists,
- voluntary submission of such plans to development agencies and active involvement in project development, monitoring and evaluation.

It was also suggested that people's participation could be further categorized in terms of

- quality of participation in decision-making,
- types of participation possible depending on the complexity of the tasks,

- phases of the project cycle in which participation can and does take place,
- the proportion of people potentially affected who are actively involved,
- the 'representativeness' of those involved,
- the organizational form through which people participate,
- amount of participation in terms of labour and/or money inputs from the community.

While empowerment of the community (the highest level) can be an end worth working towards in most fisheries projects, building in any level and quality will be a significant improvement over the status quo. It is also important to note that people's participation is something that evolves; this characteristic needs to be considered at the project planning stage, so that activities that enable the growth of participation can be formulated.

Why participate, at all?

That people should participate in activity that sets out to enable their development is so evident that it comes as a surprise that fisherfolk are rarely involved in efforts that set out to help them! Why should an agency choose a participatory approach to development and what "benefits" are there to such an approach? Unless an agency can answer this question, its intentions at participation may remain 'only on paper.

Development literature is full of irresistible arguments on the importance of participation in development. The fact that the developer (the agency) and the object of development (the people) are separate – with their own understanding of development, their own world views and logic frameworks – leads to the question: whose needs, what needs and whose priorities get met in development efforts? People whose felt needs are not addressed can hardly be expected to be eager and enthusiastic about programmes and projects, and this affects the quality and the sustainability of such efforts. With limited resources and growing population, identifying and selecting the beneficiaries of a project are both conflict-prone activities that can jeopardize the success of programmes. Perhaps the most legitimate way of ensuring such selection is to let the community do it.

The seven levels of people's participation – Dr. Richard Polinac's concept as interpreted by BOBP artist S.)ayaraj.

Problems of resource depletion show an alarming increase. Resources management to ensure sustained yields and equitable distribution of benefits in remote, scattered habitats is practically impossible, unless of course the community chooses to do the task by itself. The fisherfolk community additionally has some special attributes – like the mobile and migratory nature of their activity, the division of labour by sex that places extra loads and responsibilities on women, geographic and socio-political isolation, and the competitive open-access nature of the resource. These make participatory development approaches the most efficient way to engineer the kind of fit between project and people that results in success.

Who participates in whose activity?

The more we talk about participatory development, the more one gets the feeling that what is being talked about is the participation of people in the work of the development agency, which of course intends to develop the people concerned. And while this is the usual reality and perhaps the only practical

beginning of development action, there is a certain contradiction that needs to be thought through. Should it not be the other way around? Isn't it development agencies that should be participating in the people's activities?

Given the political, historical and social context of underdevelopment — which often deprives people of their initiative, self-reliance and confidence — the practical approach would be for the concerned agency to seek and enable people's participation. However, like in good teaching, this implies that the agency should consistently try to enable development by people rather than take the "easy" route of "doing" development by itself. There is a need to shift out of the developer-developee hierarchy to a working partnership which would require the agency to hold back on what it believes to be true, scientific and modern, and begin a dialogue that in time will enable the people to come to the same beliefs or to beliefs which blend the agency's reality with that of the people.

Partidpation as negotiation, and legitimizing negotiations

Partnership would mean that development praxis has to evolve out of unilateral action (by the agency) to a process of negotiation. But for negotiation to be real and just, each party to the negotiation should understand and agree to the legitimacy of the other involved parties, as in the case of management and labour in industry. In a negotiation the parties have to be willing to change from their initial positions of understanding and objectives to a negotiated via media.

This raises questions. If a fisherfolk community has the capability to negotiate and commands the respect of the developmental agency, it may well not need developmental aid in the first place. So, at least to begin with, the process will have to begin between "unequal" partners. How do we ensure that the less equal partner gets a fair deal? The obvious lesson from industrial relations is to empower them. But there is another aspect that can also help, and that is education about the negotiation process, training in presentation and negotiation skills and in learning about the subject of discussion, which can enable fisherfolk to make their negotiation with the agency the two-way process that it should be. This is a responsibility that agencies have to shoulder.

Education as a means to legitimize negotiation is not only restricted to the people. There is a need for the agency to be educated too, and ensuring this would be the people's responsibility. Else, education about the negotiation process would be reduced to one of educating the community to agree with the agency! That would be persuasion, not negotiation.

Organizing for participation

By its very nature, participatory development means working with groups and communities; the process is facilitated through formal and informal organizations. There are two aspects to participation that need organization : the more obvious is to facilitate contact, day-to-day work and decision-making; the less obvious and perhaps more important, is empowering the community to get its rights and to hold the agency accountable.

Agencies have to work to deadlines, and for short periods, and this raises the question : what happens when the agency leaves? If the activity has to be self-sustaining and self-perpetuating, then the organization has to have permanence and the ability to sustain the community's participation. This is not easy. Experience suggests that people's organizations in development are often reactive (formed in response to outside forces and needs) and short-lived. Such groups tend to act as advocates and brokers, and collapse when external stimulating factors diminish. Worse, organizations are created on paper with no functional reality.

The existence of organization does not, however, ensure people's participation. Organizations frequently benefit the elite alone, and the fact that several socio-cultural traditions are feudal and authoritarian means that they will oppose democratic and egalitarian approaches. What seems to be important is the way people perceive the organization and its function. Cooperatives that are perceived as statutory channels for government benefits, function differently from those that are perceived as a collective means of overcoming needs. For the agency a key question is, what should it do when there is no organization or when the organization does not fit the needs of the task? Imposing organization on people does not seem to have contributed to effective participation; the dismal record of cooperatives is ample proof of this. Therefore, an alternate approach is to study and learn from the conditions under which authentic forms of organization may meaningfully emerge. The experience of fisherfolk organizations in industralised countries and of traditional management of unregulated fisheries may help identify some factors that help organization to emerge.

An important finding from industrialized nations is that one organization may not be enough. A diversity of organizations is likely — considering the varied, often competing and changing interests in the fisheries sector, and the fact that a fisherman may enter into several alliances for different reasons. The factors that seem to have most often spawned organizations are dissatisfaction over prices received for catches; control over the market mechanism; the need to represent the interests of a particular group in a competitive fishery; and lastly (and not too often) a concern for conserving the resource and to ensure egalitarian access to benefits. This last aspect, is becoming increasingly important — given the rising fisherfolk population and the steadily depleting fishery resource.

Politically and economically, fisherfolk seem to have organized themselves most often to control the resource and the market. Government attempts to organize fishermen have often been unsuccessful, except where they have ratified and legitimized the organization attempts of fisherfolk. In fact some government actions — like heavy subsidy — can be shown to have actually defused and destabilized fisherfolk organizations.

Returning to the key question of an agency enabling organization, given the socio-cultural distance between the agency and the community: the role of NGOs and service organizations, who through solidarity have built up confidence and rapport with fisherfolk, may become increasingly important, and a way for agencies to work fruitfully in a difficult area. There are risks involved, such as the fisherfolk becoming too dependent on the NGO However, given the disorganized state of fisherfolk, their social and geographic seclusion and their lack of political

BOBP'S ONE-YEAR STUDY ON PEOPLE'S PARTICIPATION : ACTIVITIES UNDERTAKEN

Research


— Desk study : Bibliography on PEP


— Study of self-regulatory mechanisms for fisheries management in the ASEAN region


— Study of West Bengal Government's participatory rural development planning effort


— Desk study : Role of fisheries organizations in fisheries management and development in industrialized countries.


— Desk study : Keynote paper on PEP


— Desk study : Defining PEP


— Participatory planning : seaweed culture trials : Ramanathapuram district, Tamil Nadu, India


— Participatory planning for shrimp pen culture trials in Chilaw, Sri Lanka

Appraisals


— Study of BOBP projects in aquaculture, fishing technology and extension


— Study of Change Agents Programme, Ministry of Plan Implementation, Sri Lanka


— Study of Fisheries Social Development Organizations, Ministry of Fisheries, Sri Lanka


— Study of a NORAD project on participatory rural development, Sri Lanka


— Study of DANIDA-CODEC Project on participatory fisherfolk community development, Chittagong, Bangladesh


— Study of experiences with CIRDAP participatory development projects with fisherwomen in Asia.


— Meeting of Indian Fisherfolk NGOs to discuss PEP in fisheries development (Dec. 86)


— Meeting of Sri Lankan Fisherfolk NGOs to discuss PEP in fisheries development (March '87)

entitlement, NGOs may prove to be important in the transition period until real organizations emerge amongst fisherfolk.

Going about participation

After all is said and done and the implication digested, one question remains. How does one do participatory development? It is tempting to come up with a manual of do's and dont's, a cookbook as it were. From the studies and cases read at the consultation, several techniques, methods and strategies surfaced, but even as we came to grips with the concept of participation we realized the danger in such cut and dried approaches. In the end participation is a human act and grows out of beliefs and attitudes — those of the people, and even more important, of the agency. Even as in human relationships, the thing to begin with in participatory development seems to be the clarification and buiding of attitudes and beliefs. And for the agency, the quest has to begin at home. Participation is more than a technique; it is how the technique is put to practice, the feeling that goes into it, the attitudinal stance, because the agency is bearing witness to its beliefs. If there is a difference between what an agency says it believed in and what it does, if there is a difference between what the agency asks people to do and what it does itself, contradictions will surface and work against partnership. There is a need for agencies to reflect honestly on what they want to do, why and how, before allowing a heuristic process to evolve techniques, methods and strategies.

The implications of participation

Development sets out to change people, hopefully for the better, and participation changes the development praxis. It also changes agencies and

their approach to development. Participatory development implies

- that truth is not with the agency alone, but grows out of the blending of modern, scientific, rational knowledge with traditional and indigenous knowledge;
- that deciding directions and objectives grow out of negotiations rather than through unilateral agency decisions;
- that agencies, in order to meet people's needs, have to grow out of their specialities by either diversifying or going into working partnerships with other agencies;
- that agencies have to do less of doing and imposing and more of enabling;
- that agencies will have to demystify the technology and practice of development to enable people to use such knowledge and practice as partners;
- that in empowering communities, the agency faces the consequences of structural socio-political change in the community and in itself;
- that decision-making in a real sense will have to be shared (if not totally expropriated by the community);
- that information (all of it) will have to be shared with the community;
- and that successful development with and through people's participation may eliminate the role of and the need for agencies and development practitioners.

We hope that the people who attended the Bangalore consultation have gone back with more than they brought to it. And that in some small way, theirs directions and their path towards development praxis been illumined. A beginning has been made; the test will be in participation, in practice.

— Rathindra Nath Roy

Sri Lanka fisherfolk NGOs discuss people's participation

Meetings, workshops and consultations generate information and enable participants to meet, get to know each other and to evolve new networks of relationships. But rarely can they be classified as "historic" or .having political significance. One meeting recently held in Colombo, however, can only be described as being historic. Despite the political tension resulting from the ethnic conflict in Sri Lanka, fisherfolk representatives and NGOs from the Tamil-speaking North and East and from the Sinhala communities elsewhere came together, setting aside their differences, to address themselves to the common problems of the small-scale fishery sector and to seek solutions.

The meeting was organized for BOBP by IRED (Development Innovations Networks, a national NGO). It was part of BOBP's one-year learning effort to better understand people's participation in fisherfolk development. What started as a small gathering ended up with representatives of 32 organizations (including 4 groups from Jaffna and Batticaloa and six groups representing fisherwomen interests), government departments and the BOBP.

Held in Colombo in March 1987, the meeting was inaugurated by the Minister of Fisheries, Mr Festus Perera. Discussing the predicament of small fisheries and small-scale fisherfolk, Mr Perera underlined the need for their participation not only in implementing development programs but more importantly in identifying needs and solutions and in planning for them.

He felt that the only way to ensure that the services delivered by government and other agencies are really useful is to involve fisherfolk at every stage of activity and decision-making. Mr Perera said that NGOs could help the newly set up village-level "social development organizations" of fisherfolk to play a useful role. He went further, and made a clear policy statement on the Ministry's desire to work with NGOs and fisherfolk organizations. He announced procedures which would enable him and officials to maintain regular contacts with fisherfolk organizations to share information and to involve them in policy and planning activities.

BOBP had hoped to learn about the experience of the organizations present with participatory development, about the factors that enable participation or hinder it. It had hoped the meeting would come up with some ideas about techniques, methods and strategies that agencies and governments could use to promote people's participation in their development. Fortunately or unfortunately, the participants at the workshop had their own ideas and priorities. One cannot be but participative in a meeting on participation — and the agenda was changed to suit the needs of the participants.

Participants spent most of their time trying to analyse and consolidate their understanding of the predicament of tiTe small fisherfolk of Sri Lanka. The findings were revealing. The analysis showed that traditionally, fisherfolk cOmmunities had managed their own resources with no external intervention. Members of the fisherfolk communities followed an informal system of resource management and benefit-sharing, based on the degree of social and economic differentiation present in the communities. Things were not perfect. problems of equity existed, incomes were low, but there was a certain harmony. With development came external intervention — from national and international agencies interested in raising incomes and in increasing fish production to mkt urban and export needs. And this process, undertaken with little or no consultation with fisherfolk, led in time to resource depletion, environmental damage and resource alienation. These in turn triggered intra-community conflict, resulting in the present state of affairs. This, the participants felt, was the real issue that needed addressing.

So, the problem of fisherfolk participation was raised from the community level to a national level. Participants felt that at the national level, an institutional framework was needed through which all discussions relating to new technology introduction and to resource exploitation and management would be taken up with the close participation of fisherfolk. There would be exchange of knowledge and information between development planners, scientists and bureaucrats on the one hand and fisherfolk on the other.'

The meeting, therefore, focussed on bringing about a partnership between the Ministry of Fisheries and international agencies on the one hand and small fisherfolk communities on the other.

Taking a cue from the Ministry's offer to set up procedures to enable such interaction, the participants decided to form a loose network, with a secretariat, to voice the fisherfolk communities' needs and interests. They elected an action committee to work out the details of such a network. It was toundertake the following.:

1. Exchange of knowledge and information between fisherfolk communities and external agencies.
2. Enabling fisherfolk communities to critically think through their problems, articulate and prioritize them, seek solutions and organize themselves to solve the problems with help (where necessary) from external sources.
3. Enabling just and equitable means of participation and benefit-sharing for the socially and economically weakest groups among the fisherfolk.
4. Transfer of technical options and knowledge to fisherfolk to help them choose appropriate technologies.
5. Consider the role of fisherwomen and increasingly involve them in fishery-related activities including production.
6. Enable training in technical areas for fisherfolk.
7. Sensitize, brief and lobby government officials and politicians to ensure that the interests of fisherfolk are given priority.

The participants did not have the time to discuss the operational means of achieving these tasks or to discuss other important community-related problems such as health care, education, water supply, sanitation, marketing and all those things that go towards improving the quality of life.

Many questions have been raised and much work remains. BOBP hopes that the network will take responsibility for the important tasks it has set itself to address.

Silvi-pisciculture in the Sunderbans

(Continued from page 10)

have been made by the BOBP consultant to improve culture practices and boost yield. These relate mainly to techniques in water management, controlled stocking, harvesting, research to determine the best species/stocking rate combinations, monitoring, equipment, training etc.

Water areas for fish culture are leased out every year to the highest bidder. There is good demand for the water areas, and they command a progressively higher price each year.

"People's participation" is an important component of SPC. As part of this component, a consultant will conduct a socio-economic survey of villages around Saptamukhi. She will investigate current economic activities in the villages and sources of income, the system of social organization, wealth distribution patterns, the role of women and prominent social problems. Mechanisms for involving the people in SPC are to be identified. Youth associations, cooperatives, panchayats and private groups will be studied for this purpose. Marketing channels for SPC projects will be investigated. Major constraints to people's participation will be identified.

Q: *How many jobs will SPC generate?*

The employment aspect of SPC is significant; particularly because the target population in the SPC area has no work in winter. Labour is needed to construct bunds, to plant trees (and later to maintain them), to carry out fish culture. Payment is at the rate of Rs. 12 per man-day. It is estimated that each SPC unit will generate 20,000 man-days of employment. Through SPC several thousand people can obtain jobs and earn incomes.

A view of acacia trees planted in 1984 atop the ridges of a silvi-pisciculture unit. Peepul, neem, tamarind or coconut trees grow in other units.

Q: *Is SPC applicable widely?*

The SPC concept as practised in the Sunderbans can be transferred to other areas in the tropics where disturbed tidelands are encountered. Such disturbances may result from deforestation, intrusion of seawater into coastal farmlands or diversion of fresh water from an estuary — even abandoned shrimp farms!

S.R. Madhu

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