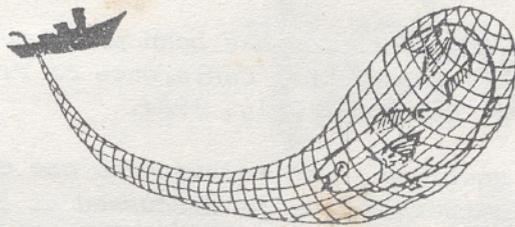


1 impact of national and international fishery^o DEVELOPMENT^o on the fishworkers





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4

INTRODUCTION

This dossier of documentation has been prepared as background material for the International Conference of Fishworkers and Their Supporters, Rome, 4-8 July, 1984.

There are four sections, each relating to one of the issues of concern of fishworkers, to be discussed at the conference:

1. The impact of national and international fisheries development programmes and industrialisation on the working and living conditions of fishworkers.
2. The changing characteristics and the future relevance of the small-scale fisheries sector, which in most developing countries continues to be the backbone of the fish economy.
3. The response of fishermen and women to the negative effects of industrialisation and of fishery development programmes, on their work and livelihood.
4. The degradation of the aquatic eco-system caused by indiscriminate fishing and pollution of seas, lakes and rivers, and its effects on fishworkers and on marine resources.

We are grateful to all those authors who have made their writing and studies available for this purpose. Many of them are closely related to fishworkers and well acquainted with the concerns of traditional fishermen and women in different parts of the world. Some authors could not be contacted, but we expect the use of their writings to highlight the concerns of fishworkers and traditional fisheries, will be in line with the intentions of their articles.

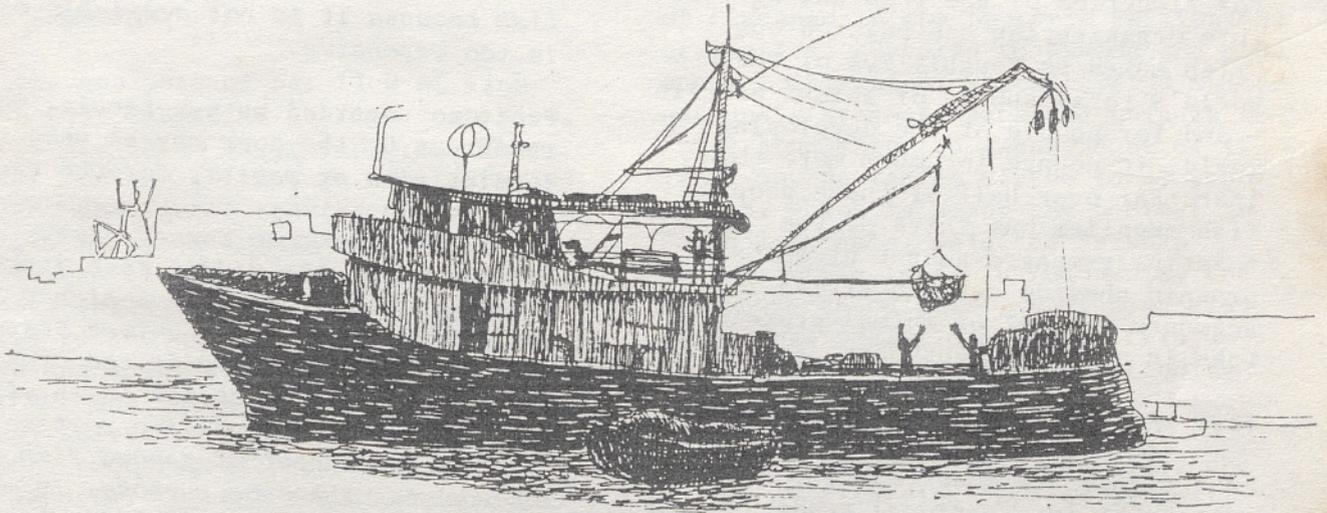
Considering the amount of material, summaries have had to be made in some cases, and many footnotes could not be included. However, for those who need the full article, a copy of the original can be requested from one of the three organisations which gathered the material, by contacting DAGA, 57 Peking Road 5/F, Kowloon, Hong Kong.

The gathering of the material was the collective effort of the Fisheries Research Cell of the PCO (Programme for Community Organisation) in Trivandrum, India; SAM (Sahabat Alam Malaysia - Friends of the Earth) and CAP (Consumer Association of Penang) in Penang, Malaysia; and DAGA (Documentation for Action Groups in Asia) in Hong Kong; the dossier was put together and printed at DAGA, Hong Kong.



fisheries and undernutrition!

GEORGE KENT



PATTERNS OF FISH CONSUMPTION

Frederick W. Bell (1978) observes: "Directly edible fish supply about 5.4 percent of the World's protein or, adjusted for protein quality, as much as 8%". According to another estimate, if milk is excluded, fish accounts for about 26% of people's total animal protein intake. In the words of Bell, "The major consumers are affluent, not developing countries". The developed market economies together use about two and a half times as much fish as the developing market economies - 56% versus 22%. On a per capita basis, people in developed market economies use five and a half times as much fish as people in developing market economies - 33 kilograms versus 6 kilograms. Evidently, the disparity is substantial.

The former Assistant Director General for Fisheries of the Food and Agriculture Organization has pointed out: "Fish makes up roughly 20% of the world's total supply of animal protein - and for people of the developing world, it counts for much more than that. For over half of these people, fish supplies one third of the relatively meagre amount of animal protein they do get. In Africa it accounts for 24% of animal protein intake, in populous South East Asia 55%.

FISH TRADE

Kent (1982) has observed: The basic pattern of international trade in food is that:

- most of the trade is among developed countries
- there is little trade among the less developed countries
- in the trade between two groups, on balance, food tends to flow from the less developed to the more highly developed countries.

The net flow is upward, not downward.

In 1980 developed countries exported 63.6% of the total quantity of fish in international trade, but imported 80.2% thus taking out more than they put in. Developing countries exported 36.4% and imported 19.8% of the total quantity, putting in more than they took out.

Simon (1975) has observed: The United States alone import about twice as much fish, primarily in the form of feed for livestock, as do all the poor countries combined". Bell points out that fish imports rose from less than 20% of the United States catch in the 1950's to

more than forty percent in the 1970's. The share of American fish consumption accounted for by imports would be even larger if the imports of non-edible fishery products were included as well. Products that may be regarded as non-edible when they reach developed countries, and thus relegated to feed, frequently are regarded as edible at the point of origin. A case from Africa illustrates this.

In Senegal...there exists a factory for the production of fish meal...This factory, Sopesine, owned by two French companies...treats 2800 tonnes of sardines each year (fish fit for human consumption) in order to produce...fish meal and oil.

Ninety-five percent of the fish meal is destined for consumption by French livestock...One hundred kilometers from the landing area peasants do not eat fish because it is not available or it is too expensive.

Products regarded as substantial food resources by the poor may be used for feeding pigs or poultry for the rich.

...a cheap Moroccan canned fish, developed for the Middle East Markets, primarily Egypt, brought a higher price when sold to the United States as cat fish. One third of the canned fish of the United States is in effect pet food. An equally large portion of the British output of canned fish is devoted for the same purpose. In most instances this constitutes food which would be very much in demand if offered to the protein-needy and mal-nourished around the globe.

The argument that the product is not suitable for direct human consumption has been used to defend the export of anchoveta from Latin America to Western Europe and Japan to feed pigs and poultry. Actually, the anchoveta technically could be converted to fish protein concentrate for human consumption. Even if livestock feed were the only possible use for those sardines or anchoveta, there would still remain the question of why the feed should be consumed by livestock used by Europeans rather than by Africans or Latin Americans.

The Organisation for Economic Co-operation and Development (OECD) plainly acknowledges the pattern that the main

flow of exported fish and fish products is irrespective of country of origin, towards more advanced and better nourished nations. Thus fish continue to migrate after they are caught. They tend to flow from the more needy to the less needy. To cite a distinct illustration, 56 million pounds of fish were exported from the famine stricken Sahel region of Africa in 1971 alone.

The thesis that the poor feed the rich is not only about international relations. It is about social structures based on the market system wherever they occur. This regular flow of food towards the top, within countries as well as among countries, helps to account for the chronic undernutrition at the bottom.

THE PROBLEMS

In the analysis of net flow of fish from poor countries to rich countries, there are three major concerns. The first concern is that in the fisheries trade, the richer trading partners are likely to get a larger share of benefits than the poorer trading partners. Consequently, the relationship contributes to the widening of the gap between rich and poor, with the poor lagging further and further behind. Devoting local resources to production for export requires increased dependence on imports. The net result can be that apparent gains are dissipated by inflation and by disadvantageous terms of trade. The Philippines appears to be facing this problem. The Philippine Government is currently pursuing a policy of production for export. As a result, most Filipinos have been made to do with a diet of low quality fish as the better kinds are now beyond their means.

The second concern is that the foreign exchange that is earned from the export of fisheries products from poor countries may not be used where it is needed most. The point is well illustrated by a group of Indian fishermen:

To add to our country's misery, the developed world is now making strident demands for our other varieties of fish like sardines, tuna, mackerals and pomfrets which have also been promoted as delicacies in their countries. If this trend continues, the Indian population will have to do without fish, since the foreign buyers are ready to pay ten

times the amount of money a poor Indian could hardly afford. Can we allow our fish, which is our vital food resource, to be exported at the cost of the protein-starved population of our country, even if the principle involved is the highly questionable foreign exchange earnings?

Often there is some compensation for increasing exports by the increasing imports of food. But the foreign exchange earned from the export of food is not devoted to purchasing low cost nutritive foods for the needy, but is diverted for the purchase of luxury foods and other products in demand by local elites.

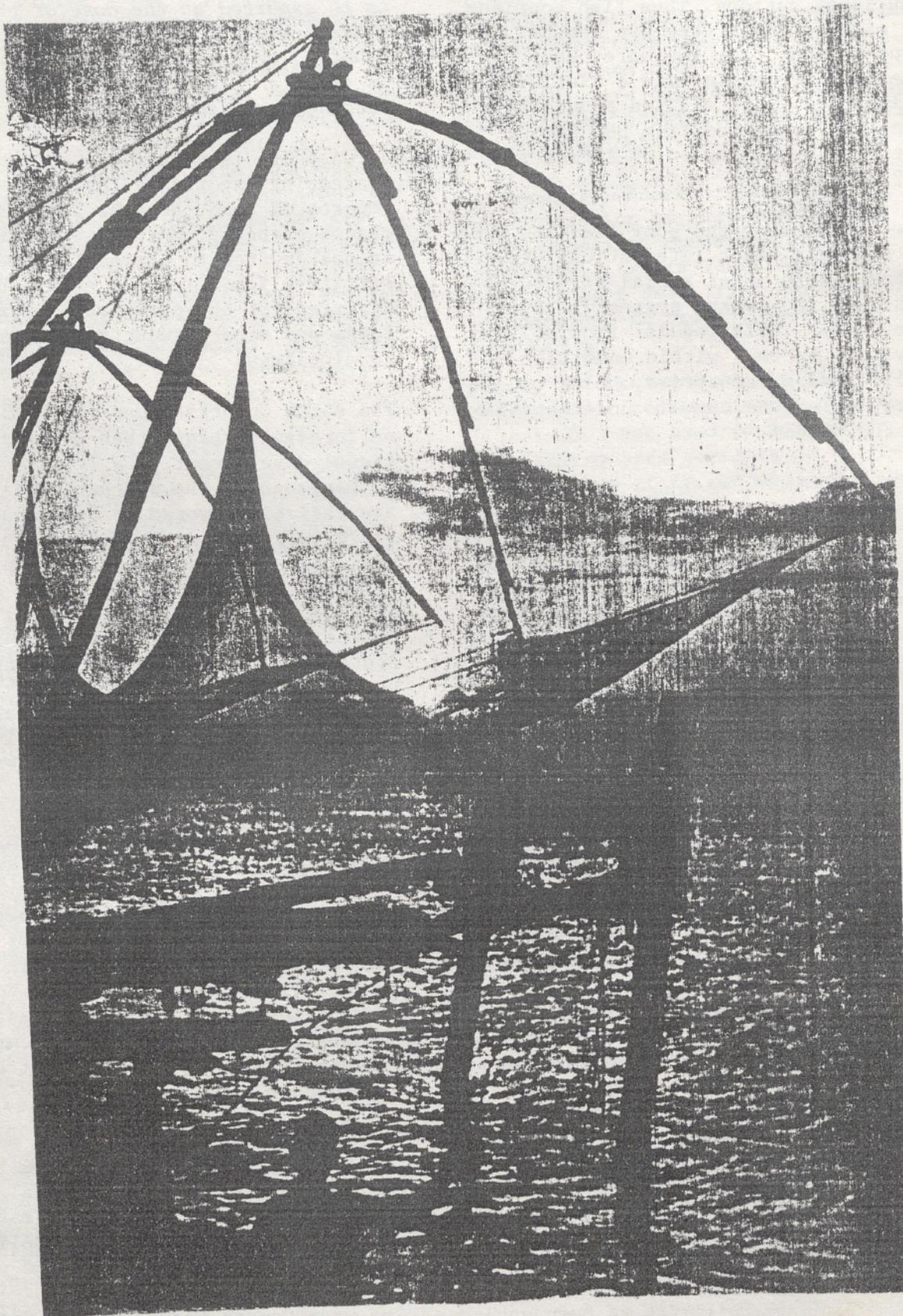
The ASEAN Countries put more emphasis on foreign exchange than local nutritional development. The fertile valleys of Mindanao in the Southern Philippines are entirely devoted to banana and pine apple cultivation, which foreign multinationals process, pack and ship in refrigerated ships to Japan. None of it lands on the tables of the local population, which is among the poorest in South East Asia. Rejected bananas become cattle feed. In Indonesia, the EEC supports cultivation of Soyabeans on a large scale, not for protein deficient Indonesian but for fattening European pigs and poultry.

In many less developed countries, the volume of fisheries imports is small relative to the volume of fisheries exports. It provides for a favourable fisheries trade balance in terms of money, but quite unfavourable in terms of nutritive values. According to Floyd, in many less developed countries, it appears that foreign exchange earnings frequently are not used to meet basic nutritional needs.

The third concern is that in a world in which there are more than 500 million people who are significantly malnourished, it simply does not make sense to export major food supplies away from those who do not have enough.

See what George Borgstrom has commented:

No doubt every one realizes how preposterous it is that the two most protein needy continents, Africa and South America are the main suppliers of the largest quantities of animal protein feed moving in the world trade - and they provide those who already have plenty. The Peruvian catches alone



would suffice to raise the nutritional standard with respect to protein for the undernourished on the entire South American continent to southern European level. The amount of protein extracted (1966-68) exceeds by one half the meat protein produced in South America and is three times the milk protein raised. The corresponding fish meal coming from Africa would be enough to reduce by at least 50% the present protein shortage of that continent.

The Chief of the Nutrition Planning, Assessment and Evaluation Service of the FAO has observed that:

..there is a disturbing trend in fish consumption. Increases in fish production have gone primarily to those countries that could afford to pay. The average per capita consumption in developing market economies has increased but only by 600 g since 1960, while in Eastern Europe and the USSR per capita consumption rose about 12 kg and in other developed countries by 3.5 kg. This trend is alarming, because it indicates the potential danger that an increasing share of world catch will be siphoned off to the higher purchasing power in developed areas and by the centrally planned economies, leaving less fish where it is much needed in the developing regions...

Brazil, Chile, Ecuador, India, Mauritania, Morocco, Peru, Senegal and Thailand, although suffering from serious under-nutrition, are net exporters of fish. In Thailand, Malaysia and the Philippines, sea food exports have expanded sharply while at the same time local consumption of fish has declined. In Malaysia, the quantity of fish available per person in 1975 was 30% lower than the 1967 level, despite the fact that the total catch increased substantially. Most of the increases in production has been exported. Commenting upon the situation in Thailand, Ho Kwon Ping (1980) has pointed out:

In 1972 the total fish catch in Thailand was 1.55 million tons. It fell slightly in the next few years and returned to 1.6 million tons by 1977. Yet seafood exports boomed, though the local catch had barely changed in five years and the population had grown.

Export agri-business in South-East Asia has grown by leaps and bounds to satisfy

the affluent world's almost insatiable appetite for luxury foods, "so that in effect Asia is becoming a vegetable plot and fish pond for the developed world." (Ho Kwon Ping)

REMEDIES

One remedy would be to strengthen the institutional linkages between agencies responsible for health and nutrition and agencies responsible for fisheries management, and to produce food items particularly suited for populations most vulnerable to malnutrition. Fish protein concentrate, for example, has good potential. Other more specialized products may be adopted or developed in particular circumstances. In Papua New Guinea, for example, the preparation of *Solpis*, a dried and packaged fish product transported inland for the benefit of people living in the highlands, has been very successful.

International agencies concerned with fisheries development should give more attention to the potentials of fisheries for addressing problems of under-nutrition. In supporting fisheries development projects, one of the Asian Development Bank's principal aims is "to increase the availability of fish and fish products for domestic consumption." But providing fish for general consumption is quite different from responding, to the particular problems of those who are seriously under-nourished.

Although it may not guarantee that supplies go to those most in need, increasing food self-reliance at the regional, national and community levels can be very helpful. Increasingly, emphasis should be placed on local production for local consumption. Trading loops should be shortened so that fisheries become more responsive to local rather than alien interests. To the extent that they promote trade among less developed countries, INFO-PESCA and INFOFISH recently created by the FAO to promote fisheries trade, could be very helpful. Similarly, programs of Technical Cooperation between Developing Countries (TCDC) such as the Bay of Bengal Program, deserve support.

Increasing self-reliance among developed countries would help as well. Rich countries could help poor coun-

tries to become more self-reliant by increasing their own food self-reliance ...That is, by reducing the amount of food they import.

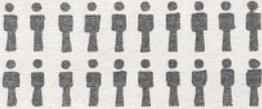
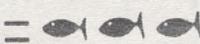
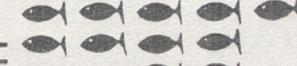
The export orientation of local fisheries can be reduced through the imposition of export taxes. Troadic (1981) explains an unusual form of taxation undertaken in Maldives on Skipjack tuna, most of which is exported:

The government handles the marketing. By applying the official rate in local money at the time of purchase, the government only pays the fishermen in cash about half the actual export price. It is thus able to directly take the added value which is then used to subsidize the importation of products of prime necessity (cereals, baby food, marine engines etc.). This is done by applying in the other direction the official rate of local currency in calculating the local selling price of imported products.

The outflow of fish can also be limited in other ways. In Malaysia, in order to increase supplies to local consumers, trucks have been required to unload 10% of their load in Johore before going on to Singapore. Import duties can be used to reduce the inflow of fish from outside. For example: instead of continuing to import large quantities of canned mackerel from Japan, Papua New Guinea could place duties on imports and support the creation of its own domestic mackerel processing industry, based on the ample stocks found off its own shores. It might be wise to expand the domestic fish supply in a form that is highly independent of the vagaries of outside markets and outside forces. The industry might be used to create jobs in production, processing and marketing.

In designing any enterprise to produce food for the poor, one must be willing to forgo the maximisation of profit and instead optimise, taking into account other values like basic nutritional needs as well.

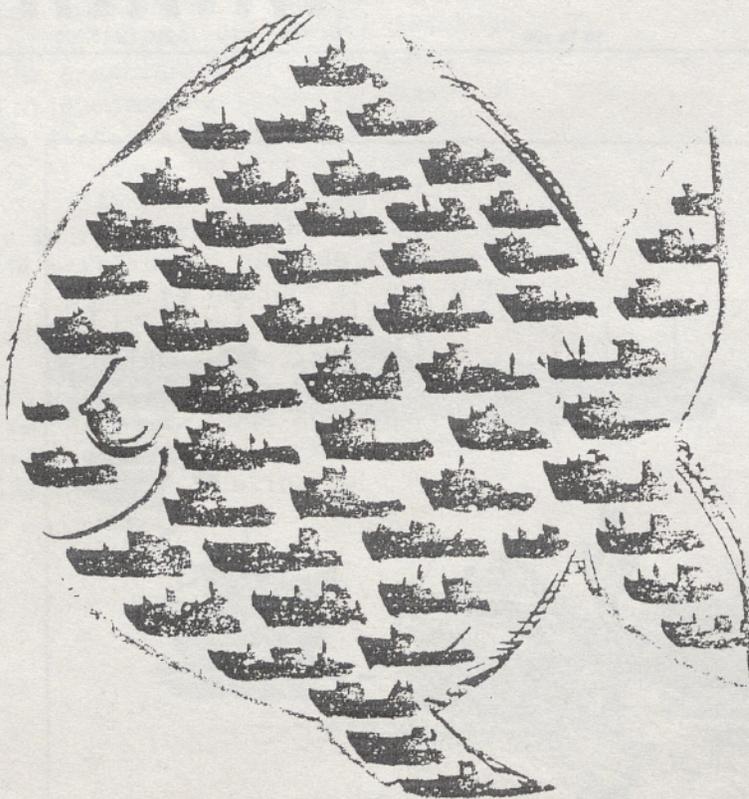
THE WORLD'S TWO MARINE FISHING INDUSTRIES - HOW THEY COMPARE

	LARGE SCALE COMPANY-OWNED 	SMALL SCALE ARTISANAL 
Number of fishermen employed	 AROUND 450,000	 OVER 8,000,000
Marine fish caught for human consumption	 AROUND 24 MILLION TONS ANNUALLY	 AROUND 20 MILLION TONS ANNUALLY
Capital cost of each job on fishing vessels	 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ 10,000 To \$ 100,000	 \$ \$ 100 To \$ 1,000
Marine fish caught for industrial reduction to meal and oil, etc.	  AROUND 19 MILLION TONS ANNUALLY	 ALMOST NONE
Fuel oil consumption	 10 To 14 MILLION TONS ANNUALLY	 1 To 2 MILLION TONS ANNUALLY
Fish caught per ton of fuel consumed	 =  2 To 5 TONS	 =  10 To 20 TONS
Fishermen employed for each \$ 1 million invested in fishing vessels	 10 To 100	 1,000 To 10,000



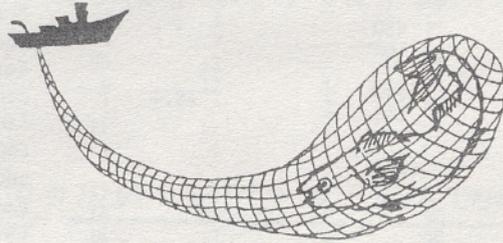
Entry of **BIG** Business into fishing

its impact on fish economy
JOHN KURIEN



The current involvement of Indian and foreign big business in Indian fishing is in fact the logical extension of trends that were set in motion in the fish economy about three decades ago, with their emphasis on modernisation and capital intensive technology. To understand the full implications of this involvement, one has to consider the evolution of the fish economy as a whole.

The present article attempts this task. Part I presents the characteristics of the aquatic terrain and the potential and exploited marine resources of India's Exclusive Economic Zone; Part II attempts a brief review of the fish economy; and Part III highlights the crucial issues which confront Indian deep-sea fishing interests and their impact on the whole fish economy.



THE current involvement of big business in fishing is basically the logical extension of trends that set in motion into the fish economy about three decades ago with emphasis on modernisation and the introduction of capital intensive technology. This was greatly facilitated by the existence of plentiful resources and a rapidly expanding market. However, with proclamation of a 200-mile Exclusive Economic Zone (EEZ),¹ which spurred off a debate on the future trend in fisheries development, a new twist is being given to the entry of big business interests to exploit our newly acquired deep-sea resources. The argument has been that the involvement of big business is an inevitable step taken only to ensure that the extension of our fishing rights will not bring a fall in world fish output because of our present inability to exploit the resources for want of capital and technology. To this debate a 'humanistic' overtone has lately been added by viewing with concern the multi-faceted impact of this 'new' phase on those traditionally involved in fishery-related activities. The consensus seems to be that while traditional fishermen be safeguarded, our commitment to the global community must be honoured.

To understand the implication of the entry of big business in fishing in terms of the concrete reality, one has to take an overview of the evolution of the fish economy as a whole. At the same time it is necessary to examine and be informed of some characteristics of the aquatic terrain and the potential and the exploited marine resources of India's Exclusive Economic Zone.

The present article discusses the problem in three parts. In Part I the characteristics of the aquatic terrain and the potential and exploited marine

resources of India's EEZ are examined and in Part II a brief review of the evolution of the fish economy is presented. Part III is an attempt to highlight the crucial issues which confront India: deep-sea fishing interests and their impact on the whole fish economy.

I

Marine Resources of India's EEZ

Contrary to the layman's understanding, fish are not all there in one biomass to be hauled in with a fishermen's net. The ocean contains several hundreds of species — over 25,000 species of marine fishes have been identified — each with its own particular characteristics and locations. In the aquatic terrain, at a certain depth, during a particular time of the year, given certain oceanographic factors, and using a specific type of fishing gear results in the catching of a particular species of fish.

Though the ocean seems an endless expanse of bountiful resources over 90 per cent of the marine life is concentrated in the 10 per cent of waters above the continental shelf — the seabed and subsoil of the sub-marine area adjacent to the coast and extending to a depth of 200 metres. This shelf skirts the earth's landmass generally from the coastline to a depth range of about 200 metres. The reasons for this concentration of resources are many: the most important being that sunlight penetrates more easily in these waters giving rise to a greater degree of photosynthesis among the microscopic aquatic plants. This leads to much faster multiplication of their mass which in turn lure shoals of fish to feed on them. These plants thrive best in cold waters and regions of turbulence and upwelling where the deep currents result in an upward

movement of rich organic nutrients from the ocean floor. The concentration of the world's largest stocks of fish are therefore in the temperate waters off the west coast of North and South America, and the North Atlantic Ocean. In these temperate waters there are in general lesser number of species but they are available in teeming millions. The tropical waters of the Indian Ocean on the other hand are known for their numerous species but each is available only in far smaller quantities.

Generally in the oceans there are much greater stocks — both in number and weight — of the smaller sizes of fish than of the larger sizes. Also, the smaller fishes are always closer to the shore and the larger fishes farther away. The smaller fishes feed on the microscopic plant and animal life in the coastal waters and the larger fish in turn feed on the smaller fish. There are much more sardines and anchovies than there are perches and tuna.

The nutritional value of animal protein from all fish flesh is approximately the same whether it is the sardine sold in the rural markets at fifty paise a kilo or the large bluefin tuna that fetches over four dollars a kilo in Tokyo. The difference between the two relates only to taste, texture and fragrance which in any case are again conditioned by several other factors — economic, social and cultural.

Taking world aggregates the smaller species of fish found in abundance in the temperate waters are converted to fish-meal for fattening the hogs, and chicken which form a major part of the animal food intake of US and European consumers. In the countries bordering the tropical waters of the Indian Ocean these smaller species are the low priced fishes consumed directly by the rural masses and form the base

TABLE 1 : DISTRIBUTION OF POTENTIAL MARINE RESOURCES AND DISTANCE TO CONTINENTAL SHELF EDGE

Region/Depth Zone	Area as Per Cent of Total Area of Indian EEZ	Potential Yield ('000 tonnes)	Average Distance to Edge of Continental Shelf (kms)
<i>NWCR</i>			
0-50mt	4.5	540	120.4
50-200mt	5.6	340	
<i>SWCR</i>			
0-50mt	1.2	680	83.1
50-200mt	2.6	810*	
<i>LECR</i>			
0-50mt	2.0	480	37.5
50-200mt	2.4	360**	
<i>UECR</i>			
0-50mt	1.3	540	68.4
50-200mt	1.0	200	
<i>Total (EEZ)</i>			
0-50mt	9.0	2260**	
50-200mt	11.6	1710	
200mt +	79.4	500	

* Includes potential of Lakshadweep

** Includes potential of Andamans

Source : Columns 2 and 4 : Compiled from data given in *Report of the National Commission on Agriculture*, Part VIII-Fisheries, 1976, Ministry of Agriculture and Irrigation, New Delhi.

Column 3 : P C George, B T Antony Raja, and K C George : "Fishery Resources of the Indian Economic Zone", *Souvenir*, issued on the Occasion of the Silver Jubilee Celebrations of the Integrated Fisheries Project, Cochin, October, 1977.

of the animal protein intake in their diet. Additionally the larger species of fish found in the deeper temperate waters are exploited by the industrialised countries to provide the table fish for their consumers. On the other hand the deep-sea resources off coasts of developing countries, in general remain unexploited for want of adequate technology and capital resources in these countries.

The importance of the Indian Ocean resources and the resources of India's EEZ must be seen in this perspective.

INDIAN OCEAN RESOURCES

The Indian Ocean covers an expanse of 74.917 million sq km² and has a potential yield (annual sustainable yield) of 14.39 million tonnes from which at present as little as 2.88 million tonnes (20 per cent) is being exploited.³

On the basis of the 1975 catch, the Indian Ocean yields only 50 kg per sq km whereas the yield from the Atlantic Ocean is 235 kg and the Pacific 170 kg. If only the area above the continental shelf is considered the yield rates from the three oceans are 1.1, 3.0 and 3.6 tonnes respectively.⁴

The primary reason for the under-exploitation of fishery resources of the Indian Ocean was the lack of the development of the capital intensive, high technology fishing fleets by the countries bordering

it. The reason for the distant water fishing fleet of the developed countries not exploiting this area related to the absence of two important features that are considered crucial for viable fishing ventures. First, the Indian Ocean is at a considerable distance away from most of the developed countries that have the distant water fleet. Additionally there was a lack of good fishing harbours where refuelling, unloading of fish and loading of supplies could take place. These acted as disincentives considering the high fuel costs that would be involved in travelling to and from the fishing grounds. Secondly, the economics of distant water fishing operations necessitates that the fish species to be caught be available in large quantities and at the same time enjoy consumer preferences. Both these conditions are simultaneously satisfied only with regard to a few species of the tropical waters of the Indian Ocean and thus acted as added deterrents to entry.

In the changed situation of fast depleting resources in their habitual fishing grounds and the great curb in the 'open sea' area, consequent to the extension of fishing rights to the 200-mile limits,⁵ several countries are now moving to undertake 'joint ventures' or what the socialist countries euphemistically call 'co-operative fishing', with the developing countries of the Indian Ocean Region.⁶

INDIAN EXCLUSIVE ECONOMIC ZONE

The Indian EEZ, which is wholly in the Indian Ocean, has an area of 2.02 million sq km or about 2.8 per cent of the surface area of the Indian Ocean. It is however important to note that 31 per cent or 4.47 million tonnes of the potential yield of the Indian Ocean is in the area.⁷

The Indian EEZ can be further subdivided into four regions. They are: North-West Coast Region (NWCR) comprising Gujarat and Maharashtra; South-West Coast Region (SWCR) comprising Goa, Karnataka and Kerala; Lower-East Coast Region (LECR) comprising Tamil Nadu, Pondicherry and Andhra Pradesh and the Upper-East Coast Region (UECR) comprising Orissa and West Bengal.

The waters over the continental shelf of the Indian EEZ account for 20.6 per cent of the total area of the EEZ. The continental shelf area may be classified into two depth zones. From the coastline to a depth of 50 metres we may, for our purpose here, refer to as the 'in-shore zone' and the depth of 50 to 200 metres as the 'deep-sea zones'.⁸ The in-shore zone accounts for only 9 per cent of the area of the EEZ and the deep-sea zone for 11.6 per cent.

Of the total potential of 4.47 million tonnes, as much as 2.26 million tonnes or 50.6 per cent is in the in-shore zone; 1.71 million tonnes or 38.3 per cent is in the deep-sea zone and only 0.50 million tonnes or 11.2 per cent is in the depth beyond 200 metres which incidentally accounts for 79.4 per cent of the area of the EEZ.⁹

Accessibility to resources varies from region to region in the EEZ. Primarily it would depend on two factors: the distribution of resources over the depth zones across regions, and the distance to the edge of the continental shelf from the coastline of each region (Table 1).

Table 2 gives a region-wise and detailed species-wise break-up of the current state of exploitation of the resources of the Indian EEZ. Considering that we do not have any deep sea fishing operations of significance it is reasonable to assume that fishing is restricted well within the in-shore zone and that the whole of the resources between the 50-200 metre depth — the deep-sea zone — presently lies totally unexploited by our efforts.¹⁰ The most revealing feature of Table 2 is the very high level of exploitation of all the species groups in the three regions

TABLE 2 CURRENT ANNUAL YIELD OF INDIAN EXCLUSIVE ECONOMIC ZONE
(Average 1972-76) (in '000 tonnes)

Species Group/Region	NWCR	SWCR	LECR	UECR	Total Species
Exportable Species ²	31 (88.6)	86 (95.6)	29 (72.5)	2 (2.9)	148 (63.4)
Penaeid prawns	28	80	16	2	126
Other Crustaceans ³	2	4	11	—	17
Cephalopods ⁴	1	2	2	—	5
Tuna and allied fishes					
High-priced Species ⁵	113 (87.0)	89 (60.0)	56 (72.7)	5 (4.3)	263 (55.6)
Tuna and allied fishes ⁶	1	8	2	—	11
Perches	3	7	7	—	17
Mackerel	3	53	12	—	68
Seer fish	5	6	12	1	24
Non-Penaeid prawns	78	1	3	2	84
Carangids	3	11	12	—	26
Pomfrets	20	3	8	2	33
Low-priced Species ⁷	270 (72.0)	337 (73.3)	266 (73.9)	26 (7.3)	922*(59.4)
Elasmobranchs	17	14	28	1	60
Catfish	11	18	17	2	48
Bombay Duck	101	—	1	3	105
Polynemids	7	—	3	—	10
Sciaenids	36	14	17	3	70
Leiognathids	1	12	34	1	48
Oil Sardines	2	131	1	—	134
Other Sardines	2	34	50	1	87
Anchovies	1	17	19	—	37
Other Clupeoids	40	6	32	7	85
Ribbon Fishes	12	20	24	1	57
Other Fishes	40	71	40	7	181*
Total (Region)	414 (76.7)	512 (75.3)	351 (73.1)	33 (6.1)	1333*(59.0)

*Includes catch of Lacadives and Andamans

Note Figures in brackets are the exploited quantity as a percentage of the potential yield of each species group in each region/total EEZ.

Source P C George, B T Antony Raja, K C George, *op cit*

(1) Only from the 0-50 mt depth zone.

(2) Classification only of species which are presently exported or have potential for export in their whole form.

(3) Only lobsters in this group are exported.

(4) Only cuttle-fish in this group are exported.

(5) Based on peripheral market and shore price data which may vary from state to state. In general however the classification is valid for the whole country.

(6) Tuna found in shallower waters are not exported because of its reddish brown flesh and pungent taste.

(7) See 5.

NWCR, SWCR, and LECR which together account for 97.5 per cent of the total current yield of the country.⁴ This was achieved by the operation of a large number of rudimentary non-mechanised craft and supplemented by a small fleet of mechanised boats. Boats were manned by traditional fishermen. This speaks very well for the effectiveness with which they have exploited the resources.¹² They certainly have served the needs of the country very well on several counts — cheap protein, valuable foreign exchange, and relevant employment opportunities.

Table 3 shows that the unexploited potential yield of the Indian EEZ is of the order of 3.14 million tonnes. Of this 0.93 million tonnes or 29.6 per cent is in the in-shore zone; 1.71 million tonnes or 54.4 per cent is in the deep-sea zone; and 0.5 million

tonnes or 16.0 per cent in the oceanic waters beyond the 200 metre depth line. The regional distribution of these unexploited resources, with special reference to the distribution of what have been categorised as the 'exportable species', will to a great extent determine the pattern and the concentration of the deep sea fishing activities in the Indian EEZ in the coming future.

II

Evolution of Fish Economy

Let us now briefly review the historical evolution of the fish economy. This is being undertaken, in spite of the limitations of such an exercise, for two reasons. First, it will portray the process and the conditions under which — and in spite of which — the persons presently engaged in fishing were able to achieve such high levels of exploita-

tion of resources. Secondly, it will help to highlight the sequence of trends which led to the development of 'new' interests in fishing, expose and examine their motivation, providing an insight into the manner in which the remaining untapped resources will be exploited.

The fish economy of the country consists of participants engaged in the activities of production (catching), marketing and consumption of fish. It is presently made up of two sectors, traditional and modern, each consisting of the three activities.

The traditional sector forms the base of the economy. It consists now of well over half a million fishermen using over a lakh of different types of non-mechanised craft. They are spatially dispersed over 1800 fishing villages along the coastline and account for about 70 per cent of the total marine fish catch of the country. The bulk of this is distributed by an equally large number of small distributors who carry fish on their heads or on cycles to a predominantly rural clientele. The sector is really the consequence of gradual evolution and innovation of individuals confronted with the sole option of making a living from fish.

The modern sector has a relatively shorter history. It became prominent only in the post-Independence period of development planning. The producers of this sector are also by and large traditional fishermen numbering about 65 to 70 thousand and operating around 11 to 12 thousand small mechanised boats which contribute a little over a quarter of the total marine fish catch. Much of the landings, restricted to about 250 centres, are initially handled by big merchants who transport it by road and railway to distant inland urban centres. It is consumed there by the upper and middle income consumers.¹³

A third sector, which we term as the ultra-modern sector is now in the making with the emerging trends.

TRADITIONAL SECTOR

The traditional fishermen of our country, residing on the fringes of the 5,650 km of our coastline, belong to communities which have for centuries been involved in this caste-based activity. Over the centuries they have evolved their own craft and gear and fishing techniques which were best suited for their local conditions. Their greatest asset is the accumulated knowledge about fish, fish habits,

TABLE 3 : UNEXPLOITED POTENTIAL YIELD OF INDIAN EXCLUSIVE ECONOMIC ZONE

(in '000 tonnes)

Region and Depth Zone	NWCR		SWCR		LECR		UECR		Total (Species)			
	0-50mt	50-200mt	0-50mt	50-200mt	0-50mt	50-200mt	0-50mt	50-200mt	0-50mt	50-200mt	200mt**	Total
Species Group												
Exportable Species	4	30	4	150*	12	125**	68	75	88	380		
Penaeid Prawns	2	—	OF	15	OF	5	28	5	30	25		
Other Crustaceans	2	—	1	5	9	—	—	5	12	10		
Cephalopods	—	30	3	30	3	15	40	60	46	135		
Tuna and Allied Fishes	—	10	—	100	—	105	—	5	—	220		
High-Priced Species***	17	100	61	180	24	75	110	25	212	380		
Low-Priced Species***	105	210	103	480*	94	160**	329	100	631	950		
Total (Regions)	126	340	168	810	130	360	507	200	931	1710	500	3141
	(13.5)	(19.8)	(18.0)	(47.4)	(14.0)	(21.1)	(54.5)	(11.7)				

* Unexploited potential of Lakshadweep included

** Unexploited potential of Andamans included

*** For details of species included see Table 2

Note: Figures in brackets give the unexploited quantity as a percentage of the total unexploited quantity of that depth zone
 Source: Same as Table 2

waves, currents and stars handed down from generation to generation.

The labour intensity of their technology and the space limitations on their craft restricted their operations to the shallower waters nearer the coast which abound in large quantities of the smaller species of fish. Though fishing is a sort of perpetual harvesting operation, the low productivity of the traditional techniques prevented any rapid depletion of the resources. Yet, even at very low levels of productivity — because of the perishability and the fact that it formed only a small portion of the producers' consumption — there were large surpluses available for disposal and trade. The increasing demand from communities outside the fishing villages provided an outlet for these surpluses to be bartered or traded. The initial trade activities were taken up by the wives of fishermen and subsequently men from other communities who did not consider fish trade a taboo also got involved. The perishability of fish posed the main limitation to the expansion of this trade.

Preservation techniques like salting and drying which increased the shelf-life of fish partially tackled the problem of perishability. This further expanded the potential for disposals of larger surpluses. The production and use of ice revolutionised trade potentials further and as a consequence there was a greater proliferation of activities related to on-the-beach transactions: icing; packing and transportation; bulk disposals at inland centre; and so forth.

These developments provided opportunities for a larger number of people to make a living out of activities allied to fishing. Since not many from among the actual producers came up-to tap these opportunities 'gap

developed between the production and consumption stage and these were filled up by outsiders. They initially entered as agents, functioning as 'buffers' between producers and traders/small distributors, and between big traders and small distributors. Generally they began to perform the role of financiers, especially to producers to whom they would advance money for making craft or gear or for consumption. To avail of this, producers had to pledge to sell their fish only through the mediation of the financier. In this manner some of them extended their influence into the realm of production while others established a firm footing in the marketing activities. Progressively this new class of middlemen-agents began to exercise a degree of monopsonistic power proportionate to the extent of integration, control and manipulation they were able to wield. This concentration of power also meant gyration of surpluses to their fold with the result that practically all further expansion in productive activities depended considerably on them and the 'sharks' share' of benefits would also accrue to them.

Prior to the expansion of trade the consumers of the traditional sector were those in the immediate hinterland of the fishing villages and much of the transaction was barter exchange. The improvement of preservation techniques resulted in an extension of the market and also a greater degree of monetisation. Purely in terms of numbers the clientele was basically rural or of the lower income groups in the numerous coastal trading centres.¹⁴ For this segment of the population fish gradually became an important animal food and a crucial protein intake. The large collective demand emanating from

the rural areas encouraged the continued growth of the traditional form of production which in turn spurred the activity of the small distributors and assured the supply of fish at low and accessible prices to the small consumer.

This mass, rural-based sector of a large number of producers, distributors and consumers is what we refer to as the traditional sector of the fish economy.

The producers were confined to pre-capitalistic production relations, used labour intensive technologies that were of low productivity yet yielded proportionately large surpluses. The large number of small distributors undertook trade for subsistence and catered effectively to the widely dispersed and growing segment of low income consumers. These were the main participants of the sector but the control was with the finance capitalists who were gradually gaining a crucial and vicious foothold into the production and marketing activities.

MODERN SECTOR

The early post-Independence period saw the faster development of industry, trade and commerce in the urban areas accompanied by a greater movement of the population to these centres. Improvement of roads and railway facilities made these centres more easily accessible and this opened up new avenues for disposal of fish at much higher prices considering the greater demand. The up and coming class of well entrenched finance capitalists seized the opportunities to divert the surplus production of fish in their control to these new portals of demand making full use of the new facilities.

Simultaneously, planned fisheries development was taken up for implementation in a big way by several state governments. In the eyes of the planners the problem of the traditional fishermen was one of low productivity leading to poverty. The penance for poverty was to increase production and productivity. Concretely it meant a graduation from the old, traditional crafts to the modern mechanised crafts used successfully in the industrialised countries like Britain, Norway and so on.

The finance capitalists backed the moves for mechanisation of fishing boats. They infiltrated the new state-encouraged primary fishermen's co-operatives in an attempt to corner the sizeable number of mechanised boats issued through them to the fishermen. With the extent of control they already had over the fishermen, this was a matter of ease and where attempted spelled great success.

Fishing with mechanised boats and nylon nets yielded very substantial increases in production and productivity and spurred out the beginning of bulk movements of the larger species of fishes to the urban centres. The mechanised boats not only resulted in increased productivity but also in a whole new realm of costs — of diesel, engine oil, repairs — unknown to the operators of non-mechanised craft. All this meant more financial requirements and made the fishermen who operated the boats more vulnerable to the overtures of the increasing number of financiers who were willing to advance money to tide over expenses of oil, fuel and repairs in return for the right to sell the fish caught on the boat.

The increased volume of catches also resulted in small fish distributors being easily edged out due to their lack of funds and control on the producers. They had either to move out of the trade or purchase fish from the many financiers, who were also becoming large merchants, on very unfavourable terms.

In this manner the traditional sector of producers as well as the new class of fishermen on the mechanised boats — who continued to be predominantly from the fishing communities — got integrated into the larger network of marketing channels. This network now extended across states linking the hitherto peripheral villages to more distant inland urban centres. The rural consumers in the immediate hinterland and

within cycling distance (a new mode of transportation taken up by the distributors) still formed the consumer base and accounted for the bulk of the consumption both in terms of volume and value. But the urban consumers provided the impetus for expansion of trade. The network of movement of fish from surplus landing points to big demand centres obscured the rapidly emerging exploitative links between the vested interests at the two ends of the trade circuit. The producers, still faced with a buyers' market, received no significant returns for increased productivity; the consumers in a sellers' market had to bargain hard over the soaring final prices in spite of persistent poor quality of fish, decaying for want of sufficient ice and proper care in handling and transportation.

With the emphasis on 'modernisation' of the fish economy a whole new infrastructure of research, development and training institutions in the field of fisheries was set up in important fishery centres all over the country to cater to and spearhead the programmes for large-scale development of the fishing industry along the lines of the industrialised countries. International collaboration and advice from such international organisations as FAO was sought for much of this activity and some concrete country-to-country development projects were arranged.

Take the case of Kerala where the Norwegians were at work on a project for 'integrated fisheries development'.¹⁵ They ruled out the possibility of an intermediate form of technology to mechanise the traditional canoes or *catamarans* and instead introduced the new Pablo mechanised boats. They also set up a Sales Organisation with the intention of developing a network to handle the processing and marketing of fish. Thus, technology then prevalent in Norway and forms of organisation suited there were transplanted to the calm and quiet fishing village accustomed to its traditional and deeply rooted system of operations. The Sales Organisation failed before too long. Its own internal structure and economies made the fish that moved through it too costly for the consumers around the area. Later, even concentrating on the upper-income strata of one urban centre did not provide a sufficiently large turnover. The local interests of the middlemen and the big merchants also scuttled its functioning by out-buying the Sales Organisation when the catches were low and with-

drawing from the shore when there was a bumper catch. A quick succession of such situations and total chaos prevailed.

Along with the catches of the mechanised boats came small quantities of prawn — a crustacea that does not have much of an internal market but which has a demand in the dried form in Sri Lanka and Burma. Resource surveys showed that the region off the Kerala coast had a plentiful resource of these crustacea. The Norwegians saw that the introduction of freezing technology and the diversion of the prawns in the frozen form to the US where the demand for it was picking up would be the solution to their knotty problems. With one stroke they had discovered the way to avoid the self-defeating internal logic of a costly technology superimposed on poor consumers and also the path to avoid conflict with the vested interests.

Bottom trawl nets¹⁶ were introduced, freezing plants were set up, trade contacts were established in the US and the prawn rush was on.

A whole new vista was opened. In the early sixties fisheries suddenly became a sector with enormous export potential in a situation when foreign exchange was a crucial need. All and sundry who ventured to take the risks of entrepreneurship were encouraged. Persons who would otherwise have shunned any association with fish or fishermen found a new respectability in prawns.

On the one hand the fish economy was breaking open to a new set of forces and interests. An otherwise seemingly stagnant economy was soon well within the tentacles of the world capitalist market forces. On the other hand, the semi-feudal relations deepened in the traditional and modern sectors of production. For the traditional fishermen using the non-mechanised craft, prawns was not a new species in their catch. They caught it in its season, may be never ate it themselves and in times of bulk landings even disposed it of as manure for coastal coconut plantations. For them this overnight transition of an inedible species into their 'gold' was beyond comprehension.¹⁷ They had the capacity to catch more of it and were even happy to accept the liberal cash advances given to them during the off-season for the mere pledge to sell their prawn catch to the same merchant/middleman. In fact until the late sixties this class of producers contributed over three-quarters of the catch of prawns¹⁸ which

finally found their way to the luxury hotels of the US and the wedding ceremonies of wealthy Japanese. In this manner the traditional fishermen were linked to the world market through a hierarchy of middlemen culminating in India with the *nouveau riche* merchant capitalist owners of freezing plants and insulated vans. They in turn exported the frozen prawn to a trade agency in the importing country which distributed it through the chain of department stores and frozen food retail outlets to an ultra-modern consumer in the developed industrial countries of the world.

EMERGING ULTRA-MODERN SECTOR

The involvement of the industrial capitalists — big business houses and the multinational corporations — in the fisheries sector came at this stage in the history of the evolution of the fish economy.

The big houses initially entered the fisheries sector and more particularly the marine export trade to fulfil their export obligations as export houses and later as a result of their acquiring import licences in terms of the Import Trade Control Policy. Under this policy an export house was required to export non-traditional goods (of which canned and frozen fish was one) the f o b value of which was to be equal to four times the value of the licence.¹⁹

To achieve this some of them initially acted as merchant capitalists buying products from processors and exporting it under their own brand name.²⁰ Some others went a step further to give a few financial doles to 'enterprising young men and institutions' to buy their own fishing boats and start fish processing firms. The understanding was that the exportable species would be sold to the business house. The big houses which succeeded in this used these 'encouragements' to boost their social responsibility-image, with tall claims of having provided employment and assisted unemployed graduates and so forth. Several big houses also gradually invested in their own productive facilities (often because the earlier methods were opposed by the merchant capitalists who controlled the marine export trade at that time) and set about seriously to undertaking fishing, marine food processing and export as part of their diversification strategy from their respective monopolies in batteries, biscuits, cigarettes, tea and other products.

The basic features of this ultra-

modern sector in the making were the very high degree of technological sophistication and the great dependence on commercial energy. The circuit of economic activity was high investment, high cost, high productivity, high depletion and high pollution. This made it almost inevitable that the end commodities produced in the course of the operations had to be of sufficiently high unit value or turnover to ensure reasonably high pay-offs to the interests involved.

One should surmise that this involvement of industrial capitalists has its own internal logic. Their full scale and committed entry is motivated by the pursuit of profits which can be had by satisfying the ever increasing consumption requirements of a metropolitan elite. The mutual interdependence of these pursuits — profits and want of satisfaction — is essential for the survival and expansion of industrial capitalism in fishing. This tie-up between ultra-modern techniques of production and marketing and ultra-modern consumption priorities is easily portrayed and propagated as being socially desirable and wholly undertaken for national interests.

III

The Future

In the background of the resource potentials and the brief description of evolution of the economy, we can examine more concretely the main issues that need to be highlighted in the discussion on deep-sea fishing interests and their impact on this fish economy.

IS DEEP-SEA FISHING NECESSARY?

To this question the answer is in the affirmative. Table 3 giving the unexploited potential of our resources indicates that as much as 2.21 million tonnes of marine resources lie untapped beyond the in-shore zone. In the in-shore waters the performance of the labour intensive traditional sector leaves no doubt about the need to reserve that whole zone as the sole preserve of the traditional fishermen, to be exploited only by them. The participation of big fishing vessels using more sophisticated technology for propulsion, fish finding, net encircling and hauling becomes necessary in the context of the limitations of the traditional craft as well as the small mechanised boats. On this ground no total rejection of deep sea fishing *per se* is valid.

The moot question however is not whether deep sea fishing is necessary or not. The crux of the problem is whether the interests (big business or public sector) that control the deep sea fishing operations will function in a manner conducive to the healthy and complementary growth and development of all sectors of the fish economy.

ENCROACHMENT ON 'TRADITIONAL WATERS'

Deep-sea fishing operation by our definition is fishing to be undertaken beyond the 50 metre depth line; and if this can be adhered to, the chance of direct competition between fishermen using non-mechanised craft or small mechanised boats and the larger deep-sea vessels does not arise at all. Catches made in the deep-sea do not affect the level of catches made in the in-shore waters. The question that needs to be asked is whether or not these vessels will restrict their operations to the deep-sea.

There are several reasons to suspect that there will be direct competition. Take the case of the shrimp trawlers now being imported in large numbers. Irrespective of whether they are operated by big business houses or public sector fisheries corporations they have to catch and export prawns worth the value of their import licence in a certain period of time. There is a pressure to show performance, achieve targets and make profits. This means catching as much prawns as possible in the most economic manner of operation.

Table 3 shows that prawns in the deep-sea zone (50-200 mts) are to be found in abundance only off the SWCR with small quantities off the LECR and UECR. Deep sea vessels operating off the SWCR, stand to initial gain; logically therefore, assuming a commitment to deep-sea fishing, there should be a concentration of vessels in this region. However, it is important to note that the other area where there is a greater abundance of prawns at present is in the in-shore zone off the UECR (Table 3). Not accidentally, all the big business houses now engaged in the marine export business have their base of operations in this region and it is inevitable that their deep-sea trawlers will also, by sheer economic necessity, increasingly concentrate their operations to this region and zone.

In the face of these realities the pronouncements of the Agriculture Minister²¹ that trawlers of the large

houses would be kept 45 miles (72 kms) away from the coastal area tantamount to hoodwinking. This is clear from the fact that the distance to even the edge of the continental shelf in the regions where deep-sea prawns exist is only 37.5 km in the LECR, 68.4 km in the UECR and 83.1 km in the SWCR (Table 1).

The likely ingress into the in-shore waters will therefore be mainly in the UECR where we see from Table 2 that the levels of exploitation are very low.²² Present underexploitation in this area will also be used to explain away the ingress of deep-sea vessels as not resulting in too serious a competition.²³

Such encroachments may seem the more blatant form of exploitation. Juxtaposing the ultra-modern with the traditional spurs the loquacious politicians in defence of the oppressed and the downtrodden. However this may be a futile and a short term solution even if it becomes possible to ensure that deep-sea vessels make no physical infringements on the in-shore zone, (by the use of the navy or coastal guards). The real exploitation, more subtle, less apparent and visible, will be the competition in the final market which is the same for the prawns, cuttle-fish and tuna caught by both the deep-sea vessels and the traditional fishermen on non-mechanised or mechanised boats.

CONFLICT OF INTERESTS

The three major interest groups in the fish economy consist of the traditional fishermen, the merchant capitalists and the business houses. We saw in our description of the working of the fish economy how ultimately all the three cater to the same elite metropolitan consumers. The vital difference is that whereas the big business house is part of an integrated, production-marketing-consumption network linked to the world capitalist economy, the traditional fisherman is a marginal participant linked to it through the aegis of the merchant capitalists who presently dominate the marine export trade of the country. Dominance in the market by the big business houses will affect this class of merchant capitalists and in turn have its repercussions on the traditional fishermen. Thus, on a more careful analysis we find that the most vociferous opposition to the entry of the big business interests is from the spokesmen of this merchant capitalist class.

Their battle has been long drawn. In the early seventies, with the initial entry of the industrial capitalist houses

into the marine export trade by using some of the merchant capitalists as their agents for procuring and processing of the marine products, a great panic struck the old hands in the trade who had reaped their millions in the windfall profits made in the prawn rush of the sixties, especially in Kerala.²⁴ Under the aegis of the Marine Products Export Development Authority (which was well in their control²⁵) a report²⁶ was submitted to the Central government on the "need for and steps to be taken towards protecting and developing the interests of small and medium scale entrepreneurs who are in the marine products industry". The crux of the argument in the report was based on the question of motives. It said that whereas the small and medium scale entrepreneurs' interest in the development of the fishing industry was both "sustained and deep", the big business houses came into the fishing industry only for making a quick profit from transactions in import licences and have "no stable or lasting interest in the industry or its development on healthy lines". A series of recommendations were suggested to curb the activities of the big business houses, the most significant one being that they should not be allowed to procure raw material from the traditional producers or the processors but should employ their own deep-sea fishing fleet, catch their own fish and export it.

In principle this seemed to have been accepted by the government which in turn placed restrictions on the business houses as regards purchasing and processing marine products which are not caught by their own vessels. Recent reports²⁷ that the big business houses have been unable to utilise their own freezing plant capacities to the full because their own vessels are not in a position to supply them with their raw material requirements confirms the effectiveness of these restrictions.

The fear of the merchant capitalists is undoubtedly because they know that the big business houses have a clear edge over them in terms of finance, control over production, and what is most crucial in this field, the control over the market. Though the marine export trade of the country, has progressed quantitatively by leaps and bounds,²⁸ in terms of quality standards, product diversification, market strategies and the like it has miles to go. The root cause of this 'backwardness' has been the approach of those who presently control the trade; bearing no direct

responsibility for the production as such, they trade where they can and what they can, the motive being quick current profits by circulation.

The big business houses being directly involved with production and having longer term profit motives will pay closer attention to the process of social reproduction and can hence be considered more 'civilised'. For that reason they may be more acceptable to those who come into contact with it — especially the consumers.

The implications of this are that the big business houses will be in a position to capture the market from the 'old hands in the trade' and thus substantially erode their business and their profits. As a matter of fact the process has already begun with the announcement of the leader of a Japanese marine products importers association, following some large scale rejection of exported sea-foods on quality grounds, that they are preparing a list of names of 'selected Indian exporters' with whom they would advise their members to have dealings. The vast majority of the 'old hands' may not feature in this list.

The opposition to the big business houses entering deep-sea fishing operations by the present interests in the marine export trade has evolved in this background. The wider implications of such a set-back to the 'old hands' are of more crucial consequence.

In the states where the export processing and trade is carried on at a greater tempo — as for example in Kerala and Tamil Nadu—the merchant capitalist exporters have built up a large, extensive network of entrenched backward linkages. This goes down to the traditional fishermen in remote fishing villages and to those on the small mechanised boats operating from a few centres, through a hierarchy of middlemen and agents. The dependence of the fishermen on this hierarchy for the sale (most often on part-credit) of all exportable species caught by them is virtually total. Having no alternative sources who will procure their products on better terms (in spite of the numerous marketing co-operatives and fisheries corporations) all losses and setbacks experienced by the processors/exporters are passed down the hierarchy until finally the fishermen ('who anyway got it free' argue the middlemen on the shore) bears the total brunt.

It is apparent from this that greater penetration of the ultra-modern big business interests can lead to the total marginalisation of the

traditional fishermen. Safeguards to prevent such an eventuality are essential. The role of fisheries corporations to fulfil this task is subject to question because they operate their backward linkages in exactly the same manner as the merchant capitalists, with the exception that they have 'accredited agents'. The only solution seems to be a large base of genuine, well organised producer co-operatives (comprised of producers alone) who will take the responsibility of marketing all the fish of their members in the manner best suited to the kind of species being handled.²⁹

PROTEIN FOR THE MASSES

It has been the traditional fishermen using their rudimentary craft and gear who have caught the fish which ultimately reached the rural consumers. Over time this linkage between traditional producers and rural consumers has been strengthened primarily because the labour intensive nature and the non-commercial energy usage of both traditional fishermen and small distributors kept costs of production low and hence prices within the reach of the low purchasing power of rural consumers — a classic case of production for the masses by the masses.

Low purchasing power of the masses is a reality that needs to be borne in mind in any discussion of protein for the masses. The linking of the vast untapped resources at sea to the crying protein needs on land will therefore crucially depend on the nature of operations (cost, type of technology, spatial distribution, etc) that will intervene to convert resources into cost-competitive supplies.

Protein for the masses is a proposition of basically catching more of the smaller, less fleshy, bulk quantity species; it means more anchovies, sardines and ribbon fish in preference to prawns, promfret and scer. Since such resources are also available in our deep-seas the question is whether deep-sea fishing vessels will fish them out and if so whether this fish will reach the rural consumers at a price which they can afford.

The main attraction of the smaller, less fleshy fish to the deep-sea fishing interests is that such fish are available in bulk quantities (See Table 3). Given the spiralling of world market prices for fish meal following the collapse on the Peruvian anchovy,³⁰ a considerable attention will be focused on the bulk resources of the smaller lower-priced species for this purpose. Here again,

given the interests controlling the deep-sea operations, when the option is between fish meal for earning foreign exchange and protein for the masses, the choice is obvious.

To believe that deep-sea fishing is an effective means of supplying protein for the masses is the result of a naive understanding of the logic and language of the market. To propagate such a policy tantamounts to concealing purely commercial pursuits by proclaiming socially desirable objectives.

RESOURCE DEPLETION

The declaration of 200-mile exclusive economic zones by maritime states the world over comes in the wake of a global concern for the fast depletion of fishery resources.³¹

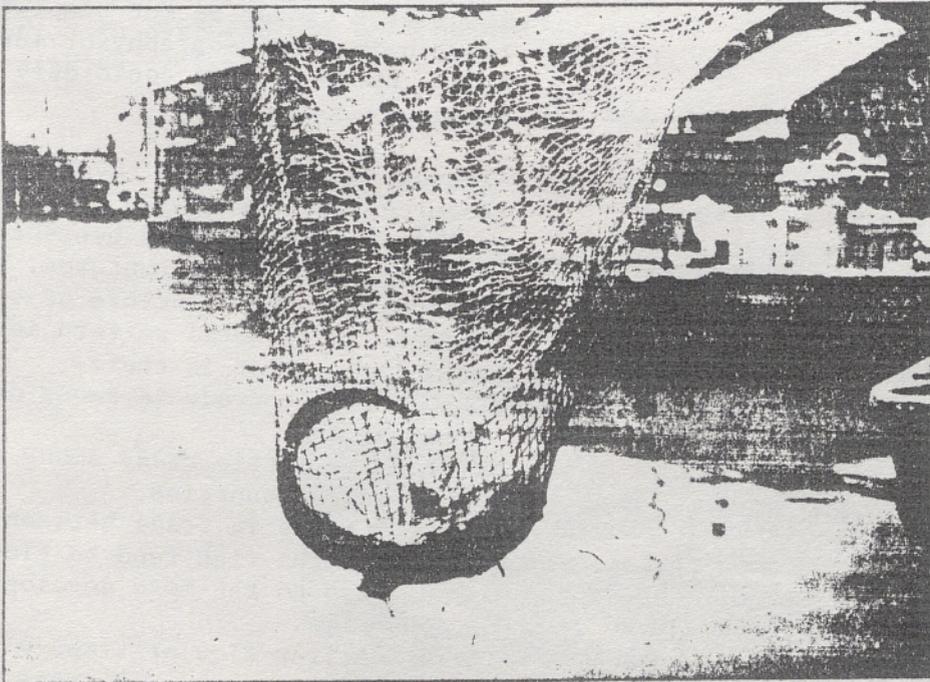
Often the tendency is to attribute fishery resource depletion to inefficient factor allocation alone. This is but the consequence, the cause lies basically in the profit motive which dictates the patterns of production.

In any big industrial fishing operation the basic objective is to maximise current profits. At the initial stages the existence of super-normal profits (because of large unexploited resources) encourages rapid expansion of the industry until profits are totally competed away (when the optimal exploitation levels are reached) and consequently leads to losses (when the resource has been depleted beyond revival).³²

The larger scale entry of big business into fishing and the numerous 'joint ventures' and 'co-operative fishing' projects we will soon negotiate in the public sector, in order to exploit all our vast resources, also spells the beginning of an ecological crisis; for the crisis of ecology is central to the logic of profit making which in any case is the prime concern of all these undertakings. It is not just the sea-food delicacies alone that face the danger of quick depletion; the small, cheaper species, which as explained earlier, also have the potential of becoming economic inputs for fish meal manufacture.

Encouragement of sophisticated technology and its protagonists will certainly yield enhanced level of exploitation at present but would spell disaster for the future of both fishing and fishermen.

GEORGE KENT,
**Bigger
Waters
SMALLER CATCH?**



The impact of the declaration of 200 nautical miles Exclusive Economic Zones:

The declaration of the 200 nautical miles Exclusive Economic Zones has the greatest impact on fishing. Over 90% of all fish, once accessible to all under the common property concept are now appropriated by individual nations. Many observers hope that the new exclusive resource zones will help conservation of fish stocks, and even out the distribution of benefits from fishing.

Poor, weak nations, which used to watch helplessly while foreign vessels fished near their shores, now have the legal right to bar these vessels from within 200 nautical miles of their shores. They can require outsiders to pay licence or royalty fees for the privilege of fishing in their waters. Or they can go in for joint ventures with foreign fishing interests, which will benefit the host countries not only in terms of income but also in terms of invested capital, transfer of technology and employment.

Netting the Profits:

With its long continental coasts, the area gained by the United States has an annual potential production of at least 18 billion pounds of fish for food and recreation, or about 10% of the total estimated world production, thus constituting the largest fisheries resources of any nation. Japan, among the developed countries, is a great loser, since nearly half of its marine fisheries production had been from near the coasts of other nations.

Netting the profits from the extended jurisdictions, it may be seen that many poor countries, limited to operations with small boats, are not even able to make full use of their narrow territorial seas. In contrast, the developed countries, with more capital and advanced technology, are able to take greater advantage of their enlarged jurisdiction.

The joint ventures or other contractual arrangements are likely to be of greater benefits to the developed nations than to the host countries. Similarly with few distant water fishing nations and many nations anxious to obtain licence fees, the result is

a buyer's market. Licence fees are likely to be modest in relation to the value of the fish taken.

Where less developed countries do increase their participation in the production of fish, they are not likely to enjoy a proportionate increase in consumption. The decline in long distance fishing will be met by an increase in international trade. Japan's fisheries imports have shown a substantial increase since 1976 so that Japan is now the world's biggest fish importer (by value).

Unlike the developed countries, many small countries are barely capable of patrolling their narrow territorial waters.

The idea that the rearrangement of jurisdictions could remedy inequalities in the distribution of benefits from fishing is based on a naive analysis of the problem. The skew in the distribution of the world's wealth is not due primarily to the fact that some nations are better endowed with natural resources than others. The problem of continuing inequities cannot be met simply by rearranging the geography of jurisdictions. At best, that could only be a temporary corrective.

Although direct control over natural resources is certainly a cause of inequities, it is greatly overshadowed by the role of social structures, and particularly the structure of trade relations. The general pattern in the world fish market is that:

1. most of the trade is among developed countries
2. there is little trade among the less developed countries
3. where there is trade between the two groups, the fish tend to flow from the less to the more developed countries.

The prevailing flow of fishery products - from poor to rich - is certainly not going to be reversed by the introduction of a 200-mile zone.

A fair share

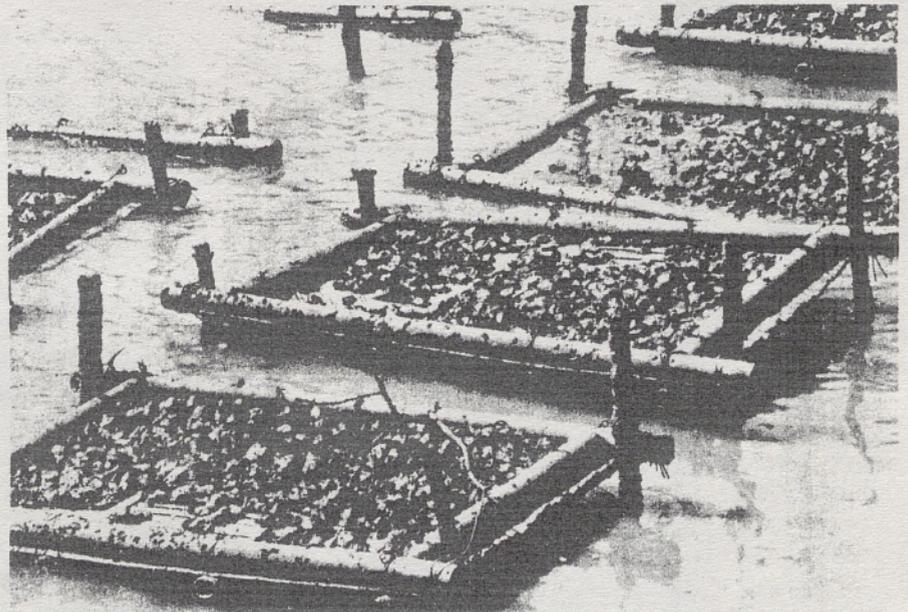
The question is not simply whether they win some benefits, but whether they obtain a fair share of the benefits.

In some cases, the benefits to the developed countries are considerably higher than those which go to the less

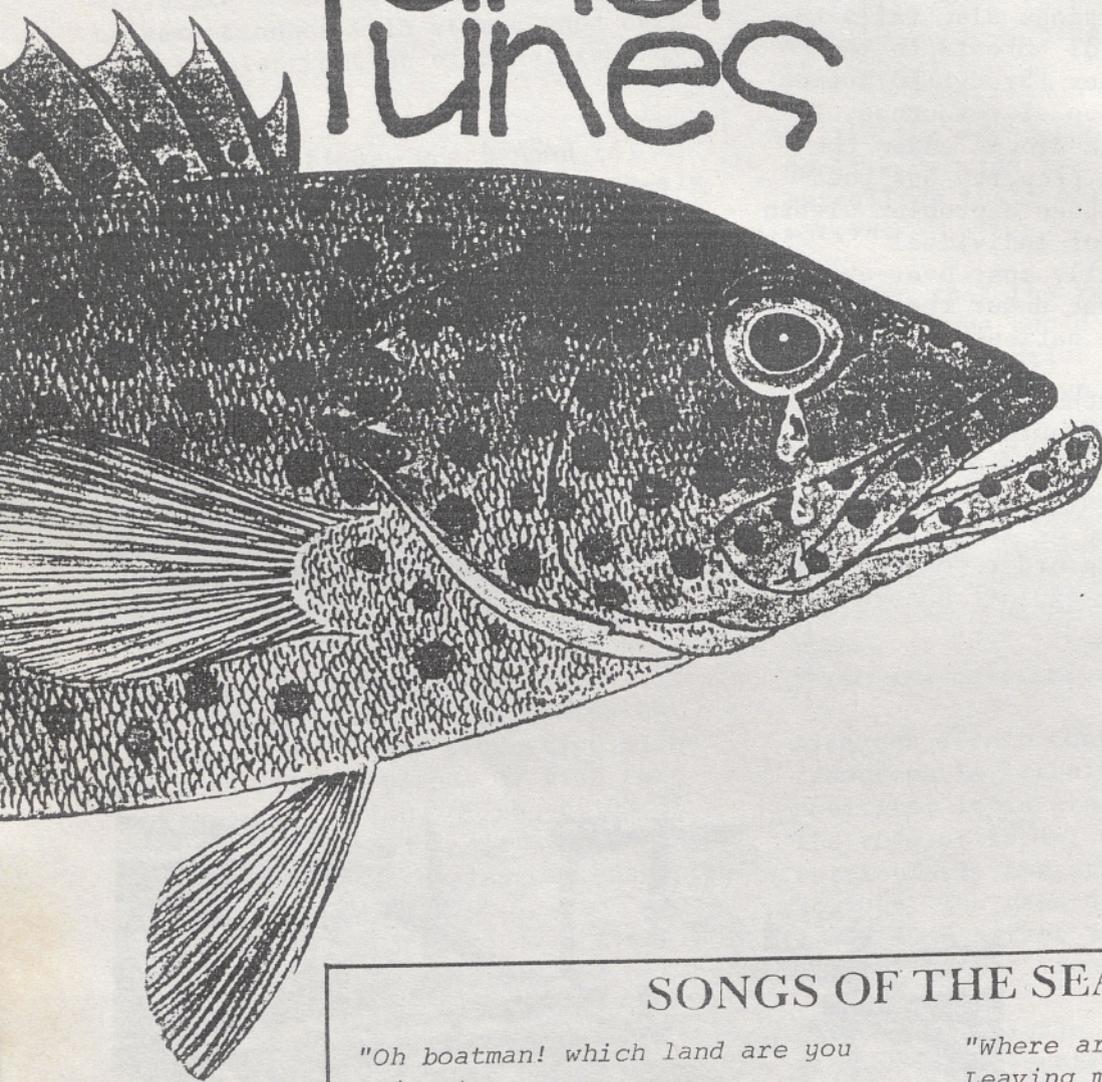
developed countries. For example, in the case of the Van Camp fishing facility in Palau, Micronesia, the fishermen (mostly Taiwanese, Koreans and Okinawans) are paid less than half the amount paid per ton of the same product landed in California. The major tuna corporations pay less to fishermen landing their products in less developed countries.

Extending jurisdictions also fails to meet the problems of threats to the environment, whether through pollution or through depletion of resources. If free access to fish stocks under the doctrine of common property has been a problem, it has been a problem within the jurisdictions of individual nations. Historically most over-exploitation has been done under the jurisdictions of single nations.

A central joint authority is needed to manage fisheries resources, an authority to manage those who use these resources. Arrangements must be made to alter the structure of incentives facing fishermen in order to reduce the motivation to over-exploit both nature and humankind.



tears and tunes



SONGS OF THE SEAS

*"Oh boatman! which land are you
going to,
If you meet my brother there*

*Tell him my plight
How long can I suffer?*

*A fire burns inside me.
You can see the fire which burns the
forest*

*But the mind is a furnace
Where the fire smoulders and
smoulders."*

*"Where are you, my friend?
Leaving me to drift in the ocean,*

*Where have you gone?
I'm gasping for breath
Fighting with the waves*

*I can't see the shores,
The waves are drowning me.*

*I have no one to help me,
Where are you, my friend?"*

*(Two Bengali folksongs popular
among traditional fishermen)*



Big business muscling in on the fishing trade with their big trawlers is threatening to wipe out the thousands of small fishermen in Kerala and Goa. Scared of the international pirates on the high seas, the Indian big business would much rather run their own countrymen out of business, a fact which the government seems unwilling to face up to.



The tawny -skinned loin-cloth clad fishermen along India's coast line are looking for Hemingway's Old Man. The wizened old fisherman lost the big fish but saved his life from the sharks. His comrades in india, however, are being devoured today by the machine-age sharks - the mechanised fishing trawlers.

While in the west, after years of indiscriminate mechanisation which has led to the depletion of marine life, the governments are going back to softer, smaller scale fishing technology, in India the authorities are importing more and more trawlers throwing out of occupation thousands of traditional fishermen.

To protect these people who earn their livelihood with countryboats and nets and whose survival is now threatened by the intrusion of mechanised boats, Mrs Mrinal Gore, M.P; is going to move a bill to amend the Indian Fisheries Act, 1897, in the coming session of Parliament. The bill seeks to allocate 20 km off the coast exclusively for the traditional fishermen and provide for punishment for violations of the protected zone by mechanised boats.

There are about 6.5 million self-employed fishermen in over 1,800 fishing villages along India's 5,650 km coast line. These fishermen are concentrated in the maritime states of Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Orissa and West Bengal. They operate country craft and catamarans

and catch about 75 per cent of the total fish catch in India. They account for about 80 per cent of India's foreign exchange earnings through fish export. In spite of this sizeable contribution to the national exchequer, the condition of the traditional fishermen is below subsistence level.

A controversy is raging over whether to allow these fishermen to operate in the conventional manner, or to permit liberal import of deep sea trawlers to gradually replace the old-fashioned fishing techniques.

The proponents of modernisation argue that the plan targets of increased fish catch can be met only by mechanised fishing technology. By the end of Fifth Plan, i.e. 1978-79, marine fish catch is expected to be 30.80 lakh tonnes. To increase the haul in the Sixth Plan, stress has been placed on massive extension of developed technology.

But by recommending indiscriminate introduction of mechanised boats and importing deep sea trawlers, the planners are losing sight of several dangerous consequences. Apart from displacing the traditional fishermen - as always happens when a capital-intensive technology replaces labour-intensive methods - the extension of mechanisation threatens to destroy the fish resources of the ocean by upsetting the ecological balance.

As it is, the fish reserves of the Indian Ocean are limited. Scientific surveys conducted by the Food and Agricultural Organisation for the last 5 years off the south-western coast of India indicate the existence of poor sparse shoals in the Indian Ocean because of pockets of low oxygen and absence of upwelling currents. Currently accepted fish reserves estimates for Indian waters place the annual sustainable yield at 45 million tonnes of fish out of which about 50 per cent lie in the depth zone 0-50 metres; 40 per cent in the depth zone 50-200 metres and the balance in the depth zone beyond 200 metres. In other words, the 50 per cent of India's total fish wealth

lying in the shallow waters is concentrated in a zone which extends to a distance of about 50 km from the shore. It is this zone again that the traditional coastal fishing people operate.

The situation in the Goa coastal area typifies the destructive role of the trawlers. According to the Fisheries Department, a saturation point has been reached in the exploitation of the shallow waters, as the availability of fish is decreasing. The catch has come down to one-twentieth of what it was 10 years ago. At that time, there was hardly any trawler in Goa. The indigenous boats run by fishermen supplied all the fish and met the demand. Today there are 400 trawlers in Goa. The government has already spent Rs 80 lakhs on subsidy and loans for the big operators to help them buy trawlers. But the fish catch has come down and there is an acute shortage of fish in the market.

The indiscriminate trawling in shallow waters, besides destroying the fish ecology, has caused immense loss to the boats and gear of the traditional fishermen by destroying their nets and boats. During the last five years, about 50,000 nets worth Rs. 7 crores have been ruined in this way. As trawler operators are increasingly intruding into the traditional preserves of the fishermen, violent clashes are developing along the coast. Since 1967, at least 12 catamaran fishermen in Madras alone have lost their lives in bloody confrontations with trawler owners and policemen. Late last year, the Kerala government was compelled to impose Section 144 Cr. P.C. within its 5 km seas following the burning down of four mechanised boats by irate fishermen off the Cochin shore.

The government's decision to go in for full-scale mechanised fishing is tied up with several factors, including major changes in the international fishing trends. After several decades of reckless deep sea trawler fishing resulting in drastic decline in fish haul, the world's leading fishing nations like Norway, Iceland, Peru and Great Britain have imposed

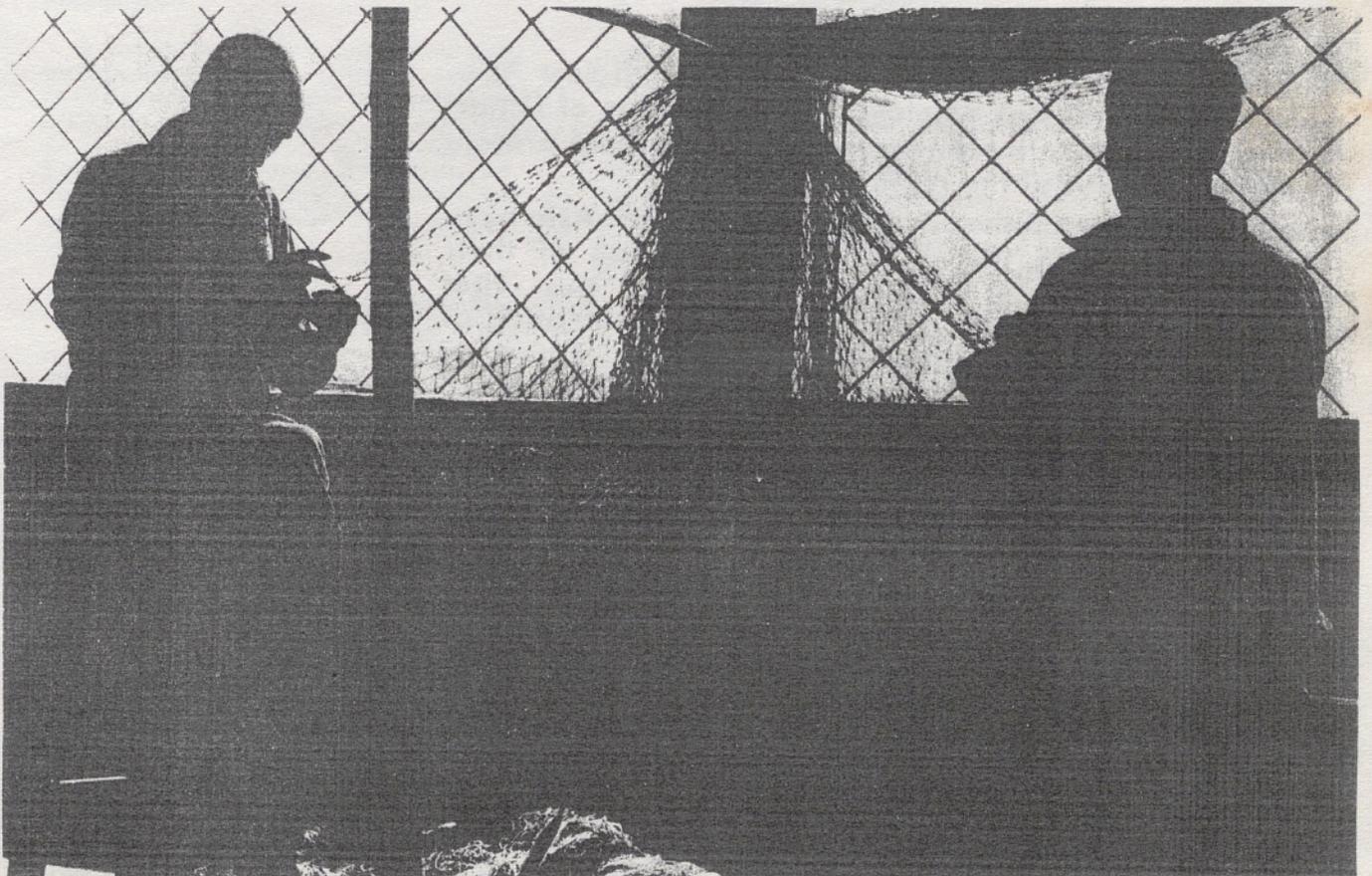
measures regulating fishing methods, netmesh size, fishing effort and catch. The OECD countries have banned techniques such as purse-seining which are stunningly efficient but highly depletive, destroying marine life and aquatic ecology. Norway has banned deep sea trawling and fish factories in some zones.

But the need for profits cannot restrain the fish merchants of the west. So, they are now rushing into the less exploited regions like the Indian Ocean. Joint ventures and cooperative fishing programmes between the developed west and India are cropping up. Scores of UN experts, World Bank delegates and foreign trawler experts are flooding New Delhi extolling the virtues of deep sea trawling. Indian technocrats, planners and politicians are being manipulated to leave the seas open to international depredation and to accept the highly sophisticated fishing technology. They forget that western technology is designed to suit the high capital and low labour availability of those countries, while in India an excess of unemployed people demands the continuation of labour-intensive technology. Apart from being driven by the craze to attain plan targets at any cost, the government officials are also vulnerable to the pressures of the international monopoly houses manufacturing trawlers and the rich Indian business interests operating them. The government has approved SFDC loans up to 95 per cent of the trawler costs at rock bottom interest rate of 4.5 per cent which is cheaper than any credit scheme available to a traditional fisherman from nationalised bank. The trawler business also attracts multifarious exceptions from income and other taxes.

One might as well wonder, why the mechanised trawlers which have the engine equipment and capacity to fish beyond 20 km from the shores, still choose to fish in the shallow waters, often hardly within 1 km distance from the shore. The reasons are obvious. First, the thirst for quick money leads them to stick to the 5 km zone,

so that they can catch the fish, come back to the shore the same day and sell the catch. Secondly, the area lying beyond the 20 km zone is being exploited by Taiwanese, Korean, Soviet and Thai trawler pirates who are openly defying Indian laws. The Indian trawler owners who find it easier to drive out the poor indigenous fishermen from their traditional preserves, do not dare to come into any conflict with the powerful foreign pirates. In this, they are continuing the Indian ruling class tradition of persecuting the poor countrymen and appeasing the rich foreigners.

While mechanised fishing is undoubtedly transporting Indian prawns to dinner tables in the USA, the drive for more foreign exchange through exports is leading the government not only to ruin the millions of fishermen, but also to kill the goose that lays the golden eggs.





south east asian **FISHING IN CRISIS!**

Fishing is a most important industry in South East Asia. It not only provides employment for millions of fishermen; fish is also by far the greatest source of protein for the peoples of the region.

In recent years the countries of South East Asia have been witnessing the rapid and sure death of their fisheries resource. The destruction of this vital resource has been brought about by a combination of tragic factors — overfishing by trawler and other big boats; the use of destructive and illegal methods; invasion of small fishermen's territory by big boats; pollution of the seas, rivers and fish ponds. Laws and regulations drawn up to prevent illegal fishing and pollution have not been strictly enforced.

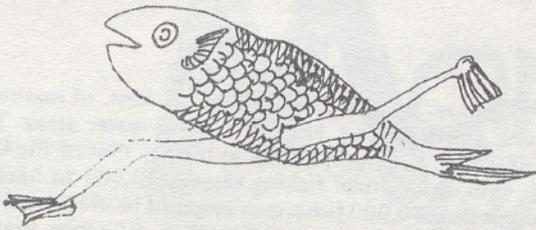
As a result, the livelihood of small fishermen have been threatened, and in many cases, destroyed. Fish resources are being depleted at an alarming rate. Fish catch in many areas has fallen. The prices of fish are soaring, converting fish from a poor man's food to a rich man's luxury. Consequently, nutritional levels are adversely affected.

The crisis in South-East Asian fishing has clearly reached disastrous proportions. It is this crisis that we have decided to focus on in this issue of Asian Action. It is hoped that increased awareness will lead to the development of stronger pressures to be applied everywhere in efforts to solve the problems.

MALAYSIA

WHERE HAVE ALL THE FISHES GONE?

For the 90,000 fishermen in Malaysia, life has never been easy. With their traditional and simple implements — a *sampan* (small boat), oars, a variety of simple small nets, rattan baskets — the fishermen of all ethnic communities brave the scorching Malaysian sun, the rain and monsoons, the tides and winds, to eke out a basic livelihood. In Peninsula Malaysia, where there are 76,000 fishermen, 40% of fishing families in the west coast and 90% in the East Coast live below the poverty line.



Even before the present crisis befell them, these small fishermen were already plagued with many problems. Many of them do not own their own boats, and have to surrender a substantial part of their catch to the boat-owner. In marketing their fish, they often get a low price from the middleman. Borrowing money, and repaying it with high interest, in order to live, was a third major problem.

On top of these problems, disaster struck with the large-scale introduction of 'modern' methods of fishing, without adequate or appropriate control by the authorities. In 1966 there were only 27 trawler boats in existence; by 1972 there were 3,028! These medium-sized and large boats gave rise to three major problems: overfishing, indiscriminate fishing, and invasion into inshore territory.

Overfishing: As small fishermen instinctively know, there is a need to balance the level of fish catch with the natural increase in fish stocks; if the catch is too high, the ecological balance will be disrupted, leading to a dwindling of fish supply. Depletion of fish stocks is the result. As trawlers are owned by businessmen interested primarily in short-term high profits, the sudden tremendous rise in trawling activity has seriously depleted the fish supply both in the Straits of Malacca and the South China Sea. The catch per trawler fell from 422 tons in 1965 to only 23 tons in 1972. Where small fishermen are concerned, the overfishing of the trawlers have also reduced their supply of fish.

Indiscriminate Fishing: Among small fishermen, it has been the practice to catch only fully grown fish; small fish caught are thrown back into the sea to allow them to mature, so as to increase the potential supply of big fish. Moreover, fishing is usually suspended during the breeding season. Trawlers however do not keep to these basic rules. Trawler fishing carries on right through the breeding season, and nets used are often so fine that even fish fry are caught, let alone small fish. The small fish, too tiny to be marketed, are sold to factories making feed meal. Hence the stock of mature fish dwindles further

Infringement into Inshore Territory: As fish stocks further out to sea have fallen, the trawlers are now frequently invading the grounds of the inshore fishermen. According to law, trawlers are not permitted to fish within 3 miles of the coast (for boats below 25 tons) or within 12 miles (for boats over 100 tons). In practice, these boats penetrate into the inshore territory, depleting the small fishermen's catch. Equally serious, the heavy nets of the trawlers are dragged along the sea bed, damaging the inshore fishermen's nets and gear, and disturbing the seabed where breeding takes place.

Pollution Problems

Besides the menace of over-trawling, the small fishermen of Malaysia face the problem of pollution. This is caused by:

(a) **Oil spills** from tankers in the Straits of Malacca, which reduce the oxygen content of the water: if the oil sinks to the bottom, it destroys the fish breeding ground and fish food. The spilling of 340,000 tons of crude oil by the Japanese tanker Showa Maru in 1975 shows the danger to marine life along the Malacca Straits.

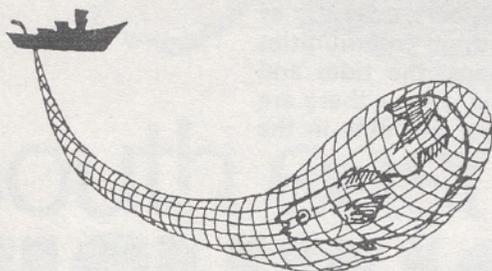
(b) **Industrial pollution**, caused by the indiscriminate dumping of poisonous effluents from factories into rivers and seas. According to the Ministry of Environment, at least 11 river basins in Malaysia face water pollution so serious that no marine life can exist in them. Although Kuala Juru, a village in North West Malaysia is the most famous case, there are hundreds of other fishing villages struck by the pollution of their rivers and depletion of their fish.

(c) **Chemical pollution**, caused by the use of pesticides in the padi areas practicing double-cropping, making it impossible for fresh-water fish to survive in the padi ponds. The depletion of fish in the ponds has deprived the padi farmers from a cheap source of protein.

As a result of all these problems, the incomes of the small-scale fishermen have fallen drastically, and many are now deprived of a decent livelihood. Consumers are equally badly hit, especially poor people, as fish comprises 80% the protein intake of the population. Between 1970 and 1976, the average price of fish increased by almost 100%, and popular fish such as the ikan bilis (once considered the poor man's fish) can be afforded only by the rich. □

PHILLIPINES

THE WRETCHED OF THE SEA



The fishery resources of the Philippines consist of 1,666,000 sq. kms. of marine waters, 9,000 sq. kms. of freshwater areas, and 5,000 sq. kms. of brackish water areas. The total coastline of the Philippines is 17,460 kms. in length, almost as long as that of the US. As of 1974 there are 29,700 fishermen with commercial fishing vessels, 15,000 to handle shore facilities, 140,000 to work in fishponds, 500,000 fishermen engaged in municipal fisheries, 2,900 engaged in oyster farming. All in all, there are 2.2 million Filipinos that depend directly on the fishery industry for their livelihood.

What is paradoxical about this industry is that there are vast bodies of waters teeming with rich marine resources but at present these are dying due to indiscriminate utilization and destruction by man. The main causes of this are pollution, illegal and/or destructive fishing and unnecessary constraints brought about by existing laws and regulations and by the failure to provide an integrated development programme for the industry.

The average fishermen are among the most progressive and independent sections of the population. Their independence and courage are reflective of their livelihood in which they have to face the many perils of the sea. They are their own sense of righteousness and honour. They are basically industrious, sociable and politically inclined. They have no choice but to be industrious for after fishing they still have to mend their torn nets, consider the fickle weather, the dwindling marine resources of their fishing grounds, and the number of mouths they have to feed — the average fishing family in Paranaque and Cavite is nine.

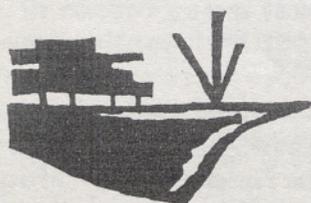
Fishermen's Problems

The main problem of fishermen is the pollution of the bodies of water where they get their livelihood. The poisonous substances emitted by the sewer and outlet docks of both coastline inhabitants and the factories are inexorably strangling marine life. Laws that prohibit such pollution are violated freely.

Illegal and/or destructive fishing is also rampant. A few examples are: Pantukos, waswas, trawl fishing in shallow waters, and dynamite fishing in the salty waters and giant Patoro and electric fishing in the fresh waters. The small fishermen of Manila Bay and Laguna de Bay complain that they can only manage a meagre catch or none at all whenever these methods of fishing are practiced.

The Pantukos — one of the deadliest methods — operates as follows. Pantukos can easily be identified with their very bright lights and the enormous number of boats involved — from 30 to 50 boats plus two mother ships, grossing two tons and above, which pull a big conical net 50 metres wide and with a height that reaches and scrapes the bottom. The smaller boats form a circumference with a diameter of two to three miles which slowly converge, slowly driving the fishes and other marine life with their lights and pounding noises into the gaping mouth of the waiting net. When the fishes are near the net, several fishermen pour gasoline or crude oil into the water and set this on fire, thereby driving the frightened fishes to the net. This method of fishing rips the net and gear of inshore fishermen; catches fish from the eggs to egg-layers; and scares away any fish that escape from the area for several weeks. This leaves the fishermen using legal methods almost nothing to catch.

If the present dangerous methods of fishing are allowed to continue unchecked, it is only a matter of time before the livelihood of the small-scale fishermen is completely destroyed. □



CONCLUSION:

The two case-studies of Malaysia and the Philippines indicate that the fisheries problem in South East Asia is a common problem. Here is a case of completely inappropriate 'modern' technology in the form of large boats and gear introduced indiscriminately by businessmen in a hurry to make profits. Here is a case where 'industrialisation' in the form of factories produces a side effect — pollution — that threatens the livelihood of a large section of the poor population — fishermen. Here is a case of big tankers carrying millions of tons of oil for energy-hungry Japan, passing through the Malacca Straits, in their path destroying marine life, the energy source of millions of poor South-East Asians. Here is a case of laws and regulations to protect small fishermen, to prevent pollution — drawn up in impressive

WHAT LIES AHEAD?

language, passed, broken a thousand times, forgotten.

In the midst of these problems, news has come that a 'South China Seas Fishing Project' has been launched to introduce 'deep sea fishing' to the region. As revealed in another article in this issue of Asian Action, this project will only worsen the fisheries problem of South-East Asian countries.

It is clear that there are only two paths ahead: immediately stop all forms of inappropriate, illegal and destructive fishing methods and carry out a SALVAGE OPERATION to rehabilitate the industry; or continue along the present trend and witness the rapid destruction of fisheries, as a resource, a source of livelihood, and a source of food. There is not much time left to make the choice. □

Bangladesh has 500,000 marine fishermen. They operate off the 480 km coast line and the fishing grounds in the Bay of Bengal. This is estimated to have a potential yield of 340,000 tonnes per year. The present production annually is of the order of 100,000 tonnes. The marine products, mainly shrimp, worth 16 million dollars, constituted 5% of the total exports in 1976-77.

The fishermen are among the most under-privileged groups in Bangladesh. They mostly work as labourers on subsistence wages while the boat owners and fish traders make enormous profits. The institutions like the Bangladesh Fisheries Development Corporation (BFDC) and Bangladesh Apex Cooperative Society (Bangladesh Jatiys Mashayajits Sambaya Samithy; BJMSS) which are to help fishermen are controlled by the people who exploit them. A World Bank report says: "It is generally recognised that the BJMSS is dominated by non-fishermen and traders. As a result few of its activities are specifically oriented towards improving conditions among the neediest segments of the fishing community."

IMPACT OF AID PROGRAMMES

The structure of interrelated communities involved in different aspects of traditional fishing in Bangladesh began to collapse in the 1960's with the introduction of imported technological improvements like mechanised boats and nylon nets. When relief began to be channeled through the fishery cooperatives in the middle sixties, the middle class groups who were in control of the societies took advantage of the aid. They became entrepreneur (keeping the fishermen outside the societies) using government loans which they never cared to repay.

The Russian trawlers given to the BFDC turned out to be an enormous waste of money as Bangladesh did not have the necessary trained crew and the running costs were too high with no efficient fish marketing mechanism.

The CCDB Scheme

The Moheshkhali Cooperative Fisheries Development Project (1974) funded by the Christian Commission for Development in Bangladesh (CCDB) was to rehabilitate and benefit the poor and exploited fishermen through cooperatives at a cost of 1.3 million dollars.

CCDB lost 300,000 dollars and finally pulled out because the ten cooperative societies which they set up were taken over by local power groups, which used the funds for their own benefit, and even refused to pay back the loans. In order to avoid the non-fishermen and traders, the CCDB had conducted an exhaustive survey of the area; the CCDB-personnel was closely involved in the training and motivation of actual fishermen, still they failed to protect the interests of the traditional fishermen.

The Danida Scheme

Under the Danida scheme, 300 small wooden fishing boats fitted with diesel engines were built for distribution to poor fishermen through BFDC. To facilitate collection of loans advanced, BFDC was to set up a marketing scheme. But what happened was that the marketing programme did not eventuate; the boats were bought by merchants and not fishermen; they were not used for fishing but as public transport in and around Chittagong. The BFDC collected only 40% of the loans offered, enough to pay back the government dues and not the Danida share.

The Danes, on the trawler side, feared that their vessels would have the same fate as that of the Russian trawlers.

The Asian Development Bank's fisheries Development Project

The Asian Development Bank (ADB) drew up a project costing over 20 million dollars to provide credit to a target group of 100 artisanal fishermen for purchasing large mechanised boats and refrigerated trucks. But the fishermen fear that the loans will benefit only the elite groups as the cooperatives are controlled by them. The proposal does not contain any mention about how the fishermen could resist the pressures of the traders and boat owners.

WHO EATS THE FISH?

A World Bank report states that the per capita calorie intake of the fishermen and other poor sections in Bangladesh is only 1720 per day as opposed to the FAO's recommendation of 4,880 per day for manual labourers and fishermen. Fish does not reach the poor in rural areas. Even the urban poor are not able to afford to consume fish as the price of fish is too high for them.

The results of aid programmes are likely to be a further concentration of power and wealth, increasing impoverishment and dependence among the fishermen and a relatively cheap supply of fish for the rich to Bangladesh's towns and to other countries.

FOREIGN EXPLOITATION OF BANGLADESH FISH RESOURCES

Various studies of the resources of the Bay of Bengal have been carried out, but none in a comprehensive manner. For example, a joint FAO and Norwegian Government Survey of the Bay, involving one survey vessel, lasted only for 3 weeks in 1979 and 3 weeks in 1980. To draw any valid conclusions, experts say, a ship should continuously survey the area for at least 5 years.

A UNDP/FAO study concludes: "an immediate solution to these problems of development (in Bangladesh) could be met through joint ventures with foreign partners experienced in all aspects of fishing and marketing."

But the motivation is exploitation, as the foreign companies' over-riding concern is profit. The foreign company, in order to make profit will concentrate on shrimps and other high value fish, throwing away tons of 'trash fish' overboard.

Foreign companies are increasingly involved in Bangladesh and other Asian countries. The Taiyo Co. of Japan is involved in a joint venture with BFDC (Bangladesh) to catch, pack and export shrimps. Other countries are also involved. 37 proposals have been sanctioned by the Ministry of Fisheries under the Bangladesh-Thai joint venture agreement, bringing the total number of new projects to 59 and vessels to 162. Under a one year agreement between BFDC and United Fisheries of Kuwait (UFK) in 1980, ten UFK trawlers were allowed to operate in Bangladesh waters in exchange for 20% of the catch. Japan, having considerable influence in Bangladesh would soon be giving a grant of 16 million dollars to BFDC for the purchases of 500-600 small boat engines from Japan. The large number of trawlers operating in Bangladesh waters, particularly for high value shrimps will result in enormous amount of waste of other kinds of fish.

The ADB fisheries loans to Bangladesh are on the stipulation that the Bangla-

desh Krishi Bante (BKB) must reduce the amount of small loans (\$110-140) it makes, as they are administratively expensive. The move to reduce small loans in a country where per capita income is only \$110 per year is obviously not designed to help the 70% of the population which live below the poverty line. This restriction put on BKB's activities will mean that farmers and fishermen will have to borrow from the village money lenders at exorbitant interest rates. ADB and BKB are propping up the power structure, subsidising the rich and reinforcing the dependent relationship of the poor upon the rich.

SHRIMP FISHING

An FAO estimate states that 60% of the fish caught by the shrimp trawlers is dumped back into the sea, whereby valuable protein is wasted. The joint-venture trawlers do not keep the low-valued trash fish, and it is reported that Japanese trawlers have destroyed one fishing ground off the coast of Bangladesh in this manner. The wastage is not only the fish discarded into the sea but also the destruction of plankton, algae and fish on account of the decomposing matter dumped in large quantities into the sea. This destruction by the trawlers has reduced the Bay of Bengal's potential, and due to this the fishermen who were catching 800 to 960 kg of fish per day twenty years ago, now get only half this catch. In June 1980, Danish trawlers returned to Chittagong fishing harbour with catches of tons of rotten and decomposed fish.

SHRIMP FARMING

The FAO and the World Bank put emphasis upon shrimp production through aquaculture, but the fact is that the rich are only able to make profit. The poor get no benefit and in some cases are actually put in a worse position by:

1. their lack of control over sluice-gates
2. lower labour requirements
3. a smaller share in the profits from shrimp as opposed to more traditional crops.

The draft of a FAO mission report to Bangladesh apparently recognises the problems. According to the mission's observations, "no low income population groups (such as traditional fishermen, landless labourers or small holders) benefit at present from the cultivation of shrimp."

Projects, whether designed by foreigners or by Bangladesh bureaucrats, rarely take the social structure into account. All resources and inputs are re-routed directly into the hands of these relatively few bureaucrats, merchants and businessmen. Aid, when it is channeled through these structures, only helps to maintain the very system which prevents the benefits from going to the people, whose lives most aid organisations claim to want to improve.



The rape of the seas: how the fishing invaders strip Africa

Ultra modern, large scale fishing fleets have instituted a new form of piracy in offshore waters

Billions of dollars a year are being lost to illegal trawling along Africa's Atlantic seaboard, with fleets of ultramodern refrigerated fishing vessels from the West, Asia and the Soviet bloc depriving African nations of more income than they receive in foreign aid.

The foreign fleets are active along most of the 14,000km stretch of the coastline, from the Straits of Gibraltar to the Cape of Good Hope, disregarding legal curbs on fishing imposed by seaboard countries.

African states have been able to do little to defend their economic interests in the face of this organised pillage, in which the Soviet bloc fleets take the biggest catch. Despite the imposition of fishing limits which purportedly bring 90 per cent of the offshore waters under African control, in practice the situation has barely budged.

There are several reasons for this. Few states can afford to finance an effective coast guard and air patrol system. There is a lack of coordination between neighbouring states to set up regional authorities with pooled financial and technical resources. In addition, foreign fishing interests are often willing to risk relatively small fines for illegal trawling, because potential profits are so high.

After the failure of attempts to shed dependence on foreign investment in their fishing industries, a growing number of countries are entering joint ventures involving African capital and foreign fishing interests.

In the short term, they aim to gain a bigger portion of the catch in their own waters — and the long-term benefits for African states able to assert control over their offshore fishing could be immense.

Fish provide low-cost protein for rapidly expanding populations. Downstream expansion into the canning industry could provide new job opportunities and increase the value of exports from the fisheries sector. More importantly, fishing, unlike oil or minerals, is a renewable resource. Properly husbanded, it could be an important money-spinner for the foreseeable future.

Food and Agricultural Organisation (FAO) documents detail the rape of Africa's fishing wealth. In 1977, 65 per cent of the catch in waters from Morocco to Zaire was netted by non-African vessels. The biggest offenders were the Soviet Union and other Eastern European states, with 38 per cent; followed by Greece, Spain, Japan and

France. Along the coastline between Angola and Namibia, the Soviet bloc share of the catch rose to 46 per cent.

FAO estimates for 1980 point to a total catch from Morocco to Angola's Cabinda enclave of some 3.4-million tonnes (probably well below the actual total) of which the Soviets alone accounted for 942,334 tonnes, or 27 per cent of the haul. Spain, from its Canary Island base, chalked up 427,585 tonnes, France 65,229 tonnes and Bulgaria almost 50,000 tonnes. In comparison, the largest African take was in Morocco, with 307,194 tonnes; the Ivory Coast pulled in 61,896 tonnes, Cameroon 19,421 tonnes and Gabon 10,255 tonnes.

Even then, according to the latest report drawn up for the Dakar-based FAO Committee for Eastern Central Atlantic Fisheries (Cecaf), "it should be noted that the high price species are mainly caught by non-African countries".

But the winds of change are slowly starting to make themselves felt in Africa's Atlantic fisheries. Of the 23 states with an Atlantic seaboard, 17 have already taken measures to extend their sovereignty 200 nautical miles from the coast.

States including Guinea-Conakry, Sierra Leone, Liberia, Benin and Congo-Brazzaville have simply extended their territorial waters to the 200-mile limit. Exclusive Economic Zones (EEZ) of 200 nautical miles have been proclaimed by Mauritania, Cape Verde, Guinea-Bissau, Togo, Nigeria and Angola. Senegal and Gambia, now forming a confederation, are enforcing a special 200 nautical mile fishing limit. But there are wholesale violations of these limits.

In the Lagos plan of action, a type of development blueprint adopted by the Organisation of African Unity (OAU) in April 1980, the goal of the fisheries industry was to increase annual production of fish from African waters by 1-million tonnes between 1980 and 1985. For greater local consumption the recommended measures include development of industrial fleets, an increase in the productivity of artisan fisheries and the expansion of aquaculture.

Meanwhile the FAO is concentrating on national or sub-regional fishing schemes. Cecaf has hammered out a three-point programme for upgrading African fishing capacities, including fish resource management, the provision of adequate supply to match demand and the socio-economic

development of the fishing sector to meet national needs.

Africa's Atlantic seaboard is one of the best stock fishing grounds in the world, but resources are unevenly divided. Because of sub-tropical upwelling along the coast from Morocco to Sierra Leone, this area is by far the richest. In comparison, the tropical Gulf of Guinea has relatively poor fishing resources, with low productivity and a narrow continental plateau.

The most frequently caught fish in the region are of the plegic (surface) varieties such as sardines, sardinella mackerel and horse mackerel. Demersal (deepsea) species — sole, snappers, sea bream and groupers — also abound. Tuna is found throughout the region. The most valuable species, such as shrimp, lobsters, squid and crabs, are concentrated in a few sheltered spots along the coast, in Mauritania's Arguin Bank, Senegal, Gambia, Sierra Leone and Congo-Brazzaville.

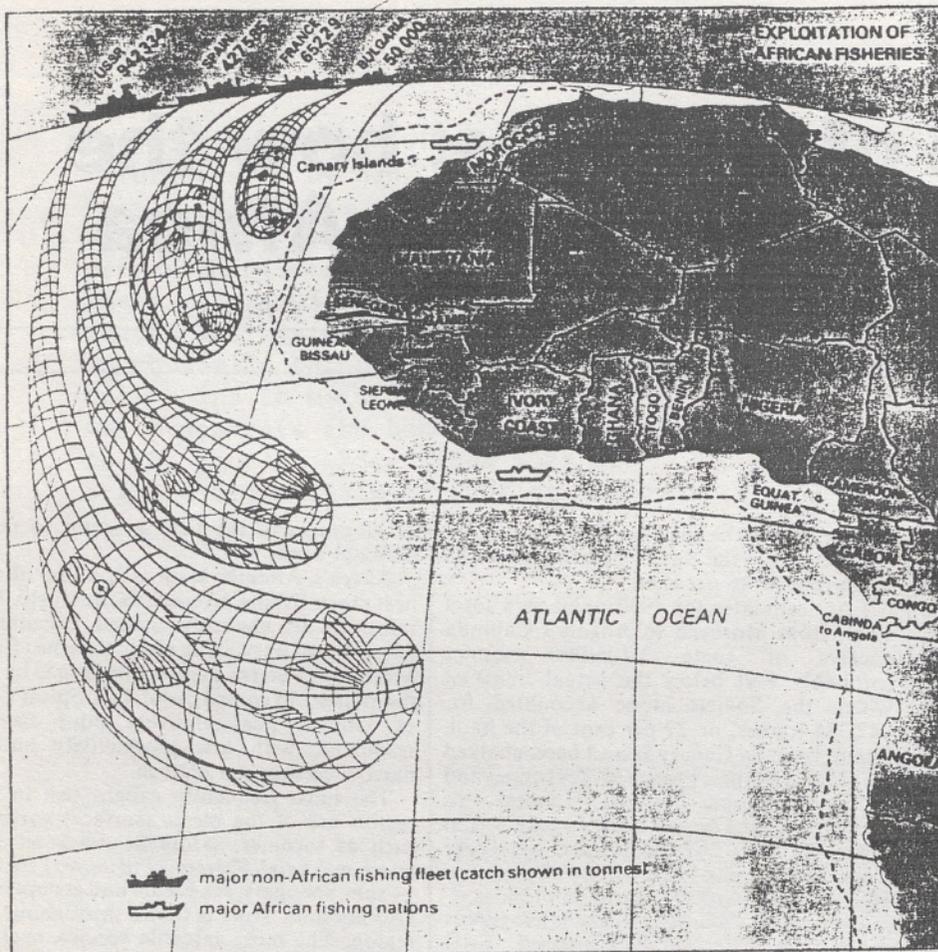
The structure of the fishing industry in most African states along the Atlantic coastline features a sharp division between an artisan sector operated from small canoes at diverse points along the coast and an industrial sector operated with the assistance of foreign labour, capital and management, using modern fishing techniques.

The artisan fishermen usually provide fresh fish for the local market and dried fish for export to neighbouring countries. This sector is plagued by lack of capital and efficient marketing networks. In Guinea-Bissau, for example, only about 150 canoes out of 700 are motorised and able to work waters beyond the immediate coastline.

African governments, often bolstered by foreign assistance, have sought to improve the performance of the artisan fishing sector, which in Senegal alone provides 60,000 jobs.

The industrial fishing sector is more often than not in the hands of non-Africans and dependent on foreign expertise and capital. Efforts by a number of states to set up state controlled fishing companies rarely yielded fruitful results. These concerns were hampered by poor management, bureaucratic paralysis and a good dose of corruption. Private companies operated by African nationals have a better track record, but often their goals are not in line with government policy, as the profit motive leads them to act in the same way as expatriate fishing groups.

A third formula, which is growing in



popularity, is for joint ventures between public or private African capital and foreign fishing companies or governments. A central aim of African governments in such arrangements is to get a larger share of the fishing intake in the short term, while insisting on the training of local crews and the transfer of technology in a longer perspective. Another approach is the trading off of fishing licences for a percentage of the catch landed in African ports.

Howard Schissel

Tightening the nets

Control of fishing is hampered by speculators, politics and lack of funds

Mauritania's problem-hit drive to extend its control over the fishing sector encapsulates the difficulties faced by all the other African states. The government abandoned its licensing system in 1980 and introduced a new framework which requires interested parties to establish joint ventures.

But it has been practically impossible for Mauritania to exercise sufficient control.

Ship captains are supposed to report their catches at the port of Nouadhibou as the basis for determining fees to be paid to the government. In 1982, only 130,000 tonnes of fish were officially declared, although Mauritanian fishing officials estimated the total take at close to 1-million tonnes. The loss to the shaky Mauritanian exchequer is about US\$350-million a year.

The fishing sector also yields lucrative speculation by Mauritanian businessmen, often with the help of civil servants. Prime Minister Maouya Ould Taya recently called for an end to "anarchic policies in this sector which have led to the flourishing of fictitious companies and all kinds of irregularities".

Some Mauritanian businessmen have special arrangements with Canary Island fishing circles, receiving commissions to serve as straw men for Spanish trawler owners, enabling them to fish in Mauritanian waters.

After the introduction of stricter licensing laws, Senegal's catch dropped to 229,000 tonnes in 1981 — its lowest level since 1973. The fall was also due to the closure of a fishmeal plant. Senegal, like other West African nations, has stiff competition from Las Palmas, where fish landed are less expensive and port and ancillary facilities of a higher standard.

Long-term growth plans have been drawn up by Senegal with the assistance of the French consultant, Scet International, and recommendations are for greater privatisation. US\$150-million to be spent in the 1980s to modernise the Senegalese fleet, and a new maritime bank to facilitate credit to

Senegalese who want to move into fishing. An interesting project in the pipeline is a Senegalese-Danish joint venture, Senegal-Seaford, a four-phase scheme to process and market 100,000 tonnes of fish a year. This exemplary cooperation programme will involve Senegalese from the fishing to the marketing end of the chain. Senegal holds 51 per cent of the company.

Ghana, once home of the most dynamic indigenous African fishing industry, is struggling to keep its head above water, especially since the exclusion of its vessels from the waters of Sierra Leone, Mauritania and Angola. The artisan sector is suffering from a lack of spare parts and fuel.

Nigeria is the largest single market for fish in Africa. Its fishing grounds are not as rich as those in Northwest Africa, and it will never be self-sufficient, so joint ventures are sought abroad. The most successful is with Mauritania, where the six Nigerian trawlers are active.

Guinea-Bissau's artisan fishing sector remains weak and the foreign-controlled industrial sector has problems. Three of the four industrial fisheries firms collapsed. Only the Soviet-Guinean enterprise Estrela Do Mar managed to survive, mainly because it specialised in up-market shrimp. The Soviets have been discreetly accused in the government publication *No Pincha* of depleting the local waters in an attempt to scoop up as many shrimp as possible to sell for hard cash in Las Palmas.

Fish production in Sierra Leone rose from 30,000 to 160,000 tonnes between 1971 and 1981. However, the local stake in this bonanza has been eroded by the invasion of its waters by Ghanaian fishermen. The government is beefing up enforcement to prevent aggressive poaching.

Overfishing threatens Angola, whose rich territorial waters are being rapidly depleted. The government has reduced the quota for foreign boats for 1983 to 95,000 tonnes from 110,000 tonnes. The Angolan monthly *Novembro* reported that, unless efforts to restrict poaching were strictly enforced, the country could become a net fish importer within three years.

The Soviet fishing fleet is mainly responsible for overfishing in Angolan waters, and this subject was the focus of diplomatic discussion at the Soviet-Angolan fishing committee meeting in Moscow at the end of last year.

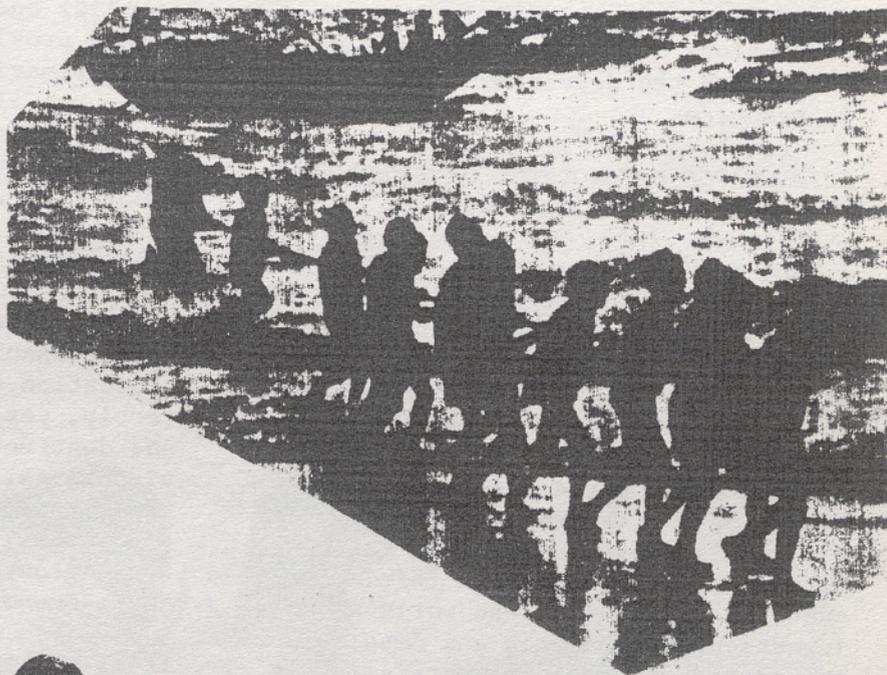
One of the most tragic stories of Africa's Atlantic seaboard is the virtual extinction of Namibia's potential over the past 15 years. The short-term calculations of the South African administration have resulted in the stripping of the once rich fishing banks, paralysing the formerly dynamic fish canning industry in Walvis Bay.

Thousands of people have been made redundant and the economy, once heavily dependent on fishing, is in the doldrums.

HS

SCIENCE AND TECHNOLOGY
**FOR DEVELOPMENT
OR FOR MALINTERGRADED
GROWTH?**

MARINE SCIENTIFIC AND
TECHNOLOGICAL ASSISTANCE
TO DEVELOPING COUNTRIES,
EMMIT B EVAN,



MARINE ASSISTANCE - THE ENDS

Much of the marine assistance provided by the US marine science community to developing countries is in the hope that it will prove the appropriate coin for "buying" research clearances. While this aid-for-access goal may constitute the primary impetus for assistance programs, there are two other goals that are clearly discernible. There are economic growth and social development, the latter to include the advance of knowledge. The advocates of this "developmental" view-point argue that the considerable expenditure and effort necessary for the implementation of the assistance programs will be more than compensated by:

1. the advance in scientific knowledge about the oceans that can be gained through the establishment of strong indigenous marine-science institutions throughout the Third World
2. the advance in standard of living that can be achieved for the poorer sections of Third World populations through the development of marine resources.

SCIENCE FOR DEVELOPMENT OR TECHNOLOGY FOR MALINTEGRATED GROWTH?

Around the beginning of the first Development Decade, it was widely assumed that modern science and technology could serve as a powerful force in stimulating and sustaining development in the countries of Africa, Asia and Latin America. But the problem of a limited Third World scientific and technological capacity is still acute. For, while two-thirds of the globe's population resides in the Third World, approximately 98% of the world's total investment in research and development is undertaken by the industrialised nations. Marine-science institutions are particularly weak in most developing countries. Before indigenous marine-science institutions could play a significant role in the process of Third World development, the capabilities of marine science, especially in terms of manpower, would have to be substantially enhanced.

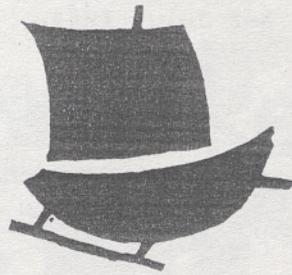
There has been little true institutional demand or support for indigenous institutions on the part of Third World governments. Consequently those institutions remained highly isolated, marginalised and underdeveloped social appendages. The socially isolated growth of marine science institutions

would tend to social decay. It is likely that the Third World economic and political elites will draw selectively and heavily on marine resource technologies in much the same fashion that they have drawn on other technologies from the industrialized nations. The result is not likely to be an advance in the standard of living of the poorer strata of Third World population. Rather, it will mean the expansion of the patterns of socio-economically inequitable growth into the area of marine resources. These patterns of dysfunctional development have characterised the economic growth process in the Third World. They are socio-economically inequitable and environmentally disruptive. The direct importation of capital-intensive industrial technologies from the industrialised nations - inappropriate to the employment, production and consumption needs and demands of the mass of Third World populations - has contributed to rampant unemployment, gross socio-economic inequality and a variety of other associated problems of social stress and decay. Primarily extractive in nature, they have also contributed to problems of natural resource destruction and depletion that are becoming increasingly apparent. Much of the technological assistance, under the programs of marine scientific and technological assistance to developing countries, is likely to be channeled into large scale, high-technology marine-resource exploitation schemes, contributing indirectly, yet forcefully, to the depletion and destruction of natural marine environments, to the disruption of the social and economic institutions of traditional coastal communities, to urban growth and decay, and to rising socio-economic inequality.

It is not that technology per se constitutes an inherently negative, developmentally disruptive force. The problem is rather one of the social control of the technology. While the technologies of the future will undoubtedly bring great benefits to mankind, they also, in the absence of effective control, present serious perils. Control of technology requires a systematic effort by society to maximise its benefits and minimize its harmful effects in the context of social goals and purposes. As a corollary, it also requires analytical insights into the nature of the technological impact and the existence of appropriate institutions capable of generalising and implementing the needed policies.

2 small scale fisheries changing character and future relevance :





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INTRODUCTION

This dossier of documentation has been prepared as background material for the International Conference of Fishworkers and Their Supporters, Rome, 4-8 July, 1984.

There are four sections, each relating to one of the issues of concern of fishworkers, to be discussed at the conference:

1. The impact of national and international fisheries development programmes and industrialisation on the working and living conditions of fishworkers.
2. The changing characteristics and the future relevance of the small-scale fisheries sector, which in most developing countries continues to be the backbone of the fish economy.
3. The response of fishermen and women to the negative effects of industrialisation and of fishery development programmes, on their work and livelihood.
4. The degradation of the aquatic eco-system caused by indiscriminate fishing and pollution of seas, lakes and rivers, and its effects on fishworkers and on marine resources.

We are grateful to all those authors who have made their writing and studies available for this purpose. Many of them are closely related to fishworkers and well acquainted with the concerns of traditional fishermen and women in different parts of the world. Some authors could not be contacted, but we expect the use of their writings to highlight the concerns of fishworkers and traditional fisheries, will be in line with the intentions of their articles.

Considering the amount of material, summaries have had to be made in some cases, and many footnotes could not be included. However, for those who need the full article, a copy of the original can be requested from one of the three organisations which gathered the material, by contacting DAGA, 57 Peking Road 5/F, Kowloon, Hong Kong.

The gathering of the material was the collective effort of the Fisheries Research Cell of the PCO (Programme for Community Organisation) in Trivandrum, India; SAM (Sahabat Alam Malaysia - Friends of the Earth) and CAP (Consumer Association of Penang) in Penang, Malaysia; and DAGA (Documentation for Action Groups in Asia) in Hong Kong; the dossier was put together and printed at DAGA, Hong Kong.

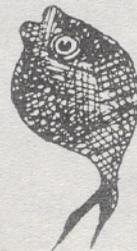


fishworkers of AFRICA

JACQUES
BUGNICOURT,



The problem of hunger in general and that of various nutritional deficiencies is presently and will continue to be an acute problem in many areas of Africa. One of the reasonable possibilities to answer this problem consists in extending the activities of marine fishing. In these circumstances fishermen and workers in the fishery sector represent a very strategical group for the development of Africa. However, one may observe on the one hand that a large part of the work of the fishermen and the fish workers is oriented to the profits of entrepreneurs and tastes of consumers outside Africa. On the other hand no account is taken in political and economical decision making of the specific interest of the African fishermen and fish workers. Moreover these fishermen and fish workers sometimes live in difficult conditions, are often exploited and may even be threatened in their very existence.



Dependence in Fishing

It is well known that Africa is heavily dependent upon external countries. This is also true of marine fishing. Indeed a large portion of the African fish catch never reaches the African consumers. For instance, in 1978 the value of fish exported by Africa to the United States was 26 times higher than the value of the fish exported by the United States to Africa. Several African countries have been forced to sign agreements with foreign countries and companies which are unfavourable to their own interest. A more serious fact is that foreign factory ships of South Korean, Japanese and Soviet origin, carry out intensive and destructive fishing activities which compete with the current fishing activities of small scale African fishermen, endangering their very lives as well as the reproduction of fishes and the marine ecology system. A first line of conflict of interests arises here: all categories of coastal African fishermen feel threatened by foreign, industrial fishing activities.

Paucity of Statistics

There is no strongly organised group of fishworkers ready to fight for preserving their own interests. If you rely on the official statistical data, particularly those collected by the FAO, it would seem that the number of African fishermen is quite limited. There would be however some countries where marine fishing is an important activity: This is the case of countries like Nigeria, Ghana, Senegal and the Morocco. However, there are various biases and inconsistencies in this statistical data base. Thus, for instance, according to FAO statistics, there would be around 30,000 fishermen in Senegal. In fact, it can be seen, that these statistics do not include the inland fishermen. For another thing, it appears that the number of sailing canoes is increasing faster in Africa, than the engine power canoes and that the value of the fish catches increases faster than the weight of the fish landings. However, we do not have any information about how the catch proceeds and the profit from fishing are

being distributed as between industrial large scale fishing and the small scale fishing sector.

Who are African Fishworkers?

It would be very important to know better who are the various fish workers in Africa. As a first approximation to reality, one could identify several categories of fish workers. At the level of production, one would have owner fishermen fishing in the rivers and ponds, lake fishermen, coastal marine fishermen working their canoes, employers and employees working with small marine fishing units, fish workers working in large scale marine fishing units, artisans producing fishing gears, wage workers in firms producing fishing gear. At the level of processing and distribution of fish, one would find four other categories. These are the following: temporary workers in industries, permanent workers in fish industries, individual carriers and sellers of fish, all workers involved in firms specialised in the distribution and marketing of fish, artisans specialised in the drying and preservation of fish.

As could be expected, there are considerable variations in the situation of the various categories of workers distinguished above. Thus, investment per head may vary from a few dollars upto 30,000 dollars (purse seiner of 150 tonnes) and upto 100,000 dollars (for a trawler of 2000 tonnes). Technology as well as the social organisation are extremely variable. Yet, there is one thing which is common to most of these categories, namely the awareness that they are doing the same job, a job which is fundamentally different from other jobs, in short the feeling to be fishermen. The social situation of the fishermen may vary substantially from one country to the other, or from one area to the other. Be it in Senegal, in Morocco, in Benin, or in Mauritius, each group of fishermen occupies a specific position in the whole social fabric: it would be nonsense to ignore these differences.

Conflicts in the Fish Economy

We have already spoken about the line of conflict between the factory ships of foreign origin on the one hand and all the African coastal fishermen on the other. There is another line of conflict which is opposing all the African fishermen to the foreign powers in general. More precisely African countries attempt to oppose unequal agreements which many developed countries try to impose on them, be they belonging to the capitalist world or to the socialist world. Incidentally it is worth noting that EEZ may be a crucial part of this strategy through which advanced countries try to pre-empt the right of fishing in African waters. With the view to circumvent these difficulties which arise from the opposition of African states, a number of European and American companies create shadow African societies under which they carry out their activities as before.

Another latent conflict, which may sometimes lead to acute tensions, is that which opposes the fishermen on canoes to a national bourgeoisie which finds it profitable to invest their surplus money in mechanised boat of medium size. The conflicts between these two categories of people arise not only in connection with the access to sea fishing grounds, in which the traditional fishermen believe that they had forever an exclusive right to operate and carry out their activities, but also in connection with the access to crucial inputs, like credit, government assistance, etc. Yet another area of conflict between the same above categories concerns the control over the distribution channels. Nevertheless, the future of traditional fishermen in Africa, especially canoe fishermen, is not completely gloomy. Indeed, it would seem that, given the family and the social context of fishing activities in Africa, modernisation techniques can be applied without involving a basic re-designing of the traditional gears.

The next line of conflict is that between the traditional fishermen, mainly artisanal fishermen, and the

fish sellers in so far as the marketing of fish is less and less affected through the wives of the fishermen and through their family members. Latent oppositions also exist between workers involved in the processing of fish on the one hand and entrepreneurs managing the firms. Finally, artisanal fish dryers and fish sellers feel more and more threatened by the development of industries specialised in the preservation of fish. Finally, one should not forget that there are important cultural aspects in the dialectics of conflicts which have been outlined above. Indeed, several groups/communities of African fishermen have developed quite specific cultures or sub-cultures which are threatened by the present evolution of things. These threats are to be taken very seriously as they may endanger and weaken the coherence and resistance capacity of the traditional fishermen communities in Africa.

The Condition of Women Workers

In Africa, one of the most disadvantaged groups is that of workers involved in processing industries of marine fishing products. Most often, these workers are women and young girls who are employed as unskilled labourers without any employment security and in particularly difficult working conditions. For instance, some surveys have indicated that the working conditions are very hard for the women employed in the peeling of soles and shrimps. The absence of gloves, the continuous contact with iced water, the night work, not only make the work particularly arduous but also tend to create a fertile ground for several type of serious sickness like rheumatism and bronchitis. Unfortunately, there is no legal protection for this type of workers in Africa. True, there is the theoretical possibility to register in a trade union or to have recourse to labour inspectors. However, the working women have to face all kinds of difficulties which are usually linked up with slowness and the complexities of the administrative procedures involved: as most of these women are illiterate, they have

absolutely no idea about how to proceed with their claims. They also know quite well that there exists many kinds of corrupt practices that help to make the local justice further away from them. But that is not the end. The work done is poorly paid and a worker is never sure that she will get work tomorrow: she is a casual or daily wage labourer. Perhaps the most important point to keep in mind is the heavy dependence of the working women on the local chiefs. Very often, these chiefs or bosses arrogate to themselves the right to impose sexual relations with the working women. If the latter refuse to comply with the chief's requests, they may easily lose their employment on the next day.

Strategies for Development

Given the extreme variability of the situations facing the fish workers in Africa it would be complete nonsense to work out a kind of standard strategy of development for the fishworkers for the whole continent and all islands of Africa. Yet, there are a number of basic orientations which can be followed everywhere in Africa. Let me now review them briefly.

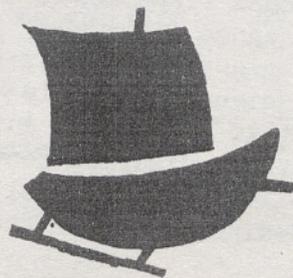
A first thing to do is to encourage participatory research, which means research conducted in close association with the various groups of fishworkers and starting from the problems as they are perceived by them. In this connection, it is very important that the results of this research be effectively and largely spread out and circulated. A second line of action is to take any initiative which will reinforce the self organisation of the fishworkers. Such a self organisation of fishworkers will never be effective if at the same time there does not exist a better communication among them so that possibilities of larger reflection and better self training can be furthered.

An interesting experience in this respect is that of a professional fishworkers association in Mauritius island which has been created in 1968 with a view to

demand government protection against illegal invasion of foreign vessels into the coastal waters. Moreover, a specific enquiry on the situation of the local fishermen has been undertaken under the pressure of this association. On the basis of the results of this survey, discussions have been initiated among the fishermen and an organisation has been set up in order to foster awareness of their own plight by the fishermen themselves. One issue which received a lot of attention was the problem of exploitation of fishermen by various type of middlemen and the fish merchants. If there is not a constant knowledge and awareness of the specific characteristics of the present concrete situation of the fishworkers, the risk will be high that the actions are undertaken that do not answer the needs of the population concerned.

As a top priority, it is necessary to support the fishworkers who are the worst exploited by various types of middlemen and owners. Next, a due account must be taken of the fact that, in many countries of Africa, fish is a crucial nutrient element in the diet of large classes of poor people. It is therefore important that fishworkers be better able to fulfill this function.

Finally, it is important that fishworkers strengthen their solidarity and cooperation all throughout the world and take up more responsibility vis-a-vis the environment in which they are living. Also, they must contribute to the self-development process in the society at large at the national as well as at the local levels. A new policy for fisheries, worked out in association with the fishworkers and duly allowing for their betterment, would represent a crucial component in a new fisheries development strategy for Africa.



MYTHS ABOUT SMALL-SCALE FISHERMEN

by John Kurien



Small-scale fishermen are ignorant, unscientific, conservative, pessimistic and slow to learn.

This is one of those myths that pass into folklore as a result of value judgments made by armchair observers. There is as much truth in these assumptions as there was in the belief rampant in Kerala, India, during the 19th century, that European men wore pants and never sat on the floor because they had tails!

How do myths arise? When the perspectives and "world views" of the observer and his subject are totally different. Myths are quick to spread and intensify when they promote the interests of the stronger groups in society. So also the myths about small-scale fishermen. They are created and propagated by all except the fishermen themselves.

Traditional small-scale fishermen of South-East Asian countries represent these working masses of this region who are closest to Nature. Nature, in the form of a mighty, moody, capricious ocean—now rough, now calm, sometimes bountiful, sometimes barren—conditions their psyche and influences their whole "world view." Their hot temper, which flares up and cools down in a trice; their overt generosity and carefreeness; their nomadic instinct; their disregard for the morrow and their proneness to superstition—all these underscore their closeness to and intimate dependence on Nature. It is this nexus between man and nature that governs the evolution of their techniques of fishing, their comprehensive and intricate grasp of the totality of their eco-system

Big words? Let me cite a few examples that prove my point and blast the many myths about the lowly fishermen.

* Poonthura is a small, densely populated fishing village in the south western state of Kerala, India. Shark fishing is a speciality of some of the catamaran fishermen there. During the calm season (November-March) they set out for the fishing grounds so as to reach it before dusk. On reaching the appropriate depth—between 30 to 40 fathoms—they take in multidimensional sights of landmarks and of emerging stars, drop a long heavily weighted bottom set gillnet without any markers or buoys and return ashore. After two or three days—a period that varies depending on the current and the shark catches made by other groups—they go back to the exact spot, drop a line with a hook attachment and fish out their own net, with sharks and rays entangled in it, often in less than half an hour! Such skill defies verbalisation in the form of any theory on the science and practice of fishing.

Small-scale fishermen "unscientific?"

* For hook fishing, small-scale fishermen rely largely on the availability of live bait—worms, small fish or crustacea. Over the years, bait has become a scarce commodity and hence costly too. Necessity leads to innovation—no international expert is around. The community's traditional R & D—the wealth of knowledge arising from their assimilation of the nuances of their eco-system—is put to work. Result: a minor technological revolution—the use of the twinkling weft yarn of nylax on their aluminium

hooks. The fish are fooled and now the use of *minisum* is widespread.

Small-scale fishermen "uninnovative?" "Slow to learn?"

* The capitalistic ethic glorifies the conquest of Nature by man. Small-scale fishermen glorify and worship Nature as Mother; "Mother Sea" or Kadalamma is the provider. Her gifts you reap; her anger you accept; her barrenness you never reproach. This relationship with Nature is manifest in their technology—low productivity fishing gear, minimum damage to the ecology. As pointed out earlier, it is equally apparent in their psyche.

I remember a memorable expression of this faith in the ocean. One evening, squatting back to the sea on a palm-fringed beach, I was trying to impress a group of fishermen about the need to save for the uncertain tomorrow. They listened carefully, but when I stopped one of them pointed over my shoulder to the sea and quipped: "You mean that will dry up tomorrow?"

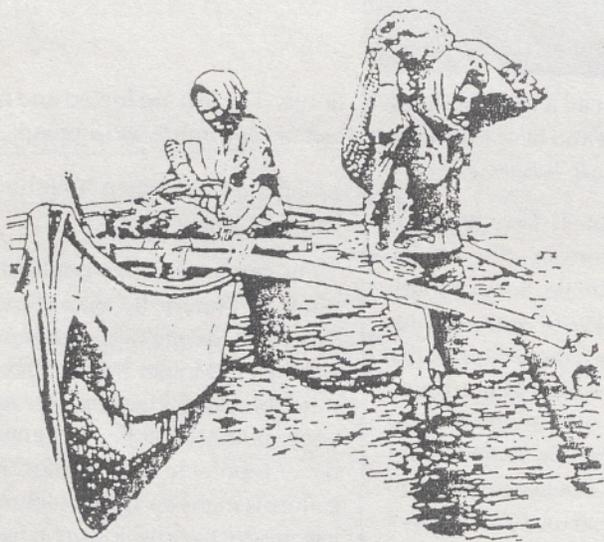
Small-scale fishermen "pessimistic?"

No, friends. Rather than indulge in rash and superior generalisations about small-scale fishermen, let us understand them, respect their knowledge, and probe their motivations. The reality and the myth are worlds apart.

John Kurien has worked for several years with small-scale fishermen in Kerala. He is a researcher at the Centre for Development Studies, Trivandrum.

TRADITIONAL FISHING METHODS AGAINST MODERN FISHING METHODS

Datuk Abdul Ghani bin Jamil DPMB



Traditional Fishing Methods Explained

At a glance the phrase "Traditional Fishing Methods" appears to most people, especially the modern and educated ones, as some primitive and unscientific way of fishing, just as Chinese medicine and Chinese art of healing appears as the work of quacks to the modern Western doctors. But, on the contrary, both are more scientific than the modern ones if by the word scientific was meant the practical application or use of proven facts originated from theories or through observations. I say this because in the Traditional Fishing Method, each gear is so designed that the fisherman operating it can choose the type of fish he prefers to catch without endangering the others. This is only possible through centuries of observation and studies on the life and habits of each type of fish and designing the right type of gear through knowledge of the life and habits of the fish.

In the course of time, these gear were modified and improved to suit local conditions as well

as the availability of the type of material used for these gear, with the result that today we have in West Malaysia some 70 odd different types of Traditional Fishing gear being used. To illustrate this point: of late, local drift netters have had nets made from polythene, some from guts and some from cotton. It is not because of fancy or durability, but because of the type of fish they choose to catch. I bet you that even the inventors of polythene threads never thought of this idea.

Modern Fishing Methods Explained

Modern Fishing gear are designed by scientists and researchers to get the maximum catch of marine fish irrespective of type and taste because the main aim of the scientist is to exploit as much protein as possible from the sea. The best source is the deep sea. The deep sea is wide and consists of a much bigger portion of the earth than the land we live on. Hence the following factors are being disregarded such as: conservation of fish, selection of taste, having regard for other fishermen.

The source of marine fish in the West Coast of Peninsular Malaysia is the Straits of Melaka and the North Sea of Penang. It comprises mainly of mud banks and as such it is an excellent fishing ground for inshore fishermen. There is no room for offshore fishermen at all. All modern methods of fishing are designed for offshore fishing and to permit any one of them to fish inshore will have a disastrous effect on both the fish and the fishermen. For instance, the trawlers scrape the mud bank of any living fish irrespective of types, newly born or fully grown, and disregarding the livelihood of the inshore fishermen.

The Fisherman — His social status, education, knowledge and experience

In this country of ours, social status is measured by one's earning capacity and material wealth and/or degree of education and/or recognised knowledge and/or political platforms. A fisherman has none of these except his traditional knowledge of fishing which usually is not recognised, although the fish they catch is the main source of proteins which is fundamental to life. Hence he is a near-forgotten man in society.

The Government no doubt is aware of this

and is putting every effort to uplift fishermen through education, finance, co-operatives, Majuikan, Mara and other statutory bodies. The millions of dollars allocated to Majuikan in the Third Malaysia Plan is more than proof of the good intention of the Government. However, I feel that the recognition and appreciation of their traditional knowledge by persons or bodies of intellectuals and planners is absolutely necessary if that knowledge is to be used or exploited and incorporated in the planning of any Fisheries Project for the inshore fishermen. The success of such a project would certainly boost their social status. There are about 50,000 Traditional Fishermen in the West Coast of Peninsular Malaysia. To replace them with educated Traditional Fishermen would take many decades and its success depends very much on how lucrative these Traditional Methods are made to be.

The Fisherman — What education, knowledge and experience is required of fishermen to operate modern fishing gear

In actual Modern Fishing Method (NOT including the existing local trawlers) each fisherman working on board a Modern Fishing Boat must have sufficient education in order to acquire the different skills and knowledge required to navigate the boat in the open sea, to use instruments to locate any school of fish, to operate wireless communication, marine engineering, refrigeration and handling the machine operating the net, etc. If Modern Fishing is our aim, it is therefore necessary to create a new generation of fishermen, educated and well trained in the various fields required to operate or to man Modern Fishing Gear. The South China Sea Project of Majuikan can be the nucleus of this new generation. Hence the question of Modern Fishing Method as preference in the West Coast of Peninsular Malaysia does not arise at all.

The Fish — Categorizing the fish

To Malaysians, fish is a must in our daily meal. Not because of its protein but because of its taste as well. Its quality may be defined in many ways and by taking many factors into consideration. Generally, inshore fish is always preferred to offshore fish. Then we have boney fish being preferred to others, such as ikan parang, ikan puput, terubok, etc. This is because boney fish tastes sweeter. Then we have quality being determined by the tenderness of the meat and the bone such as Ikan Bawal Tambak which tops the three species of Bawals. Thus it is actually difficult to categorize the fish. However, the fish of superb quality is undisputedly the Bawal Tambak which carries a price of about \$10.00 a kati, next being

Bawal Puteh which is tagged up to a maximum of \$6.00 a kati depending on size and where it is caught. Prawn comes next, its price depending entirely on size and specie.

Fish quality also depends on two other factors besides taste. One is degree of freshness and the other is where and by what means it is caught. The majority of consumers have no idea as to how to identify how fresh a fish is, where it is caught and by what gear it is caught. Here is where fish-mongers make their exorbitant profits, especially from fish imported from Thailand, for which an experienced consumer would not pay more than 50% of the value of a similar type of fish caught off Telok Bahang.

The Fish — Consumers' Fish Eating Habits

I include this subject in my speech, because it is a very important factor to consider in choosing what type of method or gear is best preferred. The Chinese in Hongkong prefer live fish. In other words the fish must be quite alive just before preparing it for any dish. Among these live fish, Kerapu Singa or the one with red scales and face resembling a lion is considered the best. Most Westerners prefer any big fish so that they can have a nice juicy fillet from it for their fish and chips. For Malaysians the head and the tail of most big fish are delicacies. They don't mind paying \$15/- for a dish of curry fish head. To those who can afford, they choose Bawal Tambak or Bawal Puteh and if these are not available, Kurau or Senangin. Among the small fish which are usually caught within a mile of the beach, Kedra and Belanak are favoured most. A full grown Kedra fetches a price of \$3.00 per kati and the others cannot be obtained for less than \$2.50 a kati. Their choice of fish depends also on what dish they wish to prepare. Ikan Kikik which before the coming of trawlers into Malaysian fishing scene was caught in abundance and was about the cheapest on the market, is best for making laksa. Today this fish is rare. One more factor which is just as important is the degree of freshness of fish. Malaysians prefer very fresh fish which has not been preserved with ice. This could be determined by the redness of its gills and in the case of Bawal Tambak and Bawal Puteh, the minute scales on the body still remain. In the good old days, the super class fish were those caught by fishing stakes, especially Belat Pok and Jeremals. This was because the fish was brought to the market hardly 3 hours after it was caught. On the other hand, fish caught by drift net or gill net is the worst type of fish because it is already dead before the fishermen could even draw the net into his boat. Such fish is usually sold to salt fish curers. Fish caught by trawlers get a

poor classification because it is usually crushed after being caught in the net. Similarly at least 50% of the prawns or shrimps caught by trawlers are completely crushed, so that they are usually sold to fish curers. That explains why there is so much broken salted prawn in the market today. Similarly the crushed crab caught by trawlers is processed by separating the meat from the shells and sold as crab meat today. The edible fish that is caught by a trawler makes up 10-20% of the total catch. The remaining 80-90% is trash or ikan Baja or "chow hoo" in Hokkien. This is sold at \$4/- per pikul to fish meal factories. The trash caught includes newly-born fish which if left to grow would benefit both consumers and fishermen. I learnt to my surprise that in 1973, there was something like 1.6 million katis of trash landed along the West Coast of Peninsular Malaysia out of a total catch of 4.5 million katis. This total catch includes clams or cockles, crabs and prawns. With this, one can clearly see the disaster and the complete waste the trawlers have caused to the industry. Hence the Traditional Method is still to be preferred for a long time to come.

Fishing Gear — Preference according to type of fish

In Traditional Fishing Methods a fishing gear is specially designed to catch one type of fish. The best gear to catch Ray fish or Pari for instance, is the unbaited long lines or Rawai Pari. This is a simple gear made up of a few hundred strong and sharp iron hooks, each tied with a thin strong rope of about a meter long with the other end of this thin rope tied to a much thicker rope at about one meter apart. The thick rope ranges between 100 to 150 fathoms long. A boat could carry a few sets and they may be joined together if so required.

The line is trawled over any shallow sand-bank, where ray fish usually prefer to rest. When any of these sharp hooks grazes the skin of the ray fish it hooks deep into the flesh and there is no way for it to escape. These hooks are even more effective when the ray fish glides across it. The principle of this gear is simple. Just run one of these sharp hooks casually on any part of your body and you will see that it hooks your flesh so fast you do not know when it catches your skin. Ray fish have no scales thus the sharp hooks can work readily on their skin just as they do on your skin.

There are traditional fishing gear designed to catch fish by using a decoy or any other form of luring the school of fish into the net, such as Pukat Bawal. This method of fishing is also found in most developed countries in the world. Japan

has an even better method called the Moro Ami where divers with the help of a number of pieces of white cloth tied to a rope drive the school of fish into a waiting net. Thus if you look at the names of some 70 different fishing gears used in Malaysia, most of them carry the names of fish they are designed to catch, such as Pukat Terubok, Pukat Temenung, Pukat Kebasi, Pukat Kedra and so on.

Fishing gear — Preference according to fishing ground and weather condition

When the seabed is found to be suitable and a fish-carrying current flows steadily in one direction for 4 — 5 hours, then a fishing stake is preferable. The type of stakes depends on the depth of the sea and whether there are prawn and small fishes expected to be caught. Thus you find that in Singapore and certain parts of Johore, the Kelong is most suitable. So good and effective is the Kelong that a developed country like Singapore still has faith in it and is still catching a handsome catch, while in Malaysia stake fishing is considered primitive and most have already abandoned it.

Sometimes the fishermen are faced with very bad weather for months. To sit idle means to starve. Hence they use the Bubu which is undisturbed by weather conditions as it is placed on the deep seabed. The weather frightens the fish and they swim right to the bottom of the seabed to look for refuge. The Bubu is there and it looks like a reasonable place. So they are trapped in it. When they try to dodge out through the wall of the cage, their noses are injured. Hence you can always identify a fish caught by a Bubu by looking at its injured nose.

Drift nets are also alternative gears used in bad weather conditions when others are not suitable.

In conclusion you can see here that Traditional Fishing Methods provide a very wide choice of gears such that there is always a gear to catch any fish of your choice or to be used in any fishing ground that you prefer or in any weather condition, and most important of all, without destroying the breeding place of the fish, its food and the young ones.

Aims of the Fishing Industry — Primary

The primary aim of the fishing industry should really be to produce marine fish sufficient for the need of the population by regulating the supply so that a sufficient supply can be constantly maintained throughout the years. This is not an easy task as there are many factors which may hinder the constancy of supply. We should

identify these factors and find ways and means to offset them. At a glance these factors can be identified as the following:— seasons, weather condition, shortage of gear or materials for making the gear, destruction of marine fish and breeding places by sea pollution or direct human action such as using explosives, or poison for fishing, or indiscriminate trawling, or, in the case of cockles, harvest them before they are big enough.

Seasons and weather conditions can be overcome by a couple of ways. Since Peninsular Malaysia is almost surrounded by sea and the land communication is excellent there is no problem of shortage of supply caused by seasons and weather conditions because when the season is bad in the West, it could be very good in the East and vice versa. In some cases when the season is bad in the North west it is good in the South west. The second method is by using Traditional Fishing Methods suitable for use in bad weather.

As to the problem caused by inadequate supply of materials for fishing gears through inflation, wars and other possible uncontrollable reasons, this too could easily be solved using fishing stakes and Bubus, because the materials used are easily obtainable in abundance from local forests and are not very much exploited by the forest industries. The problem caused by destruction of marine life and breeding places by explosives, indiscriminate trawling and pollution as well as harvesting premature cockles could be controlled or solved by proper legislation and strict law enforcement. For instance, there is legislation against the use of explosives for fishing and there used to be legislation restricting the size of the mesh of nets and the harvesting of cockles less than one inch in size. I am sure the Ministry concerned with the Environment has drawn up or is in the process of drawing up the necessary legislation on sea pollution.

In all these cases, law application and law enforcement are very important and must be carried out strictly. The above legislation can also help in the proper conservation of marine fish which is very vital and just as vital as the conservation of our forests.

Aims of the Fishing Industry — Socio-economy

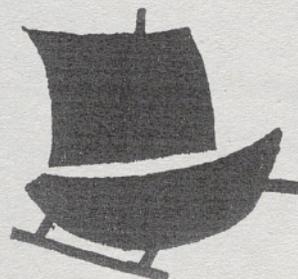
Besides the above primary aims, the industry should also be geared towards providing livelihood for more people than the existing 50,000 fishermen and also towards more earnings. But this should never be done while disregarding the primary aims. Often you read reports stating that Malaysia has earned so many million dollars in foreign exchange through export of marine products, yet we are still importing about 150 tons of fish daily from Thailand. The present worry is that there is insufficient fish for the consumption of the population. Fish has undoubtedly become the most expensive item on our dining table. The question now is how did this situation ever come about?

Conclusion — Conservation of fish should be the primary factor in aiming at a satisfactory and steady supply of fish

Perhaps due to my age, I have unwittingly dealt with this subject under the previous head. However, I may still add a word or two by emphasizing the fact that the only way to rehabilitate the fish population in our straits is by prohibiting totally the use of trawlers so that the breeding place on the seabed can be left undisturbed for some time for the fish to adjust itself to the already disturbed environment. Secondly, avoid any possible pollution of the sea and finally, encourage more Traditional Fishing Methods to boost production and controlling this by proper legislation. As to the existing trawler boats, they could be adapted to operate Pukat Tangkul or Pukat Jerut, or Pukat Bilis or even Pukat Temenung. Trawler fishing should only be carried out by using 100 ton boats with proper fittings and instrument for fishing in deep waters.

Which of the two fishing methods is to be preferred after considering the different aspects of fishing as explained above?

It's needless to argue any further, the answer is: Traditional Methods of Fishing is very much to be preferred against Modern Fishing Methods as long as the Trawler is the only existing Modern Fishing Method on the West Coast of Peninsular Malaysia.



CHAN LING YAP

WOMEN

♀ in fisheries



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

FISHERIES DEVELOPMENT AND ITS IMPACT ON WOMEN FISH TRADERS

The dominant role of women fish traders in the artisanal fisheries of many countries is partly reflected in their large numbers. But, by far a more important indicator is the financial and entrepreneurial support they provide for the industry. Women fish traders comprise both those handling only the catch of their husbands and those buying and selling all fish delivered to them, just like any trader.

When a fisherman sells to an outside dealer, the payment for his fish will be the ex-beach price or the bottom price of the marketing chain. The difference between this and the cost of producing the fish including the value placed on the fisherman's time and effort will be his profit. Sold through his wife, the same fish will fetch more. Precisely by how much depends upon several factors. If the woman sells immediately to another fish dealer who collects fish from the small traders, the increase in earnings will not be significant. If the wife takes it to the inland market however, or if she delivers to the final consumer, considerably more is earned from the same fish. This is comprised of both the payment that would be received by fishermen at beach level and the additional payment earned by the fishwife for her handling and distribution of the fish. In some countries, fishwives do not only sell from door to door but they also gut and clean their products. All these have a value which add significantly to the total family earnings from fish. The further the inland market they deliver to, probably the better the price. This arrangement gives fishermen an additional bargaining power that otherwise would not be available if he had to sell on the beach. A choice of several markets is made available. He is, therefore, less open to exploitation.

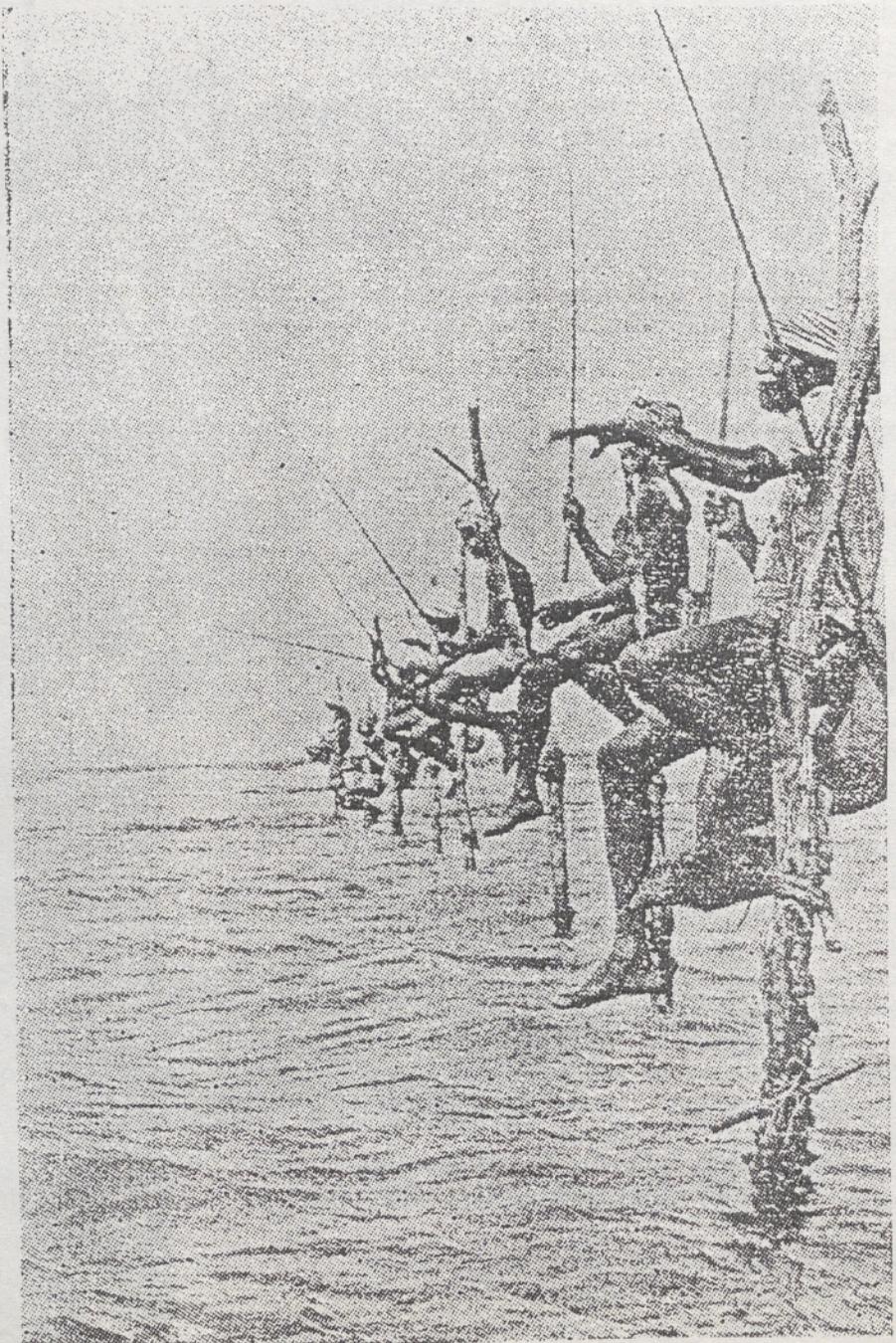
With the exception of isolated examples, most women operate on a small scale. They have capital to handle the fish of a few. In turn, they earn sufficient to invest only in small amounts.

The introduction of motorized boats, costlier fishing equipment and sophisticated fish distribution systems in many countries has completely unbalanced their role. The growth of a large

wholesale fish trade buying in bulk and directly from the fishermen, has reduced the bargaining power of fish-wives. Many of them have to get their supplies of fish from whole-salers, buying mainly small fish that have been left unsold on the beach or market. Large lorries used to transport fish inland, made many of them redundant. The result is an overall contraction of the women's role and dominance. The consequence for the small fishermen of the shift from selling fish through their wives to selling to big traders is a loss in the return per unit weight of fish caught.



THE State OF SMALL SCALE FISHERMEN



SMALL FISHERMEN IN THAILAND

Fishery is very important to Thailand's economy (Thailand's population is 43 million.). In 1976, there were altogether 257,254 Thais who were involved in fisheries. Out of this number, 30% were middle-class and capitalist fishermen and 70% were small fishermen having not more than 100,000 Baht (US\$5,000) as capital. But the small fishermen produced only 30% of the total fish production while the middle-class and capitalist group produced 70%. So the general situation of the small fishermen is not satisfactory. Because of their low income, they find difficulty in meeting daily expenses, they have debts and their children cannot have high education. Since the number of small fishermen is quite small when compared with the population, these small fishermen are not sufficiently looked after by the government. However, at the present, they are cared for by the government more than before. If some other non-governmental organizations help them, they would soon be better off.

General situation

Today's fishery is getting better after it was much affected by the oil-crisis in 1974 which decreased the fish-production to 1,510,466 tons from 1,678,901 tons in 1973. However it was better in 1976 when we could catch 1,699,086 tons, that is 7,532 million Baht (US\$376 million) in value. Most of the increase came from surface fish, such as Round Scod sub Sardine. Sea Mussels are caught much more too. The amount of fish caught by trawlers decreased by 6%. For example, Trash Fish are caught less because trawlers which fish very far off the coast do not want to catch Trash Fish but reserve their place for more valuable fish.

In 1976, Thailand increased its fish product export by 26%. Prawn and Cuttlefish export increased by 19%. Other kinds increased by 40%. As far as imports are concerned, imports of Shrimp Paste (Blachon) and Bloody Clam from Malaysia were increased.

Basic economic and social data on small fishermen

The Gulf of Thailand is 1,784.8 Km. in length. 70% or 180,000 of its fishermen are considered small ones. They live along its shores and in its various small islands.

Fishing households, manpower, boats (1976)

Fishing Households

No. of Fishing Households	40,198	
No. of Fishing Households engaged in own fishing by extent of dependency of fishing		31,869
No. of Fishing employee's Households		8,329
Fishing Population	257,254	
No. of Fishermen (Engaged in fishing) (Solely 51,198. Mainly 13,754. Partly 4,975.)		69,927
Fishing Boats		
No. of Fishing Boats	26,135	
No. of Powered Boats		20,768
No. of Non-powered Boats		5,367
No. of Powered Boats by length	20,768	
Less than 4 m.		29
4-8 m.		7,752
8-14 m.		9,375
14-18 m.		2,146
18-25 m.		1,321
25 m. and over		147

Income

Small fishermen have small catches because they have small and non-modern equipment. This results in low income. Within the period of 16 years (1961-1976), the amount of fish caught by the small fishermen decreased terribly, that is, in 1961, they could catch 300 kg. of water-surface-fish per hour by trawls, but in 1976 they could catch only 50 kg. But there are many others who still use hooks, Spanish mackerel drift gill net, and some other small instruments, and these people have much smaller amounts of fish. The small fishermen have an average annual income of 6,000 Baht (US\$300).

Product capacity

The small fishermen have small fishing boats, so they can only do their fishing along the shores, in the shallow water and inside the Gulf of Thailand. Their normal boats are row-boats or powered-boats not more than 16 meters in length. Their total product is about 510,000 tons a year or 30% of the country's total fish product.

Instruments

The usual equipment of the small fishermen are as follows:

Trawls. There are many kinds of trawls, for example, Spanish Mackerel Drift Gill Net, Push Net, etc.

Bamboo Stake Traps. At present, there are little, since the amount of fish is small too.

Hooks. This is quite familiar.

Lob (Round Trap). Little is used.

Co-operatives

Out of 31,869 small fishermen families, there are only 338 in cooperatives, that is, only 1 percent of them. At present, the government is trying to introduce cooperatives to these people and it is hoped that, through them, these people will be better off.

Their problems

It is a fact that small investments have problems. Small fishermen in Thailand face the following problems:

Debts. These people have a lot of debts. They do not have capital and there's a lack of sources of capital. They are terribly cheated in buying some fishing instruments which are not produced inside the country. They often have to buy on credit based on high interest rates. The new small fishermen face this problem more when trying to buy modern equipment.

Less Product. The small fishermen catch less fish because there are less fish. The sustainable yield of surface-fish caught in the Gulf of Thailand should be 500,000 tons a year, but at present the middle class and capitalist fishermen with modern and huge size instruments catch as much as 900,000 tons a year.



Pirates. Because of the economic crisis, there are many pirates. So the small fishermen have to spend more money to hire men to look after their instruments, for example, Spanish Mackerel Drift Gill Net.

Middle-men. The small fishermen, due to their poverty, have to buy their fishing materials from the middle-men by means of credit. The latter charge them high interest rates and most of the time the small fishermen have to use their fish-sales to cover up the debts. But at the same time, the middle-men offer very low prices. For example, if the market price is 7 Baht a Kilogram, the middle-men will value the fish at only 5 Baht.

Small Capital. Because of limited capital, they can buy only small instruments. With these small instruments and small boats, they cannot fish far away from the coast, lest they meet with danger.

Low Education. These people have insufficient knowledge about fisheries. Fishery, for them, means only taking advantage of the sea. Thus, they do not know the importance of the sea and the fish conservation and cultivation. There is a need for education on fishery for these people.

Pollution. There are many causes as follows:

Water-pollution. Water is polluted by the waste from the industrial factories and others. Water pollution does not affect the capitalist fishermen as much as the small fishermen since water pollution affects the fish around the coast, such as, young fish, fish-eggs and slow-moving sea animals. The research of the Department of Fisheries discovered that between 1971-1974 fish production decreased terribly, especially the Bloody Clams. This is due to water-pollution.

Coastal-forests destroyed. Coastal-forests were destroyed and so the young fish, prouze and crabs have no place to stay. This destroys also the chance of reproduction.

Irrigations. Before there was no irrigation, so the rivers brought along with them food for planktons in the Gulf of Thailand. These planktons are essential food for young fish. But now, irrigation schemes have been established. Planktons are decreasing and the young fish have less food.

Capitalist Boats. Often the capitalists with their big power boats and modern instruments move close to the coasts and catch nearly all the fish there and so there is little left for the small fishermen. And often also the small fishermen's instruments are caught by the capitalists' big trawlers but nothing good results from quarrelling with those who are already powerful.

Fish-Bombings. There are some people who throw bombs into the water as a means of catching fish. Bombs kill fish, both big and small, on a large scale. Besides, bombs destroy also other sea creatures. In the affected area, there will be little fish, since many die and many others flee away.

Low Price. While many other things are getting higher and higher in price, fish has been maintained at the same price or a slightly higher price. This causes an imbalance in the price of things in the market and the small fishermen suffer a lot out of this.

Other Illegal Means. The government has put up laws against fishing too close to the coast, trawlernets with too small holes, fish-bombings etc. but there is not enough manpower to put these laws into effect. Thus, small fishermen continue to suffer.

Monetary Crisis. In this time of worldwide monetary crisis, the small fishermen who have low capital suffer a lot especially when their boats are attacked by the stormy sea, hit by the big boats, robbed by the pirates etc. they can hardly recover from these damages.

Exclusive economic zone

Thailand does not face the problem of intruders to its exclusive economic zone because it is very advanced in fisheries. According to statistics, Thailand holds the 7th position among the countries that catch the most fish. On the contrary, other countries' exclusive economic zones could be its problem. Now Thailand is contacting its neighbours, especially Bangladesh, for co-fishing in their zones.

An example of a fishermen-group

Place: Chomtien Commune, Sattaheep District, Chon Buri Province.

For a long time in the past, the small fishermen of this commune did not group together. They might be facing the same problem but each of them individually tried to solve them. Then in 1974, there was an oil crisis everywhere. The small fishermen in Chomtien did not have oil for their boats. The problem meant "life or death" to them and it forced them to group together and send their petition to the government. The government supplied them with oil. So that was a success and then they saw the importance of grouping together which was exactly the policy of the government. Through the help of the government, they were registered as a "Farmer Group". This Farmer Group was helped by the Fisheries Centers of Sattaheep District and Chon Buri Province. The members were altogether 72. The total capital was 504,370.16 Baht (US\$25,218). Out of this, 58.98% were Shares and 41.02% was a loan from the government.

The activities of the "Chomtien Farmer Group" since 1974 were as follows:

- A 237 meter-long-pier
- An Ice-Stovehouse
- An Ice-Breaker Machine
- A place for fish-selectings and trawl-repairing
- A Gas-Station as a member of Caltex
- A Group's Office

In 1975 the Group's Gas-Station supplied petrol to the members in an amount of 70,200 litres, valued 1,573,200 Baht (US\$78,660). When the end of the year came, the Group had 26,386.48 Baht (US\$1,319) as its net profit. And in 1976, 82,207.83 Baht (US\$4,110).

Suitable alternatives aqua-based livelihoods

A certain suitable portion of the sea should be used to breed certain aquatic animals, for example, prouze and other aquatic animals which Thailand at present has to import from other countries.

Promote fish-breedings along the Coastal Forests. But at the same time the government must control the capitalists so that they do not take over the whole area. On the contrary, the poor fishermen should have certain privileges over the area.

Sea-plants cultivation should be promoted. This will help solve the problem of food-shortage.

Suggestions for national and regional policies

1. Control the activities of the middle-class and capitalist fishermen who intrude into the prohibited areas. Use legal means to punish them if they try to oppress the small fishermen.
2. Promote fish-cultivation. Use severe punishment against those causing water-pollution especially against some industrial factories. Also, preserve the coastal forest.
3. Punish severely those who kill fish with bombs.
4. Encourage cooperatives for the small fishermen. That will augment their capital, assure the marketing of their products, strengthen their families and fight against capitalists' oppression.
5. Encourage other means of subsistence to the small fishermen's families, besides fisheries, for example, pig and fowl raising, rice growing, home-gardening etc.
6. Provide irrigation facilities to those small fishermen who besides fisheries, grow rice.
7. Provide the fishermen with education and training on fisheries, fish-preservation, machinery, machine-caring etc. This will help them save their money.
8. Educate the fishermen about the law on fisheries which will help solve the problem of the shortage of fish.
9. Control the price of the fishing instruments.
10. Provide education to the Fishermen Groups or the Fishermen Cooperatives so that they can run their groups effectively.
11. Provide more places for fish-breeding which will help solve the problem of fish-shortage.

Suggestions for research and actions project

1. According to the research, the amount of fish which should be caught in the Gulf of Thailand each year is 5,000,000 tons but the fact is that our fishermen catch 9,000,000 tons a year. This is the main cause of the reduced amount of fish. It is high time for the government to lessen the number of the big trawling-boats, illegal trawls and other illegal means of fishing. At the same time research should be undertaken to select suitable places for fish-breeding.

2. The number of Thai fishermen is only 257,254, but, though small, they are important to the country's economy. These fishermen should be united much more than at present. If they are effectively organized they will not be exploited by the middlemen.

3. Of the Thai Fishermen, 70% are small fishermen. And 80% of these small fishermen are in debt. The Government should find ways to help them out of debts especially during this time of the monetary crisis. The Government's Demonstration Farms or the Pilot Projects which are already in existence should be widely expanded so that they can be of help to the small fishermen.

4. The Government should work closely with the small fishermen so that the latter could know more about the Fish-market both inside and outside the country. This will solve the problem of over-production of certain kinds of fish which the market does not need.

5. The small fishermen should be well-informed about the price of fish in the market so that they will not be exploited by the middle-men.



MALAYSIAN FISHERMEN

Fishing is one of the most important industries in the Malaysian economy. It not only provides a livelihood for about 90,500 fishermen, but it is also the greatest source of protein for the Malaysian people. In Peninsular Malaysia alone, there are 76,000 fishermen. In recent years, the socio-economic status of the fishermen, especially the small inshore fishermen, has deteriorated badly. 40% of the fishing families on the west coast and 90% on the east coast live below the poverty line. The Trengganu fishermen can earn as much as \$400 in a good month; in a bad spell, only \$50. Over a period of time, the average works out at \$100. About \$95 million change hands in the fishing trade in a year. For all his contribution, the fisherman earns less than a manual worker. This is really an ironical situation as Malaysia, though surrounded by one of the most richest fishing grounds in South East Asia, has fishermen who are in fact the poorest group in the nation.

Socio-Economic Data on Small Fishermen

According to the Ministry of Finance Economic Report for 1977/78, 2.45% of the economically active population in the country were engaged in fishing activities in 1975. This amounts to 90,500 people. Out of this, a total of 41,600 households depended on fishing as their major source of income and it was estimated that 63% of them lived in poverty. The report also estimated that the mean income of fishermen in Peninsular Malaysia was at \$1,115 per annum or about \$94 per month. This figure when compared to the padi farmers and rubber smallholders was very much lower as the latter earned an annual income of \$1,964 and \$1,456 respectively. This further indicates that Malaysian fishermen are not only the neglected group but also the poorest group in the nation.

Among the 90,500 fishermen in Malaysia, disparities in terms of income occur in what they earn. There are three major income categories among the fishermen. They are:

1. The low income group earning less than \$124 a month;
2. The middle income group earning \$125 to \$299 a month; and
3. The high income group, made up mostly of skilled *taikongs* (captains) earning \$300 to \$600 a month.

Those earning less than \$124 a month constitute about 56% of the total number of fishermen in Peninsular Malaysia. This group comprises mostly fishermen on the east coast and some fishermen on the west coast. They either use traditional methods of fishing or work as unskilled workers on the more productive *pukat tarik* (seine net).

The second category, earning \$125 to \$279 a month, are those who hold positions as enginemen, fish watchers, or netmen operating the highly productive gears like *pukat tunda* (trawlers) and *pukat tarik*. This group forms about 40% of the fishermen in Peninsular Malaysia.

The last category of income earner whose income ranges from \$300 to \$600, is made up of only the very few fishermen. They only constitute about 4% of the total fishermen. These rich fishermen dominate production and access to government assistance, co-operatives, etc.

The reasons or factors that have accounted for the fishermen to become the poorest group can be summarised as follows:

- (a) Overfishing
- (b) Indiscriminate fishing
- (c) Infringement into inshore territory
- (d) Pollution problems

ILLEGAL and indiscriminate trawling within the fishing limit has been primarily responsible for the depletion of our fisheries resources. Apollo nets and trawlers catch everything in their path. Iron weights tied to nets disturbed the sea bed thus destroying the breeding grounds of fish and prawns.



(a) Overfishing

In Malaysia, the majority of the fishermen are the small inshore fishermen or the 'traditional' fishermen. They do not have capital outlay and skills for large scale fishing operations. In the early 60's when modern and big scale fishing methods (trawlers) were introduced, the livelihood of the majority of the fishermen began to deteriorate. Trawlers have a very high productivity compared to traditional fishing methods. The trawlers bring in high profits and by 1972 the number of trawlers has increased from 27 in 1966 to 3,028 due to government encouragement and *laissez faire* licencing policies. The rapid increase of trawlers, however, has resulted in severe damage to the fish stock. The catch per trawler fell from 422 tons in 1965 to only 23 tons in 1972. This also means that the catch of the inshore fishermen declined dramatically as most of the fishes were 'dragged' by the trawlers. Overfishing occurs because the development of trawling at break-neck speed takes place at a rate above the biological reproduction potential of Malaysian fisheries resources.

The quantity of some of the most popular and nutritious types of fish has declined tremendously in the past few years. The outstanding example of this phenomenon is the rapid collapse in the catch of the *IKAN BILIS*, possibly the most popular consumer fish in Malaysia. In 1973, 397,790 piculs of *ikan bilis* were landed; in 1974, the figure had fallen by 44% to 220,296; and in 1975, the catch fell further to 218,646 piculs or 45% below the 1973 level.

Between 1972 and 1975, the catch for other popular species of fish was as follows:

Ikan Kerapu fell from 2,139 to 1,990 tons (a fall of 7%)

Ikan Tengiri fell from 6,554 to 5,487 tons (a fall of 16%)

Ikan Merah fell from 5,548 to 2,675 tons (a fall of 52%)

Ikan Duri fell from 4,237 to 3,760 tons (a fall of 11%)

(b) Indiscriminate Fishing

The trawler nets have extremely small mesh sizes, thus enabling them to catch young fish in great quantities. The large catch of young fish depletes the waters of a large quantity of potentially big fish. The draggings of the trawling gear along the seabed also plays the role of destroying the breeding grounds of the fish. This is best stated by the representative of the Teluk Kumbar fishermen; "*Pukat tunda ini bukan saja mengambil ikan dari serba jenis, tapi menyuak segala bapa ikan, ibu ikan, abang ikan, adik ikan, anak ikan, cucu ikan, cicit ikan dan telur ikan.*"

Translation:

"The trawlers not only scoop up various types of fishes, but also scoop up the father(fish), mother(fish), brother(fish), children(fish), grandchildren(fish), great-grandchildren(fish) and fish eggs."

As a result the catches of small fishermen are reduced and their livelihoods seriously affected.

(c) Infringement into inshore territory

The trawler fishermen frequently illegally infringe into the 12-mile inshore territory. The Apollo nets scoop up all aquatic life along the coast and leave very little to the inshore fishermen. Complaints from the inshore fishermen are frequent and clashes between the small fishermen and trawler fishermen often take place.

To cite a few examples:

15 October 1977

1,000 fishermen in several areas in southern Prai — Sungai Pakau, Sungai Acheh and Sungai Udang suffer from the intrusion of trawlers. Before the infringement, they earned around \$200 per month; now they earn less than \$80 per month. Some of the fishermen no longer go fishing because of such poor catches.

7 September 1976

Fishermen operating in Telok Kumbar claimed that a large number of 'irresponsible' trawler fishermen had damaged their nets by fishing inshore.

2 July 1977

Approximately 70 trawlers using 'Apollo' fishing nets from Tanjong Piandang, Perak, have been fishing illegally within the 12-mile inshore fishing zone in Penang waters. — C.A.P. —

26 June 1977

Nibong Tebal: About 600 inshore fishermen in southern Seberang Prai are living in uncertainty as their livelihood has been endangered by 'Apollo' trawlers. — Star —

12 September 1976

Some 2,000 fishermen in Province Wellesley are contending that their daily income had shrunk from about \$12 to \$30 a day to only \$1 to \$2 due to encroachment of trawlers. They called on the Federal and State Governments to take immediate action. — Sunday Echo —

11 April 1977

Tense situation exists between feuding trawler and inshore fishermen in the Gertak Sanggul and Muka Head areas in Penang Island. About 1,400 inshore fishermen in the 2 areas claimed trawlers had destroyed about \$10,000 worth of their fishing gears and nets. — National Echo —

28 May 1970

60 trawler boats went off Port Weld to fish and came back with 5 injured and 6 of their boats burnt.

29 September 1970

Port Weld: 10 trawler boats were destroyed with 3 fishermen injured and 1 missing.

21 May 1971

Port Weld: More than 10 trawler boats were destroyed.

31 August 1971

Port Weld: Another clash — 4 fishermen were killed.

14 November 1972

Port Weld: 40 inshore fishing boats fought with 15 trawler boats — 3 fishermen were killed, 4 were injured.

16 April 1977

Nibong Tebal: 2 trawler fishermen were shot dead in the Straits of Malacca — by a gang of 4 men. — New Straits Times —

10 October 1977

1 fisherman was killed, 3 injured, and 1 missing. 2 trawler boats were attacked by 5 others off Port Weld.

12 May 1977

A trawler fisherman from Tanjong Piandang was killed. About 2,000 inshore fishermen are inactive. They feared that clashes would occur again. — Star —

(d) Pollution problems

The Environmental Quality Act of 1974 provides for a maximum fine of \$25,000 to factories found guilty of polluting the environment. But this *Act* merely exists on paper, it has never been enforced. So the Industrialists continue to pollute without conscience or fear. According to the government's national strategy for the development of industrial estates, a total of about 9,000 acres will be developed throughout the country between 1976 and 1980. (Third Malaysia Plan, 1976-1980, page 321). In Malacca, Ipoh, Kuala Lumpur, Seremban, Johore Bahru, Alor Star, Kuantan, Kuching, Kota Kinabalu and elsewhere, industrial complexes, chemical plants and manufacturing factories have been indiscriminately established or are being planned without proper consideration of their effects on the surrounding environment and the people who live there.

To cite a few examples of industrial pollution that threatens the livelihood of the fishermen:

BATU PAHAT — 3 February 1974

Batu Pahat river and Sungai Simpang Kiri, polluted by effluents of rubber and palm oil factories and weed-killers used in the estates. Segamat area fishermen were affected.

KUALA LUMPUR — 17 June 1975

Klang river and lower reaches of the Sungei Penchala and Sungei Kerayong polluted by indiscriminate clearing of land, tin-mine effluents, organic wastes from sewage and industrial wastes. Fishermen and residents were affected.

SUNGAI PETANI — 9 January 1976

Sungei Merbok polluted by effluents from rubber processing factories. Over 300 fishermen were affected.

PULAU AMAN — 14 August 1977

The Pulau Aman fishermen complained of the destruction of aquatic lives and their waters because of the pollutants discharged by the factories in Penang and Prai industrial sites.

A government report on the pollution wastes emitted from oil palm processing factories has warned that by 1978 the major good natural water resources of Malaysia will be irretrievably fouled should no strong remedial measures be immediately undertaken. "If the present state of affairs is to be left as it is, there will be a tremendous impact on our ecological system as to render considerable imbalance which will not only result in the depletion of our valuable resources but will also destroy our aquatic and fish and animal life upon which the livelihood of most of our rural population if not all of us depend." (Abdul Aziz bin Ahmad, Palm Oil Processing Effluent Treatment, Vol. I, in *Pollution of the Environment by Industries*, Ministry of Labour and Manpower, Kuala Lumpur, undated.)

Recent studies taken by other government departments have shown that "at least 11 Malaysian river basins are at present facing water pollution problems of a serious magnitude". (Ministry of Finance Economic Report 1976/77 page 121.) Example: *Sungai Sekudai in Johore* is so heavily polluted by the untreated wastes discharged by 30 factories that no shellfish, shrimp, fish or other aquatic life can live or propagate for over a distance of 6 miles upstream. The polluted water is also directly harmful to human life as it contains disease organisms and dangerous chemicals.

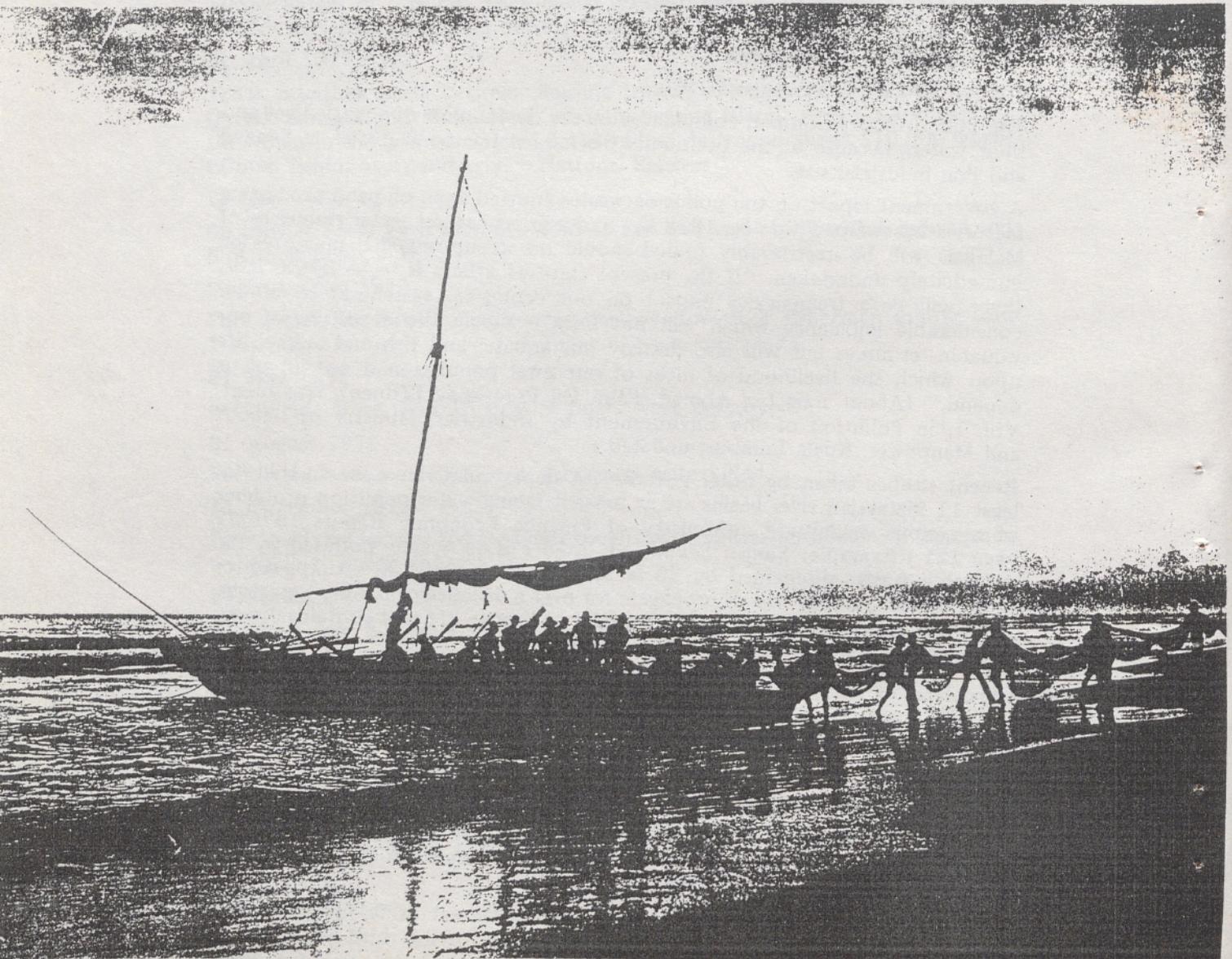
Other Problems of Small Fishermen

- **Failure of Fishermen Cooperatives:** Because cooperatives are dominated by big fishermen and bureaucrats, small fishermen have obtained few benefits from them.
- **Exploitation by Middlemen:** Middlemen dealers offer low prices for the fish they buy and charge high prices for the products they sell to small fishermen.
- **Lack of Capital:** The low incomes of small fishermen mean that they cannot afford to modernise their equipment.
- **Indifference of Government:** The government has set aside for the fishing industry only 1.5% of the total budget allocation for the third Malaysia plan (1976-1980). This indicates the low priority it accords to small fishermen. Widespread indifference and even corruption plagues the departments dealing with small fishermen.

Conclusion

The problems that are plaguing the fishermen are tremendous. Immediate effort to save this industry is urgently required. The upliftment of fishermen in Malaysia necessitates the following measures:

- (a) Strict enforcement of the laws regarding the use of destructive gear and the breaking of the off-shore limits by trawlers. This requires a competent enforcement unit to supervise the Malaysian coastline.
- (b) Rehabilitate the fishing grounds that have been destroyed before they are completely destroyed beyond any hope of salvation.
- (c) Immediate reduction in the number of trawler boats. Trawler licences only to be given out to genuine small fishermen cooperatives.
- (d) Immediate steps to stop river and sea pollution e.g. close down factories which have no or ineffective anti-pollution equipment.
- (e) Encourage traditional methods of catching fish that would not endanger aquatic life.
- (f) Control the activities of middlemen. Encourage village cooperatives.
- (g) Increase the efficiency and effectiveness of departments dealing with small fishermen and fisheries development.
- (h) Promote aquaculture, marineculture and further diversification of small fishermen's economy.
- (i) International organizations e.g. FAO to communicate directly with small fishermen and not through governments to establish action-oriented local national and regional projects such as fish pond culture.



THE FISHERIES WAR

Anoop Babani

The oceans have long been considered a major potential source of food and the oceanic food chain-yielding some 75 million tonnes of fish per year - is humanity's principle source of high-quality protein. Not only do fisheries provide animal protein for direct consumption, but the less palatable species are converted into fishmeal and fed to poultry that produces meat and eggs.

However, in recent times, these very oceans and their wealth have become the subjects of a fierce controversy, especially in some developing countries of Asia. Apart from the major problem of overfishing which has led to shrinking stocks and declining - or at least stagnating - catches, the other major source of upheaval has been the introduction of modern aids, which have turned the simple vocation of fishing into big business and have given an impetus to consequent rivalries among traditional fishermen and their counterparts owning mechanised vessels.

Over the past twenty years, total fish catch from Asian waters has registered a tremendous boost, largely due to mechanisation efforts. However, the small fishermen of Asia have had no share in this wealth because for them the catches have declined drastically which tends to threaten the entire basis of their survival. Says Kher Kok Peng, a Malaysian journalist who reports for "Earthscan", the London-based paper: "The seas of South East

Asia have traditionally provided a livelihood for some 6 million small fishermen. But in recent years their existence - never very secure - has become even more precarious."

In India, the story is the same. The traditional fishermen of India today constitute a community of 6.5 million people fishing with some 192,000 country-boats and 2.7 million gear and tackle, accounting for almost 70 per cent of the total fish catch. The mechanized sector, on the other hand, consists of nearly 16,500 fishing trawlers, owned by roughly 8,000 persons. They contribute 30 per cent of the total fish output.

India's coastline, which stretches about 6,500 kilometers, is dotted with numerous fishing communities. These over generations - under different socio-religious, cultural and environmental factors - have evolved specific varieties of craft, gear and tackle. Over the span of centuries, the traditional fishermen of India perfected several techniques of fishing, evolved crafts and gear best suited to their local conditions, mastered the vagaries of seas and the habits of fish, understood the patterns of wind and currents and overpowered the waves to eke out a living.

These communities, for the last thousands of years, have been fishing along the Indian coastline and providing us with our valuable protein intake, besides managing for themselves

a subsistence livelihood. While initially their operations were highly individualistic, since the last 400 years or so, these fishermen have come to accept cooperative fishing ventures which were introduced by Fr Ramponi, a Portuguese missionary, in Goa, four centuries ago.

It was only after independence that the government started the process of mechanisation and modernisation of the fisheries sector - especially during the late sixties and early seventies - with a view to boost up the fish production and usher in the much publicised "Blue Revolution". The policy of mechanisation was based on the assumption that the non-mechanised sector and its technology were "Primitive, ignorant, unorganised, ill-equipped and inefficient." Consequently, the outlay for fisheries development was hiked from a meagre amount of Re 1 crores during the First Plan to an estimated outlay of Rs185 crores during the Sixth Plan.

An important ingredient of post-independence planned fisheries development was the rapid increase in the number of people involved in the mechanised sector, as production, motorization and introduction of new types of crafts and fishing techniques received much attention. Though it was envisaged that this mechanised sector would develop on sound producers' cooperative lines, it has, in the words of John Kurien, Research Associate at Centre for Development Studies, Kerala, "finally emerged as being owned by a citadel of finance and merchant capitalists," and has come into sharp conflict with the traditional sector, which has faced extensive marginalisation and worsening conditions.

As a result, the simmering tensions between the two classes of fishermen have surfaced during recent years and a number of quarrels and clashes between the mechanised and traditional boatmen have been reported from several parts of India, causing over 60 deaths and thousands of arrests of protesting fishermen.

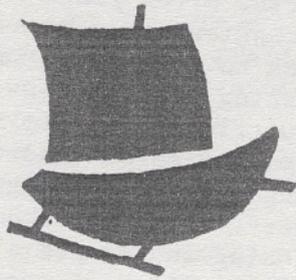
Mechanisation of the traditional fisheries, from labour-intensive to capital-intensive, has been a

development of the 1960s, when the first trawlers were introduced on the Indian shore. This was furthered by the introduction of purse-seiners in 1975. While during the initial stages, it gave a tremendous impetus to fish production, in the long run rapid mechanisation has not offered any dramatic increase in the productivity of production; no real improvement in the lot of the small sector; depletion of fisheries stocks and often irreparable damage to the shore ecosystems. According to Rathindra Nath Roy, research scholar at AMM Murugappa Chettiar Research Centre, Madras, "Inshore fishing by mechanised and deep sea operators with resulting conflict with traditional fishermen, resource depletion and pollution of ecologically very vulnerable in shore zones is already a reality and there seems to be no reason to believe that things will change in the near future.

The intense mechanisation, during recent times, has not only posed a serious threat of survival to the traditional fishermen of India but has seriously undermined the regenerative capacity of sea life. This has resulted in stagnation of fish catch over the years. The marine fish output has more or less stagnated at annual rate of 1.2 to 1.4 million tonnes. An important reason for this has been the fact that the operations of mechanical trawlers in regions closer to the shore have proved detrimental to the delicate fish ecology. Fishing by trawlers in the shallow waters involves dragging with heavy wooden boards and weights which have a ploughing effect on the seabed. This, in turn, results in killing of fish eggs and larvae and destroying floral life on the sea bed which is the breeding ground of fish.

The fisheries experts, who are opposed to large-scale introduction of mechanised fishing vessels, further point out that the trawlers drive fish shoals away from their shore due to their noise, oil discharge and pollution. Sometimes the trawlers catch considerable quantities of under-sized and baby-fish, resulting in the extinction of several species of fish.

This is due to the fact that Ramponi method of fishing and purse-seining method are diametrically opposite. In the former case, each individual fishermen contributes 5 to 6 pieces of net staking his equal claim from the rampon. Made of hemp and cotton, the net consists of 500 to 700 pieces of webbing, extending from 2 to 3 kms. With about 80 to 100 persons operating, this giant net, this method stands out as one of the largest traditional craft-gear combinations used in India. The ramponkars wait for the fish following their natural and biological circle to come to the shore where it is encircled.



Contrary to this in case of the purse-seining method - which draws its name from the simple technique of a ladies draw-string purse - the purse-seiners go after the shoals, out to the sea, hunting them out and catching them, thus stopping their movement towards the shore. Moreover, the stretched net size of a purse-seiner has a mesh opening of 6 sq mm, while that of a ramponi net is around 25 sq mm. When such a net with small mesh opening is operating, there is no escape for the juvenile fish. In other words, when the nets are hauled in, the small fishes are also trapped. This by itself impairs the future of the fish stock. On the other hand, as explained by John Devaraj, the author of the exhaustive study, "Mechanisation of Fishing in Dakshin Karnataka", the operations of purse-seiners at all times without restrictions lead to capturing the egg-bearing females during spawning seasons, deterring the rate of reproduction and consequent stability of the fish stock.

A UNI survey on the impact of fishing mechanisation, undertaken in 1978, revealed that mechanised boats and trawlers are posing a threat to marine prawn resources in many coastal areas and the prawn resources are already feared to be declining in

Tamil Nadu, Goa and Ratnagiri district of Maharashtra. Due to this, the survey noticed that prices of prawns and some select fish varieties in local markets had increased so much that it has gone beyond the reach of even middle class consumers.

Yet another study of Prof. V K Srivastava, Prof M Dharma Reddy and Prof V K Gupta of the Indian Institute of Management, Ahmedabad, on the effects of mechanisation of fishing operations in Veraval zones of Gujarat showed that fish prices during 1967 and 1976 climbed by almost 400 per cent - at a much faster rate than those of other food articles in the same period. Commenting on the study, Tushar Bhatt wrote in a leading Calcutta financial daily, *Business Standard*: "Given the nature of mechanisation programme since 1972 (in Gujarat), the net increase in the table varieties of fish for the domestic market has been very insignificant. It would be vital to think of the implications of the type of mechanisation programme that is likely to be followed in the future."

The study further pointed out that the catch composition of mechanised trawlers contained a high percentage of low quality fish. It noted that the variety of fish catch grouped under "others" went up sharply to 80 per cent of total landings in Veraval zone after 1973-74, the year of substantive mechanisation in the zone. While the definition of "other" was not clear, more than 70 per cent of this consisted of trash fish, mostly used as fish meal. In biological terms this may also mean depletion of the stock of potential high value edible varieties.

Thus the mechanisation programme seems to have played havoc with the inshore ecological balance. In a paper prepared jointly by Fonseca, Saldhana and Lobo of the "National Forum for Catamaran and Countryboat Fishermen's Rights and Marine Wealth," the authors sum up the situation in the following words: "This sophisticated mechanised technology is today being misused; instead of going out in the deep sea and capturing resources beyond the reach of manual labour, the trawlers and purse-seiners have in fact turned inwards towards the

shallow waters, killing fish eggs, causing destruction of the delicate fish ecology, cutting the traditional fishermen's nets, reducing their daily fish catch and bringing strife and suffering to millions.

The consequences of mechanisation have been near disastrous for the traditional fishermen of India. Thousands of small fishermen have been thrown out of their occupation, impoverished. The fishing villages in many parts of India portray a picture of poverty and hunger with unemployed idling around. Says John Devaraj, the new result of unplanned mechanisation efforts has been "a shattered economy disintegrating families; idle men; weather beaten boats, withering nets; this is the havoc wrought by the purse-seiner." And Loy Machado, a Catholic missionary closely associated with the anti-mechanisation movement in Karnataka adds: "Poverty, dissension, frustration are making inroads into that once contented community."

Aware of these problem, a 5 kilometer limit was fixed by some state governments, beyond which alone the mechanised crafts should ply. Despite that, complaints of mechanised boatmen have come from almost all coastal states and there has been mob violence in many areas. According to a report in *Business Standard* dated 23 March 1981 said: "Are they (deep-sea trawlers) really involved in deep sea fishing? The unanimous opinion in fishing circles is a No! In private talks, all the companies who use deep sea trawlers admit that they have been fishing in coastal waters and running for the same shrimps which have for generations been caught by the small fishermen using their small wooden boats."

During early 1981, the All Goa Mechanised Boat Owners Association defied the Goa government notification prohibiting them from fishing within 5 k.m. of the shore openly and the case is now in the court. The trawler owners allege that by defining such limits the government is encroaching upon their fundamental rights and hence their livelihood is at stake. To this the answer provided by the traditional fishermen's union is that nobody is stopping them from fishing beyond 5 k.m. The law only stops

them from doing so in mechanised trawlers as it endangers the shore ecology. Besides, in their counter-affidavit, the fishermen's union has alleged that close to Rs 1 crore worth of fishing nets have been destroyed by mechanised boats in the last 10 years.

This case has assumed great significance as the judgement of the Supreme Court may affect the livelihood of millions of traditional fishermen. In the meanwhile, all this is a pointer to the fact that some drastic measures are needed to protect the uneven and depletive development of fisheries. Already in many leading fishing nations of the world, after years of indiscriminate mechanisation, there is now a trend back to softer and smaller scale fishing technology. Developed countries, with negligibly small communities of traditional fishermen, long ago adopted aggressive and over-efficient technologies in fishing and reaped a rapid depletion of their fishery resources causing considerable concern.

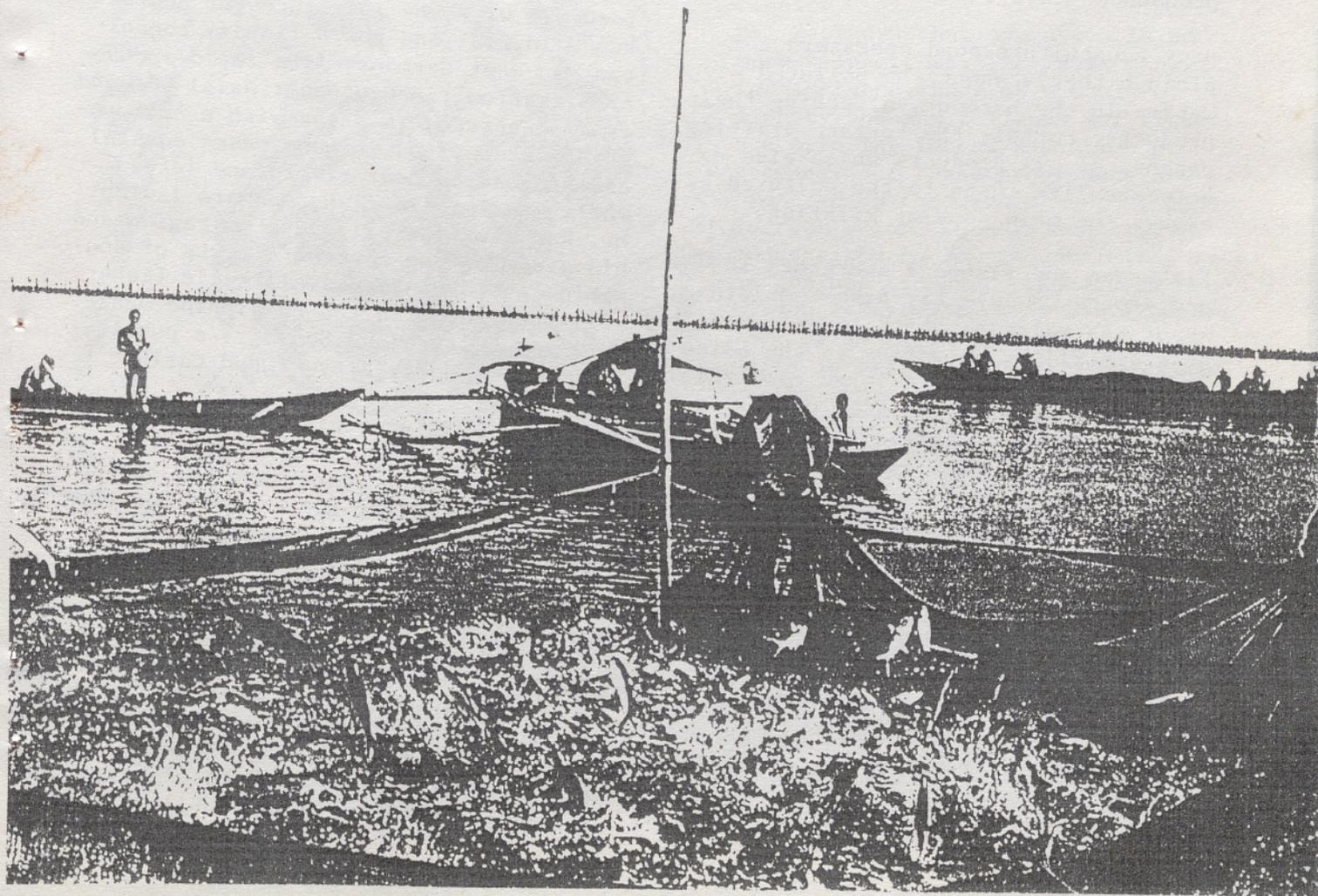
This has led to controls being enforced and a growing preference for small scale operations in developed countries. For example, from 1979 onwards, Norway has banned the construction of new trawlers and has, in effect, drawn up a programme of sinking quota of existing trawlers every year after paying due compensation to the owner. In 1980 alone, an estimated 30 trawlers have been sunk. On the other hand, Iceland, Peru and the United Kingdom have imposed drastic measures regulating methods, netmesh size, fishing effort and catch. The European Common Market Countries and the industrialised(OECD) countries have banned techniques such as purse-seining which are stunningly over-efficient but depletive, destroying marine life and endangering aquatic ecology. When these countries are learning, at a very high cost, how dangerous it is to allow fishing waters to be over-exploited, it will be nothing short of a tragedy if trawlers are allowed to ply freely along the coast here.

As to the protection of interests of small fishermen, it has been suggested that a range of six to seven kilometers off the coast should be exclusively reserved for their operations.

Mechanised trawlers should be allowed only beyond this limit as only the shallow in-shore zone is exploited while the deep sea zone and beyond is fairly un-exploited at present. As Draft Sixth Plan document rightly suggests, "Along with the introduction of large number of mechanised boats and deep fishing vessels for exploitation of marine resources, it would be necessary to protect the interest of small boat owners, who mainly fish in the coast waters. Conflicts between small fishermen operating traditional fishing crafts, mechanised boat owners and operators of large fishing vessels will be sought to be avoided through suitable legislative measures and delimitation of fishing zones for each type of fishing vessels." Moreover, traditional fishermen should be encouraged to increase the fish production whereas large houses and exporters should be

encouraged to handle processing and marketing functions, with a view to raise domestic fish consumption on one hand and foreign exchange earnings through exports, on the other hand.

It is true that every sudden change in the politics or regulations by government might indeed upset certain well-established systems or investments, but compared with the aim of reaching social peace and stability, by way of providing better protection to the poor traditional fishermen masses, the disadvantages ultimately become very minor.



SMALL FISHERMEN HIT BY TOURISM:

PRESS REPORT

Around 4000 small-scale fishermen living in the vicinity of Cebu City (Philippines) are saying that the fish have deserted them.

The reasons: pollution and over-fishing.

Indeed, one village leader in Opaó blames the disappearance of fishermen in his village on the polluted waters of Cansaga Bay which enter the Cebu Channel. Cebu is the second busiest port city, 354 air miles southeast of Manila in central Philippines, and the differences in the catch of longline fishing between the more polluted southern part of Cebu harbor and the less polluted northern part, observed as early as 1977, have become more pronounced today.

Many aquaculture pond operators complain bitterly about the polluted waters in the harbour, affecting their products, notably the surface drifting patches of oil products which give a kerosene-like taste to the cultured algae, the main food of milkfish.

Fishermen and fishpond operators in and around Cansaga Bay also complain about the molasses which is released by a distillery belonging to the Asian Alcohol Corporation. A large commercial 60-hectare pond had to stop oyster production while the remaining milkfish cultures suffer heavily from the high mortality of fingerlings.

Fishermen say that every time the molasses is released, dead fish and shrimps are soon found on the bay's surface. Those in Magellan Bay complain that catches have been decreasing since about 50 years ago (which cannot be due to pollution alone), but especially so recently, when more and more fishermen from nearby villages came over because of the sharp decline of fish there.

Studies made by the University of San Carlos estimate that around 110.000 - 150.000 (or about one-sixth to one-fourth of the city's population) are fed daily with fish caught in the polluted waters. Besides the 4000 fishermen around the city, also affected are about 15.000 - 20.000 men, women and children engaged in the hand-picking of edible snails, mussels, sea urchins, sea cucumbers, jellyfish and algae from shallow waters.

That small-scale fishermen often give way to industrialisation is a well-known fact by now, but Cebu's plight perhaps also gives a glimpse on small-scale fishing in Southeast Asia.

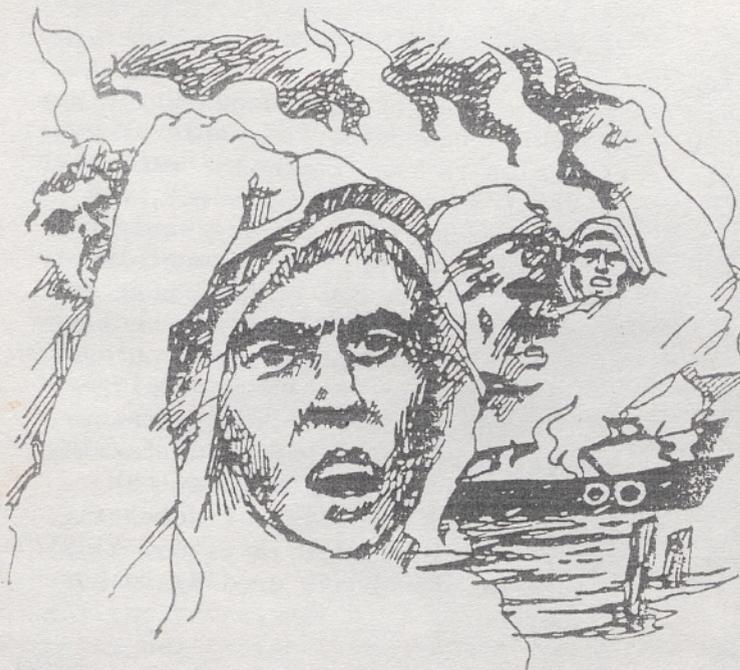
Says Mr. Norbert Rau, a marine biologist formerly with the Institute für Meereskunde in Kiel and now a fishery consultant in West Germany: *'The rapid industrialisation (in Southeast Asia) was and is concentrated in areas with a high population density, in many cases coastal areas or areas near rivers and lakes where small-scale fishermen are living.'* Mr. Rau has been all over the region and his study on the adverse effects of economic development on small scale fishery will be printed in the Philippine Quarterly of Culture and Society, a publication of the University of San Carlos.

Southeast Asia accounts for about 40% of the present global catch of more than 70 million tons each year. Some 80% of the world's aquaculture also comes from the region. Mr. Rau has seen cases where small-scale fishermen give way to economic development. *'This is most pronounced in Singapore'*, he says, *'where small-scale fishery of the mainland has practically vanished.'*

In Changi, a suburb, the reclamation of land for a new international airport, has *'wiped out a whole fishing village'*. The villagers were transferred to highrise apartments in the mainland. While flying

over the airport site, Mr. Rau observed the reclaimed area to be about 12 square kilometres. What was even worse was that a water area about five times that reclaimed (or some 60 square kilometres) was heavily loaded with sediments, most probably the result of dredging and reclaiming.

Mr. Rau also decries that greater emphasis is made on the development of more expensive marine fishing fleets than on resource management in spite of the evidence that there are limited opportunities for increasing the catches of several important fish stocks. For instance, overfishing is already acute in the Gulf of Thailand and the Java Sea. *'Conflicts are created by the modernisation of commercial fishery'*, Mr. Rau says. In East Sumatra, fishermen destroyed vessels and equipment because they could not compete with modern fishing techniques. In the Philippines, mini-tractors, purse-seiners and bag netters frequently ruin near-shore fishing grounds of small-scale fishermen, although big operators use only 40% of their own potential catching capacity.



'It can be expected that in the course of the extension of the exclusive economic zone to 200 nautical miles, those nations with established distant water fisheries like Japan and Taiwan will create joint ventures with local companies of developing countries in Southeast Asia'.

Tourism is also high on the priority list of many Southeast Asian Governments who want to lure tourists to clear beaches and secluded coves.

Consequently, hotels and beach resorts are erected in clean and secluded areas where water is unpolluted and coral reefs are still intact and beautiful.

In Sicogon Island in the Philippines a beach resort has forced the removal of a fishing village because, Mr. Rau says, *'the management of the enterprise did not want the tourists to see the miserable life of the fishermen there.'* The tourists themselves compete directly with fishermen with their spear fishing.

Kovalam the internationally acclaimed beach resort in Kerala - India - was built by displacing the fishermen of this village. Fishermen who cross that area while tourists tan themselves are caught and fined.

In Singapore's Sentosa Island, small-scale fishermen were evacuated to give way to a huge recreational area with beaches, resorts, golf, swimming pools, restaurants and nightclubs.

In other places, fishermen succumb to the lure of easier income by selling souvenirs and services to overpaying tourists and voluntarily give up fishing.

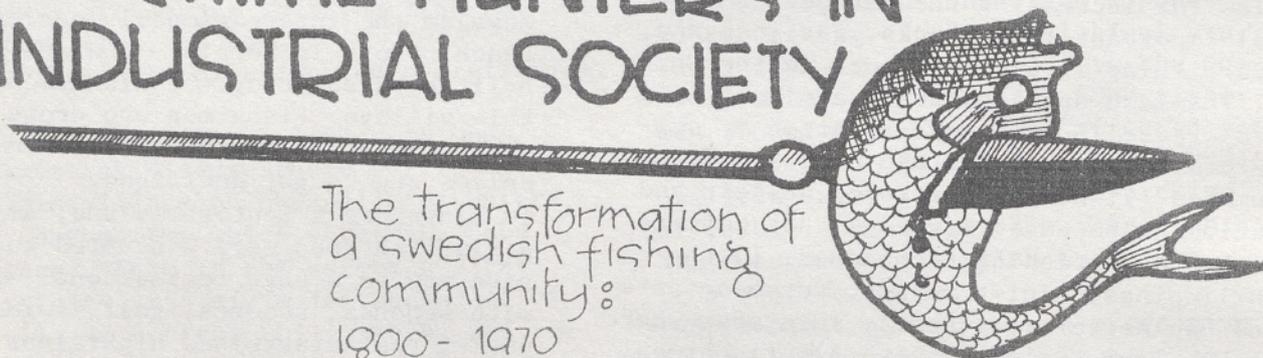
Mr. Rau says that education is not of much help either. The Philippines, for instance, have 68 schools of fishery and six colleges for fishery are offering formal education programmes. But these programmes are *'centred on the development of aquaculture which, in this country, is constrained by low productivity, lack of trained manpower, inadequate technology transfer systems and a general lack of an adequate data base.'*

'With an official policy which aims at the conversion of rich mangrove swamps into relatively unproductive aquaculture ponds, it may be expected that in spite of all educational efforts small-scale fishermen will continue to use obsolete and destructive fishing methods which will destroy the very basis of their own livelihood,' contends Mr. Rau.

He says it may be worthwhile to consider ways of involving industry in the development of small-scale fishery. For a start, millions of productive small-scale fishermen in the world are a huge potential market for boats, engines, catching and processing equipment.

MARITIME HUNTERS IN INDUSTRIAL SOCIETY

The transformation of
a Swedish fishing
community:
1800-1970



Bua is situated on the west coast of Sweden, in Varo, which at the beginning of the 19th century was a rather traditional agrarian community. Between 1800 and 1860, the economy changed rapidly, after a doubling of the local population. The majority of the landless established themselves as small-scale fishermen and combined their coastal fishing with several other subsistence activities.

Fishermen (1880-1940)

Towards the end of the 19th Century, the fishing crafters became deep-sea fishermen with the help of state loans and the state constructed sheltered harbours along the unprotected coastline. The relations between fishermen and merchants developed into a 'patron-client' link. Some entrepreneurs bound fishermen to them through loans for new fishing equipment.

In the years during the first World War the fishing fleet was gradually mechanised, a development which brought a short but important boom to the community. However, the pattern of exploitation of the sea's resources remained based upon seasonal fisheries.

Trawlermen (1940-1970)

The years during the second World War brought a new period of rapid economic expansion to the community "with high prices for everything landed", and larger boats with trawling equipment were bought by most fishermen. The trawl created a new fishing gear and gradually replaced the old techniques of drift-net fishing, lobster trapping and longlining. Year-round employment in fishing and stable cash earnings were secured and subsistence farming was rapidly abandoned. Today the fishing fleet consists of trawlers, forty to eighty feet long, and a small number of open boats used by inshore fishermen.

A more intensive exploitation of local waters has brought greater competition for resources, but this development has, to some extent, been mitigated by the specialisation of different niches among the individual fishing units. The composite pattern of exploitation, combining many different niches, has also made the Bua fishermen less vulnerable to the great fluctuations in the herring fishery. Short fishing trips, careful handling of catches and a well developed

marketing organisation have made it possible to increase profits.

Social organisation

At the turn of the century, when capital investment in fishing was modest, most crews were loosely structured with frequent exchange of personnel based upon neighbourhood and friendship relations as much as on kinship ties. As fishing became more intensive after the introduction of drift nets and decked boats, it became more common that crews were based upon households or extended families. The growing capitalization of fishing made control and maintenance of capital a central issue and family-based crews proved themselves the most convenient form of ownership corporation. A fisherman who formed a team with his sons secured an advantageous pooling of resources, all profits going straight into the household chest. During this expansion phase, nearly all loosely structured crews disappeared and were replaced by family units with joint ownership of capital, where the members contributed their labour and capital in return for an equal share of the catch. Together with his sons, the fisherman gradually accumulated fishing capital, in part by exchanging old boats and equipment for new and better ones. When the father retired, his share was usually transferred to the sons who continued in partnership together. Daughters never inherited any fishing capital.

Attempts of land-based entrepreneurs to take control of production have occurred in the past, but they have usually been thwarted by fishermen's refusal to man their trawlers. Furthermore, the adaptive resiliency of family corporations and their frequent division into smaller units has resulted in a proliferation of capital, deterring concentration of ownership in a few. Except one, all trawlers in Bua are owned by several fishermen. The distribution of returns is based upon a simple system of 'boat-shares' and man-shares.

The fishing results of individual crews are constantly discussed and judged in the whole community, and relations between fishing crews rest upon a somewhat uneasy balance between cooperation and competition.

Cultural patterns

The fishermen share more in common with fellow fishermen along the west coast than with neighbourhood farmers. Women were strongly integrated in the fishing economy, but they never took part in the actual fishing.

After the Second World War, when new economic opportunities arose, many sons of fishermen took jobs on shore. With the growing occupational differentiation value conflicts appeared. New scales of preferences and parameters of prestige were introduced into the community.

Fishermen in peasant society

A common trait of the maritime settlements of crafters or landless peasants all over Scandinavia, Ireland, Scotland etc. is the marginal economic position of the fishermen. Quite often his status in the local peasant community is low.

Typical of many North Atlantic regions is the integration between agrarian and maritime sectors of the coastal economy. The fishermen - crafters were often subordinate socially, economically and politically to local landlords or landowning farmers.

Fishermen in industrial society

In the wake of industrialization and modernization, some sectors of the fishing industry have been integrated into large-scale trawler companies. Others have retained much of their traditional structure.

In many coastal regions, the local trader or fish merchant played an important role in the economy of the fishing community, even during the first half of this century. There are several reasons for this economic dependence upon local entrepreneurs. In this situation, withholding power of a peasant fisherman was low and his bargaining position often weak. The fishermen often disposed of their catch in exchange for other commodities and often became involved in a credit-relation with a standing debt. This dependence furthered the growth of closed clienteles.

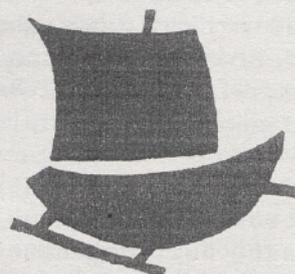
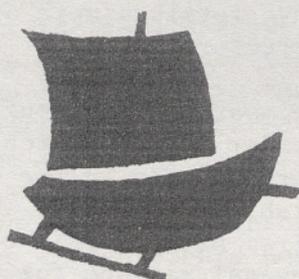
The persistence of family crews has been a dominant feature of many contemporary fishing communities. During the 20th century, the capitalization of fishing has strengthened the role of the family crew. This kinship unit has proved to be a viable type of corporation for capital management. The "herring boom" of the early 1960's led to a rapid growth in the Swedish trawler fleet, but also to a disruption of the traditional economic structure. In 1967, this boom was over. Over-expansion and over-fishing led to drastically reduced incomes and started an exodus from the fishing industry.

Bua with its economic adaptation characterised by cautious capital management, family crews and composite coastal trawling for human consumption showed much greater "shock absorbing capacity" during the recent crisis. While many fishing communities on Sweden's west coast have lost 50-70% of their fishermen during the last decade, communities of the Bua type have kept their levels of incomes and the number of active fishermen much more stable.

Cooperating competitors

The homogeneous social structure of many pre-industrial fishing communities was also furthered by well developed systems of mutual aid and redistribution.

There is a ritual and magical superstructure around the notion of fishermen's luck which it was believed, could be manipulated by others. The beliefs and accusations of magic manipulation mirror actual social conflicts of competition for a common property resource. The dependence upon a marine common-property resource no doubt influences the fishermen's belief and behaviour, but how this dependence is structured into cultural forms depends upon the economic and social structure within which the fisherman is operating.



3 fishermen respond:



Lehrplan
Lehrplan





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INTRODUCTION

This dossier of documentation has been prepared as background material for the International Conference of Fishworkers and Their Supporters, Rome, 4-8 July, 1984.

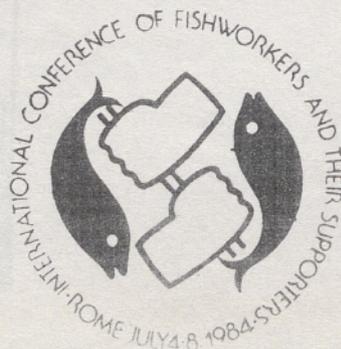
There are four sections, each relating to one of the issues of concern of fishworkers, to be discussed at the conference:

1. The impact of national and international fisheries development programmes and industrialisation on the working and living conditions of fishworkers.
2. The changing characteristics and the future relevance of the small-scale fisheries sector, which in most developing countries continues to be the backbone of the fish economy.
3. The response of fishermen and women to the negative effects of industrialisation and of fishery development programmes, on their work and livelihood.
4. The degradation of the aquatic eco-system caused by indiscriminate fishing and pollution of seas, lakes and rivers, and its effects on fishworkers and on marine resources.

We are grateful to all those authors who have made their writing and studies available for this purpose. Many of them are closely related to fishworkers and well acquainted with the concerns of traditional fishermen and women in different parts of the world. Some authors could not be contacted, but we expect the use of their writings to highlight the concerns of fishworkers and traditional fisheries, will be in line with the intentions of their articles.

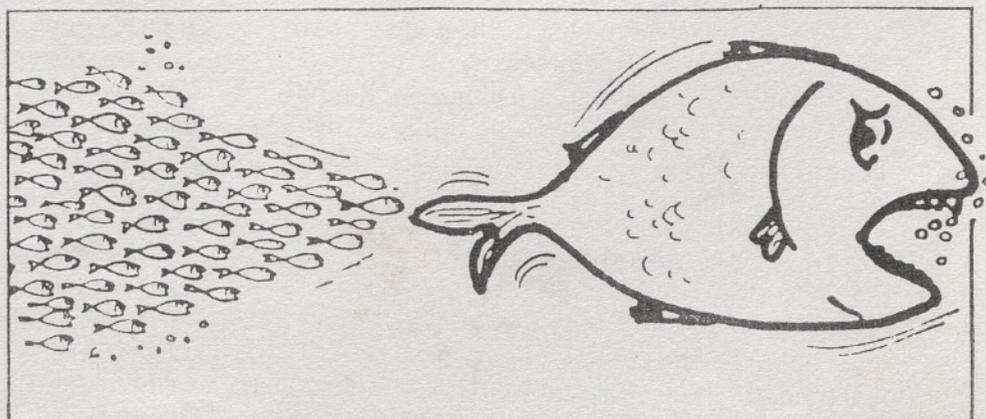
Considering the amount of material, summaries have had to be made in some cases, and many footnotes could not be included. However, for those who need the full article, a copy of the original can be requested from one of the three organisations which gathered the material, by contacting DAGA, 57 Peking Road 5/F, Kowloon, Hong Kong.

The gathering of the material was the collective effort of the Fisheries Research Cell of the PCO (Programme for Community Organisation) in Trivandrum, India; SAM (Sahabat Alam Malaysia - Friends of the Earth) and CAP (Consumer Association of Penang) in Penang, Malaysia; and DAGA (Documentation for Action Groups in Asia) in Hong Kong; the dossier was put together and printed at DAGA, Hong Kong.



big fish
eat
**SMALL
FISH**

AYESHA KAGAL





India's export of seafood reached an all-time high of Rs 200 crores in 1978. But the price of fish in local markets has also risen and supplies have been steadily falling. This is the inevitable result of an export-biased Government policy.

The unthinking encouragement given to mechanised craft and capital-intensive technology in a sector which is traditionally labour-intensive has resulted in growing hardship for the fishing community.

(N.B. 1 lakh = 100.00 Rupees
1 Crore = 10 million Rupees)



A deceptive clam descends over Velsao, the little Goan fishing village. The hamlet is deserted. No country craft are out at sea, the edges of their nets ringed by seagulls. The lie upturned on the sands, unused. No groups of men sit under the palm-trees mending their nets or playing cards - those who have not been arrested have fled the village. Their wives do not know where they have gone or when they will return. At night, afraid of police raids, they are said to shelter in the convent run by the Sancoale sisters. Then, on March 8, 1979, fishermen from neighbouring Benaullim village come to Velsao to put out the rampons (large beach seines). Eighteen of them are taken in by the police. The tension mounts.

Since February 16 this year, Velsao has become the focal point of the Ramponkar struggle when, for the first time in the so far peaceful agitation, these fishermen took to violence. The

trawlers NISHANT and BON VOYAGE were hijacked and set on fire by a group of fishermen for violating the five-fathom limit - a zone reserved for traditional craft, according to a 1974 Goa, Daman and Diu fisheries rule. The incident sparked off a series of arrests, including that of 29 year old Matanhy Saldanha, the firebrand leader of the movement.

The violence at Velsao marks a turning point in the four year old struggle of the traditional fishermen of Goa who have, over the recent past, been paying the price for a rapid and unplanned spurt in mechanised craft. The cost is in terms of a fast-depleting catch, damage to their nets and an ecological imbalance caused by indiscriminate "overfishing". The Goan agitation now takes on the character of fishermen's movements along other parts of India's coastline, mainly Tamil Nadu and Kerala, where frustration with Government policy has resulted time and again in violence, arson and death. All this is the inevitable result of the compromises made by Third World countries vis-a-vis developed nations over the export and import of seafood and technology. It is also a reflection of a developing country's failure to reconcile the need for mechanisation and, subsequently, progress with the protection of the interests of some six-and-half million fishermen for whom the "progress" is ostensibly intended.

Ecological Problem

The depletion of fish resources is today a worldwide ecological problem. Dutch jurist Hugo Grotius's treatise of 1609, The Freedom of the Seas, no longer holds good. For three-and-a-half centuries this was the only widely accepted "law" for the watery two-thirds of the earth. Grotius had maintained that "the sea is common to all because it is so limitless that it cannot become a possession of anyone and because it is adapted for the use of all, whether we consider it from the point of view of navigation or of fisheries". But this is no longer true. Resources from the sea can be and, as we know, are being steadily depleted.

From 1950 to 1970 there was a worldwide boom in fishing. Fleets expanded rapidly and the global fish catch quadrupled. The annual yield rose to 75 million tonnes, mainly caught in the shallow waters of the continental shelf which extends, on an average, to 200 miles off most coastlines. Unfortunately, nearly half of this catch was made by what has been termed the "vacuum-cleaner" fleets of a handful of countries which had the necessary technology for fishing in distant waters. These were pitted against others who had the need for these protein-rich resources but not the knowhow. (Japan for instance, which fishes in almost every sea across the globe, accounts for 14.4 per cent of the world catch of 10,620,000 tonnes and 39 per cent of her offshore yield is from the coastal waters of other countries).

Wars At Sea

The battle by the developing countries to protect their coastlines from the highly mechanised, alarmingly efficient fleets of other countries who went in for indiscriminate overfishing was on. The "cod war" between Britain and Iceland, the "tuna war" between the United States and Ecuador, the "lobster war" between Brazil and France -- all these were marked by tension, violence and armed confrontation. As R.P. Anand points out in Law of the Sea, they are "grim reminders of the unequal struggles involved here".

In November 1967, in a speech before the First Committee of the UN General Assembly, Arvid Pardo, the representative from Malta, observed that some countries had begun ".....to use their technical competence to achieve near unbreakable world dominance through predominant control over the seabed and ocean floor....which will lead to a competitive scramble for sovereign rights over the land underlying the seas and oceans, surpassing in magnitude and its implications the last century's scramble for territory in Asia and Africa".

Since 1958, when the first UN conference on the Law of the Sea was held, many attempts have been made to tackle this immense problem of determining the

sovereignty of the seas. The major confrontation, not surprisingly, has been between the developed and the developing nations, the former determined to maximise the benefits based on their superior technology and the latter anxious to see that they did not lose out in the scramble for exploiting the earth's last frontier.

Already by 1970, when the boom in fish yield came to an abrupt halt, it was evident that the excessive demands made on the seas had resulted in steady depletion of fish stocks. Overfishing was no longer the exception - it had become the norm; and there was a drastic decline in certain species of cod, sardines and salmon. Even the lowly herring, once common fare in Germany and Scandinavia, became a luxury. And the fish and chips of English stalls grew more and more expensive. Short-term goals had taken precedence over long-term objectives. And this was the price that had to be paid.

In 1974, in Caracas, Venezuela, 2,000 delegates from 137 countries met. From this ten week session there emerged the creation of a 200-nautical-mile marine boundary for each country. Many nations whose own seas were depleted were severely hit by this EEZ (Exclusive Economic Zone) restriction. Japan, for instance, no longer able to go in for direct fishing, faced a 40 per cent setback in her total catch. Undeterred, she merely changed course and steered towards trading - couched in terms of "joint ventures" and "cooperative fishing ventures" - offering advanced technology to developing countries in return for exporting the increased catch. Doubly useful since the highly intensive methods now being rejected by the developed nations are dangled as bait before Third World countries. So while the OECD countries, after years of intensive mechanised fishing, have banned purse-seining (i.e., the use of a very fine mesh-net, which initially had remarkable results, since the sea is rendered practically barren in a few years) and are going in for smaller-scale fishing technology, in India the Karnataka Government is joyous about the discovery of the "purse-seining

revolution" and the "breakthrough" in the Karnataka fishing industry. While Norway has banned deep-sea trawling in certain zones, India goes in for the import of deep-sea trawlers (even before the resources of the Indian Ocean are mapped out) which fail "stability" tests and lie idle, resulting in a loss of Rs 4,000 a day.

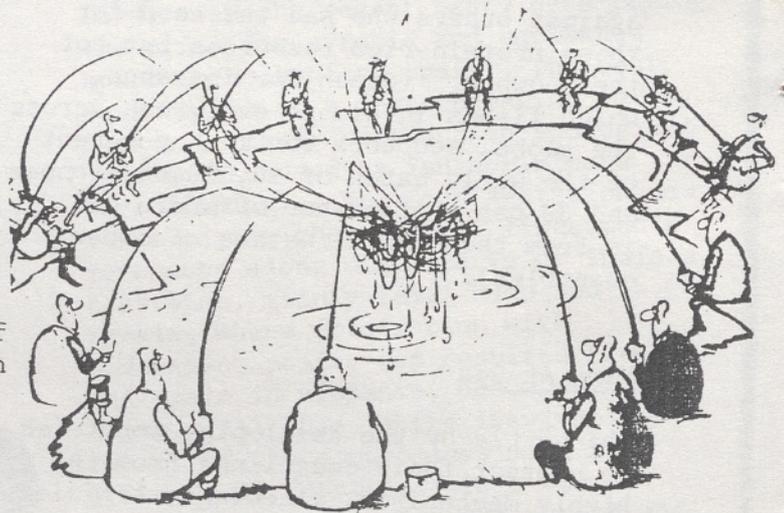
The character of the Indian fishing industry and the problems of her traditional fishing community, 6,500,000 strong, cannot therefore, be examined in isolation, but must be viewed in the larger context of Indian's position in the global situation. Only then does one see how a developing country, with limited bargaining power, continues to adopt compromising stands in relation to the developed countries - how home demands take a back-seat, how unemployment and impoverishment of traditional fishermen, now rising fish prices and scarce fish supplies in local markets lose out as priorities to the lure of export and the glint of foreign exchange. And how, when vested interests of multinational corporations and capital-rich investors take over to "revolutionise" a large traditional sector, they begin to influence Government policy.

India's coastline extends over 4,000 miles and includes over 1,280 islands, the mid-ocean archipelagos of the Andamans and the Nicobars and Lakshawadeep. From January.15, 1977 the Traditional Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act came into effect.

In 1977 India ranked eight among the major fishing nations of the world with an approximate average annual production of 1.5 million tonnes - only 3.25 per cent of the global production. Japan topped the list, with 14.4 of the total production; China accounted for 9.33 per cent; and even the Republic of Korea, with a population of 36 million, produced slightly more than India.

In terms of per capita consumption of fish, India's record is even more dismal. The annual Japanese per capita consumption is 40.8 kg, while the Indian figure stands at 3.04 kg.

(This level of consumption only provides a third of the minimum per capita protein requirement. By the end of the century we will need six times as much to maintain even this level. India's per capita consumption of protein - at 4.9 grammes a day - is among the lowest in the world; and fish, being cheaper than either meat or eggs, is the most feasible solution to the problem of malnutrition which affects more people today than it did 25 years ago).



Quest for a new law of the sea

Mechanised Craft

According to the Central Marine Research Institute, approximately 75 per cent of the marine fish catch is accounted for by traditional fishermen who live in 1,800 villages and use 200,000 fishing craft. Mechanised craft, numbering 16,000 (out of which 14,000 are in operation), make up barely 5 per cent of the total fishing craft in the country.

Mechanised craft - different types are usually loosely banded together as "trawlers" - have the advantage of being able to go further out into the sea and often, according to their size, can stay out for several days on end. They have the additional advantage of not being held to ransom by the vagaries of the weather and are able to carry largely nets and, subsequently, greater catch than non-mechanised craft.

Unlike the traditional methods of fishing by rampons, gill-nets, cast-nets, cables or hooks and lines, however, which are gentle and of

low intensity, trawling - conducted by dragging heavy beams and weights on the seabed in order to upturn the slush - is of high intensity. During the ploughing effect, fish eggs and larvae are destroyed, thus disturbing the process of biological regeneration. Also, the noise and the turbidity caused by the sediments upturned discourage the entry of fresh fish shoals from deeper waters.

Trawling operations, using fine mesh-nets which do not allow small fish to escape, are often conducted in groups which advance in formation, almost like a naval battle, combing an area thoroughly - undoubtedly highly efficient but also very damaging to the ecological balance of the seas, especially the shallow waters just off the coast that teem with fish life.

It is over the fishing rights of these shallow waters that the major confrontation between traditional and mechanised crafts has arisen. Current accepted fish resource estimates for Indian waters place the annual sustainable yield at 4.5 million tonnes - of which 50 per cent lies in the depth of 0 to 50 metres, 40 per cent between 50 and 200 metres and the remaining 10 per cent beyond 200 metres. Therefore, 50 per cent of our entire fish wealth lies in inshore waters - occupying barely 10 per cent of our EEZ.

The Prawn Business

In these shallow waters is also found shrimp - the backbone of India's export earnings and the main target of mechanised craft which concentrate single-mindedly and to the detriment of other species on this lone money-making item. Owing to the concentration on the prawn business by exporters and big business houses which have come into fishing, attracted by the promise of heavy commercial returns, India occupies a top position in shrimp production.

In 1976 India beat her nearest rival by a 13,000 - tonne catch, with 14.7 per cent of the world total: 196,000 tonnes. From 1966 to 1976 the average annual growth rate of prawn production was 8 per cent, nearly twice as high

as the rate of growth of other fish production; and in 1977 this single item accounted for 73 per cent of our marine exports in terms of quantity and 97 per cent in terms of value.

Prawns therefore promise lucrative returns and, naturally, have attracted the attention of big business houses. As it is, the introduction of mechanised craft resulted in businessmen - not from the fishing community - entering the field as they were in a far better position to take advantage of Government loans and subsidies to buy mechanised craft. Consequently, most mechanised craft in the country, like in Goa - as the Director of Fisheries M R. M. Dhawan reluctantly attested to - are owned by "moneyed unwanted elements" and not by traditional fishermen. The entry of big business houses which have begun to invest heavily in fishing further changed the picture.

Union Carbide, with an investment of more than Rs 10 crores, owns over ten trawlers; Tatas have invested Rs 1.5 to Rs 2 crores and own more than four trawlers besides joint collaborations with the Thais; New India Fisheries have sunk in Rs 80 lakhs and own six trawlers and two plants; ITC has put in Rs 1 crore and own four trawlers; and Britannia Biscuits have three mechanised craft and three trawlers after investing Rs 80 lakhs.

The big houses brought with them capital, sophisticated technology and a respectable brand image. They financed the purchase of fishing boats and the setting up of processing plants in return for the agreement that exportable items would be sold to them. Concentrating on exports, they were able to obtain import entitlements and now dominate the prawn export business. Four big houses between them cornered 19.26 per cent of Bombay's prawn export in 1977 and five big houses accounted for 12.3 per cent of Madras' total frozen prawn export.

But, while the big houses have contributed to "revolutionising" the fishing industry in terms of providing well-equipped processing plants and allied infrastructure, the main implication has been a lop-sided development of the fishing industry.

Moreover, as they confine themselves to prawns which have a ready foreign market with easy money advances and high profits, it means increasing concentration of mechanised boats operating in the already oversaturated shallow waters. The argument put forward by big houses is that the trawlers imported are not deep-sea vessels. They threaten to quit the fishing industry if they are not allowed within the 20-km zone, where the catch is ensured and the waters are known.

Deep-sea trawling is therefore more eyewash than anything else and provides a convenient label to collect deep-sea export incentives. Catches by Tata charter vessels sold in Singapore are said to contain at least 80 per cent inshore species; and, in the Andamans, which are used by the Tatas as a clearing-house, they show three categories of fish without stating their species - an effective method to conceal their catch.

The role of big houses, therefore, has been more a negative than a positive one. A fishing expert alleged that they have failed to contribute to the development of the industry since their main role is one of processing the country's normal catch - 75 per cent of which is caught by traditional fishermen. What are the other implications in terms of impact to the labour-intensive fishing sector? Not surprisingly, the catch of traditional fishermen is steadily falling and over the last ten years, fishermen of Goa complain that their haul has been reduced to a fraction of what it once was.

Overfishing

The impact of overfishing is also being felt. A news item reported that a few shrimp units in Cochin were forced to close down. As a leading seafood exporter stated: "We have reached the upper limit of our exploitable shrimp resources and any further increase in fishing effort will bring continuing diminishing returns". This year, in Goa, there was an acute shortage of mackerel and the fishermen are now faced with fluctuating fish movements and depleted catch.

In addition to the damage to marine ecology, intensive mechanisation has created other problems for the fishing community. One is the damage done to their nets which get torn by trawlers that operate day and night and for which they rarely receive any compensation. Also, the reduced catch has forced many of them to take up jobs as trawler hands.

The Government of India offers little protection to the fishing community - a sector which, as the Programmes Evaluation Organisation of the Planning Commission pointed out, was capable of generating almost seven times the employment opportunities offered by mechanisation. There is woefully inadequate governmental legislation to ensure that either the fishing sector or the fish ecology is safeguarded. The Act in existence till today is of 1897, drawn up by Dr F Day of the Madras Medical Service, which prohibits wanton destruction of the fish within a coastal zone of one marine league - 5½ km. Since then both the Central and State Governments have been passing the buck, dragging their feet over passing a new maritime Bill.

The States claim that they can only act after a Central Bill is enacted and the Centre states that, since fisheries is a State subject, it can only work on recommendations from the States. The only placatory gesture offered to traditional fishermen was a letter from the Agriculture Secretary, G.V.K. Rao, Central Government, on March 29, 1978, which directed the States to reserve an exclusive zone of 5 km for them. However, passing an order is one matter, enforcing it is another. More so since a few States have neither the patrol boats nor the Coast Guard reserves to implement it.

All along the coast, groups of fishermen have been forced to tackle the problem themselves, resorting to *morchas*, *dharnas* and finally, when all fails, arson. In Cochin recently, after a number of trawlers were gutted, Section 144 was imposed on the seas. In January this year, an 18-year-old boy, Basu, from Kattur, Alleppey, was killed when a trawler rammed into his country craft off the Kerala coast. In Tamil

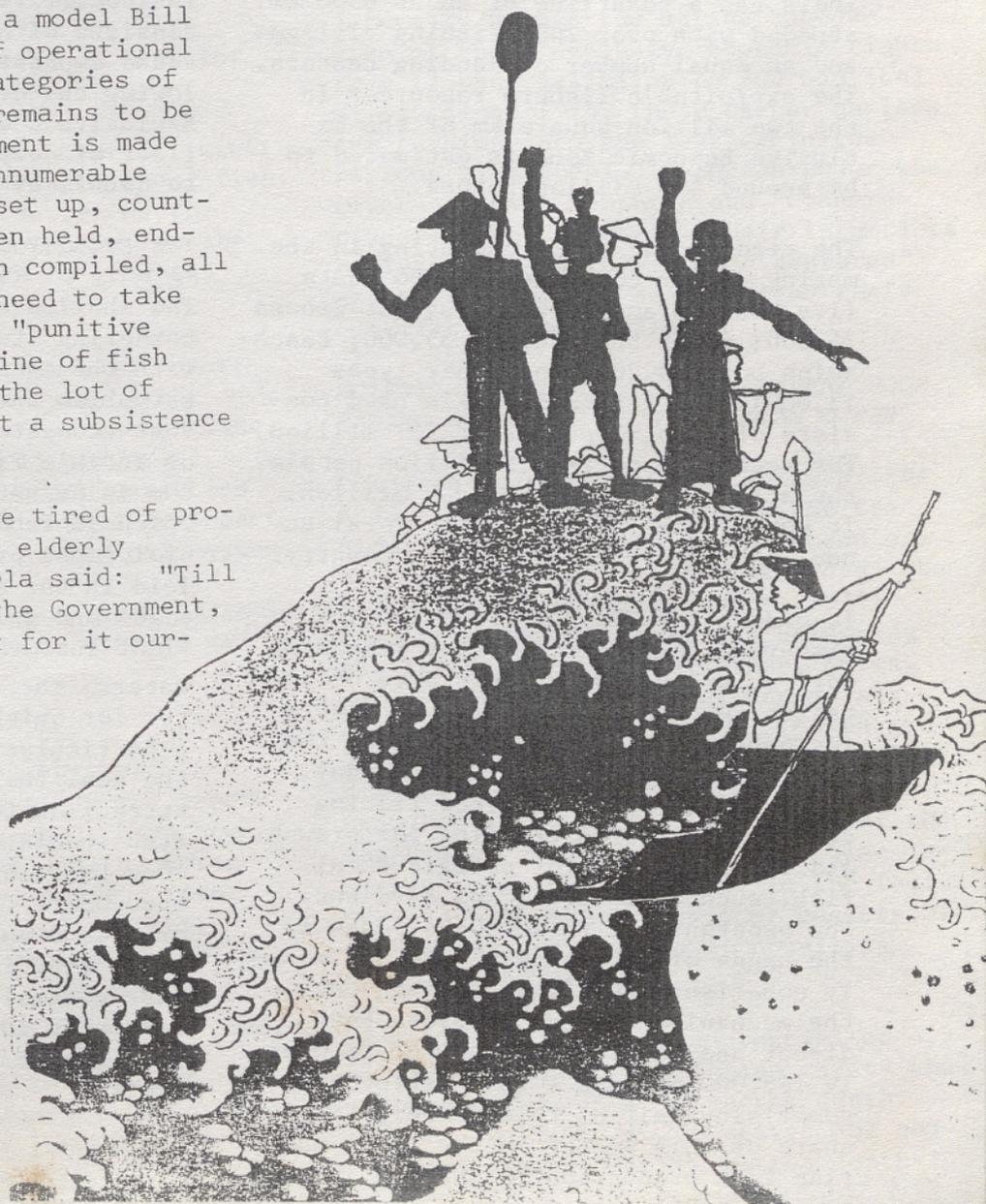
Nadu, there has been a bitter struggle going on between catamaran fishermen and owners of mechanised craft and there is virtual open warfare on the high seas.

Protected Zone

In July 1978, 13 unions from the maritime states came together and formed the National Forum for Catamaran and Country-boat Fishermen's Rights and Marine Wealth. Their demands include the establishment of a 20-km protected zone, the establishment of Naval Coast Guards to enforce the law, a regulation-net size to be specified and a stiff penalty for violation of the reserved zone.

On February 26, Surjit Singh Barnala, the Union Agriculture Minister, announced that the State Governments were being sent a model Bill for the demarcation of operational zones for different categories of fishing vessels. It remains to be seen how much improvement is made on the 5-km order. Innumerable committees have been set up, countless seminars have been held, endless reports have been compiled, all of which talk of the need to take "firm steps" and pass "punitive laws" to prevent decline of fish stocks and to better the lot of fishermen who "eke out a subsistence living".

The fishermen too have tired of promises. As a grizzly, elderly fisherman from Vengurla said: "Till we get justice from the Government, we just have to fight for it ourselves."



CHRISTOPHER FONSECA,

FISHERMEN of INDIA DEMAND

FISHERIES SECTOR IN INDIA

India has a coastline of about 6500 km. studded with over 2000 fishing villages and an equal number of landing centers. The exploitable fishery resources in the two million square km of the Exclusive Economic Zone is estimated to be around 4.5 million tonnes.

The traditional craft operating in the marine sector comprise 192,200 boats (i.e. catamarans 60,000; dug out canoes 75,000; plank built boats 35,000; beach-seine boats 9,200; and other types 13,000). The gear and tackle used consists of a total number of 2.7 million. The sector supports 6.5 million people, the active fishermen being 2 million. It contributes to 70% of the total annual marine production in the country.

In order to equip the traditional fishermen to obtain a better return of harvest by extending their area of operation, mechanised fishing boats were introduced since the inception of the first Five Year Plan in 1951. Today, there are 16,500 mechanised fishing vessels engaged in trawling for prawns and purse-seining for pelagic shoal fish, such as mackerel and sardines. The ownership of these boats rests in the hands of 8000 people, who are mostly non-fishermen. It is claimed that the mechanised sector provides both direct and indirect employment to nearly 165,000 persons - the fishing crew comprising half of this number. The share of this sector in the total marine fish production is 30%.

The commercial deep sea fishing fleet consists of nearly 200 vessels. With the added emphasis on deep sea fishing following the declaration of the 200 mile Exclusive Economic Zone, the fishing fleet of deep sea vessels is targeted to double by 1982-1983.

THE ECOLOGY OF FISH IN SHALLOW WATERS

The shallow coastal waters of India bordering its 6500 km coast-line, along with the connecting network of rivers, estuaries and backwaters constitute a vast ecosystem, which are the nurseries of India's fish resources. This ecosystem is pulsating with benthic life, which is food for fish and encourages biological productivity. Fish eggs are laid in the soft mud along the coastal edges and grow into larvae; some larvae float into this zone from the deeper waters; they breed in this vast ecosystem for quick growth until they attain a particular size before returning to the sea. The shallow waters become an attraction for the pelagic and demersal fish shoals of the deep waters, as they come to feed on the small fish life on the coast. This biological interaction creates a vast population of big and small fish in the shallow waters. This vast coastal nursery supplies the fish resources in the inshore waters for the traditional and mechanised boats to exploit.

*PASSIVE TRADITIONAL MODES OF FISHING,
TRAWLING CUM PURSESEINING AND THE
ECOLOGICAL BALANCE*

The traditional methods of fishing are all slow, gentle and of low intensity. Trawling on the other hand is conducted by dragging heavy weights and beams on the sea bed in order to squeeze the prawns out of the sea bed. In the process the fish eggs and larvae and even the benthic life breeding in the soft sediments are killed. So also, the undersize fish which get entangled in the trawl are destroyed.

The turbidity of waters caused by the plough-like dragging of weights, together with the noise, drives away and deflects the new shoals which have come from the deeper waters to the coastal waters for feeding and spawning. The intense, continuous criss-crossing of dragging operations by the flotilla of trawlers, carried on day and night, ultimately annihilates all the life from the sea bed, allowing no time for natural biological regeneration.

Purse-seining is a highly over-efficient method of fishing the pelagic shoal fish. But it is equally destructive as the trawling as it leaves no scope for the juvenile pelagic species to grow and proliferate.

The ecological equilibrium built over centuries is being destroyed by the trawlers and purse-seiners. The decline of edible crab, sea shell prawns, mackerel, sardines and other varieties is a manifestation of the adverse impact of the collapse of the ecological system.

*THE HUMAN TRAGEDY CAUSED BY MECHANISED
TRAWLERS AND PURSE-SEINERS FISHING IN
SHALLOW WATERS*

The mechanised trawlers and purse-seiners, intended to tap the resources in the deeper waters outside the reach of the traditional fishermen, have been encroaching the coastal waters, doing destructive fishing and causing fish scarcity to the traditional sector. The intrusions by the mechanised boats into the domain of the traditional fishermen, including the cutting of their nets, have resulted in violent confrontations causing in the last two years itself over 60 deaths, injuries to many and arrests of thousands of protesting fishermen.

*WORLD WIDE DEPLETION OF FISH CATCH
DUE TO RECKLESS TRAWLING AND PURSE-
SEINING - THE CONSEQUENT TRAWLER RUSH
TO THE INDIAN OCEAN AND THE CRIMINAL
ROLE OF INTERNATIONAL AID*

Decades of reckless trawler fishing, resulting in drastic decline of fish catch, witnessed the World's leading fishing nations like Norway, Iceland, Peru and Britain imposing stringent measures to conserve their fishery resources by regulating fishing methods, mesh size, fishing effort and catch. The ECM nations impose strict quotas on their member countries and the OECD-countries have banned techniques such as purse-seining which are disturbingly over-efficient.

By 1975, having destroyed the marine resources of their own seas, particularly after the Peruvian fishing collapse, the developed nations unilaterally pushed the marine boundaries of their exclusive economic rights from 12 nautical miles to 200 nautical miles. Since 1975, these richer nations are rushing into the less exploited regions like the Indian Ocean under the cover of joint ventures and "Cooperative fishing Ventures". Their intentions behind the outwardly "noble gestures" are plundering our seas to feed their own fishing industries.

*SCIENTIFIC FISHERY SURVEYS REVEAL POOR
MARINE RESOURCES IN THE INDIAN OCEAN*

Compared to the rich fish zones of the Atlantic and Pacific Oceans, the tropical oceans like the Indian Ocean are by nature poorer in fish resources. The FAO World Fishery Statistics (1975) show that the few countries bordering the Arctic Ocean, USSR, Japan, Korea, Norway, Denmark, Iceland, Canada and U.S.A. accounted for 50% of the entire world fish catch. The scientific pelagic fishery surveys carried out by the UNDP/FAO for the last five years of the South West coast of India have also indicated poor sparse shoals in the Indian Ocean due to the presence of pockets of low oxygen and absence of upwelling currents.

Of the total estimated potential of 4.5 million tonnes of the Indian waters the inshore waters upto 50 metres depth account for 50%, 50-200 metres 40% and the zone beyond the 200 metres depth 10%

*THE PHILOSOPHY OF FISHERIES DEVELOPMENT
IN INDIA TODAY*

The philosophy appears to be just blindly importing Western capital intensive sophisticated mechanised technology, insensitive to the misery of the 6.5 million coastal fishing people. See what the Agriculture Secretary, Government of India, considered the priority areas of the Sixth Plan for fisheries development. Speaking on 28th September 1978 at the Central Institute of fisheries Education, Bombay he spoke about "financial credit for fishing fleets; survey of fishing zones; fishing harbours for expanding fleet; improvement for handling, storage, processing and marketing; massive extension of developed technology; providing the consumer with quality fish and fish products through more fish outlets; joint ventures with foreign firms and charter of foreign vessels to boost deep sea fishing." Nothing was said about the traditional fishermen who form the backbone of Indian fisheries.



*FISHERMEN OF INDIA DEMAND APPROPRIATE
TECHNOLOGY IN THE INDIAN FISHERIES
SECTOR*

From the Indian fishermen's point of view, any plan of 'MODERNISATION' must have the following attributes:

1. The technology must not be deleterious to the ecology, otherwise, the fish resources will dwindle and bring ultimate misery.
2. The new technology must raise the productivity of the existing labour-intensive units without causing labour displacement and unemployment.
3. Modernisation must raise the standard of the entire mass without concentrating wealth in a minority.

This can be achieved through a multi-pronged approach:

- a. Development of small out-board/inboard engines to motorise the country craft which would reduce the physical strain and at the same time augment the fishing hours.
- b. Adopt moulding techniques with indigenous organic fibres and resins to manufacture cheap, light, simple craft for the traditional fishermen.
- c. Develop cheap small cold-storage units to preserve the fish catch on board the craft as well as on the beach.
- d. Utilisation of solar energy for drying the fish and development of a cheap device to keep the drying fish clean, free from predators and neatly packed for sale.
- e. Develop appropriate technology to set up cheap radio communication to rescue the fishermen from the hazards of nature.

AN APPEAL APPEAL



Dear Friends,

The National Forum of Catamaran & Countryboat Fishermen's Rights appeals to you and the concerned authorities of your country to take note of the distress of 6.5 million traditional fishermen of India and to take appropriate measures to alleviate our miseries.

In the recent years, the coastal waters of the Indian Ocean, where we have been fishing most effectively for centuries through our traditional, labor-intensive and ecologically safe method of fishing has been invaded by oversophisticated fishing trawlers and purseiners. They have been recklessly scraping the sea-bed, resulting in depletion of fish resources and destruction of fish ecology. These trawlers and purseiners, which were supposed to undertake deep-sea fishing are shamefully fishing in coastal waters, sometimes hardly 200 meters from the shore; thus driving away the fish from the coastal waters by the turbulence of the waters as well as destroying the valuable nets and boats of our fishermen, which has led to violent clashes in the sea between the mechanized boat-owners and our traditional fishermen, resulting in the loss of life.

The so-called 'mechanization' of our fishing industry, has not really benefited the traditional fishermen. Fifty percent of our fish lies in the coastal waters near our shores. Since 50% of the prawn resources, which our country is exporting to your country, is in these coastal waters, the mechanized trawlers and purseiners whose main interest is to catch prawns for export, will always tend to fish in this coastal waters, where our traditional fishermen fish, thus bringing untold misery to our fishermen. It is this craze to export prawns and fish, at whatever cost, to foreign countries such as Japan, in order to earn foreign exchange, that has been the cause of our sufferings and hardships.

But the greatest fraud of all, instead of catching fish in the deep-sea these so-called deep-sea companies having trawlers and

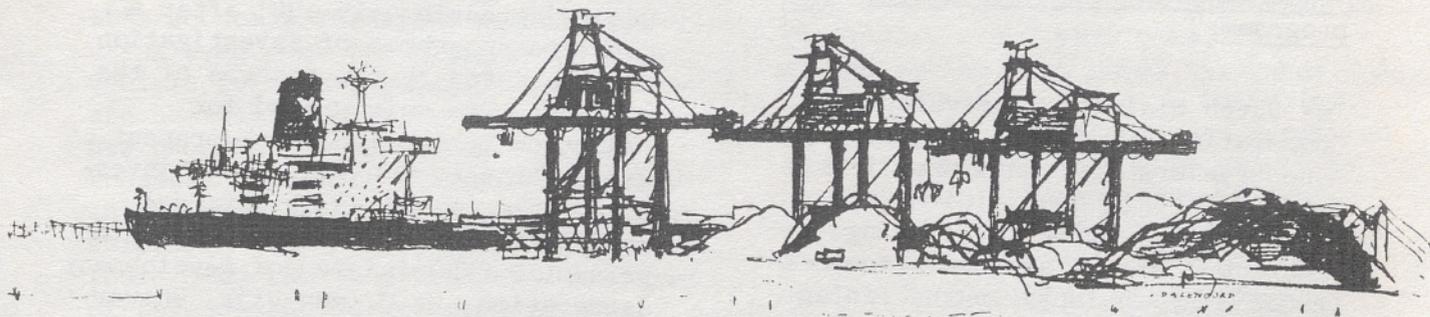
purseiners, charter smaller mechanized boats to fish in shallow waters and send their trucks around the Indian Coast to collect the fish, then freeze and pack it under their label, export the fish, and then collect the deep-sea export cash incentives, which should have gone to the small fishermen who caught the fish. In this process, the deep-sea trawling business encourages the smaller trawlers to violate and deplete the shallow fishing grounds of our traditional fishermen. Besides, once the fish in the sea is all gone, as has happened in many over-fished countries, the deep-sea fishing companies and businessmen, will easily give up fishing as a profitable venture, whilst all that we may get, is a few feet of earth to bury our dead.

The luring of trawlers, destruction of fish nets and boats, violent clashes and the cutting of legs of our fishermen around the coast of India, provides grim evidence of the current economic genocide of the 6.5 million traditional fishing community now being committed by the trawler and purseiner industry with the knowledge of our New Delhi planners.

We appeal to you therefore:

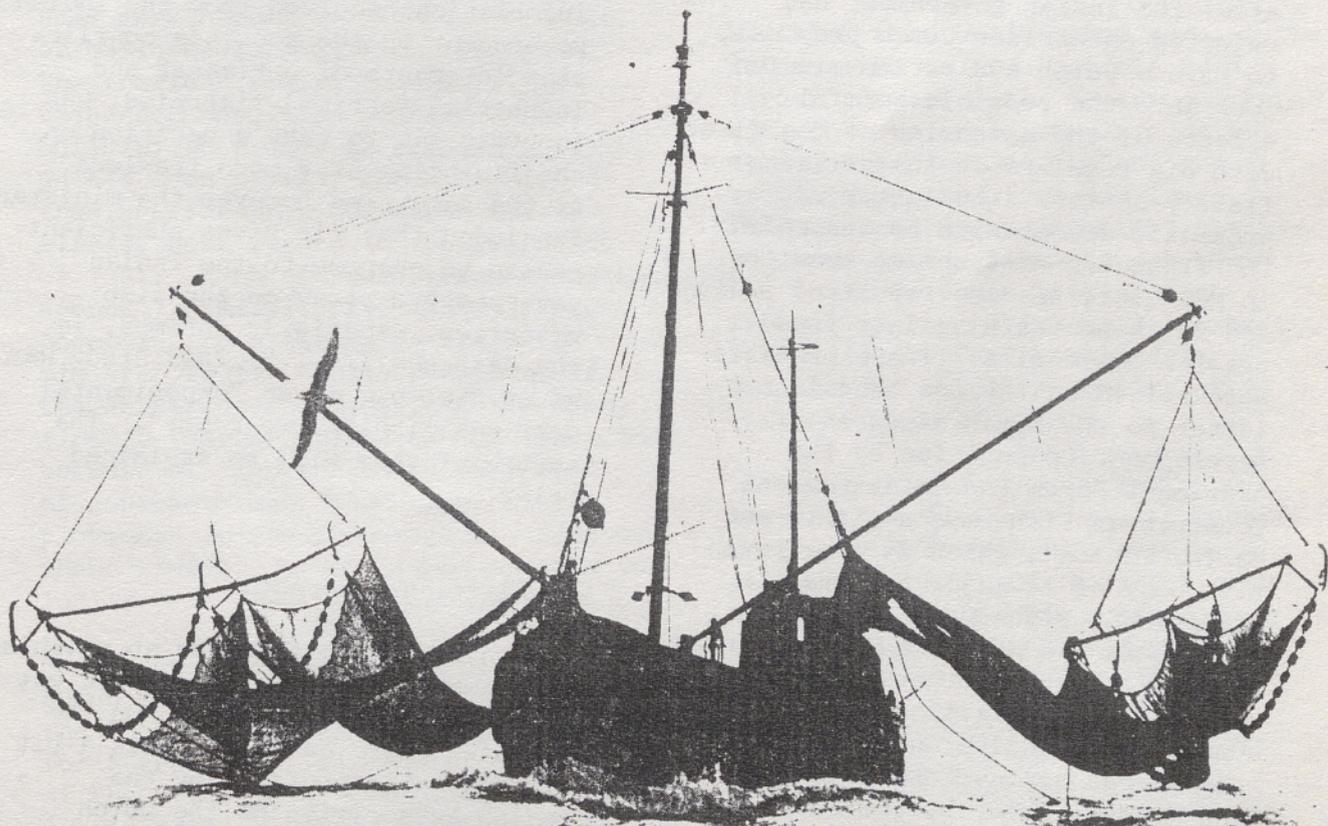
- (1) To stop the imports of prawns and other varieties of seafoods from our country.
- (2) To stop all aid to our country for the purchase of more trawlers and purseiners, as there is an over-saturation of these vessels in our seas.

MATANHY SALDANHA
Chairman



FROM THE NETHERLANDS

PRESS REPORT



Dutch government refuses to finance trawlers for India without preceding "experimental deep-sea fishing programme"

The Dutch Ministry of Development Cooperation refuses to finance any more trawlers for India from its development-aid funds, without a preceding "experimental fishing programme" on the seafood resources (especially shrimps) in the Indian deep-sea zone. It is of the opinion that more trawlers - in excess to nine trawlers already delivered - should only be financed if such a programme shows positive results, indicating that economic returns from deep-sea fishing are possible. This is meant to prevent these big trawlers from fishing in the coastal waters, where most prawns are found and conflicts with the interests of the "traditional" fishermen could arise.

Earlier proposal rejected

The above mentioned proposal on experimental deep-sea fishing came after the Indian government had rejected an earlier Dutch proposal, to have a Dutch evaluation-mission look into the possible harmful effects of the extension of the fleet with big trawlers on the artisanal fishery-sector. The latter proposal, accompanied by suspending the financing of 8 shrimp-trawlers in May 1981, was the result of Indian and Dutch protests against these trawler-deliveries. These protests were voiced on the one hand in a letter to the Dutch minister of Development Cooperation by the "National Forum for Catamaran and Countryboat Fishermen's Rights and Marine Wealth", which is a representative body of 13 major regional traditional fishermen's unions in India. In the Netherlands the "India Committee of the Netherlands" - a solidarity organisation trying to support progressive movements in India - spoke out against the planned trawler-deliveries by the Dutch government.

Initially an investigation into the issue by a Dutch evaluation-mission

was accepted by the Indian government at the aid-spending negotiations in May 1981 in New Delhi, but finally it was rejected in July 1981 after a concrete programme of investigation was presented by the members of the mission. The main ground for rejection by the Indian government was, that they considered the investigation as meddling in internal Indian affairs. In the words of the present Dutch minister of Development Cooperation, Mr C. van Dijk, answering questions on the issue by a member of the Dutch parliament: "The Indian government was of the opinion that her sovereignty would be at stake, having an inquiry into her fisheries policy by a foreign mission".

Insufficient information

The Indian government also wanted first to send reports on the fishery-sector themselves, before having a foreign mission. This has been done now, but the Dutch minister, reacting to another question of the mentioned member of parliament, stated that the information received from the Indian government on the possible conflicting interests of artisanal and industrial (shrimp) fisheries, was insufficient to take a decision on the financing of 8 more trawlers. At the same time however the minister concluded that "it gives sufficient reason to propose to the Indian government a study on the fish resources, especially shrimps, in the deep-sea....." This study was given the form of an "experimental deep-sea fishing programme". The nature of this will be explained below.

Conflicting interests

As can be gauged from the above, this programme was a compromise born out of conflicting interests. On the one hand there has been quite a bit of diplomatic pressure by the Indian authorities on the Dutch government to finance the trawlers. The Netherlands is of course afraid to endanger its diplomatic and

commercial relations with India on account of this issue. Especially now the Netherlands is trying to broaden it's economic relations with India, using even more as before "aid" as a vehicle for this, business interests are heavily weighing in the minister's new proposal on the "trawler-issue". Pressure of a more specific character in the same direction comes from Dutch shipyards who want to sell trawlers to India. On the other hand the ministry of Development Cooperation is under pressure of an alerted and critical public opinion, because of newspaper and magazine articles which were criticizing the minister for harming the poor, instead of helping them. The ministry of Development Cooperation, apart from possible concern about the traditional fishermen, wants of course to save it's face as aid-giver to the poor, as is the official policy. In the Netherlands this is a quite important political issue, even though "aid" is often used as a tool for export-promotion.

Big trawler-deal at stake

Some more should be said on the role of business-interests in this case. The trawlers for which finance is suspended now, were planned to be built by shipyards in the Netherlands, as has been already the case with 9 trawlers for which contracts had already been signed in the beginning of 1981. Each of these trawlers costs around 7,5 million (75 lakhs) rupies. According to a letter of the Dutch minister to the "India Committee of the Netherlands", contracts for these first 9 trawlers could not be cancelled because of "repercussions of breach of contract" and "the aspect of employment" in the Netherlands. Most of these trawlers have already arrived in India.

Much more is however at stake for the Dutch shipyards in the trawler-issue, than possibly "mere" loosing contracts for 8 trawlers. As "India Committee of the Netherlands", we have been contacted by a Dutch businessman who is acting as an intermediary between a Dutch shipyard and Indian parties, interested in buying a trawler.

According to him there are plans or negotiations going on the build a big part of the 350 trawlers envisaged in the Indian 6th V year plan, in collaboration with Dutch shipyards. A number of these should be built in parts in the Netherlands and assembled in India, but most of them should be built in India by Indo-Dutch joint ventures. The minister of Development Cooperation, reacting to a question on this by a member of parliament, admitted with some understatement that "there are the usual contacts in this field between Dutch and Indian industry".

Large trawler-contracts linked with aid

The mentioned businessman also tried to impress upon us that our activities against the financing of 8 trawlers from aid-funds, was harmful to Dutch industry and misinformed as far as big-trawler fishing in shallow waters is concerned. On this last point no facts were given however.

We think this businessman gave us the information on the possible much larger trawler-deal, because he hoped with this he could convince us to stop our activities against the trawler-supplies from aid-funds. This was extremely important for him and some Dutch shipyards, because the possible large trawler deal depends on a positive decision by the Dutch minister of Development Cooperation on the financing of 8 trawlers from aid-funds.

In fact if it does want to finance these 8 trawlers, the Indian government will most probably refuse to allow commercial trawler-contracts with Dutch shipyards. Officials at the Ministry of Development Cooperation confirm this link.

Experimental deep-sea fishing

This is the context in which the idea of an "experimental deep-sea fishing programme came up, using some of the 9 Netherlands-built trawlers

which have recently arrived in India. These privately owned trawlers are supposed to go out fishing in the deep sea zone, having been guaranteed a sufficient rate of return in case the catch is bringing in less than that. They should work like this for a couple of months, after good briefings have been given by Indian fishery-research institutes. The programme further includes the provision of specific nets and gear for deep-sea fishing and possibly Dutch technical assistance.

According to a Dutch prawn-biologist, adviser of the Dutch ministry of D.C. on this proposal, there are 14 different kinds of prawns to be caught in the Indian deep-sea and finding out if these can be caught in high enough quantities to make deep-sea fishing profitable, can only be done by "taking out" commercial vessels in the deep-sea. Again according to this man, facts from fishery-surveys are only indicators and statistical averages over samples, but never proof that a commercial trawler will or won't catch enough to make profits. For this on the spot "trial and error experience" is necessary. Through a combination of surveys by institutes (which have been done enough in India, says the prawn-biologist) and real live try-outs, Dutch deep-sea fishery came into being.

Of course such an experimental deep-sea fishing programme is, according to us - the India Committee of the Netherlands - no guarantee that the traditional fishermen will not suffer from the possible introduction of more trawlers. Even if some good catches can be made in the deep-sea, one is not sure whether big trawlers will eventually fish there as long as it is more profitable to fish in the coastal zone and as long as laws and regulations forbidding them to fish there, are not properly enforced. Take only the case of Goa, where the Marine Regulation Act of 1980 has not been fully implemented and where a chain-hunger-strike by traditional fishermen is being held for months in the first part of this year. The fact that not only smaller trawlers but also the big trawlers, fit for the

deep-sea, are now mostly fishing in coastal waters is mentioned by numerous Indian and other sources. For example: "..... even the deep-sea vessels already in operation seem to confine themselves to the coastal waters....." (Economic Times, Saturday Supplement on Fisheries, February 28, 1981) Not only that, but it is common knowledge that prawn-catches along the Indian coast are declining rapidly and prawns are being over-fished tremendously. The traditional fishing community, numbering six million people, suffer most from this because fishing is their only and often already meager source of existence.

The "National Forum"

For many years however, fishermen's unions in many different coastal states have been organizing people to improve living conditions for the fishing community. In 1978 the "National Forum for Catamaran and Countryboat Fishermen and Marine Wealth", a representative body of 13 major regional fishermen's unions, was formed. These fishermen's unions, later coordinated by the "National Forum", have been protesting and struggling against the fishing of more than 16,000 mechanised boats and trawlers in the already optimally exploited coastal waters. Violent clashes sometimes occurred. Their main demand was to have an exclusive fishing zone of 20 km from the coast - the traditional fishing grounds of artisanal fishermen - reserved for the 200,000 non-mechanised fishing boats & to have much more fishing-gear. A national-wide campaign was launched in 1978, which resulted in promises by the central government to draft a new Marine Bill, recognizing the legitimate demands of fishermen. Now - in 1982 - only a model Bill has been sent to the states, 3 of whom have now enacted laws protecting traditional fishermen. In none of these and other states however, are these laws fully implemented. So it is clear that the fishermen's unions and its National Forum are still struggling to have laws enacted and carried out effectively.

The "National Forum" also put forward concrete ideas on appropriate forms of fishing technology, which are labour-intensive, not harmful to the ecology of the sea and income distributive. These were put forward in the paper: "Appropriate technology in the fisheries sector in India" in 1980.

Among other activities, effective protests have been raised against the use of "development aid" and commercial investments in large scale fisheries development by for example FAO, the Worldbank and the Paris-group of investors, which would have been to the detriment of the artisanal fishermen.

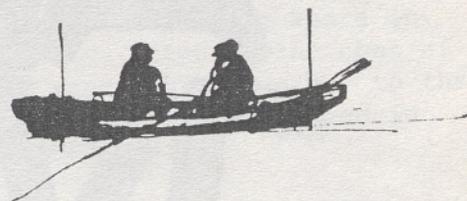
The "National Forum" also launched an international campaign against the export of sea-food from India, being one of the causes of reckless over-fishing in shallow waters by trawlers and the steep rise of fish-price in India.

Annex: India Committee of the Netherlands

The India Committee of the Netherlands is a combination of a number of India committees in the Netherlands, who have as their purpose to spread information on political, economical and cultural events in India and outside, in which the relationship between India and the Netherlands is a central topic. In this way we try to support progressive movements and organisations working with the oppressed in India and evoke more solidarity between the Dutch public and these movements.

Among other things we published a booklet in Dutch on the "fishing sector" and fishing policies in India, including a chapter on the Dutch involvement in it. (Blue Revolution in India-Millions of fishermen threatened by advance of trawlers), initiated publicity around the issue and wrote letters to the minister and other officials, to stop the supply of trawlers to India. All this was based on thorough research, based on information from many different Indian and Dutch sources. To the Dutch ministry of Development Cooperation we

pointed out the sharp contradiction between this trawler-programme and the main official purpose of the Dutch policy on development cooperation, which is: improving the living conditions of the poorest groups in developing countries. In the "trawler-case" it was amply documented by us that the proposed trawler-deliveries would be harmful to the living conditions of the traditional fishing community: one of the poorest sections of Indian society.



ANOTHER APPEAL APPEAL

THREAT SPREADS
Trawler fishermen still defying ban

INVASION MAY SPARK OFF FULL-SCALE WAR

FISH DISPUTE: BAN WARNING ON TRAWLIN

PLEA BY FISHERMEN TO STOP DISPUTE AT SEA

POLICE IN BID TO PREVENT CLASHES AMONG FISHERMEN

STANDSTILL AT FISHING VILLAGE
2,000 fear sea clash

Encroachment by trawlers: \$61,000 in fines netted

Troubled waters

FISHERMEN TOLD WHY TRAWLERS WERE DETAINED

should trawling be banned?

area, fishermen urged

EDITORIAL

This is an appeal to your conscience from one of the most neglected and downtrodden sections of our country. Our motherland is blessed with a long sea coast. If properly planned and utilised, the immeasurable riches of the Indian ocean, would go a long way to alleviate the agonizing sufferings of the millions of our countrymen, more so the citizens along the coast. But, though several decades have elapsed since Independence, the situation of the coastal people has terribly deteriorated. Poverty and unemployment has been seasonal till recently. But now it has become a constant companion to them. The greatest irony of the situation is that the Government which professes to stand for the weaker section, itself is the cause of the present pathetic predicament.

Ignorance about the conditions of the fishermen along the coast coupled with the reasons known to those in charge of the fisheries portfolio (if at all there exists such a portfolio in the present set up of the Government!), entire marine resources seem to be sold out to the most affluent sections of the country who are systematically competing with one another in depleting the marine wealth in collusion with the multi national corporations. Reckless profit oriented machinations of the companies and other big men in the industry and the government has led to a state of affairs which threatens the very survival of the fisheries industry in general and the fishermen community in particular.

The operation of the so-called deep sea-fishing trawlers (which scarcely operates in the deep sea!) managed by the Indian citizens hired by the multi national corporations is sufficient to spoil the whole well beings of the fishermen community. Added to this havoc, the Government has given permission to foreign vessels to operate on the Indian waters. This has worsened the situation of the already depleting process of the marine resources. The so called chartered vessels are nothing but a reckless exploitation of our marine wealth. Ruthlessness of this process can be imagined from the facts obtained from the first hand information of some of

our society members who are employed by these chartered vessels.

Let us take for instance one of the Taiwan vessels which is licensed to fish in our waters to the extent of catching 150 tons of fish per trip. Normally they extend the trip and manage to collect 250 tons at least per voyage. This is the minimum storage per voyage, though they records will show only 150 tons. Often they are able to, 'buy' the Indian officials responsible to check up the capacity of the vessel. It is 'achieved' through the instrumentality of the company which charters the vessel. The company gets a meagre share in the huge booty, often at the cost of negligible wages which are due to the Indian crew, nominally employed in these foreign vessels.

The worst part of the whole story is not the reckless exploitation of the fish, but the wasting of the fish captured. On an average only 1/10 of the catch is collected for storing, while 9/10 of the catch is thrown away into the sea. Once caught, fish is dead. So there is no question of their survival. So it is a complete waste. Not less than 100 foreign chartered vessels are operating in our waters. Each vessel collects up to 250 tons of fish per trip. Normally one trip is for a period of two months. If so, the bimonthly combined collection of the fish by these 100 foreign vessels can be calculated: $250 \times 100 = 25000$ (twenty five thousand tons).

For one year $2500 \times 6 = 150000$
(one hundred and fifty thousand tons).

Normally the fish is taken to the countries they come from, and never sold in our country. Therefore, neither do we benefit from their operations in providing for our protein deficiency.

Let us calculate the waste caused in the process: Normal yearly collection of fish by these foreign vessels we have seen as being around one hundred and fifty thousand tons. Every ton collected is a selection from the ten tons of

the total catch of which nine tons are thrown out as waste. Then the total waste while collecting 150000 tons will be $150000 \times 9 = 1350000$ (one million three hundred and fifty thousand tons). Thus we are allowing these hundred trawlers from abroad to waste our marine wealth per year to an extent of one million three hundred and fifty thousand tons of fish which will be sufficient to make up the protein deficiency of our population. Add to this the devastating pollution caused. Is this not a crime against humanity? Is this not an indirect treason to allow to plunder and squander our resources? Is this not a legalised piracy?

The government has prohibited all trawlers to operate within the territorial waters (i.e. 12 Nautical miles from the shore). But these trawlers often come so close-up to the shore that they destroy the nets as well as the livelihood of the traditional fishermen who operate within two or three nautical miles from the shore. Worse still they annihilate even the breeding grounds as well as several varieties of fish at the larval stage through their ploughing operations.

Further, the treatment meted out to the Indian crew in these vessels is inhuman. The Indian crew gets only a fraction of the salary generally paid to the foreign workers. Though often selected on regular terms, after one or two trips they are asked to sign another contract invalidating the first contract. Thus making every worker in this field permanently a temporary employee. It is true of all - from skipper (captain) to cook. There is no labour law to redress these difficulties. Security of job or safety to life are rare dreams about which the employees cannot imagine or consider in an organised manner. If at all any attempt is made it is nipped in the bud by the powerful association of the owners. The humiliating failure of the Skippers' strike at Visakapattanam in 1979 is too frightening a memory to be forgotten.

If the Government blindly and ignorantly allows the depletion of the marine resources of our country in the manner as it goes on at present, the worst sufferers will be the traditional fishermen who are already living below the poverty line. While recording our concern for their well-being, we strongly protest against the short sighted and harmful policies of the Government in the fisheries sector, and we want the government to take urgent steps to remedy the fast deteriorating situation in this field. As a primary step we demand the government.

1. Nationalise the deep sea fishing sector.
2. Completely ban the legalised piracy of the foreign trawlers chartered by companies.
3. Implement special welfare schemes for the uplift of the fishermen community equivalent to the amount earned in foreign exchange by marine products.
4. Establish special research centres and institutions along the coast for the better utilization of the marine wealth with indigenous knowhow and personnel.

Fr William Lourdayyan
Director
Kannyakumary Skilled
Fishermen's Society.

SMALL FISHERMEN'S MANIFESTO

After three days of deliberation, the small fishermen gathered in the seminar decided to draft a manifesto of their rights and to draw attention to the problems facing them. Eighteen resolutions were finally adopted for the manifesto after careful consideration and resolute examination. All the small fishermen present signed the manifesto with a great sense of unity and determination to protect their hereditary rights as small fishermen.

The manifesto reads as follows:

PREAMBLE

We, the small fishermen of Thailand, Malaysia, Indonesia, Philippines and Japan, gathered at the ACFOD/FAO Small Fishermen Seminar in Bangkok, 22-26 May 1978 wishing to assert our right to live in harmony with the sea and sea-life, our fellow fishermen and society, wanting to draw attention to our plight as being amongst the poorest communities in our countries and to the threats to our livelihood and our relationship with the sea hereby adopt the following resolutions:

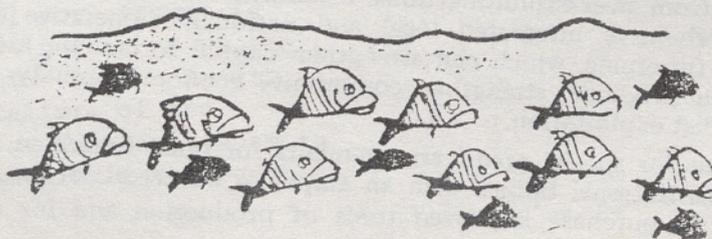
RESOLUTIONS

1. We call for an immediate stop to all forms of pollution which destroy the rivers, lakes and seas and its life-forms. We urge the establishment of anti-pollution bodies and laws to protect the sea.
2. We deplore man-made activities such as reclamation, filling-up of mangrove swamps and shore-line development for tourist hotels, industrial factories or commercial enterprises which recklessly disturb the natural ecology and constrict the existing and potential fishing areas.
3. We urge immediate local, national and regional action which seek to conserve and increase fish stocks and rehabilitate depleted fishing grounds.
4. We are concerned that regional fish development programmes such as the South China Seas Fisheries Programme are not benefitting us and strongly urge funding and implementation agencies not to proceed with such programmes until we have an opportunity to study them and our views communicated.
5. We protest against the encroachment by powerful foreign fishing fleets into our national and regional waters. We also request our governments to prohibit the setting-up of joint-venture fishing enterprises unless they serve the interests of small fishermen and the local consumer.
6. We draw attention to existing policies which have led to the increasing domination of the fishing industry by big business and big fishermen and call instead for positive discrimination in favour of small fishermen as against existing privileges to big fishermen. We also call for the abolition of policies e.g. concessioning sea areas which only benefit big fishermen.
7. We call for the progressive elimination of privately-owned trawler-boats and the issue of licences instead to genuine small fishermen co-operatives. Such bodies must strictly observe laws which set a limit in terms of area of fishing, power capacity and gross tonnage so that inshore fisheries can be safe-guarded.
8. We urge effective control of middlemen and other intermediaries to prevent them from over-exploiting small fishermen and call for the establishment of comprehensive integrated local and national co-operative organizations for small fishermen which can strengthen capital formation, assure fair markets for our products, strengthen community economic activity and fight against capitalist exploitation.
9. We call for special credit arrangements for small fishermen from government and institutional bodies with an emphasis on credit for coastal area development to purchase improved tools of production and for diversification of means of livelihood.

10. We urge training be extended to small fishermen to upgrade their fishing practices and other economic activities with the emphasis on appropriate and ecologically sound techniques. This should include opportunities for exchange of information and experiences between small fishermen both within and between countries to be provided by national organizations, non-governmental bodies and international organizations such as the FAO.
11. We urge the establishment of local, national and regional research and practical study institutions which can serve the special needs of small fishermen.
12. We urge the building up of appropriate information and communication services to serve small fishermen both within and between countries.
13. We urge the widespread dissemination of literature on existing fisheries laws and regulations, the condition of the seas and such other literature so as to promote consciousness amongst small fishermen and the public about the problems facing small fishermen and the seas they are dependent upon.
14. We call for the provision of supplementary means of livelihood including those based on aquaculture and integrated economic projects which can set into motion the local economic and social mechanism for development amongst coastal communities and other peoples dependent on fisheries.
15. We request a realignment of government policies in non-fishing sectors e.g. fiscal, infrastructural, etc. so that support can reach fishing communities who are acknowledged to be amongst the poorest peoples in our countries.
16. We call for a reorientation of attitudes and policies of government agencies dealing with fisheries so as to ensure that meaningful assistance reaches us. Presently widespread indifference, inefficiency and even corruption characterise the departments working with small fishermen. These must be stamped out and a new strategy of development leading from the bottom upwards such as that formulated in the FAO/RAFE Small Fisheries Programme instituted.
17. We urge the establishment of small fishermen co-ordinating bodies at local, national and regional levels along both governmental and non-governmental basis to work for the true aspirations and hopes of small fishermen. In this context we especially solicit the support of FAO/RAFE and ACFOD to assist in the organization of such bodies.
18. We request governments and international bodies to work for the eventual setting-up in the respective countries of fisheries and fishermen reform e.g. transfer of ownership of assets from capitalists to co-operatives along the broad lines of agrarian reform which can take into account the special problems and interests of small fishermen.

CONCLUSION

Notwithstanding these resolutions we reserve the right to take such further action as may be necessary to protect our hereditary rights as small fishermen, especially in lieu of such decisions as may be made at the forthcoming Law of the Seas conferences. We urge all peoples and governments to take heed of our resolutions and we pledge our collective resources to act in solidarity to overcome our problems.



MATSUOKO NOBUO

FISHERMEN'S ARMADA



Most Japanese were greatly shocked when they looked at their newspapers on the morning of June 25th. Emblazoned across the top of page one was an announcement from the Welfare Ministry of fixed limits on the amount of fish a person could eat in a week without damaging his health. The Welfare Ministry calculation of safety limits was based on the volume of mercury accumulated in the fish's body. It is well known that fish is an important source of protein in the daily diet of the Japanese. Short of an extreme food shortage, as in wartime, it seemed inconceivable that the Government could impose such a clear limitation on the staple food of the people.

Why did the Welfare Ministry choose this time for its announcement? The answer is this. From May this year, along the shores of the Ariake Sea and Tokuyama Bay in Yamaguchi Prefecture at the southern part of the main island of Japan, where people eat large quantities of fish, a number of cases have occurred of people suffering from a disease with symptoms very like Minamata disease. Minamata is a disease in which life is destroyed by industrial waste mercury which is absorbed and accumulated in the body from the fish and shellfish which one eats. If these victims from the shores of the Ariake Sea and Tokuyama Bay are suffering from true mercury poisoning it means the disease has struck for the third and fourth time in Japan, following the outbreaks in Kumamoto and Niigata Prefectures.

Not only that, but factories in many other places in Japan use mercury in the manufacturing process, and mercury has been detected in the seawater or in the bodies of fish in many districts. It is clear that in the future further new outbreaks of mercury poisoning will occur.

Faced with this appalling situation the announcement of restrictions on fish consumption was the Government's desperate counter-measure. Needless to say, it was merely an emergency measure rather than a fundamental solution to the problem. Japan's coastal seas are virtually all more or less polluted. Not only is it technically impossible to make them clean again, but it lies beyond the capacity of the government to dissolve the social and political malaise resulting from its restrictions on fish consumption. Above all, the government has neither the inclination nor the ability to order factories which continue to emit various industrial wastes to suspend operations. The polluting factories continue their operations as before, paying no heed to the suffering of the people.

Scientifically speaking, the criteria used by the government as a basis for assessing the danger level in polluted fish were extremely vague. The most reliable criticism of the government's standards is that at present there is no scientific basis by which safety standards may be calculated. Throughout the world, scientific research on the effects on the human metals and chemical synthetic substances is in its infancy. Moreover, as a result of public criticism, the Welfare Ministry quickly went through the humbugger of relaxing its own standards, and then, a few days later, abolished completely its so-called "fish consumption restrictions."

Did the Welfare Ministry's lifting of these restrictions mean that fish caught along the Japanese coast were safe for consumption? Far from it. Quite the opposite is the case. It is already no secret that fish caught along the Japanese coast and in nearby seas are polluted with heavy metals and chemical synthetic substances, including mercury and PCB. It is also clear that the reason for this

pollution is to be found in the waste products discharged from the heavy and chemical industrial areas lining the Japanese coast. If the government was to conduct the most thorough investigation, and fix maximum safety standards for fish consumption in accordance with that investigation, nearly all the fish caught in Japan's coastal waters and nearby seas would have to disappear from the Japanese dinner table. The government is afraid of the social and political confusion that would be likely to result from such a step.

It is of course the coastal fishermen who suffer the most from pollution of the seas. For example, most Minamata disease victims, suffering from mercury poisoning, were small scale fisherman, accustomed to eating lots of fish. As a result of having eaten much fish the health and sometimes the lives of these fishermen, were sacrificed. Not only that, but through the reclamation of land to set up factories, and through pollution of the water by wastes discharged from the factories, they lost their fishing grounds as well. Furthermore, even if the fishing industry can carry on, in cases where the fish have a strange smell due to waste products from factories, or where fish are found in which the accumulation of harmful substances exceeds national standards, the transport to market of the catch is stopped. In other words, the fishermen are deprived of their means of livelihood.

Pushed into this desperate plight, it is only natural that the fishermen should stand up to protest against the polluting enterprises, and against the government that protects them. This June the fishermen of Niihama in Ehime Prefecture in Shikoku, in protest against pollution of the seas by mercury from the Sumitomo chemical Factory, blockaded Niihama port with flotillas of fishing boats. For three days they completely barred all ships carrying raw materials or water to the factory, or finished products from it. At around the same time the big industrial belt at Mizushima in Okayama Prefecture facing the Inland Sea was blockaded by flotillas of fishing boats. The three factories which had been using and discharging mercury in the greatest quantities

were forced to suspend operations for three days. In today's Japan it is unthinkable that a factory should suspend operations save in the case of unexpected disaster, a strike, or regular holidays. It is a reflection of the seriousness of the pollution situation that such a step should have to be taken because of the direct action of fishermen from outside.

The Inland Sea lies between the western half of the main island of Japan and Shikoku island. From ancient times the beauty of its natural scenery was sung about, and it was a treasurehouse of fish. However, over the past ten years or so, big businesses, taking note of the convenience of transport of raw materials or finished goods, of the sales market and the labour power available there, have moved one after the other into the coastal strip on both sides of the inland sea. Today a string of factories stretches around it in an unbroken line. The industrial wastes discharged day and night by these factories are polluting the Inland Sea, polluting the air in the vicinity of the factories, causing fine dust to fall like rain on thickly populated areas nearby, and destroying the health of the people. People say: "Now the Inland Sea has become just a drain for waste from the factories." They do not exaggerate.

In the summer of this year this writer paid a visit to the fishing people of Iejima, Hyogo Prefecture, in the Inland Sea. On this island they breed the high quality "hamachi" (yellowtail) and boast of being Japan's number one producer of the fish. Last summer several million "hamachi" died as a result of an abnormal "red tide." The financial losses suffered by the fishermen as a result were enormous. "Red tides" have occurred time and again in many areas of the Inland Sea in recent years. They are caused by the excessive enrichment of the sea water due to the inflow of artificial substances, above all factory waste.

The blows suffered by the fishermen of Iejima did not end there. This June the price of fish caught in the Harima Strait area, which includes

Iejima, fell drastically when PCB levels exceeding the standards fixed by the Government were found in fish caught about 30 kilometers from Iejima. One old fisherman the writer met in Iejima complained: "It was terrible. We were quite unable to see any future for the fishing industry of Iejima. Young fishermen lost the will to work and fell into a state of apathy."

However, they were not just wringing their hands. Seven years ago, when Idemitsu Petroleum planned to construct a petrochemical factory on Shikema Bay on the coast opposite Iejima, the fishermen of Iejima waged a stubborn campaign, eventually storming into the site at the time of the ceremony to mark commencement of construction work and achieved a complete stoppage in the construction plan. (As a result of their forceful struggle, Idemitsu moved to Chiba and built in Shikama only an oil storage depot, which was but a small part of what they had planned.) The demands which leaders of the Iejima fishermen recently thrust at the Governor of Iyogo Prefecture contained the following uncompromising items.

1. Call a complete halt to the discharge into the Harima Strait of all effluents from factories facing the Strait.
2. Stop effluents from the factories of Osaka Bay and the industrial belt of Mizushima from flowing into the Harima Strait.
3. Get rid of the muck that is polluting the sea and restore the environment of the fishing grounds to what it was 50 years ago.
4. Close at once the factories of Kanagafuchi Chemicals and Mitsubishi Paper which are the cause of the pollution of Takasago, and make them repent.
5. Close all factories along the coast of the Inland Sea.
6. Stop the fishing industry in the Inland Sea for a period of five years. (In other words, forbid the catching of polluted fish.)

7. Let there never ever be land reclaimed for factory sites along the coast of the Inland Sea in the future.
8. Let there be an absolute stop to the construction of factories along the coast of the Inland Sea.



These demands are certainly not just the self-conceit of the fishermen of Iejima only. They are demands common to the fishermen of the Inland Sea Coast as a whole. The fishermen of Iejima, like the fishermen of other districts, are waiting for the time to ripen to battle for the implementation of all or part of their demands.

In the summer of this year, there was a simultaneous outbreak of disturbances in which fishermen in various parts of Japan took action by force to blockade bays and harbors, lay siege to factories, block up factory drainage outlets, conduct sit-ins in front of factories and stop operations in factories. This fishermen's rising was in flat opposition to the established view of fishermen as a conservative class - itself a conservative view. Quickest to experience a shiver of fear, and to give voice to their fear, after this direct action by the fishermen, were none other than the defenders of the capitalist system. For example, Kuraishi Tadao, Chairman of the Liberal-Democratic Party's Policy Board, prophesied: "If a forest of fishermen's flags were to be unfurled now along the Japanese coast, they would soon turn into red flags." (The "tairyoki," the flag which used to be unfurled on returning to port with a good catch, has become the banner of the fishermen's struggle.)

In other words, Kuraishi was afraid that the fishermen, who had hitherto been seen as one of the pillars of conservative control, would under the impact of industrial pollution, become antiauthority, left-wing, radicalized and openly involved as a wing of the forces opposing the capitalist system.

To deal with this, the Government and ruling party simultaneously threatened the use of police force, on the grounds that direct action by the fishermen was a violation of the laws controlling sea traffic and use of port and harbor facilities, and they strove to wind up the struggles quickly by softening up the conservative upper strata of the pyramid-shaped fishermen's organization by buying them off or making concessions. It is a fact that this attack by means of candy and whip had a certain efficacy in calming the fierce flames of the fishermen's struggle.

There have, however, been cases in which the fishermen have been triumphant. At Saganoseki, in Otia Prefecture, in the southern island of Kyushu, the official "Fishermen's Association" had been for 40 years in the hands of a leadership acquiescent to the demands of capital, even to the point of secretly promoting the "New Industrial Towns" plan in the area. Two years ago, 400 men broke away to form an "Association of Fishermen Comrades" to resist this leadership. From June 24th to 28th of this year they carried out a blockade of Nihon Selkojo's copper refining plant at Saganoseki, which had been discharging cadmium and arsenic into the sea. After the plant had been forced to close down for these four days the fishermen's demands were completely accepted. They were:

1. cleanse as far as possible the polluted seas.
2. install equipment to prevent absolutely any further discharge.
3. provide equipment to satisfy the specifications set by the residents.
4. residents have the right to enter and inspect the plant.

This is an excellent example of the power of the fishermen to regain some control over their local environment through united and determined struggle.

At the same time, the weak point of the fishermen as they stand up to struggle is that they often struggle in isolation. But we can never blame the fishermen for their being isolated. The people who are to be blamed are rather the various strata apart from fishermen, especially the people living in the big cities. The mass of workers, by their refusal to act in solidarity with the fishermen, isolated them.

There is a recent example of workers' hostility to the fishermen's struggle. In August this year, fishermen along the Shiranui coastline blockaded by land and sea the Chisso factory from which Minamata disease originated. They demanded compensation for the losses suffered by the fishing industry as a result of sea pollution, and brought operations at the factory to a virtual halt. The leadership and members of the "second union" (the company union) which is loyal to the enterprise and to which most of the workers belong, not only demanded that the fishermen end their blockade but even requested the local police to use force to put an end to the behavior of the fishermen that was causing the work stoppage.

One of the excuses given by people living in the cities for their indifference or coldness towards the activities of the fishermen is this: "Fishermen are egoistic. If they get their compensation money they will surrender to capital, give up the struggle, and abandon their livelihood and the sea." People who give such an excuse do not know the real situation the fishermen are in, and do not really understand their feelings. Those fishermen who could be satisfied in their hearts with compensation money, and abandon fishing, could never constitute a majority. For the majority of fishermen, retreat and defeat, however reluctant, were inevitable, when faced with the overwhelming onslaught of power and wealth, and the fait accompli of pollution through heavy and chemical industrialization. The fate of the fishermen victims of Minamata disease

will presently be the fate of the people living in the cities. The fish pollution disturbances this summer are omens of what is to come. There is no denying the fact that fishermen and land workers are bound by the thread of a common fate.

But one new phenomenon which appeared last summer was the open appeal for support of the fishermen issued by a section of the urban workers' and peoples' movement groups. In July one group of workers demonstrated at the Tokyo offices of Keidanren, the GHQ of capital, making clear their open support for the fishermen's direct action struggle, and their opposition to the polluting companies.

Also last August anti-pollution peoples' movement groups from Tokyo distributed leaflets in Chiba city supporting the action taken by the Chiba fishermen in blockading Asahi Glass and other factories discharging mercury. These examples of fishermen's struggles being openly supported by strata other than fishermen indicate that the germ of solidarity between fishermen and people living in the cities has begun to develop.

The Winter, 1970, issue of "Fishermen's News" (Gyomin Tsushin) the paper which reports developments in the Japanese fishermen's struggle, said: "Judging from the way things have been till now, the situation for Japanese fishermen is going to become even more serious in the future. Once we take it that we have only our own strength to depend on, and that there is no legal or political goodwill that can be depended on, then it is inevitable that the fishermen's struggle will become more fierce."

Events in the three years since then have developed in just the way this "Fishermen's News" suggested.



4

degradation
of the
aquatic
eco-systems



Department
of the
Geologic
Ecosystems



INTRODUCTION

This dossier of documentation has been prepared as background material for the International Conference of Fishworkers and Their Supporters, Rome, 4-8 July, 1984.

There are four sections, each relating to one of the issues of concern of fishworkers, to be discussed at the conference:

- 1. The impact of national and international fisheries development programmes and industrialisation on the working and living conditions of fishworkers.*
- 2. The changing characteristics and the future relevance of the small-scale fisheries sector, which in most developing countries continues to be the backbone of the fish economy.*
- 3. The response of fishermen and women to the negative effects of industrialisation and of fishery development programmes, on their work and livelihood.*
- 4. The degradation of the aquatic eco-system caused by indiscriminate fishing and pollution of seas, lakes and rivers, and its effects on fishworkers and on marine resources.*

We are grateful to all those authors who have made their writing and studies available for this purpose. Many of them are closely related to fishworkers and well acquainted with the concerns of traditional fishermen and women in different parts of the world. Some authors could not be contacted, but we expect the use of their writings to highlight the concerns of fishworkers and traditional fisheries, will be in line with the intentions of their articles.

Considering the amount of material, summaries have had to be made in some cases, and many footnotes could not be included. However, for those who need the full article, a copy of the original can be requested from one of the three organisations which gathered the material, by contacting DAGA, 57 Peking Road 5/F, Kowloon, Hong Kong.

The gathering of the material was the collective effort of the Fisheries Research Cell of the PCO (Programme for Community Organisation) in Trivandrum, India; SAM (Sahabat Alam Malaysia - Friends of the Earth) and CAP (Consumer Association of Penang) in Penang, Malaysia; and DAGA (Documentation for Action Groups in Asia) in Hong Kong; the dossier was put together and printed at DAGA, Hong Kong.



ERIK P ECKHOLM

LOSING GROUND

environmental stress and world
food prospects

In the southeast Pacific Ocean, off the Peruvian coast, the world's richest fishing ground has just experienced a convulsion that parallels strikingly such terrestrial ecological breakdowns as the recent Sahelian debacle and the American Dust Bowl of the thirties. In all three cases, humans made progressively greater demands on the eco-system, pressing it to its limits. Then when a sudden but predictable change in natural conditions occurred that temporarily reduced the system's capacity to support life, the confluence of pressures imperiled both humans and the natural systems.

This particular tale originates in the mid-fifties, when the fishing industry of Peru began the most spectacular expansion in the history of marine fisheries. Ocean conditions off the coast of Peru and northern Chile facilitate an extra-ordinary concentration of life there. A westward swing of the Humboldt Current, which flows towards Peru out of the South Pacific, causes a cool, nutrient-rich upswelling from the depths, and as it reaches sunlight, there is a rich bloom of plants and animals.

In the nineteenth and early twentieth centuries, humans capitalized upon this ecosystem by collecting for sale as fertiliser the manure (guano) of sea birds that fed upon the billions of anchovies swarming off the coast. Governmental regulations in reaction to the foreseeable exhaustion of the *guano*, together with the spread of chemical fertilisers, helped dampen the trade.

But a new industry, based one step lower on the food chain, emerged to change the face of oceanic fisheries. At a time when technological progress permitted more efficient culling of the anchovies, rising incomes and a revolution in the poultry industries of Europe, Japan and North America were creating a lucrative new market for the fishmeal into which the anchovies were ground. Unfortunately, the anchovies, a vast source of high-protein, have been mainly used not to eliminate malnutrition in the Andes and elsewhere in Latin America, but to help satisfy the growing taste for meat in the industrial countries. In part because of the prolific anchovy, fishmeal has become a frequent protein additive to feed for broiler chickens that are often now produced in huge, scientifically-fed concentrations.

The anchovies soon proved a precious natural resource for Peru, with fishmeal replacing even copper as the country's top export in the mid-sixties. As the catch soared, Peru became the world's leading fishing nation; its anchovy catch accounted for a fifth of the entire world fish catch in many years. Often, nearly two-thirds of the world's fishmeal exports came from this one country.

High profits generated massive over-investments in fishing vessels and fish-meal-processing plants. Gerald Paulik described the staggering capacity of the Peruvian fleet in 1971:

"On April 28th, 1970 the total catch reached 9.5 million metric tons. The fishery continued for ten more days, taking 100,000 metric tons per day. This fantastic catching power could have taken the whole US yellow-fin tuna catch in one day, or the entire US catch of all Pacific salmon in two and a half days. Obviously, this type of destructive power must be handled most carefully, and precise management and regulation are essential."

Though an excellent system of biological monitoring and fishing regulation was developed, the combination of too many investors with too many boats and the government's hunger for foreign exchange generated strong pressures to continually increase the anchovy harvest. In 1970, an international team of biologists estimated the maximum sustainable yield of the Peruvian anchovy fishery at about 9.5 million metric tons. Political realities had stronger exponents than biological needs however, and the catches in 1967, 1968, 1970 and 1971 all exceeded this estimate. The catch reached a height of over twelve million tons in 1970 and surpassed ten million in 1971.

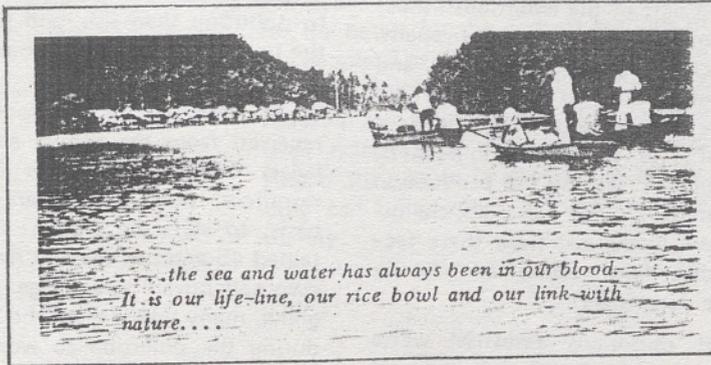
The anchovy stock had long been known for its instability; an unpredictable warm current, locally known as *el nino* ("the child", because it often occurs around Christmas time), periodically drives the anchovies deep in search of cooler water, and probably reduces their numbers. Beyond this, the earlier collapse of fisheries based on species closely related to the anchovy - the sardine off California and herring off Norway and Japan - suggested to thoughtful observers the greater susceptibility of these types than most to spectacular, rapid damage.

In mid-1972, after heavy fishing in the spring, it became apparent that the anchovies had vanished from their usual coastal haunts in the wake of the *el nino*. Alarmed by their absence, the Peruvian government halted the fishing for the rest of the year. In early 1973, the characteristics of the current remained unusual, and experimental catches indicated the absence of

a new brood of anchovies. Fearful that the fishery would be permanently destroyed, the Peruvians closed it for most of that year and part of the spring of 1974. For almost two years, the world's greatest fishery lay virtually idle - two very long years for fishermen, who were out of work; for the fishery owners some of whom lost fortunes; for the Peruvian government which lost its chief export; and for the consumers everywhere, who found the world protein market disrupted by the sudden shortage of fishmeal.

There has been a tendency in many quarters to ascribe this collapse entirely to nature and *el nino*, but a careful examination of events makes that explanation unsatisfactory. In hindsight, to observer John Gulland, a leading FAO fisheries expert, it appears likely that the overfishing of 1970 and 1971 depleted the stock to such a vulnerable condition, that "while recruitment (successful replenishment by a new spawning) could be maintained under average or better environmental conditions, the unfavourable conditions of *el nino* would cause a recruitment failure that would not have occurred if the adult stock had been larger." After the particularly heavy catch of 1970, an exceptionally small brood was produced in 1971 - well before *el nino* struck. The fishing effort of early 1972 apparently finished off the survivors of both the 1970 and low 1971 spawnings, leaving few adults to replenish the species. Tellingly, *el nino* caused only a brief and modest drop in the anchovy catch in 1965, after annual catches under the recommended level, and did not disrupt the following year's brood.

In 1973, the Peruvian government nationalised the fishmeal industry as part of an effort to reduce its overcapacity. The number of anchovy fishing boats was cut in half. Under the guidance of marine biologists, the government also tightened management of fishing levels. In 1974, as the fishery began to regenerate, a catch of just 3.6 million tons was allowed, and in 1975, it appeared that up to six million tons might be permitted. With the new degree of management, biologists hope the fishery will be back to normal by 1977; presumably, fishing will henceforth be held to a sustainable level.



FIGHTING POLLUTION **JURU** **TAKES THE LEAD**

There is a small fishing village north of Peninsula Malaysia called Kuala Juru. In Malay, *kuala* means the mouth of a river, and the village is situated at the mouth of the Juru River. Juru was once a thriving fishing village. The sea and river contained over 30 species of fish. Rowing the *sampan* (a small Malay boat) and using elementary nets, the 50 families (with a total population of 300) obtained enough from the natural environment to satisfy their basic needs. Unemployment was unheard of as all young boys could earn a living the moment they knew how to handle a sampan and a net.

The resources in the sea and river were abundant, and the environment was clean and healthy. The sea, the open sky, the breeze offered them the best in life. One of the villagers described their love and dependence on the sea as follows: "From the very day we were born, the sea and water has always been in our blood. It is our life-line, our rice-bowl and our link with nature..."

This situation prevailed for generations — until 'Modernisation' struck in the 1970s. Firstly, the government built a bridge across the Juru River four miles east of the village. The bridge was constructed as a dam which blocked the natural flow of the river, thus producing two bad effects. It prevented the fishermen from using the upper part of the river whether as fishing ground or as a means of transport to market their catch upriver. It also reduced the strength of the river's flow, leading to rapid siltation at the river mouth, where the depth of the river fell from 25 feet to 7 feet. Many types of fish which loved to play in the deep water at the estuary now disappeared. The fishermen's catch dropped, so too did their income.

Industrial Pollution

Secondly, an 'Industrial Estate' was established at Perai, just to the north of the village. This Estate was a part of the ambitious industrialisation scheme of the state government. By 1975, 40 factories were in operation, and more were to come in the next few years. These factories produce a wide range of goods from metal cans, roof tiles to badminton rackets, textiles and chemicals. During the production process, a huge mass of waste materials, chemicals and foam are discharged from these factories into drains, large canals and finally dumped into the Juru River.

The tons of poisonous industrial waste pouring daily into the Juru River made it almost impossible for fish to survive. The fishermen's catch dropped drastically from 200 katis to 40 katis a month. Their monthly income fell to M\$80 (US\$35). What could \$80 give to a fisherman and his family in times of rapid inflation?

Despite the hardship, the Juru people never felt defeated. They made countless appeals to the authorities to stop the pollution, to little avail. Finally, with the help of the Consumers' Association of Penang (CAP), they managed to get the local newspapers to highlight their problems and to alert the public to their problems.

A New Venture

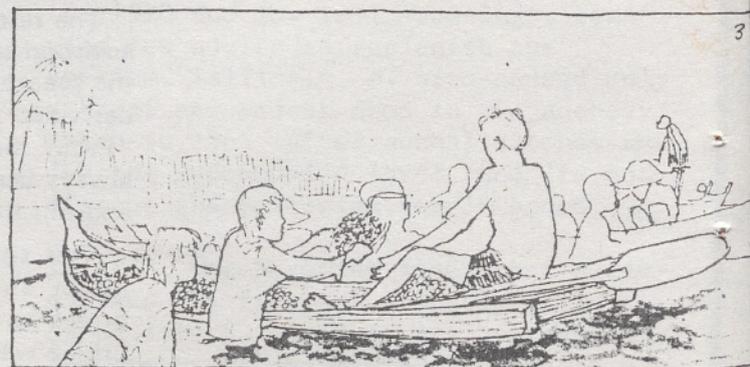
In the meantime the many crises had pulled the members of the Juru community closer to one another. After many meetings and discussions, often going far into the night, the

villagers decided on a bold move — to start a cockle industry to replace fishing as the latter was no longer a viable occupation. Cockles, a very popular dish in Malaysia, are more resistant to pollution than fish, and they grow well on the bed of the sea and river at the Juru estuary.

While some aid in the form of motors was received from the fishing authorities, the villagers basically relied on their own labour resources, pooled together on a cooperative basis, to start the project. The fishermen obtained 45 acres of sea and river bed which they own collectively as a village. As the project got going, many young men who had left the village during the pollution to work as odd job labourers in the towns returned home.

The operation of the cockle project has been placed in the charge of a 'Cockle Committee' which organises together all the available labour force in the village to share out the work on an equitable basis. The villagers are divided into 3 groups, comprising about 20 people per group. Each group goes down to work once in 3 days, in rotation. The work differs according to 'seasons': first, sowing the baby cockles (or scattering them all over the sea bed); then collecting the half-grown cockles after 3 months and sowing them again, to prevent overcrowding; and finally, after a further 3 months, collecting the mature cockles (with the aid of wire baskets fastened on poles) for sale. Although simple, the work is tedious and requires much cooperation among members of the group.

the cockle
collection...



tem of work and the distribution of income have both been organised in a uniquely equitable way. It is a system which if practiced by other villages in Malaysia, in Asia, and in all the Third World, will bring about tremendous change for the better for the poorest sections of the people. The Juru villagers have shown through their experience that if people stand up as a united group, they can to a large extent solve their own problems. And if they unite in cooperative labour, they can bring about a more equitable society.

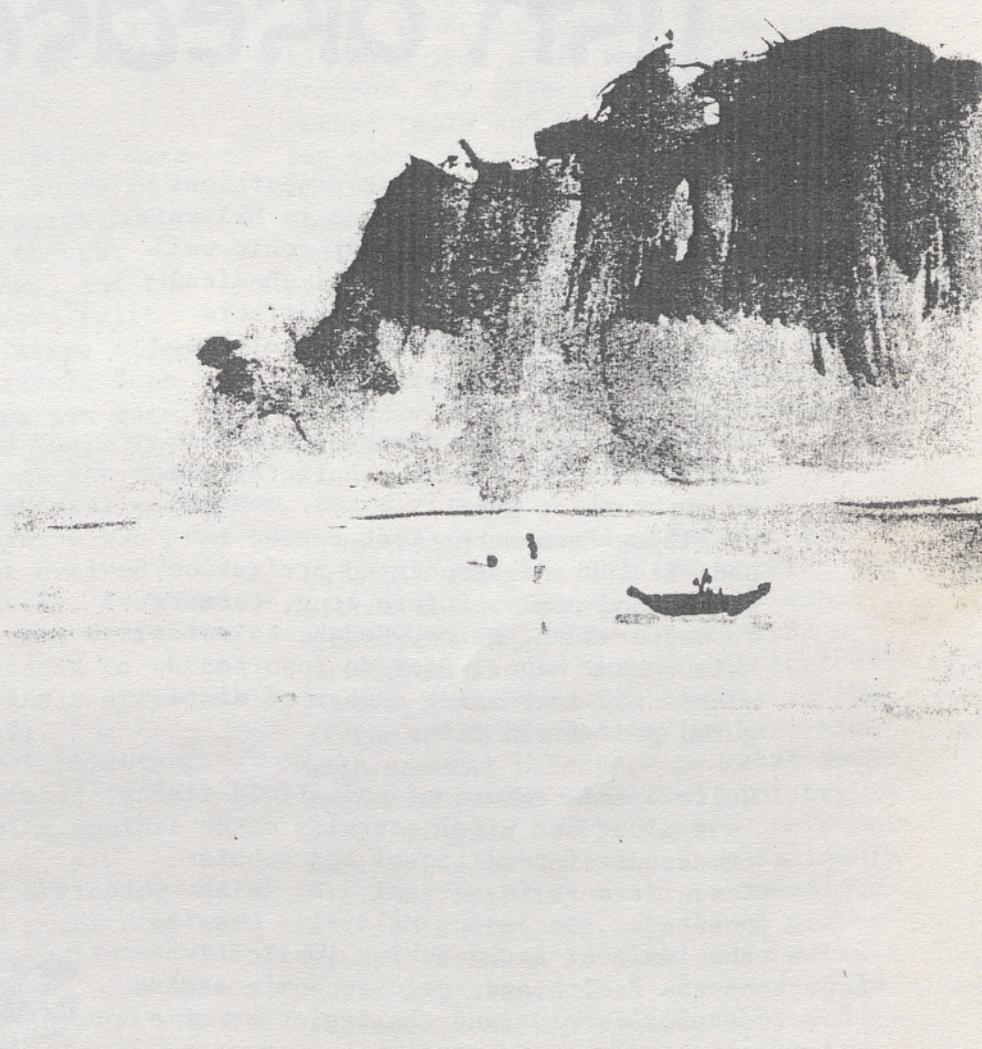
The problems of Kuala Juru are far from over. The spectre of poverty can never be removed when the factories still continue to pollute the river and the sea. Late in 1977, a large amount of income was lost when a mixture of pollutants and heavy rainfall killed some of the Juru cockles. The villagers, however, are determined to face the obstacles, to continue to fight the pollution, and to carry on their own project on a cooperative basis.

Unique Distribution System

The income derived from the sale of the cockles is divided according to a very unique system. Two-thirds of the proceeds are distributed as wages to the villagers working in the project, with the shares being more or less equal. The other one-third of the income is placed in a 'Village Fund'. A large part of this fund is saved to purchase baby cockles for use in the next season and to invest in making new baskets for use in collecting the cockles. Another portion is used to distribute to the old, sick and dependent among the villagers who are not able to work, thus ensuring that every family's basic needs are met.

Another share is given to run a kindergarten and school for the children of the village, not as a substitute but as a supplement to the official schooling attended by the children. The village mosque obtains yet another part of the Fund's income. Finally, the Juru village recently embarked on a big project: using the Fund's savings to open their own cooperative sundry shop and canteen. The village shop has now taken over the traditional middleman's role of supplying goods to the villagers, thus ensuring that trading profits are enjoyed by the villagers themselves.

The cockle project has thus benefitted all members of the community. The sys-



*gunung tinggi sama didaki
lautan dalam sama direnang
marilah kita bersatu hati
perkara yang susah menjadi senang*

*high mountains together we'll climb
deep seas united we will swim
come, let us proceed with one heart
and make simple our difficulties*

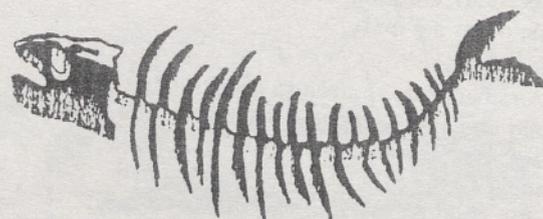
A Traditional Malay Pantun (Verse)

Mysterious fish diseases

Fish diseases of epidemic proportions are fairly recent phenomena in Malaysia, and trends indicate that it could well be related to the additional chemical inputs - pesticides and fertilizers - which constitute an integral part of modern agricultural practices.

In 1980, a peculiar disease termed *wabak kudis* by farmers, characterized by outbreak of ghastly sores, emerged to plague freshwater fish reared in padi-fields and associated irrigation canals and ponds. Before long, farmers in Butterworth, Perak, Kedah, Kelantan, Malacca and Negeri Semilan reported an alarmingly increasing number of disfigured padi-field fish.

Culture and capture of padi-field fish is a minor but vital activity of thousands of traditional and subsistence farmers in several S.E. Asian countries, including Malaysia. Despite the imminent far-reaching implications on the health and socio-economic status of padi-farmers and the depletion of a vital source of protein to a poverty-stricken sector of the population (with little or no financial resources, to turn to other sources of protein), neither the medical or agricultural authorities have been able to elucidate the enigma surrounding the disease.



Notably, the authorities concerned could not even come to a unanimous decision as to whether the diseased fish could be consumed or not, leave alone agree on the primary/secondary causative factors. Apparently, officials from the health and agriculture ministries and experts from the academia are at logger-heads on how to advise the farmers and the public. Totally disgusted by the proceedings, one member resigned from the "multi-agency working committee" - a special task force established to investigate the *wabak kudis* episode. According to the farmers, no one in his right senses would even consider eating such grotesquely deformed fishes.

Members of the working committee were strongly divided over the causes of the *wabak kudis* disease. Basically, there were two schools of thought - one incriminating pesticides, and the other implicating fertilizers (with a few advocating the cumulative effects of pesticides and fertilizers). Both groups put forth "corroborative evidence" to substantiate the "validity" of their arguments. Whatever the underlying factors, there was general consensus that the trigger mechanism was probably a chemical pollutant derived, either singly or collectively, from the application of pesticides and fertilizers. The sequence of events leading to the manifestation of the *wabak kudis* symptoms is likely to be as follows:

- a. Irritation by a chemical pollutant.
- b. Stressed/weakened/irritated fishes seeking relief by rubbing against underwater rough edges.
- c. Shedding of scales and stripping off of epidermal layer and mucus membrane.
- d. Development of tiny lacerations and wounds.
- e. Secondary infection of exposed regions by pathogenic micro-organisms.
- f. Outbreak of sores and deterioration of parts of the fish body.

During the period 1981-1982, farmers in Kampung Sungei Kerang (situated in the vicinity of Parit in Perak) had to throw back 10 to 20% of the fishes harvested from padi-fields and irrigation canals. In the words of one affected resident, Harun Talib: *over the past year, we began to see sores on the fish... we noticed their scales falling off and small holes appearing in their flesh, which soon developed into sores... late in the padi-cultivation season, I saw live ikan sepat*

half-rotted away by sores and ikan haruan as big as my fore-arm with their lower jaws eaten away.

Padi-farmers like Harun Talib, are reputed to possess an unerring instinct of what is wrong - *'the pesticides and fertilizers used in the fields have something to do with it'. 'The chemicals applied could be causing the fish scales to drop off... some kind of germs enter the unprotected areas and cause the sores.'*

In March this year, thousands of fish, cultured in padi-plots and submerged cages, in Kuala Muda and Pulau Langkawi in Kedah died under mysterious circumstances. The affected fishes exhibited rotted tails and red blotches all over the body. According to the Director of the Fisheries Research Institute, Encik Shaari Sam Abdul Latiff, fish kills at Kuala Muda was attributable to water pollution from pesticides or fertilizers. *'The chemicals could irritate the fish and cause them to knock against the bund and injure themselves. Bacterial infection could then set in on the wounds.'*

From reliable sources, Sahabat Alam Malaysia gathers that the working committee which investigated the *wabak kudis* episode, had - in mid-1982 - submitted to the Ministry of Agriculture a 'comprehensive' report on the status of fish diseases in Malaysia, with special reference to *wabak kudis*. Apparently, the concerned ministry is still sitting on the report. Mere monitoring of the situation is insufficient; what is needed is immediate action to stem the rot. If no proper action is taken in time, then *wabak kudis* and allied fish diseases could decimate entire populations of padi-field fish. The farmers must be informed once and for all if the maladies afflicting padi-field fish are in any way linked to chemical fertilizers and pesticides. Sahabat Alam Malaysia contends that it is imperative to conduct a full-scale survey into the problem, with greater inputs into research at the field level, and to formulate and implement effective remedial measures.

BEWARE

DESTROYING REEFS
MEANS DESTROYING
BREEDING GROUNDS



As any housewife in Malaysia can tell you, the price of fish and other seafood is rising

In Penang, much of the traditional belachan industry has been forced to close down due to lack of shrimp in the area. And the story continues to repeat itself around the country.

High seafood prices are a source of frustration to the city housewife. But in the less affluent segments of Malaysian society, they can constitute a more serious nutritional problem. For two-thirds of the protein in the average Malaysian diet comes from the sea. High prices mean, simply, less protein in the family diet.

What's behind it all? As World Wildlife Fund director Ken Scriven explains, according to researchers, it is due to the reduction of Malaysia's annual fish catch. This, in turn, is largely a result of the destruction of coral reefs through pollution, over-fishing and other misuse.

In 1975, the total fish catch in Malaysia mounted to 433,000 tons. But in 1976, fish landings dropped to 375,000 tons - a decline of 14 percent in just 12 months. And the trend shows no sign of reversing.

Coral reefs get involved because they are where the eggs of most of our sea life - including commercial seafood such as fish and prawns - are hatched. This is true of both reef-dwelling fish and the commercial fish which are usually further out at sea but which come to the reef to breed.

A parallel problem is the pollution and misuse of mangrove swamp areas, where the young are nurtured.

Yet both coral reefs and mangrove swamps are being destroyed in Malaysia at an appalling rate.

In fact, virtually all the coral reefs on the West Coast of Peninsular Malaysia have been damaged. The remaining reefs are currently in danger.

Further, because very little of the coastline along the Malaysian mainland is suitable for establishing coral communities, reefs are concentrated in only a few areas. That makes them all the more susceptible to exploitation by both commercial and recreational activities.

Malaysia is so situated vis-a-vis the South China Sea and other bodies of water that the flow of nutrients necessary for coral life is irregular. This is one of the reasons why Malaysian reefs will be slow to repair once disturbed. In many cases a reef may not grow back at all, because the ecological conditions following the disruption

may not be suitable for the establishment of a reef community.

Probably the single greatest cause of reef destruction is the covering of reefs by silt resulting from poorly controlled operations in the mining, agricultural and building industries and from the dredging of harbours. Uncontrolled, these operations cloud the surrounding water with silt, sand and other particles---which means death to a reef community in the vicinity.

Another reason is the excessive trawling by commercial fishermen along reef fronts and by blasting the reefs with dynamite---both as a form of "fishing" and to use the coral as a material for road building.

Industrial pollution which flows from rivers out to the sea has also taken its toll on reef life, as has excessive spearfishing.

What is to be done?

The World Wildlife Fund Malaysia is currently working toward the setting aside of many reef areas as marine national parks. WWFM has already conducted several ecological surveys of reef communities judged to be least touched by destructive forces. These are along the shore of Balambangan Island, Sabah, and Pulau Redang off the coast of Trengganu.

The result will be a home where our rich reef-dwelling sealife can live unharmed by man and where deep sea fish can come to hatch their eggs in peace. Thus, helping to assure that the annual fish catch does not reduce further in Malaysia.

Another tragedy associated with the destruction of reef communities in Malaysia is the loss of the rich variety of reef life that inhabits the waters of the reefs.

Included are such interesting life as several species of crab, orange coral, the orange clown fish, the lion fish and even the angel fish. These species are common throughout the tropical waters of Asia so they are not currently on the endangered species list. But they are very much in danger in Malaysian waters as they are natural dwellers of reef front areas. If the reefs go, they go, too.

Reefs and other undersea areas are, after all, far removed from the daily lives of most Malaysians and it takes a special effort to bring these problems to the attention of the general public and the business community.

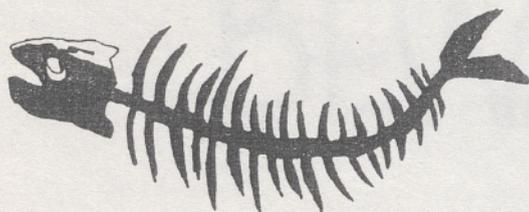


Japan's dying seas

Fishing has long been an important part of the Japanese economy. Between 1965 and 1976, the total fish catch increased by 50%. In 1974, Japan caught 15% of the total world catch, more than any other country. However, during the same period, life was becoming harder for the fisher people in Japan. Between 1965 and 1976, 142,000 people gave up fishing one by one, fishing villages are being replaced by smoky factories and the seas around Japan are steadily turning black and are dying.

The two factors that have contributed the most to the decline of fishing are:

1. The proliferation along the coast line
2. The high-seas fishing industry, which employs big, expensive ships and is controlled by big corporations.



PROLIFERATION ALONG THE COAST LINE

Factories tend to be built near the coastline because land there, especially filled land, is cheap and has easy access by sea. Besides, the government policy is in support of the factory sector which earns more profit to the nation. The displaced fishermen would provide cheap labour force for the plants. By 1973 21.2% of Japan's total coastline had been turned into factory land and closed for the people. The two areas which have been most intensively filled in and redeveloped are Tokyo Bay and the Seto Inland Sea, both among the richest fishing areas. Since 1951, in Chitara Prefecture, across Tokyo Bay, 12,000 ha of land has been filled, 24,000 ha of fishing ground has been destroyed and 35 fishing cooperatives (20,000 families) have been put out of business. The water line has been polluted and the clam catch dropped from 69.30 tons in 1953 to 51 tons in 1975. In Seto Inland Sea, 16,000 ha of land has been reclaimed since World War II. In Okayama Prefecture, a company which is responsible for contaminating the fishing grounds, purchases the poisoned fish catches from the fisher people and mixes them with concrete to use as land-fill.

HIGH SEAS FISHING

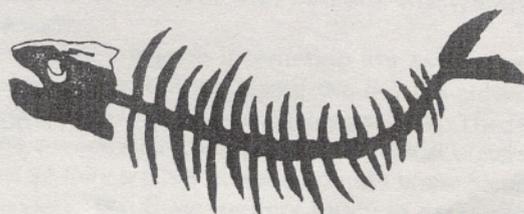
This method of fishing has appeared since the 1950's. But by 1976, it was bringing in 73% of the total catch, though it employs only 22% of the fishing people. It is controlled by large corporations and 25% of the catch is used for animal feed and fertilizers.

FISHER PEOPLE'S STRUGGLE

Many Japanese fishing people fight against reclamation and pollution. The struggle of the people of Minamata in Kyushu is quite famous. A fertilizer manufacturing company called Chisso Co. poisoned the fish by pumping organic mercury into the bay with its waste water. The people who ate the poisoned fish developed paralysis, blindness and even many died as a result. The fishing people fought against the company to force it to accept responsibility and pay compensation to the victims. In November 1959 the people invaded the pipe line that was emitting poison into the sea. Even though the government supported the company, the court decided in favour of the fishing people and directed the company to pay compensation to the victims.

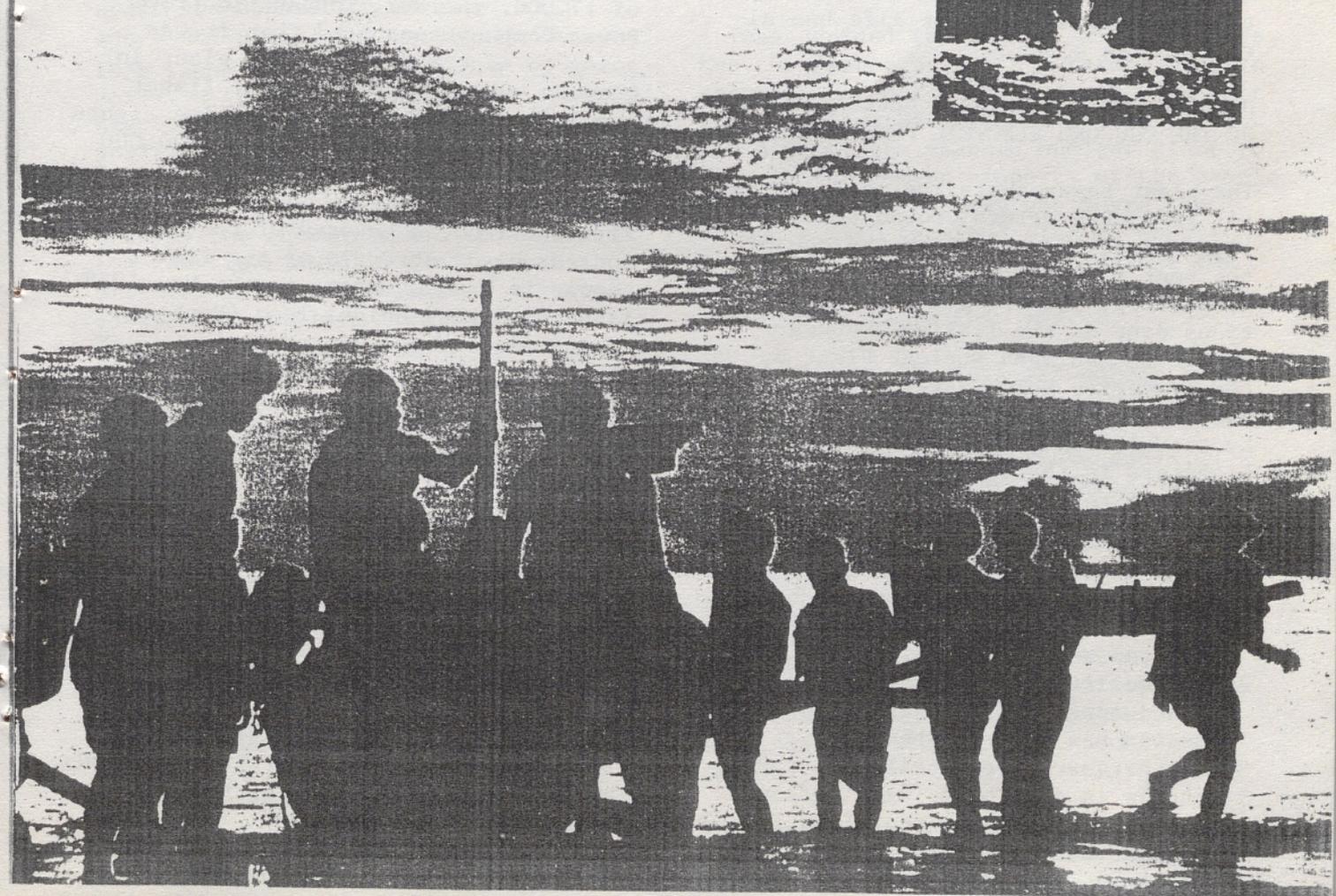
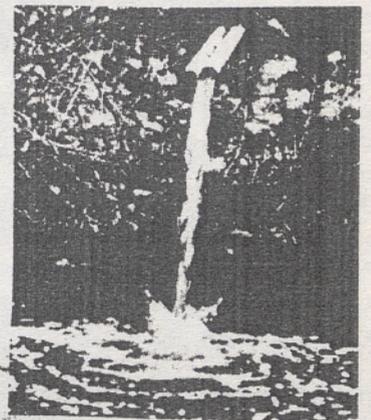
In Mutsu, in Northern Japan, the fishing people opposed the government's move to use their home port for its first nuclear powered vessel. They feared that leaked radiation would poison their shell fish beds. They succeeded in their struggle to drive the ship away from their bay. The ship has yet to find a new home port.

In many places around Japan, fishing people and their allies are fighting to protect their fishing grounds against reclamation and pollution. An all-Japan fishing-people's congress to help coordinate these efforts and to strengthen local fishing is being planned.



Japanese
fisherpeople
FIGHT against
nuclear powerplant

OKADA OSAMU



Although Japan recorded a total fish catch of over 10 million tons in 1976, the highest in the world, the coastal people of Japan have been affected drastically by the post world war II policy of rapid expansion of chemical and heavy industries. Alongside the destruction of the sea by industrial landfills and industrial wastes, the problem of the construction of nuclear power plants and thermal power plants has become increasingly serious for Japan's inshore fishing people.

THE DEVELOPMENT OF NUCLEAR PLANTS IN JAPAN

All of Japan's nuclear plants are situated along the coast. The assumption is that "the sea is a garbage dump" and that in exchange for compensation money the industrialists can steal the sea from the fisher-people. It has been pointed out that the contaminated wastes in nuclear plants' and thermal plants' waste water is incorporated into the bodies of fish and shell fish. In tests conducted at a number of sea sites, radio-active materials such as cobalt 50 and magnesium 54 have been detected and damage to marine life has already taken place.

DAMAGES DONE BY SHIMANE NUCLEAR PLANT OF THE CHUGOKU ELECTRIC POWER COMPANY

The plant began operating in 1974. Until 1976, the waters around this nuclear plant had been known as one of the best fishing grounds in Shimane prefecture. The results of investigations done on the fishing grounds around the Shimane Nuclear Plant by the Fisheries Warm Waste Water Research Group of Tokyo University and Kyoto University's Research Group on Disasters in the fishing Industry have been reported as follows in the magazine *Choryu*, August 1978:

1. Where the waste water is discharged into the sea, sea urchins and shell fish such as earshells and top shells have died.
2. The quality of laver (sea weed) has dropped and the harvesting season has been shortened.
3. The harvest of earshells and top shells is done by using a "glass box", to search the sea floor for shells which are then caught with a long hooked pole. The warm waste water discharge causes a blurring

- and thus reducing the harvest.
4. The quality of the cultivated *wakame* sea-weed has deteriorated.
5. The squid-fishing ground has become smaller.
6. Some areas where gill nets can be used to catch flying fish have been lost.
7. The catch of red snappers, tuna and yellow tail, all high priced fish, in stationary trap nets, has decreased considerably.

The heat of the waste water from nuclear and thermal plants has a damaging effect. It is said that in the process of producing 1 million KW of electricity, 70 tons of waste water which is seven to eight degrees warmer than ocean water, is discharged every second.

The fisher people of Japan have not been standing idly by watching the destruction of their sea. Of late, the struggle has become very intense, especially in the areas where constructions of nuclear and thermal plants is taking place.

THE STRUGGLE OF ONAGAWA FISHER PEOPLE

Onagawa is a typical small fishing town in Miyagi Prefecture, with a population of 17,000. In 1967, Tohoku Electric Power Company announced that it was going to construct a nuclear plant in Onagawa, which meant that the fisher people had to forgo their fishing rights over a sea area covering about 500,000 m².

Fiyinaka Ikuo, a veteran of the anti-nuclear plant struggle of the fisher people in Onagawa wrote in the May 1978 issue of *Gekkan Chicki Toso* (Monthly Resident's struggle) an article "Gyogyoken Hoki Wa Narazu" ("fishing rights not given up") about the struggle: "The coastal area of Onagawa is a fish farming ground cultivated by the fishing people with their blood and sweat. The barrels filling the inlet are the fruit of the hard labour of the fishing people, who finally reached the present stage of livelihood by cultivating the sea like farm land, fighting against a harsh environment. The catch from Onagawa bay, mainly of oyster, scallop, sea squirt and *wakame*, exceeds 1 billion yen per year, counting that which goes through the Gyokyo (fishing cooperatives) alone. Fish farming is thus giving the fishing people a stable livelihood, in spite of some problems such as dense oysters farming and poor *wakame* harvest.

The Onagawa fisher people refused to give up their fishing rights because they loved the sea. In June 1969 the general meeting of Onagawa *Gyokyo* (fishing cooperatives) made a firm resolution against nuclear plant construction. In August of the same year they formed an Opposition League against the Onagawa Nuclear Plant's construction, and began an active opposition movement, marching for instance to the Tohoku Electric Co. head office to protest the construction.

Abe Sukeo, one of the fishermen in Onagawa testified at the Sendai District Court in November 1973 as follows: 'As far as I know, I am the fifth generation of a family who has lived in Onagawa. My children also live there and engage in fishing. We intend to continue fishing in the future, since we are confident of making our livelihood by it. Since I want my children and grandchildren and their children to continue fishing, I feel that I have to protect nature, and oppose the nuclear power plant'.

However, Tohoku Electric tried to split the opposition movement with money and power. In the August 29, 1978 issue of *Kahoku Shimpo* a local daily, a reporter revealed that 'the Electric Co. tried to destroy the opposition by spending 10,000 yen notes like water and entertaining people with feasts and that the money spent in the area by the company since it announced the construction plan (aside from the official compensation money) amounts to about one million yen'.

These stories are not an exaggeration. The peaceful fishing village was divided into two groups by the electric company's manipulation of money and pressure - one for the nuclear plant and the other against. It reflected itself even in family life.

The opposition league developed an active movement including youth action and women's action brigades. Students of Tohoku University and even those from Tokyo joined the movement, helping the villagers. A severe battle was fought between the electric power company (together with the local government and power elite who worked as the company's tool), and the fisher people and their supporters who struggled to protect the sea.

In November 1978, when Tohoku Electric offered a total amount of 5.1 billion yen as compensation, a majority of the members of the *Gyokyo* (fishing cooperatives) was in favour of giving up fishing rights. But the majority decision was not carried through as it did not have the requisite two-thirds majority. The company then increased the amount of compensation significantly. On August 28, 1979 another general meeting was held to decide the issue. Out of 579 members of the Onagawa *Gyokyo*, 578 did vote (but 148 of these voted by proxy) - 124 votes against giving up fishing rights and 454 in favour.

The forced decision to give up fishing rights aroused a strong reaction not only among the fisher people but other Onagawa villagers. The Onagawa Fish Transport Industrial Association later issued a statement opposing 'the nuclear powerplant which would be harmful to people's livelihood.' It was openly rumoured in Onagawa that Tohoku Electric had been buying the letters of proxy at one million yen each. It was also said that among the voters in favour of giving up fishing rights forty or fifty people were not officially qualified as *Gyoko* members.

It was decided to give up fishing rights, but the fisher people's determination to struggle has not been weakened. The opposition League bought land adjacent to the site of the planned nuclear plant to make it the common property of the people throughout the country who share the struggle with them and also to make it a stronghold of the struggle against the forcible reclamation operation which is expected to begin this year."

THE STRUGGLES OF IKATA AND HOHOKU FISHER PEOPLE

The fisher people in Shikoku appealed to the public via the courts concerning the danger of nuclear plants. On April 25, 1978 the Matsuyama District court made a decision to reject a request by the people for the court to cancel permission to build the Ikata no. 1 nuclear reactor of the Shikoku Electric Power Company. The fisher people of Ikata immediately appealed to Takamatsu High Court against the district court's decision.

The case of fisher people in the Chugoku district shows that the fisher people are not always defeated in their struggle.

In June 1977, Chugoku Electric Power Co. informed the prefecture and the town that it wanted to build two nuclear reactors. Surprised by the news, the fisher people of nine cooperative associations immediately passed a resolution against the plan and organised an opposition group called '*fisher people's Liaison Council against the Nuclear Power Plant*', showing their determination to oppose the plan. They distributed flyers to each home protesting against the company and the prefectural authorities, studied the problem by holding lecture meetings inviting specialists and scientists concerned with nuclear power. The activities of the wives of the fishermen were particularly remarkable.

In January 1978 Governor Hirai wanted the town mayor to carry out an environmental survey of the town for promoting the nuclear reactor plant. The fisher people held protest meetings and challenged the mayor in February. The mayor did not accept the request of the governor and when attacked by the promoters of the plan the mayor offered to resign from his post. In addition in a flyer distributed by the workers of Chugoku Electric, it was stated that the workers of Chugoku Electric were firmly opposed to the construction of nuclear power plants, as they were fully aware of the danger of the plant. The management punished the workers' union leaders. Protesting against the punishment, the fisher people staged a sit-in in front of the Company office together with the punished workers. Thus there formed a real solidarity between the fishermen and the workers.

In the ensuing mayoral election, the fisher people succeeded to elect their candidate as the mayor with an overwhelming margin. The newly elected mayor Fuji told Chugoku Electric his intention to refuse nuclear plant construction.

The joint struggle of the Hohoku fisher people and Chugoku Electric workers has eloquently demonstrated that a struggle against nuclear power plants can win, through the strong solidarity of local fisher people and workers.

STRUGGLES BY FORCE

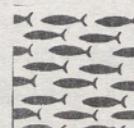
The nuclear powered vessel *Mutsu* ap-

guarded by a patrol boat. But it was after a three hour long sea battle with people's boats' containing activists from throughout the country (including farmers from Sanrizuka) and about sixty fishing boats, that it could finally enter the port.

The Japanese fisher people began to realise that they have to use force in order to protect the sea, when the capitalists force nuclear power plants or nuclear power or vessels upon them. The fisher people call this type of struggle "Sanrizuka-style struggle" named after the farmers struggle against the New Tokyo International Airport.

The struggle of the Nanao fisher people in Ishikawa Prefecture, the most radical fisher people's struggle, is known as the "Sanrizuka of the Sea". The issue here is a plan for construction of a thermo electric power station by Hokuriku Electric Power Co. involving 85,000 sq. meters of Tokusa Bay which is a good fishing ground. In the early morning of April 2nd, 1978 the company attempted to forcibly begin reclamation of Tokusa Bay, mobilizing six operation boats. The fisher people mobilized more than thirty small fishing boats, surrounding and seizing the operation boats. In two hours the operation boats had to withdraw. This was followed by arrests of fourteen leaders of the struggle, but the fisher people were not discouraged by the arrests.

The power of those electric power companies which are backed by state power, is certainly overwhelming. In contrast, the fisher people's power appears to be small. But if the fisher people unite with other local people and workers, and exchange experiences and lessons with the people struggling in other areas for the same cause, thus building the solidarity of people throughout the country, the electric power companies cannot push through their plans as easily as they wish.



Rape of Coral Reefs Is Threat to Philippine Economy

Rape of Coral Reefs Is Threat to Philippine Economy



By MICHAEL T. MALLOY

Special to THE ASIAN WALL STREET JOURNAL

ANILAO, The Philippines — Underneath the water you can see that some of the reefs are dying. They are cratered by dynamite, poisoned with cyanide and choked with soil washed down from the hills.

Biologists say the coral reefs directly produce about 15% of the Philippine fish catch. They are the mainstay of perhaps 700,000 families — more than four million people — who haul in a thin living as subsistence fishermen in frail canoes.

Coral reefs are living things. They're the skeletons of little underwater creatures. If the creatures are really dying at the rate that was claimed at an environmental conference here, it could mean economic, social and even political problems for the Philippines.

Environment vs. Stomachs

The three-day conference at this seaside town was sponsored in part by the government-backed Environmental Center of the Philippines. The center's executive director, Ramon Binamira, is in a unique position to see the link between a damaged environment and empty stomachs.

Mr. Binamira is also chief executive of a nationwide nutrition and child-welfare program headed by Philippine first lady Imelda Romualdez Marcos. He says the highest rates of childhood malnutrition are usually found in farming villages where the soil has worn out

or in coastal settlements where the fish catch has declined.

"We are a people who eat fish and rice," the executive says. "We are increasing our human population and decreasing our fish population. If you put this on a graph, any businessman can understand it."

But neither Mr. Binamira nor his allies in the Philippines' budding environmental movement have any hard figures to put on such a gloomy graph. On the contrary, government records show that national fish production doubled to 1.5 million metric tons a year in the decade that ended with 1977.

The environmentalists argue that these figures merely show that more efficient and destructive fishing methods are hauling in a bigger share of a declining population of fish, a trend they say is sure to backfire.

"The fish population has definitely declined, for practically all species," says professor Dioscoro Rabor, a white-bearded wildlife expert who has trained many of this country's marine biologists.

Nobody Knows

The environmentalists also argue that national figures reflect the growth of motorized, offshore fishing, but disguise the socially explosive problems of subsistence fishermen whose families go hungry on days when the reef doesn't yield any fish.

Again, they have no statistics to back them up. Nobody really knows how badly the reefs have been hurt or how much they contribute, as feeding or breeding grounds, to the 85% of the annual catch that doesn't come directly from the reefs.

Nobody even knows how many coral reefs there are in the Philippines. Scholarly estimates of the area of this country's shallow-water reefs have ranged in the past

three years from 4,700 to 10,400 square miles.

So evidence of underwater destruction is based almost entirely on the complaints of small fishermen who claim they can't support their families any more, and from the growing industry that caters to scuba-diving tourists.

"We're destroying the product that I'm trying sell," says Allen Staley, president of the firm that owns the Seafari diving resort, where the conference was held.

"We have one place here where all the people had to move away because they couldn't catch fish any more," says Omar Evangelista, a municipal councilor here and part-owner of Seafari.

"In all the reefs surrounding the main islands there are problems," says Mike Corro, who operates two live-aboard excursion boats for Aquaventure Philippines Inc. "If you want good diving you've got to go out to the most distant reefs."



Spotty Evidence

Such evidence may be spotty and word-of-mouth, but it's believed by many Filipinos who otherwise take a hard-nosed view of the necessary trade-offs between a pristine environment and the needs of a growing economy.

"I'm in charge of producing food, not conserving the environment," said Agriculture Minister Arturo Tanco Jr., who helicoptered into Seafari to take part in the conference.

Mr. Tanco's open scorn for "bleeding heart" conservationists and apparent defense of industrial pollution stirred an angry debate here. But the link between saving the reefs and feeding Filipinos seemed so strong that the Minister stayed on to help the conference plot its lobbying strategies.

Growing concern over the marine environment was shown by the attendance here. Mr. Binamira hoped that 25 persons would show up when he sent out 50 invitations to fishermen, marine biologists, government officials and proprietors of scuba-diving resorts. But more than 70 participants descended on this small resort and Mike Corro had to bring in one of his excursion boats as a floating barrack for the overflow.

Illegal but Common

Most of these people arrived with the hope of getting the government to stamp out dynamite and cyanide fishing, which are illegal but common, and a legal method called *moro ami*, in which destructive weights are pounded on the coral to drive fish into a net.

As a publicity stunt, the participants gave \$6 to a local fisherman who went out and used it buy two sticks of dynamite. That showed, said Mr. Binamira, that you can buy

dynamite "like chewing gum" in Philippine fishing towns, even though its possession is illegal.

But when the divers, biologists and fishermen compared notes here, they found their problem was a lot more complicated than the use of destructive fishing methods. They agreed that the largest single cause of destruction to the reefs was silt washed down from denuded Philippine hillsides.

If that's true, then the environment really is the seamless web that ecologists like to talk about, and protecting it may require a political will that hasn't so far been available here.

Widespread Erosion

Widespread soil erosion in the Philippines is generally blamed on excessive and often illegal logging operations that are quickly followed by slash-and-burn farmers who are just as poor as the subsistence fishermen.

It is notorious here that illegal logging goes on even in Philippine national parks with the help of bribes to the underpaid officials who are supposed to prevent it. The intrusion of landless farmers into public forest lands is also illegal, but it is politically too dangerous for the government to evict poor people who have no other way to feed their families.

The same problems of poverty and politics have undercut existing laws that supposedly protect the marine environment. A senior law enforcement officer at the conference said bluntly that his men "look the other way" when fishermen use dynamite or illegal shallow-water trawls. He said experience has taught them that mayors and other officials will prevent the prosecution of local voters who, in the politicians' view, are only trying to make a hard and sometimes dangerous living.

"To Hell With It"

"To hell with your conservation, I've got to feed my child," is the attitude that Mr. Tanco said is responsible for environmental depredations by poor people who don't have any other choice.

The Agriculture Minister previously has said that destruction of the Philippines' forests, and the soil on which they grow, will reach a "point of no return" by 1985 if it isn't stopped.

In the face of poor statistics and lack of research into Philippine fish resources, it is hard to tell if the underwater environment is as threatened as the conference here proclaimed. Some participants even envisioned hordes of subsistence fishermen marauding as bandits and pirates when their reefs are exhausted.

It's true that the *bahura*, or reef, that's closest to Anilao is punningly described nowadays as a *basura*, which means garbage. But it's also true that some fine reefs exist a few miles from here, where fish are as thick as snowstorms, and scuba diving tourists come from Europe and Japan to enjoy them.

Pressure Group

The conference here was intended to create a "pressure group" to encourage the government to enforce existing marine protection laws and maybe pass some new ones. Such a group was created, and affiliated with Mr. Binamira's Environmental Center.

Mr. Binamira and Domingo Abadilla, who heads a federation of 15 conservation groups, privately agreed at the meeting to start a "sue the bastards" campaign to seek court orders to make government agencies enforce the conservation laws. Both men are lawyers and former executives of major Philippine companies.

The meeting also got Mr. Tanco's agreement to work for a number of legal changes:

- A temporary suspension of the conversion of mangrove swamps into fishponds, while scientists work out the knotty question of whether the swamps produce more food as fishponds or as natural breeding grounds.

There is a strong political element in this question. Fishponds may indeed produce more fish for the relatively wealthy men who own them, but a loss of breeding grounds can hurt the catch of the more numerous, and hungrier, subsistence fishermen.

- A ban on possession or transport of coral. There is already a law against gathering live coral, but policemen say they don't dare enforce it because it is the livelihood of wretchedly poor fisherfolk, many of them in southern Philippine islands that already simmer with rebellion.

As a result, Mr. Staley says Philippine coral is exported for sale as souvenirs in places like Hawaii and Florida, which thereby protect their own reefs. Policemen told participants here that they can enforce a sale-and-transport ban on coral wholesalers without appearing to oppress the ordinary people who collect it.

- A system for stamping the names of mining companies on the dynamite they buy, and punishing them if the dynamite "leaks" into fishermen's hands. Fishermen at the conference said the dynamite they use is mostly smuggled out of mines.

- Setting up a laboratory at Manila International Airport to test for cyanide in samples of live aquarium fish when they are exported. This would be backed by lifting of the export license for future shipments by companies whose fish proved to contain cyanide.

The poison is usually used here just to stun colorful reef fishes so they can be caught for the export trade. But it is also said to kill the coral. Mr. Binamira said fishermen who have used the poison in the aquarium trade have lately begun to use it for food fishing because of a slump in aquarium-fish demand.

"You have diarrhea for about four days and you wish you were dead," he says of the resulting fish dinners. Cyanide is readily available here because large quantities are used in the process that concentrates ore from Philippine copper mines.

Mr. Tanco was less forthcoming on demands for a ban on *moro ami* fishing. Government figures show that *moro ami* yields more tons of fish per boat than any other method in the Philippines.

Some Coast Guard officers, however, have offered to go after *moro ami* fishermen on safety grounds. They say the boats carry as many as 400 boys who are dumped into the water to bang the coral and herd fish toward a net. Boys are used instead of men because more of them can be squeezed into a boat.

"Hundreds of boys are going to drown," if one of the *moro ami* boats ever sinks ●

Fishery Management in Camarines Sur, Philippines

Why Sinarapan Almost Disappeared from Lake Buhi

BRUCE GINDELBERGER

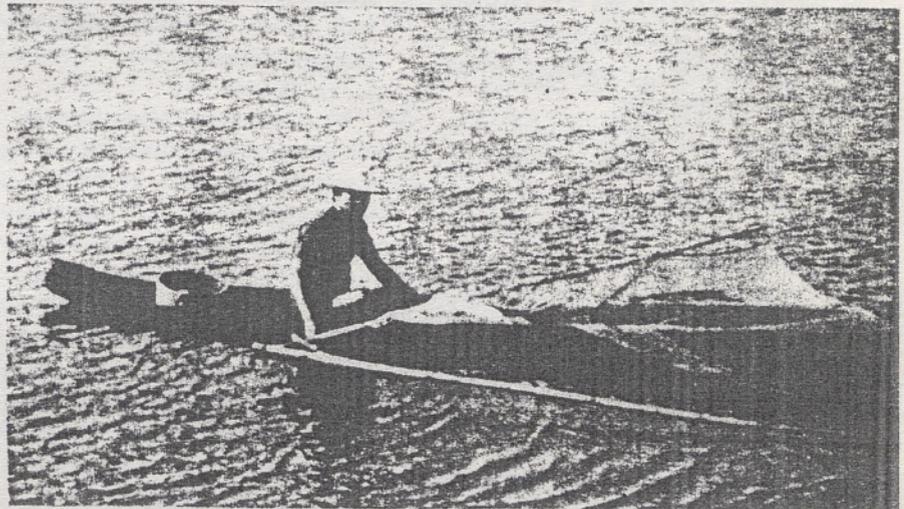
In the management of small bodies of water, especially freshwater lakes, the actions of only a few people disturbing the environment can have considerable impact on aquatic ecology. Even small changes in the abundance of the different organisms can be symptoms of serious problems which can worsen if the causes are not found and removed. Finding the cause frequently involves an investigation by a trained biologist but depends first on someone recognizing that the problem exists. Solving the problem frequently involves the time-consuming process of making laws to prevent people from continuing their destructive practices. Frequently, by the time the laws are finally enforced, the ecology of the area has been so severely damaged that the laws are no longer useful.

The history of the fisheries of Lake Buhi, Camarines Sur, is presented here to point out the problems involved in fishery management.

Lake Buhi

Lake Buhi is an 1800-ha lake set in the valley between two ancient volcanoes, Mt. Iriga and Mt. Malinao. According to Spanish historians, it was formed in 1641 when a strong earthquake caused the side of Mount Iriga to collapse, forming a natural dam on a small stream. The lake is as deep as 20 m in some spots and has an average depth of about 10 m. The lake is notable in that even at the start of written records in the area, the main source of fish consumed by the people was already the small (12.5 mm average adult size), transparent goby called sinarapan (*Mistichthys luzonensis* Smith). The fish were exceedingly abundant in the lake, along with a few other gobies, halfbeak and some migratory fish which ascended the river to reach the lake.

When first discovered by H.M. Smith in 1901, sinarapan were believed to be the smallest fish in the world. Later this was amended to "smallest commercial fish" in the world following the discovery of *Pandaka pygmaea* Herre. Perhaps more amazing than the sinarapan's small size is that one man, using a hand-operated scissor net made of finely woven abaca cloth, could catch several kilograms of the fish in an hour. People living in Buhi ate the fish for breakfast, lunch and dinner.



Because of their amazing abundance, few people thought of them as a limited resource and no one took the time to study them in detail.

Introductions

The 1920s and 1930s were times of many fish introductions. No fewer than five exotic fish species—common carp, three species of goramy, and *Gambusia* or mosquito fish—were dumped into Lake Buhi to supplement its fauna. No records exist as to the effects on the sinarapan fishery of these fish introductions.

In 1955 tilapia (*Sarotherodon mossambicus*, syn. *Tilapia mossambica*) were introduced into Lake Buhi by a

private citizen. The fish multiplied quickly and within a few years large tilapia of more than 400 g were common in the market. During the 1960s, tilapia were stocked on a regular basis by BFAR and private individuals. After the introduction of tilapia to Buhi, a steady decrease in the abundance of sinarapan was observed.

Damming

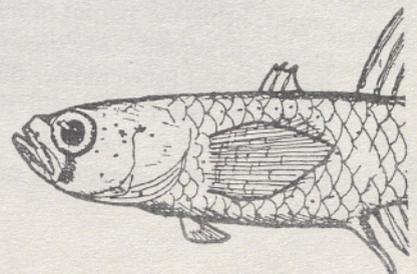
In 1955, a dam was constructed across the river flowing out of Lake Buhi to provide hydroelectric power to the area. Unfortunately, no one recognized that at least five species of migratory fish, on which many of the fishermen depend, would no

Sinarapan fisherman with fine-mesh net and poor catch: learning that a fishery is not an unlimited resource.

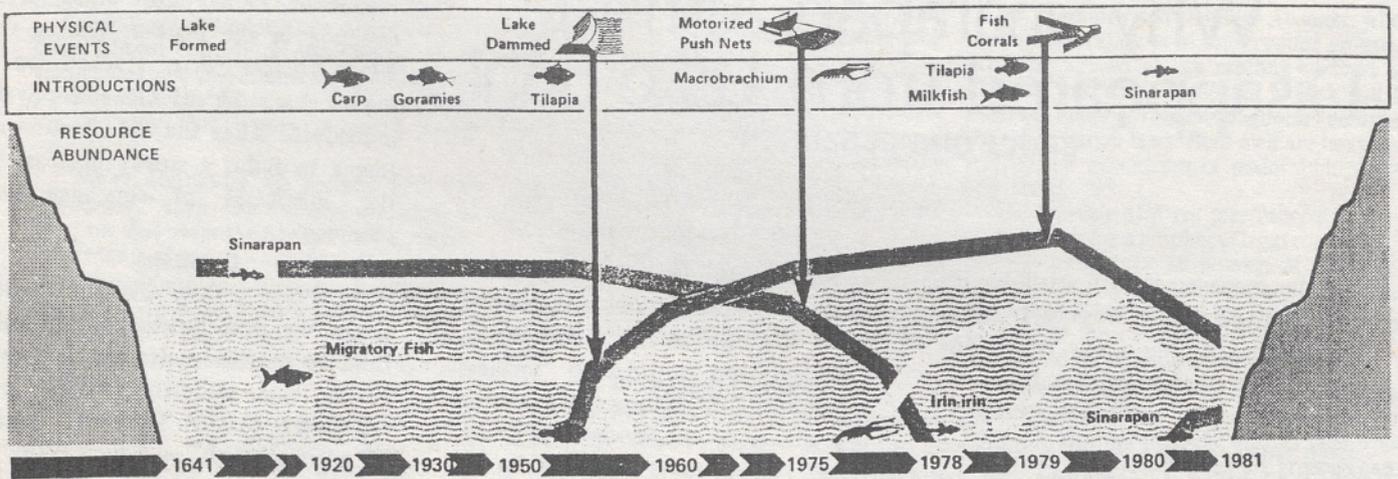
longer be able to enter the lake unless a fish ladder was incorporated into the dam. Only later were petitions submitted to modify the dam so that migratory fish could enter. However, these modifications were not then feasible.

Motorization

The use of motorized pushnets in Lake Buhi started in 1975. Initially, it was heralded as a technological



A historical diagram of Lake Buhi's fisheries.



advance and the best way to increase the declining catch of sinarapan. Due to the low cost of gasoline, it proved to be a very economical way to catch sinarapan. One 8-10-m motorized banca fitted with a scissor net 4 m in width at the mouth could catch more than 100 kg per day by running several times around the lake.

According to a BFAR survey, there were 34 motorized pushnets and about 490 manually operated scissor nets all with very fine mesh catching sinarapan by 1976 in Buhi.

Lake Bato and Macrobrachium

In the beginning of 1976, stories were being told in different places in Bicol about the mysterious shrimp which were destroying the once abundant sinarapan in nearby Lake Bato. Fishermen from Bato had started using the motorized pushnets in 1971 and were indirectly responsible for their use in Buhi. Because the Bato fishermen had never caught an abundance of this type of shrimp before, they claimed, wrongly, that BFAR stocked the shrimp in the lake. The shrimp were *Macrobrachium*, their source unknown.

By the beginning of 1977, the more than 100 motorized pushnet operators in Bato confirmed to the rest of Bicol that sinarapan were no longer being caught, being the victims of the highly predacious shrimp. They even reported that they had fished heavier than usual during the last few months to try to rid the lake of the shrimp. Unfortunately the pushnet was not selec-

tive for the shrimp and caught most of the remaining sinarapan that had not been eaten by predators. The shrimp became so numerous that they were caught in greater volume than the sinarapan in Bato had ever been. They were sold in the markets of many different municipalities in Camarines Sur, including Buhi.

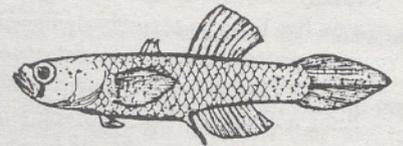
Lake Buhi and Macrobrachium

It was during this time that the town of Buhi began to be frequented by vendors bringing the live shrimp from Bato. What most townspeople did not know was that the shrimp that were not sold were thrown along the edge of the lake with other market trash. Some of the shrimp apparently survived because by February 1977, the same shrimp which had supposedly caused the demise of sinarapan in Bato were now being caught in Buhi.

The now more than 40 motorized pushnet operators were not too concerned with the appearance of the shrimp. However, for the first time, people were worried that the fish which had given publicity to their town might become extinct. Submissions were made, from late 1976, to BFAR and the Office of the President of the Philippines for the restriction of the use of motorized pushnets.

By February of 1978, more people were becoming concerned about the presence of the shrimp in Buhi. The mayor tried to talk the pushnet operators into voluntarily stopping their day-and-night operation until the sinarapan had a chance to increase.

The pushnet operators claimed that they had to operate for longer hours of the day to remove the shrimp from the lake and give the sinarapan a chance to survive. The Buhi fishermen, just as the fishermen in Bato had done two



years earlier, in turn blamed BFAR for stocking the shrimp in Buhi.

In October 1978, BFAR acted by banning the collection of sinarapan. It also ordered a study of the interrelationships of the sinarapan and the shrimp. Unfortunately, by then sinarapan were being caught in traces only in contrast with the large volume of shrimp.

Laboratory studies of BFAR showed tilapia fingerlings to be voracious predators of sinarapan. This is a probable explanation for the observation that as tilapia increased in abundance in Lake Buhi during the 1960s and 1970s, the catch of sinarapan seemed to decrease. It was also found that sinarapan were extremely effective predators of the planktonic larvae of the shrimp up until the larvae were about 5 days old.

However, the studies also showed

that probably there would still be sinarapan present in the lake if it were not for the heavy fishing by the motorized pushnets. The nets destroyed the beds of aquatic vegetation (*Vallisneria* sp.) where sinarapan laid their eggs and hid to avoid predators. The shrimp would probably have never become such a problem if it were not for the overfishing of one of the main predators of their larvae, the sinarapan. Observations in an unfished lake nearby over a 3-year period have supported this view.

Fish Corrals

By the beginning of 1979, sinarapan had disappeared from Lake Buhi. The motorized pushnets had now been banned pending the results of the studies being conducted on the shrimp. Some of the operators continued selling their catch of shrimp as fishmeal for animal feeds but many of the others erected fish corrals in the lake. From 1977 to 1979, the number of fish corrals in Buhi increased from 37 to 114. Most of the corrals were made with small-meshed (1-cm) netting and were very efficient in capturing fingerlings of tilapia. Many of the corral operators found that it was more practical to culture the fingerlings they had caught in fish cages made of



nylon netting than to try to sell the small fish in the market or as pig feed.

By October 1980, there were 153 corrals and more than 500 small cages. Almost 80% of the tilapia being sold in the market in Buhi were coming from these fish cages. Unfortunately, the excessive catch of fingerlings in corrals tended to make it more difficult for the poor fishermen using gill nets and spearguns to catch many fish. Many of the fishermen

blamed the low catches of fish on the predation by the still abundant shrimp, while many of the corral operators were able to collect thousands of fingerlings in a day.

Thousands of tilapia, carp and bangus fingerlings were stocked in Lake Buhi in 1978 and 1979 by BFAR to try to increase the supply of fish in the lake. Information drives were run by BFAR to show, among other things, that the small mesh of the corrals was depleting the tilapia and carp in the lake. The operators argued that BFAR could not supply enough fingerlings for the fishcage business in Buhi, so the small-meshed corrals were necessary.

During the rest of 1979 to 1980, each sustenance fisherman using a gillnet in Buhi could catch only 0-2 kg fish per day. The price of tilapia and carp went up to ₱10.00 (US\$1.30)/kg, which was higher than in Manila. Large quantities of fish from the ocean were now being sold in Buhi to feed its people.

Irin-Irin

Meanwhile, there was one fish species which seemed to be increasing in number while all others were declining. Irin-irin (*Vaimosa dispar*), small, 20-30 mm gobies, were being caught in greater and greater quantities. By August 1980, they were the commonest fish by weight sold in the market in Buhi. The fish were originally found in the catch of sinarapan in the 1920s but had always been rather uncommon.

Investigations showed that irin-irin, like other fish species in the lake, ate the shrimp larvae. But the irin-irin were the only fish which could pass in and out of corrals through the small mesh. Further, the males, which had a greatly enlarged mouth compared to the female, guarded the eggs from all intruders (including the females) during the 3-day hatching period and until after the yolk sac was exhausted.

During October and November of 1980, large quantities of shrimp were washed up in the lake shallows, apparently the victims of a natural poisoning of the water by sulfide compounds. These sulfur upwellings are a natural occurrence in the lake during the rainy season. Natural fish populations are able to avoid the upwellings, while caged fish are usually killed.

Lake Buhi This Year

As of February 1981, some fishermen were finding sinarapan in their catches again. The shrimp now seem to be declining in number, possibly due to poisoning by the sulfur upwellings and predation by irin-irin. On the request of the mayor of Buhi Town, a stocking program bringing sinarapan from Lake Katugday to Lake Buhi has begun in an effort to accelerate the recovery of sinarapan.

The changes in the lake fauna have taken many complex twists and turns as a result of man's intervention. Serious problems have developed within a span of only a few months, whereas the government agency has taken sometimes years to respond. The existing fishery laws cannot be ade-

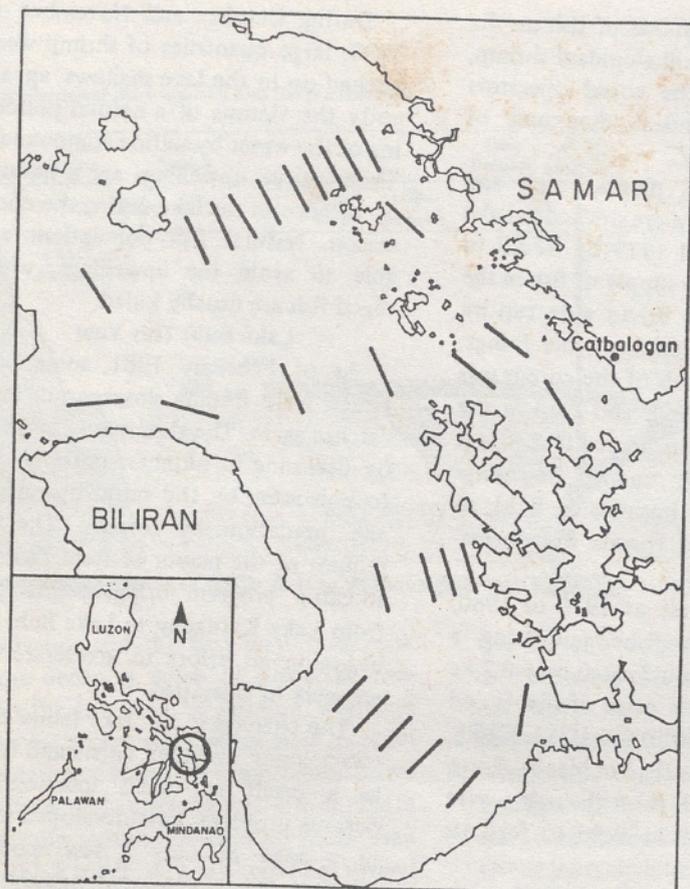


quately enforced due to lack of personnel.

What is happening in Lake Buhi illustrates the fact that complex problems of small-scale fisheries are not solved by economic consideration or legislation alone, particularly legislation developed and enforced by remote institutions. Fishing communities, to fully benefit from their fisheries, should have a say in management decisions. Only when community participation is taken into account does legislation and its enforcement become truly effective and meaningful.

Do Trawling Bans Work in Tropical Waters?

JUERGEN SAEGER



Southern portion of the Samar Sea. Bars show the UP sampling stations.

AMONG the many questions the article by Admiral Iman Sardjono *Trawlers Banned in Indonesia** may have prompted, a leading question is: What is the biological effect of a fishing ban in tropical waters?

For temperate waters, this question has been answered: the stocks do recover. Limitations of fishing effort have, in a comparatively short time, resulted in a more or less complete recovery of the stocks concerned and, consequently, in higher yields. This was demonstrated for the first time in the halibut fishery off California more than half a century ago. The same effect has been shown most dramatically in the herring fishery in the North Sea, where a total ban on fishing in recent years has led to a remarkable recovery of the stocks to the extent that a re-opening of the fishery is now under serious consideration. In fact, the recovery of many fish stocks during the two world wars, is well documented, especially in the North Sea area, where early post-war fisheries

harvests were greatly enhanced.

Though the question is sufficiently answered for temperate waters, in which regulation and limitation of fishing effort in international waters are mere questions of political accomplishment among nations concerned, it has never been proven that limitation of effort in tropical waters would have the same effect, though theoretically it should be expected.

In the Philippines, fishing grounds have been closed for various reasons, usually when it was felt that the operations of commercial boats were a threat to a subsistence fishery.

These closure decisions were made on an ad hoc basis, without much insight into the status of the fish stocks and without monitoring possible changes the stocks may experience during the closed period.

Following complaints from small-scale fishermen in the Samar Sea about decreasing catches, this area among others was closed in November 1976 to all commercial trawlers, prohibiting them to operate closer than 7 km from the shoreline. Commercial trawlers are

those over 3 GT. The Samar fishery remained open to so-called municipal fishing craft, vessels less than 3 GT, generally gill-netters, used by small-scale fishermen.

Despite the ban, a number of small commercial trawlers of about 15 GT, equipped with 150-180 HP engines, continued to operate in the region, working mainly out of Catbalogan.

Meanwhile, rising fuel costs and very low catches had forced most of the larger vessels to discontinue trawling the area by the beginning of 1979. These two factors, the ban and fuel prices, served to decrease considerably fishing effort in the Samar Sea.

To monitor possible changes in the fish stocks following the ban on trawlers, the University of the Philippines (UP) through the College of Fisheries launched a fishery survey of the Samar Sea, using the UP-owned research vessel *Albacore*. The *Albacore* is a 190 GT, multi-purpose training and research vessel of 31.6 m LOA and 600 HP. In March 1979, monthly investigations started at a number of fishery stations between 10 and 100 m depth, using a high-opening bottom trawl with a headrope of 46.3 m length and 4.5 m average vertical mouth opening. The average trawling speed was 3 knots.

The project was funded by NSDB (National Science Development Board), through PCARR (Philippine Council

for Agriculture and Resources Research), and was part of the activities of the bilateral Philippine-German Fisheries Project at UP College of Fisheries.

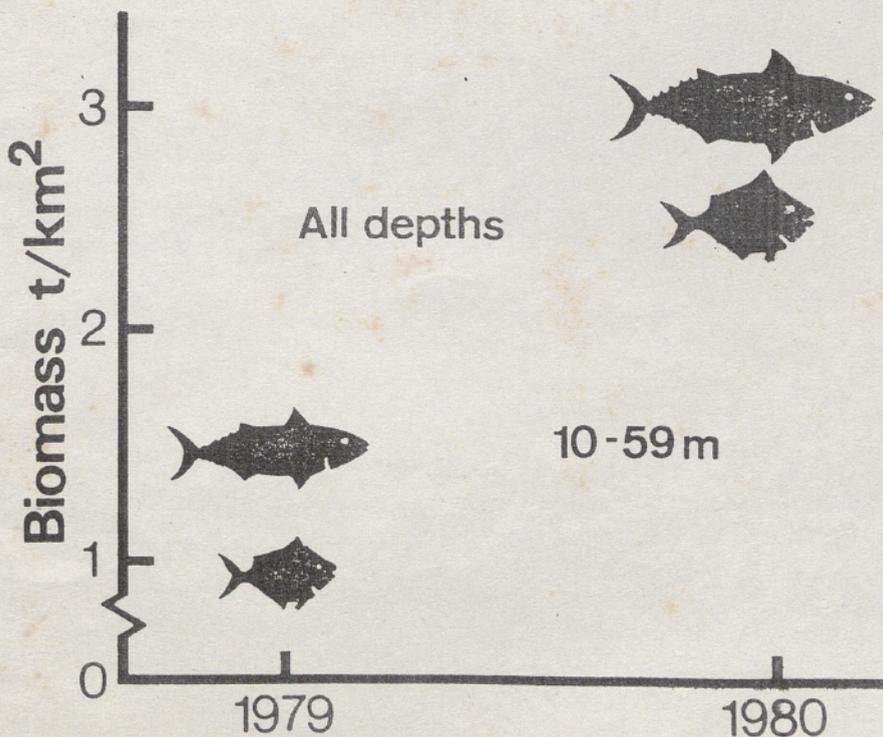
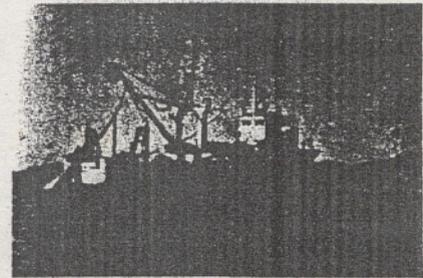
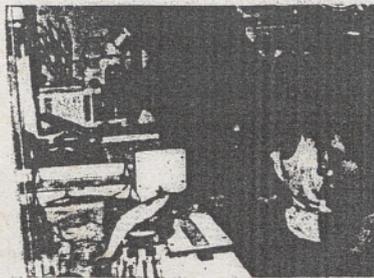
During the months of March, April and May 1979, the mean biomass for all depths was found to be 1.52 t/km², with a mean biomass of 1.21 t/km² in the depth range 10-59 m. This depth range, which comprised about 60% of the whole survey area and fishing grounds, is to be considered as the main trawling area for both large and small commercial trawlers as well as for the municipal fishery using a variety of gears, including motorized outriggers (bancas) suitable for trawling.

These values indicate that the complaints about decreased catches seemed to be justified indeed, especially if the values are compared with the biomass of virgin stocks. In Southeast Asia, the biomass of virgin or untapped fishing grounds ranges generally between 5.0 and 6.0 t/km² in the continental shelf region. It is also generally agreed that the potential maximum sustainable yield (MSY) in Southeast Asian shelf areas is about 3.5 t/km²/yr.

In spite of the ongoing activities of the small trawlers, the biomass of fish



Above: Municipal fishing vessels, mostly gill-netters at Catbalogan, Samar. Below left: Students working on trawl samples on board the *Albacore*. Below right: The *Albacore* hauling in the trawl net. Bottom: Graph illustrates the increase in fish populations in the Samar Sea from 1979 to 1980.



in the Samar Sea increased constantly during the survey period. During March, April and May 1980, the mean biomass of all depth categories combined increased to 3.09 t/km². For the depth range 10-59 m it increased to 2.80 t/km². That means that in one year the biomass over all depths doubled, while the most seriously affected depth range, 10-59 m, recovered to the extent that the biomass increased by more than 100%. It must be noted that the catch composition remained more or less unchanged during the investigation period.

This result clearly shows that the imposition of a trawling ban is a suitable tool in tropical waters to protect the vital interests of the sustenance fishery by helping heavily exploited fish stocks to recover.

Another survey in the area will be conducted in March and April 1981 to get a closer insight into the alterations the stocks may have experienced due to the trawling ban.