

## THE FISH PEN INDUSTRY (OF THE PHILIPPINES): AN OVERVIEW\*

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I welcome this opportunity and feel highly honored to be with a select group of men and women dedicated to the advancement of fish farming. The invitation for me to speak has accorded me the sense of participation in the noble task of pushing the frontiers of knowledge for the benefit of man.

I am therefore congratulating the Southeast Asian Fisheries Development Center (SEAFDEC) Aquaculture Department and the International Development Research Centre (IDRC) of Canada for sponsoring this International Workshop on Cage and Pen Fish Culture. The Workshop comes at a time when the need to meet the requirements for food has become increasingly acute because of the high population growth rate and increasing limitation of resources.

### FISH SUPPLY AND DEMAND PICTURE

Fish and rice are the two most important components of the Filipino diet. The Philippines for a long time was rice deficit. Now it can afford to export. How about as regards fish? The supply and demand situation of fish and fishery products in the Philippines continues to be unbalanced with fish requirements always outpacing production. Statistics from the Bureau of Fisheries and Aquatic Resources shows a deficit of 160,000 M.T. in 1978 and possibly 140,000 M.T. this year.

#### Fish Supply Situation\*\* (In Metric Tons)

Year	Normal Production at 4.6 Percent Growth Rate (In M.T.)	Total Estimated Protein Requirements at 36.5 kgs*** per capita at given popu- lation (In M.T.)	Deficit (In M.T.)
1974	1,268,400	1,489,200	220,800
1975	1,326,700	1,535,500	208,800
1976	1,387,800	1,581,500	193,700
1977	1,451,600	1,629,000	177,400

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\*Keynote Address

\*\* Data for 1974 taken from Bureau of Fisheries at normal fish production at 4.6 percent growth rate.

\*\*\* Population growth rate.

Year	Normal Production at 4.6 Percent Growth Rate (In M.T.)	Total Estimated Protein Requirements at 36.5 kgs*** per capita at given popu- lation (In M.T.)	Deficit (In
1978	1,518,400	1,677,900	159,500
1979	1,588,200	1,728,300	140,100
1980	1,661,300	1,780,100	118,800
1981	1,737,700	1,833,400	95,700
1982	1,817,600	1,888,500****	70,900

## PHILIPPINE FISHERY RESOURCES

The persistent deficits should in no way diminish our resolve to expand production considering the remaining fishery potentials of the country. Although aquaculture contributes only 8 percent to total fish production, it is one area where the prospects for increased production are bright. The 176,000 hectares of fish ponds in the country yield an average of only 600 kg/ha. I understand that some neighboring countries produce 4 M.T. to the hectare. If, through the pooling of local and international talents, we were able to discover or breed miracle rice varieties, shouldn't we embark on a similar course for fish, our second most important food item.

## THE FISHERIES DEVELOPMENT PLAN

The climate for such a breakthrough has become ideal in recent years. The Five-Year Philippine Development Plan (1978-1982) provides for the accelerated development of fisheries and aquatic resources.

### Fishery Resources, 1976

<u>Classification</u>	<u>Area in Thousand Hectares</u>	<u>Remarks</u>
1. Aquatic/Marine (Territorial)	166,630	12,650 ha are already exploited;
a) Marine coastal	26,597	extensive off-Northern Luzon, Lingayen Gulf, Manila Bay, Bicol, Visayas, Northern Mindanao, Palawan;
b) Marine oceanic	200	unexploited for commercial fishing;
2. Freshwater Lakes	200	biggest, most productive and suited for the fishpen industry in Laguna de Bay with an area of 91,000 hectares;
3. Reservoir	130	
4. Rivers	31	

\*\*\*\* Based on per capita requirements taken from the Regional Five-Year Development Plan, Region IV (Southern Tagalog Region).

<u>Classification</u>	<u>Area in Thousand Hectares</u>	<u>Remarks</u>
5. Marshes	128	biggest is Liguasan Marsh in Mindanao;
6. Mangrove swamps	252	
7. Brackishwater/Estuarine fishponds	176	biggest in Region III, IV, VI, with milkfish as the main species cultured plus tilapia and shellfish, prospective area for polyculture of shellfish and shrimp;
8. Freshwater fishponds	minimal	expansion through advanced technology in freshwater fish culture.

Source: Five-Year Philippine Development Plan, 1978-1982.

The present political leadership of the country has come out unequivocally in full support of a total fishery development program. The President has declared 1979 to be the year of the "Common Tao," to symbolize government's concern for the small men on the farms to include 600,000 survival fishermen in the country. And to draw particular attention to the plight of the fishermen, he has further espoused the beginning of a Blue Revolution the counterpart of the Green Revolution. But to succeed, this revolutionary movement must be nurtured by specific strategies, programs and projects. Fisheries bureaucrats and technocrats must formulate the counterparts to the Masagana 99, Compact Farming and G.O. 47 slogans of the agriculturists. Let us not be misled by believing however that programs succeed by attaching to them interesting labels. Even the thoughtful program planner can be surprised by the host of problems that are generated along with the program benefits. As an additional backgrounder to this workshop and if only to exemplify the problems referred to, let us review the history of a fisheries program — the fish pen industry.

#### FISH PEN INDUSTRY IN LAGUNA LAKE

In 1968, the Bureau of Fisheries & Aquatic Resources initiated what one might call a "laboratory scale" fish pen in Laguna de Bay. In 1970, the Laguna Lake Development Authority (LLDA) introduced a 40-hectare pilot commercial scale fish pen project in Bo. Looc, Cardona, Rizal, to demonstrate that yield per hectare of 4 to 10 times the natural productivity of the lake could be realized. This venture was to change the entire concept of Laguna de Bay as a fishery resource. A new industry was born.

Almost immediately following the LLDA fish pen were a few enterprising operators. In 1972, these few hectares increased to 200 hectares. In 1973, the area expanded to 5,000 hectares and to 7,000 hectares in 1975. Thereafter, the hectareage varied each year — rising or falling depending on a number of factors. But at an average of 5,000 hectares at P 30,000 per hectare, a total of P150M was invested in the fish industry in Laguna Lake. At an average of 5,000 kg per hectare per year, this industry is contributing significantly to the fish supply of the country particularly the Metro Manila area.

## PROBLEMS OF THE FISH PEN INDUSTRY

But like the other industries, it has its share of the pains of a pioneering industry.

1. Typhoons may be referred to as the No. 1 killer of the fish pens. Strong winds generating wave action combined with a heavy downpour resulting to overtopping of fish nets are associated with typhoons. Typhoon Didang of May 1976 wiped out over half of the fish pens (3,000 has) in the lake. Last year, the succession of three strong typhoons destroyed 90 percent of the fish pens. (It is said though, that the fish escape may be a loss to the fish pen owners but a bonanza for the poor fishermen catching them in the open waters.)

2. Fish mortality from a number of causes during the growth period results to a recovery rate at harvest time of only about 40-50 percent of the stocking rate. A high rate of mortality occurs during the fingerling stage itself, soon after their introduction in the fish pens because of physiological stress. The most phenomenal cause is the so-called summer fishkill particularly during the years 1975-1976.

3. Large accumulations of water hyacinth in between fish pens and in navigation channels create problems of access. During periods of strong winds, these accumulations are liable to damage fish pen structures by pressing against the bamboo barrier. Their presence could in fact magnify the extent of typhoon damages to fish pens.

4. Problem of predators could be quite serious. Mudfish and catfish are the most important of these carnivores.

5. Last but not the least, the social problem dramatized by the increasing frequency of reported poaching. Thirty-eight percent of the fish pen operators reported that they had suffered fish losses due to poaching; 35 percent were not quite sure of the occurrence of poaching in their fish pens; and 27 percent were apparently spared of the problem. It is very difficult to define the exact nature of poaching, but according to frequent reports, net enclosures of the fish pens are slashed open below the waterline and all escaping milkfish are caught outside the fish pens. To prevent poaching, many fish pen operators go to the extent of building an extra bamboo fence around their pens and of hiring private security forces.

## LONG-TERM DEVELOPMENT

All these problems and the loss of capital investment threatens to diminish the original enthusiasm of even the existing investors in the fish pen industry. For example, many of the fish pens destroyed by Typhoon Didang in 1976 were completely abandoned by their owners and the government had to undertake Project "Bunot Baklad" (pull out the fishpens) to clean the lake of the leftover stumps and debris that became safety hazards.

As an afterthought, it may now be asked: Where did the planners of 1968 and 1970 go wrong? Shouldn't they have anticipated these problems and rectified the program immediately? But it may also be asked: Had the planners foreseen these problems, they could have been overwhelmed by their seeming insurmountability and shelved the program altogether.

But the fish pen industry is already a reality — a pleasant one — notwithstanding the tricky problems. In fact, it is being looked upon as a possible vehicle for uplifting the welfare of our lake fishermen through their active participation as owner-operators not as lowly-paid caretakers or resentful bystanders.

Therefore, the question rather, is: What can we do to insure the long-term viability of the industry?

The Asian Development Bank and the Organization of Petroleum Exporting Countries have together approved a loan of \$13.5 M to finance the participation of these lake fishermen in the Laguna de Bay fish pen business. This gesture alone by the two institutions is a measure of their confidence in the innate capability of our lowly fishermen to become entrepreneurs. The Philippine Government through the Development Bank of the Philippines and the LLDA is committing a counterpart fund of P60.66 M. The fishermen will be expected to contribute their labor valued at P9.08M.

Now, what can we, assembled here as fishery experts, technocrats, bureaucrats, contribute? No less. But not in dollars or pesos. It shall be the invaluable, priceless stream of ideas, formulas, expert answers to the problems and issues posed during the workshop. The greater contribution is actually yours.

In conclusion, I challenge you, if it is not too much, to complete this workshop with concrete or plausible findings and recommendations for:

- (1) a fail-safe fish pen design that could absorb or withstand the onslaughts of typhoons, the likes of typhoon Yoling, Dading and Kading;
- (2) management practices to eliminate summer fishkills and increase recovery rate;
- (3) a miracle bangus that will weigh 300 grams in three months.

With such a tall order, I must extend my best wishes and prayers for your success.