

# A REPORT ON THE OBSERVATION OF BANGUS (MILKFISH) FRY INDUSTRY IN MINDORO ORIENTAL

By

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## INTRODUCTION

Bangus or milkfish culture is a well-established fishing industry in the Philippines which dates back to the latter part of the 19th century. It became more extensively practised at the start of the 20th century and has since grown to a major industry. Its popularity and extensiveness may be attributed to the environmental condition and the geography of the Philippine archipelago. The tropical climate here is conducive to the growth of various forms of aquatic flora and fauna that usually serve as the natural food of fishes cultured under controlled conditions.

Existing milkfish fishponds in the Philippines have a total area of about 140,054.84 hectares, both privately-owned and government-leased. These areas can produce at the present level of cultural techniques some 70,000,000 kgs valued at about P140,000,000. There are still huge swamplands available for freshwater and brackishwater fish culture totalling about 546,315 has. These can be developed to increase present production about three times. In the long run, even if only 50 per cent or roughly 250,000 has. of the available swamplands are developed using improved scientific techniques of fish culture the country can be assured of an additional fish supply of about 200,000 mt annually. With this projected increase, the protein requirement and per capita consumption of the entire population as recommended by the nutrition agencies can be maintained at the medium level.

To attain self-sufficiency in fish and other fishery by-products, the government is encouraging citizens, private business corporations

and foreign investors to venture into the bangus or fishpond industry. Fish seeds for extensive stocking will not be a problem as the whole archipelago constitutes a central zone of bangus fry that can sustain an adequate supply throughout the year. Aside from this natural fry collection, other scientific means could be evolved to induce spawning of milkfish.

The Naujan Sabalo Hatchery Experimental Station in San Jose 1, Naujan, Oriental Mindoro, is experimenting with the induced spawning of the *Chanos (sabalo)* with the treatment of hormone under controlled conditions. Studies and investigations on this subject are in progress and a breakthrough is expected soon.

#### *Geographical Distribution of Sabalo and Bangus Fry*

The mature sabalo (milkfish) has been observed to migrate in schools along Naujan coast, particularly within the limit of the mouth of the Lumangbayan River. Sabalo are seen some 300 to 500 m away from the shoreline and the fisheries station building. They have been observed to swim to and from the mouth of the river. This migration starts during the latter part of March until May particularly when the sea is calm. The same migration pattern has been observed along the eastern coast of Mindoro Island from Puerto Galera in the northwest to Mansalay and Bulalakao in the southeast where the coastal towns have one or more river outlets. Along the coast of eastern Mindoro are the towns of Puerto Galera, San Teodoro, Baco, Calapan, Naujan, Pola, Pinamalayan, Bongabon, Roxas, Mansalay and Bulalakao. Some of the inhabitants of these towns are in the bangus fry business.

#### *Bangus Fry Production*

From April 16, 1970 to June 30, 1970, a total of 2,635 pots of bangus fry (about 6,382,000 fry) were collected along the eastern coast of Oriental Mindoro. These fry were mostly collected by few small fishermen and later sent in bulk to the concessionaire for disposal to various fishpond operators and bangus fry dealers. Statistics on bangus fry collected in Mindoro Oriental in 1970 is shown next page.

Bangus fry collected in Oriental Mindoro in 1970.

Towns	Period	No. of Pots	No. of Fry per Pot	Total No. of Fry
<b>Grand Total</b>		2,680		6,482,600
Puerto Galera	April 16-30	20	2,500	50,000
	May	180	"	450,000
	June 1-7	50	"	125,000
	<b>Total —</b>	250		625,000
Naujan	April 16-30	49	2,200	107,800
	May	405	"	891,000
	June 1-7	76	"	167,200
	June 8-15	70	"	154,000
	June 16-30	83	"	182,600
<b>Total —</b>	683		1,502,600	
Pinamalayan	April 16-30	60	2,500	150,000
	May 1-31	200	"	500,000
	June 1-7	150	"	375,000
<b>Total —</b>	410		1,025,000	
Bongabon	April 16-30	52	2,500	130,000
	May 1-15	151	"	377,500
	May 16-31	345	"	862,500
	June 1-7	51	"	127,500
<b>Total —</b>	599		1,497,500	
Roxas	April 20-30	3	2,500	7,500
	May 1-31	8	"	20,000
	June 1-7	113	"	282,500
<b>Total —</b>	124		310,000	
Mansalay	April 16-30	200	2,500	500,000
	May 1-10	119	"	297,500
	May 11-20	9	"	22,500
	May 21-28	106	"	265,000
	June 1-7	135	"	337,500
<b>Total —</b>	569		1,422,500	
Naujan Sabalo Station	May-June 30/70	45	2,200	100,00

The coastal towns of San Teodoro and Bulalakao have no concessionaire managing the bangus fry industry, although it is certain that there are bangus fry in these areas. The reason may be that inhabitants near the coast do not know the proper technique of fry collection. As a result, the fishpond industry is not well-established in the area.

#### *Methods of Bangus Fry Collection*

The two methods of fry collection that are commonly used are the *salap* or *panagap*, and *saplاد* or fry trap net.

The *salap* or *panagap* is made of fine sinamay cloth in the form of a seine. It is 10 m long and 4 m wide. Usually, the *panagap* is towed by two persons along the banks of the sandy shore. Bangus fry are hauled in the *salap* by means of a basin. One set of *salap* can collect as much as two to three pots depending on the occurrence of bangus fry.

Heavy occurrence of bangus fry goes with the phase of the moon. Majority of the fry collectors believe that the phase of the moon has a great influence on the occurrence of fry along the coast and on river estuaries. They observed that heavy collection is experienced three days before and after a new moon and three days before and after a full moon. They relate the phases of the moon to the tide.

On the other hand, *saplاد* or fry trap nets are made of bamboo mattings set on rivers as a barricade. The opening has a V-shape form, leaving a narrow passage at the tail end where a purse type of fine sinamay cloth is attached to gather the fry. This type of fry collection is more effective and can gather plenty of fry during high tide as the fry go along with the incoming tide. Fry collection is likewise more effective if the river course is narrow and the barricade is well set. The *saplاد* collects as much as 10 to 20 pots a day, depending on the fry occurrence.

#### *Possibility of Induced Spawning of Sabalo*

For the past several years, the Naujan Sabalo Hatchery Experimental Station in San Jose 1, Naujan, Oriental Mindoro, has undertaken a series of studies and investigations on the occurrence and behavior of mature *Chanos* along the Naujan coast. Since 1967,

schools of mature *sabalo* have been observed swarming from about a meter or two below the surface some 300 to 500 m away from the shore. This behavior is usually observed during the latter part of March which may be presumed as a pre-maturing season for *Chanos* before it lays its eggs.

Based on the data gathered from April 6, 1967, to June 5, 1969, a total of 76 mature *Chanos* were caught by means of gill nets. Out of this number, 29 males and 14 females have been found to have fully mature gonads, two female fish have spent gonads. All the gonads that had been collected were kept in 10 percent formalin solution for further study.

The five mature *sabalo* that were stocked alive in the pond had been placed under close study and observation to find out some basic information concerning their adaptation, their natural behavior, their food and feeding habits and other characteristics that may affect the retrogression, the progression and the hastening of gonadal development.

It was observed that after a year or more of confinement under controlled conditions, the gonads had retrogressed and did not exhibit any sign of gonadal progression. The retrogression of the gonads is presumed to be affected by the controlling factors prevailing in the pond such as the low salinity, the shallowness of the pond, the nature of the bottom, the temperature of the water, and other physical influences.

After more than a year, it was observed that the fish did not spawn nor show gonadal progression and development. However, it is believed that induced spawning of the *Chanos* may likely succeed if experiments on hormone treatment will be undertaken right in the open sea, in a specially-made floating breeding *hapa* wherein some of the favorable factors are present such as ideal salinity, oxygen, temperature, and pH.

Nevertheless, it could be ascertained that there is a bright prospect for inducing the *Chanos* to spawn artificially under controlled conditions. This has been manifested in our continuing research studies and investigations from 1967 to the present. The *Chanos* breeders are observed to be frequenting the Naujan coast every spawning season particularly near the mouth of the Lumangbayan River. Of the

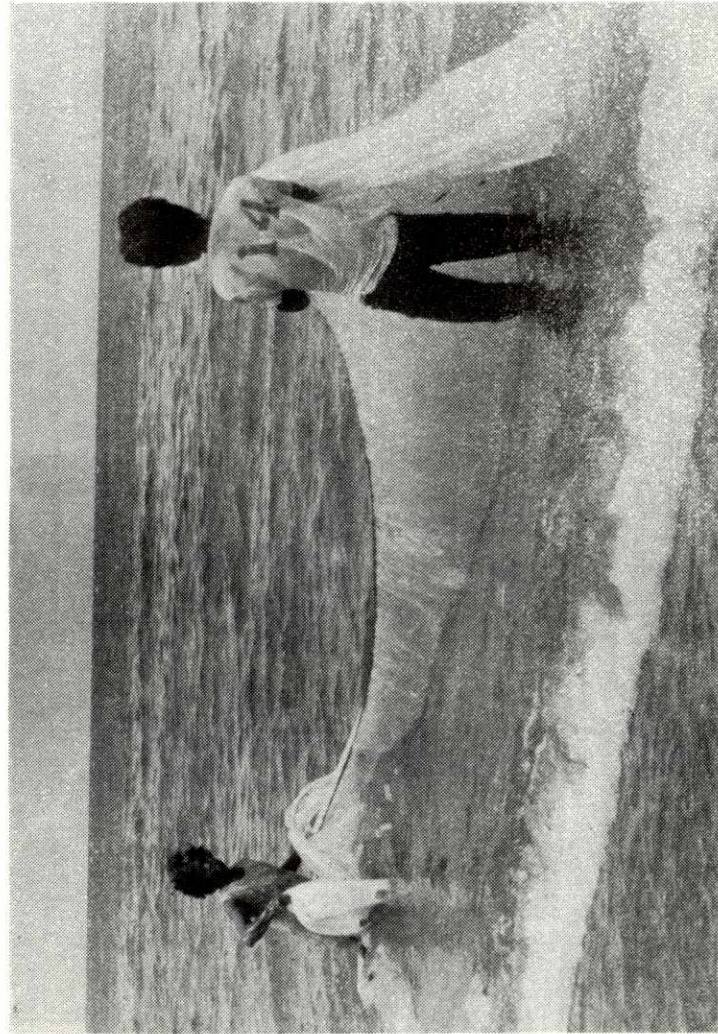
collected specimens during the past season, both sexes of the fish have relatively mature gonads.

### CONCLUSION

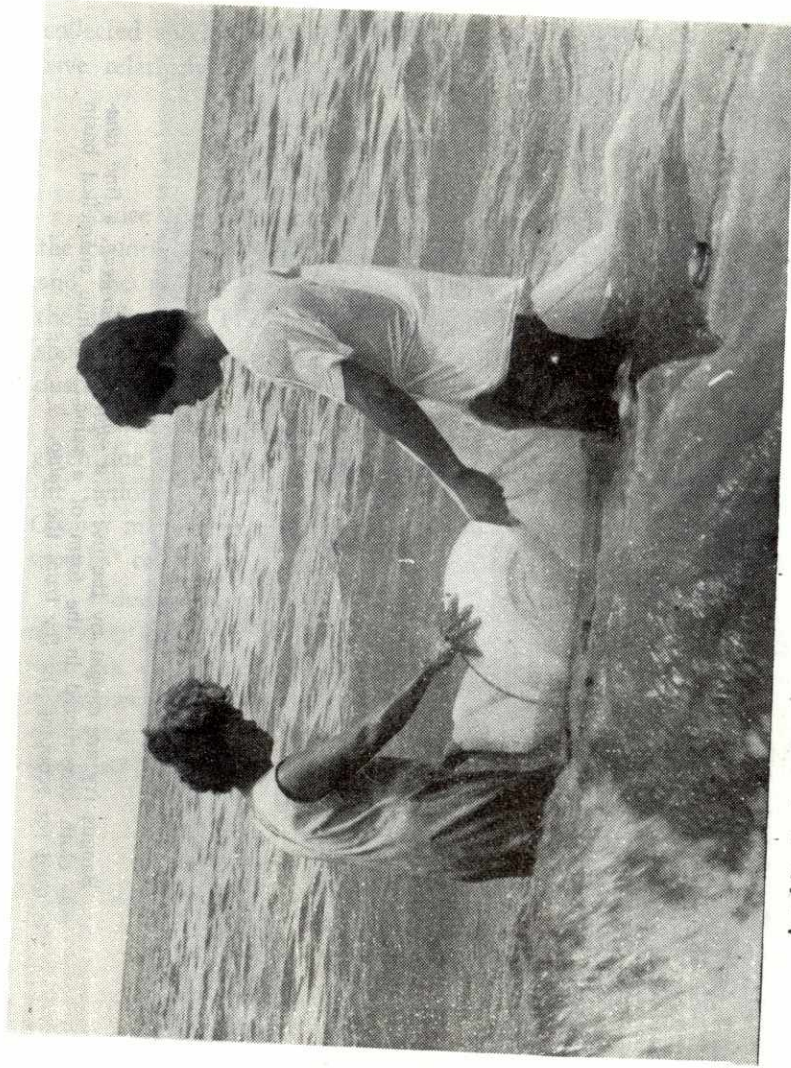
Since fish-seed supply is the main factor limiting the growth of the country's fishpond industry, a concerted effort of the government and the private sector should be exerted to provide the needs of the industry. Fry collection throughout the coast of the country should be intensified to fill the demands of the local fishpond industry.

Induced spawning of *Chanos* with hormone treatment should be given due emphasis in collaboration with the private sector as well as the national government. Successfully inducing one or two mature *Chanos* may mean from six to 10 million fry, which is equal to three months' collection from the entire eastern coast of Oriental Mindoro.

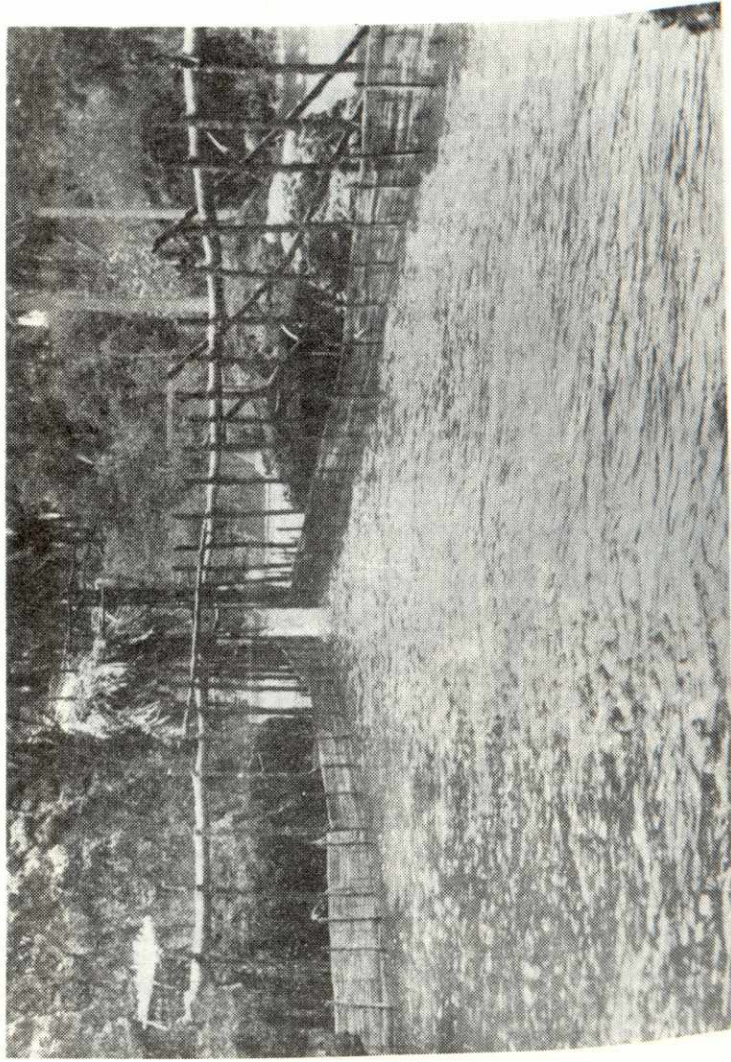
Induced spawning of the *Chanos* could possibly succeed if all necessary facilities are available to the staff of the station. Scientists who are experts in this line of work should be on hand to conduct experiments until the major objective is realized. Realization of the objective will mean progress for the entire fishpond industry and increased foreign exchange earnings.



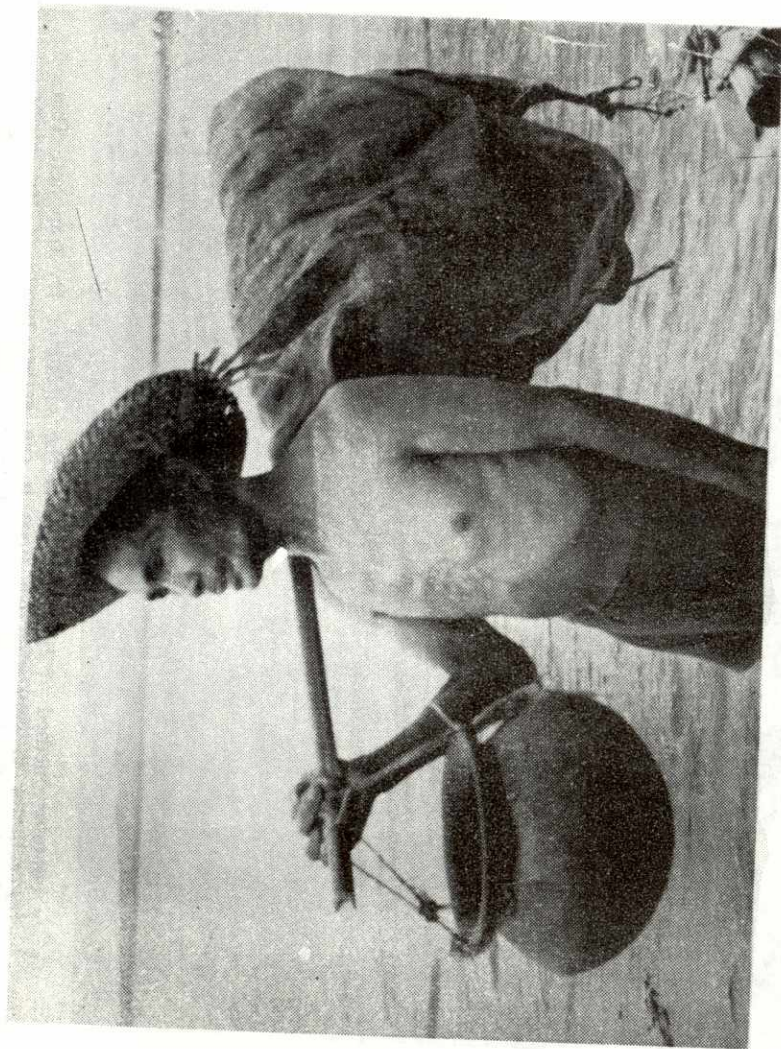
Bangus fry are caught by the use of a *salap* or a *panagap*, a fine *singamay* cloth constructed in the form of a seine. A white enamelled basin is used for scooping the fry from the *salap*.



A white basin is used to scoop bangus fry caught by the *panagap*.



Another method of fry collection is the *saplad* or fry trap net. This fry collector is very effective since it can gather plenty of fry during high tide as the fry go along with the incoming tide.



Pots or earthen jars are utilized to transport bangus fry because water in the pot remains cool longer.