

Assessment Of Milkfish (*Chanos Chanos*) Fry Grounds In Catanduanes Province, Philippines

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Abstract: The potential of the coastal waters of the province of Catanduanes, Philippines as milkfish (*Bangus: Chanos chanos*) fry ground for harnessing in commercial scale was assessed. Several stations in the eleven municipalities of Catanduanes were established as fry sampling stations. The period of occurrence was the months of March to August and the volume of catch in each station established was determined. Total catch may range from 100,000 to 500,000 per group of four (4) persons per month of occurrence. Volume of catch can significantly contribute to alleviate the short supply of fry for aquaculture industry in the country. Given the technology of identifying, catching, sorting, storing and marketing of milkfish fry, the study showed that gathering of fry as a livelihood is profitable in the stations identified during peak months.

Index Terms: Bangus, Fry ground, milkfish fry, peak months, period of occurrence.

1 INTRODUCTION

The milkfish industry in the Philippines is as old as its history of aquaculture. Grow-out technology for milkfish is almost perfect through the joint efforts of the academe, fish farmers and scientist, both in the government, private and non-government organizations. Considering the enormous economic benefits obtained from mariculture technology of milkfish which can be cultured in brackish water ponds near coastal areas, large potential for income enhancement and employment can be generated for coastal communities (K. Sullivan, K. et al., 2007). In spite of these, the insufficiency in the supply of milkfish fry poses a perennial problem and hampers milkfish production efforts, thus, restraining the growth of the milkfish industry. Vulnerability of milkfish production is further aggravated by reduction in the productive areas, high cost of farm inputs and impact of climatic changes in aquaculture (Case Study Report, undated). The reported breakthrough in 1976 by Filipino scientist at SEAFDEC in Iloilo in the induced spawning of milkfish using hormonal injection did not assure the continuous supply of fry in the country. The Philippine National *Bangus* Breeding Program in thirteen stations all over the country, established in 1980, likewise did not provide the much needed supply of fry by the milkfish industry. Importation of *bangus* fry from neighbor countries like Taiwan has been resorted to by the fish farmers in the Philippines and has been reported to be going on for the past several years (March 16, 1995, Philippine Daily Inquirer). In recent decades, milkfish hatchery technology was transferred to the private hatcheries, especially in Panay Island (1995, Seafdec Annual Report). Dissemination of technology, however, is plagued by low rate of farmer adoption to be able to significantly contribute to the total milkfish production (The WorldFish Center, 2007). Meanwhile, the *Bangus* Fry Industry Task Force, a multi-agency organization was formed to prepare an action plan that will solve the milkfish fry shortage in the country (1995, The PCARMRD Waves), but results have yet to be felt by the

industry. Milkfish industry amidst all developmental efforts is still facing a general decline in total volume of production due to chronic shortage of milkfish fry. Data from the Department of Agriculture (DA) regional offices reported milkfish fry deficit in the country at 1,564,494,019 (SEAFDEC Asian Aquaculture, 1995; table 1). Gathering of milkfish fry in Catanduanes is not a major source of livelihood. Considering, however, that Catanduanes, the twelfth largest island of the Philippines, is located along the Pacific Coast, southeast of the main island of Luzon, between 13.5 and 14.1 North Latitude and extends from 124.0 to 124.5 East Longitudes, bounded on the west by the Maqueda Channel, on the south by Lagunoy Gulf, and on the east by the Philippine Sea, with over fifty water tributaries and relatively dense *mangal* community which are nursery grounds of milkfish fry (Bagarinao, 1994; Kawamura, 1983), this highly sought-for commodity must be abundantly present in most of the coastal areas of province identified in this study. This study, therefore, evaluated the potential of the province as fry ground for commercial gathering, and as contributory livelihood for the people in the coastal barangays. The potential of the province as commercial milkfish fry grounds has been assessed so they can be harnessed, thus, alleviate the perennial shortage of milkfish fry in the Philippines. Specifically, the following were resolved in the study: 1.) identify and characterize milkfish fry grounds in Catanduanes; 2.) quantify the potential volume of and ascertain the period of occurrence of milkfish fry in Catanduanes, and 3.) introduce to the local fisherfolk milkfish fry gathering technology.

2 MATERIALS AND METHODS

2.1 Reconnaissance Survey of the Area

Using the map of the province of Catanduanes from NAMRIA (National Mapping and Resource Information Authority), milkfish fry grounds were identified and marked as sampling stations (see Figure 1). Sampling stations identified were coastal areas with freshwater outflow from a river or tidal creek, and near a mangal community within a proximity of fifty to two-hundred meters from the station. Twenty-eight (28) sampling stations were identified in the ten (10) municipalities of Catanduanes.

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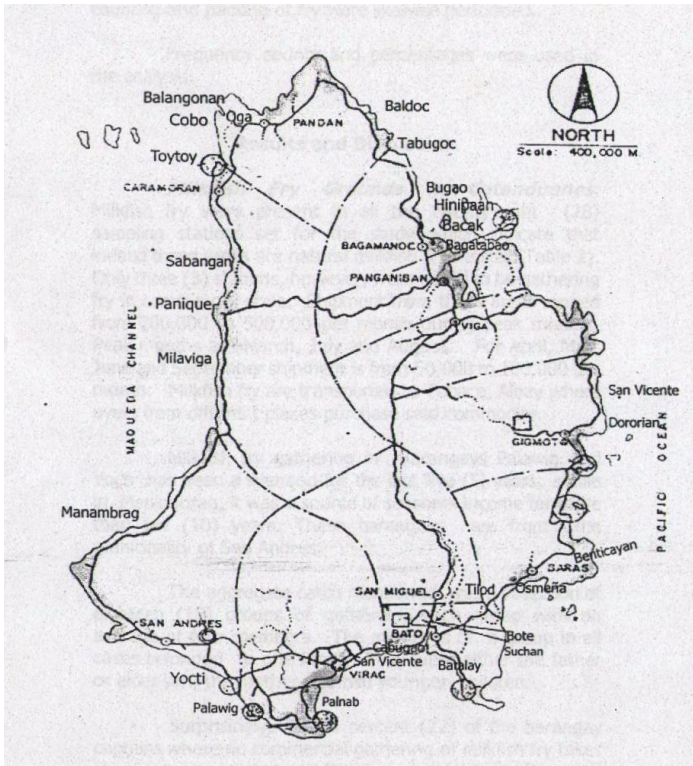


Figure 1: Sampling sites of the Bangus frygrounds in Catanduanes Province (adopted from NAMRIA, Philippines)

V	5,101	153,030	100,000	53,030
VI	30,503	439,246,800	35,288,172	403,958,628
VII	2,615	85,000,000	30,703,648	54,296,352
VIII	3,306	13,200,000	2,000,000	11,200,000
IX	10,899	54,495,267	20,000,000	34,495,267
X	3,000	27,000,000	9,000,000	18,000,000
XI	5,704	57,000,000	3,600,000	53,400,000
XII	7,556	76,000,000	6,000,000	70,000,000
ARRM	500	5,000,000	1,200,000	3,800,000
Total	114,796	1,725,158,839	160,662,820	1,564,496,019

Only three (3) stations, however, were noted to be gathering fry in commercial scale. Shipment from these areas ranged from 200,000 to 500,000 per month during peak months. Peak months are March, July and August. For April, May, June and September shipment is from 50,000 to 100,000 per month. Milkfish fry are transported to Tabaco, Albay where buyers from different places purchases said commodity. Milkfish fry gathering in Barangay Palawig and Yocti has been a livelihood for the last five (5) years; while in Manambrag, it was a source of seasonal income for more than ten (10) years. These barangays were from the municipality of San Andres. The aggregate catch mentioned was collection of eighteen (18) groups of gathers, each group with an average of four members. The members of a group in all cases belonged to one family. They were either the father or elder son, the mother and two younger children. Surprisingly, 88% percent (22) of the barangay captains where no commercial gathering of milkfish fry takes place, are aware that milkfish fry abound in their coastal area. Seventy-one percent (40) of the fishermen interviewed are likewise aware of the occurrence of milkfish fry in their place. The reasons cited for the non-commercial gathering of fry were: they do not have the technology for gathering, transporting and marketing of fry (35%); they have other better source/s of income (25%); there are no buyer/s (25%); it is not worth the trouble (15%). There is no industry or commercial farms that pollute the coastal waters, so fry in volume are washed or find their way ashore, explaining the abundance of fry in the island. This scenario could be true to hundred and more islands in the Philippines.

2.2 Interview Guide

An interview guide was used in gathering data from key informants in the community. The key informants interviewed were the twenty-eight Barangay Captains of the stations established and two (2) fishermen in each of the stations.

2.3 Catching of Fry

Sampling of fry was undertaken in the stations established with the use of push-nets. A two-hour continuous collection was observed to determine the potential of the site. Collection was conducted only during hide tide. In-situ demonstration in identifying, gathering, counting and packing of fry were likewise performed.

3 RESULTS AND DISCUSSION

Milkfish fry was present in all the twenty-eight (28) sampling stations set for the study which indicate that indeed these areas are natural milkfish fry habitat (table 2).

Table 1: Milkfish Fry Requirement by Region (Adopted from: SEAFDEC Asian Aquaculture, 1995)

Region	Fishpond in Operation (ha)	Fry Requirement (Annual)	Fry production (Annual)	Deficit
I	11,910	629,760,000	15,000,000	614,760,000
II	1,235	12,477,742	9,000,000	3,477,742
III	20,150	137,826,000	9,000,000	128,826,000
IV	12,316	189,000,000	19,771,000	169,229,000

4 SUMMARY, CONCLUSION AND RECOMMENDATIONS

Milkfish fry was identified to be present in all the 28 stations established for this study. Sampling stations established were coastal areas with freshwater outflow from a river or tidal creek and/or near a mangal community within a proximity of fifty to two-hundred meters. Using the fry collected per station in two-hour continuous collection with the use of push net collecting gear, the potential of the area as milkfish fry ground was determined. A total of 12,665,600 fry can be produced in the identified fry grounds per season of five months a year. Potential may reach as high as 15 million fry per session. The potential production can contribute barely 0.8% of the national fry deficit.

Table 2. Production and Income Potential from Milkfish Fry Gathering in Catanduanes Province, Philippines

Sampling Station	No. of Fry Caught in One Hour Sampling	Potential Production	Potential Income/Family	Period Per Month	Per Season	Occurrence
		Per Month	Per Season			
1. BAGAMANOC						
Bugao	160	115,200	576,000	P 5,760	P 28,800	March, April, Jun, Aug
Poblacion	120	86,400	432,000	4,320	21,600	-do-
Bagtabatao	115	82,800	414,000	4,140	20,700	-do-
Hinipaan	148	106,560	532,800	5,328	26,640	-do-
Bacak	190	136,800	684,000	6,840	34,200	-do-
Total	733	527,760	2,638,800	P 32,148	P 131,940	-do-
2. BARAS						
Tilod	120	86,400	432,000	P4,300	P21,500	March, April, Jun, Aug
Osmena	60	43,200	216,000	2,160	10,800	-do-
Benticayan	49	35,280	176,400	1,764	8,820	-do-
Total	229	164,880	824,400	8,200	P 41,120	-do-
3. BATO						
Batalay	150	10,8000	540,000	P 5,400	P 27,000	March, April, Jun, Aug
Cabugao	90	64,800	324,000	3,240	16,200	-do-
Suchan	35	25,200	126,000	1,260	6,300	-do-
Total	420	327,600	1,638,000	P 16,390	P 81,900	-do-
4. CARAMORAN						
Milaviga	58	41,760	208,800	P 2,088	P 10,440	March, April, Jun, Aug
Panique	41	29,540	147,600	1,476	7,380	-do-
Sabangan	48	34,560	172,800	1,728	8,640	-do-
Toytoy	129	100,080	500,400	5,004	25,020	-do-
Total	286	205,920	1,029,600	P 10,296	P 51,480	-do-
5. PANDAN						
Balanganon	145	104,400	522,000	P 5,220	P 26,100	March, April, Jun, Aug
Cobo	45	32,400	162,000	1,620	8,100	-do-
Oga	98	70,560	352,400	3,528	17,600	-do-
Baldoc	42	30,240	151,400	1,512	7,560	-do-
Tabugoc	58	41,760	206,800	2,088	10,440	-do-
Total	388	279,360	1,396,800	P 13,968	P 69,840	-do-
6. SAN ANDRES						
Palawig	210	151,200	756,000	P 7,560	P 37,800	March, April, Jun, Aug
Yocti	78	56,160	280,800	2,808	14,040	-do-
Manambrag	120	86,400	432,000	4,320	21,600	-do-
Total	408	293,760	224,800	P 14,688	P 73,440	-do-
7. VIRAC						
Palnab	25	18,000	90,000	P 900	P 4,500	March, April, Jun, Aug
San Vicente	32	23,040	115,200	1,152	5,760	-do-
Total	57	41,040	195,200	P 2,052	P 10,260	
Grand Total		2,358,720	12,665,600			

* Potential production per month = no. of fry caught per hour sampling x (6 hours) x 10 groups

** Potential production per catching season = potential production per month x (5 months)

*** Income potential per month is computed at 0.50 per fry. It may change depending upon the volume of catch. Reflected monthly

income is an income for 12 days.

**** Reflected per season income is an income per 5 months.

The technology of gathering, sorting, packing, and marketing of fry must be well disseminated in coastal barangays all over the Philippines so as to give them alternative source of livelihood. The country may still have the resources of milkfish fry enough to sustain the industry but are not exploited because of the non-availability of technology especially in islands with no aquaculture projects. In-situ demonstration should be conducted by concerned agencies of the government in a sustained effort. A concerned sustained effort of campaign against ecological destruction will likewise help the sustainability of milkfish fry industry in places untainted by industry civilization.

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