

漁村の多面的機能と Ecosystem Based Co-Management
～東南アジアにおける参加型の統合沿岸域資源管理の発展～

**Multi-functionality of Fishing Community and
Ecosystem Based Co-management**

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**PROGRESS REPORTS OF THE SURVEY IN THE
PHILIPPINES**

No. 1

**Experiences and Lessons Gained
through Banate Bay Resource Management Council, Inc.
(BBRMCI)**

フィリピン・パナイ島バナテ湾の沿岸域資源管理組織の研究

平成 18 年 3 月

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**PROGRESS REPORTS OF THE SURVEY IN
BANATE BAY AREA
No.1**

**Multi-Functionality of Fishing Community and Ecosystem Based
Co-management**

**- Experiences and Lessons Gained through Banate Bay Resource
Management Council, Inc. (BBRMCI) -**

Edited by

**Prof. Masahiro Yamao
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PREFACE

Sustainable utilization of marine coastal resources in Southeast Asia is our major concern. Since 2004, we have continuously conducted a series of field surveys in the Philippines, Thailand and Okinawa of Japan. The research title is “Multi-functionality of Fishing Community and Ecosystem Based Co-management.”

It is widely acknowledged that the Philippines have most successfully developed decentralized and participatory management approach in Southeast Asia. Resource users and local government units are increasing their involvement and role in coastal resource management, while they are making much effort to create adequate models of institutional framework that will fit in with local reality. As well as environmental, biological and technical conditions, socio-economic and cultural backgrounds would deeply affect resource users’ behaviors of exploiting valuable resources and institutional arrangements that would control over legal or illegal activities. Naturally, in this context, local resource users, stakeholders, local government units (LGUs) and a number of related agencies have initiated and developed their own community-based resource management (CBRM) and co-management (CM) models.

Banate Bay Resource Management Council, Inc. (BBRMCI) is a typical local resource management unit, but it is quite unique in nature. This management body purposes to manage the whole area of Banate Bay. Four municipal governments have established “Code of partnership” to achieve sustainable use of coastal marine resources in common fishing grounds. The BBRMCI generates local rules and regulations according to people’s consensus, and enforces these on resource users, particularly fisher folks.

Our research team has focused on lessons gained through people’s participation in BBRMCI since 2004, which will show a future direction of participatory approach to coastal resource management. This research has three objectives. The first is to identify the present situation of fishing activities in four municipal territorial zones, and the effectiveness of BBRMCI’s fishing grounds management. The second objective is to evaluate the management activities of BBRMCI through interviewing fisher folks and community members. Lastly, we would like to learn lessons from the successful experiences of BBRMCI in coastal zone management, and to develop theoretical/conceptual framework for bay-wide co-management based on BBRMCI’s experiences.

The duration of this research project is three years. During the first year

(2004), we conducted mainly base line surveys in three selected barangays (Alacaygan, Bularan, and San Francisco). Base line survey in the first year consisted of following points:

- 1) to collect demographic and fisheries information on four municipalities
- 2) to collect data of demographic and fishing activities through interviews with fishers and local people
- 3) to inquire into their opinion and evaluation on BBRMCI and barangay based management units (BFARMCs)

During the second year (2005), members of the research team studied on people's livelihood activities, community-based organizations, marketing systems, and characteristics of fishing operations. Of course, analyzing the data and information that the first and second year surveys gathered was another main task of us.

This volume includes a series of proceeding reports for these two years surveys. Part I and Part II are mainly concerned about the outlines of fisheries households and fishing operations in Alacaygan, Bularan and San Francisco. These two parts describe household economy, possession of boats and equipments, fishing operation, marketing, fishers' attitudes toward coastal resource management, and so on. Part II specializes in the analyzing of fishing operations.

Part III describes several important topics of San Francisco, in Barotac Viejo, such as roles and functions of community-based organizations and shifting from single-gear to multi-gear fisheries. Part IV refers to marketing systems, and Part V focuses on the economic condition of boat crews and livelihood projects undertaken by the BBRMCI.

Materials of presentations and data sheets are included into the last part.

This volume is not the final report of our research in Banate area, just for restoring part of survey results to local people, the BBRMCI and LGUs. More detailed and important topics will be described in a final report.

On behalf of the research team members, I wish to thank Mr. Hon. Raul C. Tupas, Municipal Major, Barotac Viejo, who chairs the BBRMCI. He kindly supported our research and observation activities. My special thank is brought to Ms. Mary Lou B. Larroza (Executive Director) and all staff of the BBRMCI. While arranging our interviewing with fisher folks and local people on a daily basis, they provided us valuable information and shared their experiences on coastal resource management. Without their precise translation, we could have hardly conducted our surveys. A number of local government staff always assisted our data gathering. Barangay captains and BFARMCs leaders actively collaborated our interviewing.

Dr. Evelyn Belleza, Associate Professor, University of the Philippines in Visayas, has also been a helpful and important partner in this research project. I and all members of the research team sincerely appreciate her help as a local partner.

Finally, I want to stress my great thank to all fisher folks and local people with whom we interviewed.

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March 21, 2006

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Part I

Status of Fisheries Households and Their Fishing Operation: Results of 2004 Survey

Status of Fisheries Households and Their Fishing Operation: Results of 2004 Survey

1. Introduction

In September and October, 2004, we made a baseline survey in three barangays of the Banate Bay area: Alacaygan, Bularan, and San Francisco. This was designed as the survey in the first year of our research project on “Multi-functionality of fishing communities and ecosystem based co-management”.

The survey had two objectives. The first objective was to illustrate the outlines of coastal fisheries in these three selected barangays, focusing on the economic status of fisheries households and their fishing operations. The second was to identify fishers’ participation in BBRMCI and BFARMC, and to inquire their opinion and evaluation on these management bodies.

In Alacaygan and Bularan, which were located in Municipality Banate, we tried to interview all fisheries households consisting of owner-operators of fishing boats and boat crews, in order to accurately illustrate the present situation of fishing activities. Barangay San Francisco was located in Municipality Barotac Viejo, whose household economy was dependent heavily on fisheries and fisheries-related business. We made a sampling survey by cluster randomized system.

The description hereafter gives the results of the questionnaires, by showing plain figures of tables and graphs. Systematic and correlated analysis will not be included into this description, which will be later described in scientific papers.

2. General information of fisheries households

2.1 Household Composition

2.1.1 Fishers and Boat Crews

The total number of households we interviewed in three barangays was 115, consisting of 71 in Alacaygan, 26 in Bularan, and 18 in San Francisco. (Table 2-1). Respondents were classified roughly into two groups, according to their economic status: owner-operator fishers and boat crews. In actual terms, there might not be much differentiation between both parties, since owner-operators were flexibly employed by other owners of fishing boats. It would appear, however, that boats crews and their households should have been distinguished in some aspects, such as level of household income, possession of property, and involvement in BFARMC and BBRMCI’s activities.

The questionnaire sheet included several questions concerning the possession of gears and boats, fishing operation, and costs & incomes, so that, if necessary, we had to separate those fishers who possessed fishing gears and/or boats and operate them from boat crews.

Table 2-1. No.of respondents in three barangays

	Unit: No.of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
Fishers (owner-operators)	51 (71.8)	22 (84.6)	16 (88.9)	89 (77.4)
Boat crews	20 (28.2)	4 (15.4)	2 (11.1)	26 (22.6)
Total	71 (100)	26 (100)	18 (100)	115 (100)

2.1.2 Family size, age composition, and working age

The average household size was from 4 to 5 persons, and the family structure was a type of nuclear family, consisting of husband and wife with 2 to 3 children. Of the sample on family size of Alacaygan, Bularan and San Francisco were 5, 5 and 6, respectively.

Three different barangays had different age composition. Majority of the fishers belonged to the age group between from 31 to 40 years old. But, in Bularan and Alacaygan, the population was young, lying between age group of 21 to 30 years old. The size of the younger age group in each barangays was big.

Average age of head of family was 46 years old in Alacaygan, 43 years old in Bularan and 42 years old in San Francisco, respectively. In Alacaygan and San Francisco, higher percentage of head of family lied before age group 31 to 40 years old. In Bularan, it was ranged between 21 to 30 years old. (Table 2-2)

The number of family members was not so large as we had expected; however, three barangays might still have a high growth rate of population.

Table 2-2. No.of family members and age structure in three barangays

		Unit: No.of households , (%)			
		Alacaygan	Bularan	San Francisco	Total
Sex	Male	145 (52.3)	63 (61.2)	48 (54.5)	256 (54.7)
	Female	132 (47.7)	40 (38.8)	40 (45.5)	212 (45.3)
Age range	<10	71 (25.7)	24 (23.3)	25 (28.4)	120 (25.6)
	11-20	78 (28.3)	24 (23.3)	23 (26.1)	125 (26.7)
	21-30	23 (8.3)	17 (16.5)	14 (15.9)	54 (11.5)
	31-40	43 (15.6)	12 (11.7)	12 (13.6)	67 (14.3)
	41-50	31 (11.2)	11 (10.7)	9 (10.2)	51 (10.9)
	51-60	16 (5.8)	7 (6.8)	5 (5.7)	28 (6)
	61-70	13 (4.7)	7 (6.8)	0 (0)	20 (4.3)
	70<	1 (0.4)	1 (1)	0 (0)	2 (0.4)
Total		277 (100)	103 (100)	88 (100)	468 (100)

2.1.3 Education Level

The level of education differs in each barangay. A large part of respondents were educated at primary level. The fishers educated at elementary level showed 47 % of the total respondents, while the percentage of high school was the lowest among three barangays, being 27 % only. In San Francisco, both elementary and high school levels reached to the same level being 44 %.

In addition, the educational level for a spouse was much higher than that of a head of family (fishers).

As a whole, the head of family and their spouses in Bularan got higher level of education than those in other two barangays.

2.2. Occupation and Income

2.2.1 Occupations of household members and combinations

Most of fishers in three barangays were engaged in fisheries and/ or their related activities. The figures of Table 2-3 show that the heads of family were likely to engage in capture fisheries. The numbers of full-time fishers amounted to 17 in Alacaygan, 11 in Bularan, and 10 in San Francisco, respectively. There were a wide variety of job combinations, especially in Alacaygan. Job opportunities were derived from both inside and outside fisheries; of course, fishers and their family members were more likely to involve in fisheries related activities.

Table 2-3. Occupations of head of family in three barangays

		Unit: No. of households, (%)					
No. of occupation	Alacaygan		Bularan		San Francisco		
One	Fishing	17 (33.3)	Fishing	13 (59)	Fishing	10 (63)	
	Culture	1 (2)	Others	1 (4.5)			
	Laborer	1 (2)					
	Others	2 (3.9)					
Two	Fisheries&trading	5 (9.8)	Fisheries&processing	2 (9.1)	Fishing+agriculture	1 (6.3)	
	Fisheries&labor	4 (7.8)	Fishing+agriculture	1 (4.5)	Fisheries&laborer	2 (13)	
	Fisheries&processing	5 (9.8)	Fishing+laborer	1 (4.5)	Fisheries&trading	2 (13)	
	Fishing+self employed	1 (2)	Fisheries&trading	2 (9.1)			
	Fishing+others	8 (15.7)					
	Fishing+culture	2 (3.9)					
Three	Fisheries&trading+others	2 (3.9)	-	-	Fishing+culture+agricultu	1 (6.3)	
	Fisheries&processing+labor	1 (2)					
	Fshing+culture+trading	1 (2)					
Four	Fisheries&trading+fisheries &processing	1 (2)	Fisheries&trading+fisheries&processing	1 (4.5)	-	-	

(Note) "Fisheries&something" means fisheries and related activities.

"Fisheries + something" means fisheries and other jobs outside fisheries.

2.2.2. Level of Monthly Income and Sources

(1) Poverty level of income

Through discussion with staff of the BBRMCI and our research counter parts, the poverty line was determined by monthly household income with less than 5000 peso. This was the total amount of household income. The real poverty line may be below 5000 peso, considering that the great majority of fisheries households were classified into the category of poverty. A more accurate line should have been drawn. After the 2005 Survey will have finished analyzing the diversification of occupations and income sources, we will again set up a new poverty line in the Banate Bay areas.

(2) Grouping

The majority of fisheries households were classified into the poor group with income of less than 5000 peso per month, accounting for 64 % of the total. The middle income group

amounted to 27 households, being 30.3 %.

Table 2-4. Category of monthly income in three barangays

Category	Unit: No.of households , %			Total
	Alacaygan	Bularan	San Francisco	
<5000 peso	30 (58.8)	19 (86.4)	8 (50)	57 (64)
5001-10000 peso	18 (35.3)	1 (4.5)	8 (50)	27 (30.3)
>10001 peso	3 (5.9)	2 (9.1)	0 (0)	5 (5.6)
Total	51 (100)	22 (100)	16 (100)	89 (100)

Although poverty was common in the Banate Bay area, the average monthly income of all respondents was not equal among three barangays. In Bularan, the income group with less than 5000 peso accounted for 86.4 % of the total, while a few respondents belonged to the group with more than 5000 peso. In Alacaygan, the lowest income group had a 58.8 % of share, and the middle income group showed 35.3 %. In San Francisco, the lowest income group was equal in number to the middle income group.

Our statistical data cannot prove that there was income gap between owner-operator fishers and boat crews, since the categories of the question about income level were too rough to get accurate figures. It is widely observed, however, that a boat crew got less monthly income. In Alacaygan, the number of boat crew family was 20, out of which 16 heads of family concentrated on fishing activity, not diversifying income sources like owner-operator fishers.

(3) Income level of full-time and part-time fisheries

The number of full-time fishers was 21 with a 23.6% of share to the total of fishers. Part-time fishers amounted to 55 with a 61.8 % of share. Part-time fishers were less likely to belong to a lower income group, and full-time fishers were less likely to belong to a higher income group.

Table 2-5. Level of monthly income in three barangays

	Unit: No.of households , (%)			Total (%)
	Full-time fishers	Part-time fishers	Fisheries related	
<5000 peso	18	28	3	57 (64)
5001-10000 peso	3	22	2	27 (30.3)
>10001 peso	0	5	2	5 (5.6)
Total	21	55	7	89 (100)

(Note) Fisheries related activities include trading and processing.
They are not really engaged in fishing operation.

(4) Diversification of jobs and income sources

The figures of Table 2-6 show the present jobs of head of families. The amount of income that he/she earned contributed a considerable part of household income. Some family members also brought income to the household economy. They involved in various kinds of jobs and got additional income, regardless of whether or not it was small or large in value. Figure 2-1 shows the ratio of major jobs to the total of household income. In three barangays, respondents depended heavily on the first ranked income source. The extent of dependency on this in Alacaygan was 77.8 % of total income, which was slightly lower than 78.2 % in Bularan and 80.9 % in San Francisco.

Although family members involved in various jobs outside fisheries business, this had the largest contribution to the sustaining of household economy. Great variation of income sources in Alacaygan was remarkable. It is located adjacent to the center of Banate, so people may easily access to alternative job opportunities. By contrast, there was not much variation of income sources in San Francisco, due to the lack of arable land and the scarcity of job opportunities.

Table 2-6. Level of dependency on fisheries income in three barangays

	Unit: %			
	Alacaygan	Bularan	San Francisco	Total
<5000 peso	74.4	74.1	90.0	79.5
5001-10000 peso	62.0	80.0	69.4	70.5
>10001peso	50.0	30.0	0.0	40.0
Mean	62.1	61.4	79.7	63.3

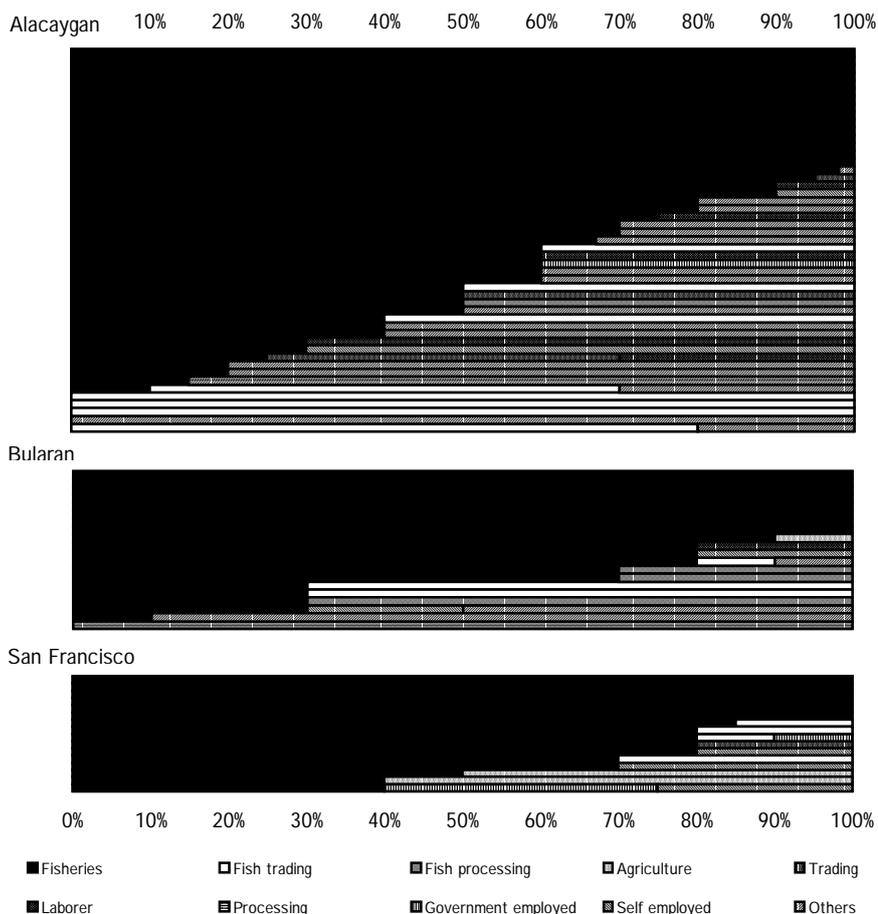


Figure 2-1. Ratio of major income sources to total household income

2.3. Possession of Property

2.3.1. Ownership of assets

(1) Fishing boats and gears

Table 2-7 shows the possession of property, including fishing gears and equipments. We interviewed almost all fishers (owner-operators and boat crews) in Alacaygan and Bularan, among whom a number of fishers neither possessed any fishing boat nor fishing equipment. The households owning fishing boats accounted for 65.2 % of the total in three barangays. In Alacaygan, only 51 % of fishers were boat owners, but 88.2 % of them owned fishing gears. Some of them used push nets and built shallow coral reefs without using any fishing boats. In Bularan, fishers owned non-motorized boats by which they used hook and line near sea shore.

Table 2-7 Possession of assets

	Unit: No. of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
Fishing boats	28 (51)	14 (63.6)	16 (100)	58 (65.2)
Engine	24 (47.1)	3 (13.6)	13 (81.3)	40 (44.9)
Fishing gear	45 (88.2)	17 (77.3)	14 (87.5)	76 (85.4)
Farm land	3 (5.9)	1 (4.5)	1 (6.3)	5 (5.6)
House lot	15 (29.4)	3 (13.6)	1 (6.3)	19 (21.3)
House	51 (100)	20 (90.9)	16 (100)	87 (97.8)
TV	36 (70.6)	8 (36.4)	6 (37.5)	50 (56.2)
Refrigerator	16 (31.4)	1 (4.5)	2 (12.5)	19 (21.3)
Vehicles	8 (15.7)	4 (18.2)	0 (0)	12 (13.5)

(2) Other assets

Very few fishers had farm land, not engaged in agricultural works in own land. Agriculture sector provided lesser income sources in three coastal barangays.

As regards residence, most of fishers had own houses, but they built their houses illegally on public and private land. There was a large gap in terms of durable goods between three barangays. The percentages of Alacaygan were higher than those of the others, which indicate that the economic surrounding of fisheries households was much preferable even if a number of households did not possess any fishing boats.

2.3.2. Source of Investment

Self-financing is quite common in investing in the means of fisheries production and purchasing any durable goods in the barangays, although there existed several financial institutions. Relatives and friends were other important sources that the fishers relied on. Only in Bularan, money lenders flourished in credit activities, from whom fishers and local residents obtained informal credits for daily expenses and new investment in fisheries.

Notably, according to the results of the questionnaires, neither formal nor semi-formal financial institutions had hardly developed in the Banate Bay area. In fact, however, government-supported organizations like small-scale fisher folk associations occasionally worked as a conduit of subsidies. In San Francisco, a fishery cooperative and association had a vital role in fulfilling with demand for new investment, coming from their members.

Table 2-8. Financial sources of investment

	Unit: No. of households , (%)			
	Alacaygan	Bualaran	San Francisco	Total
Personal	37 (72.5)	18 (81.8)	12 (75)	67 (75.3)
Traders	0 (0)	0 (0)	0 (0)	0 (0)
Financial institution	4 (7.8)	1 (4.5)	0 (0)	5 (5.6)
Money lender	3 (5.9)	6 (27.3)	1 (6.3)	10 (11.2)
Co-ops / association	0 (0)	1 (4.5)	3 (18.8)	4 (4.5)
Relatives	13 (25.5)	5 (22.7)	5 (31.3)	23 (25.8)
Friends	7 (13.7)	3 (13.6)	2 (12.5)	12 (13.5)
Others	3 (5.9)	1 (4.5)	1 (6.3)	5 (5.6)

3. Fishing Boats and Gears

3.1. Ownership of fishing boats shown by type

Table 3-1. Number of boats shown by type

	Unit: No. of households , (%)			
	Alacaygan	Bularan	San Francisco	total
Total of boats	28 (100)	21 (100)	22 (100)	71 (100)
Non motorized	4 (14.3)	12 (57.1)	0 (0)	16 (22.5)
Motorized (inboard)	24 (85.7)	9 (42.9)	22 (100)	55 (77.5)

The total number of fishing boats was 68; 16 boats were a non-motorized type, and 53 boats were a motorized and inboard-engine type. There was no outboard-engine boat. The period of year in use was less than 5 years.

In Alacaygan, most of boats were equipped with inboard engine whose power ranged from 1 to 10 HP, and their average length was between 11 and 20 feet.

In Bularan, fishers sailed small non-motorized “banca” near sea shore for fishing by hand line.

In San Francisco, motorized boats consisted of small-scale and large-scale ones. The boats with 16-20 feet in length amounted to 7, while those with less than 10 feet reached to 15.

In addition, very few fishers rented boats, and almost all boats belonged to the property of owner-operators.

There was much difference as regards boat registration between three barangays, as will later be discussed. San Francisco indicated the highest percentage of registered boats, being 95.5 % of the total number of boats. Bularan had the lowest one with 61.9 %.

Table 3-2. Registration of fishing boats

	Unit: No. of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
Total of boats	28 (100)	20 (100)	22 (100)	70 (100)
Registered	20 (71.4)	13 (61.9)	21 (95.5)	54 (76.1)
Non-registered	8 (28.6)	7 (33.3)	1 (4.5)	16 (22.5)

3.2. Possessions of fishing gears

(1) Possessing one fishing gear

One of the most remarkable points that the 2004 Survey found was the tendency towards the possession of fishing gears, as the figures of Table 3-3 indicate. The majority of fisheries households had only one fishing gear, accounting for 60 % of the total. Three barangays represented a similarity in concentrating on one particular type of gear, respectively. Those households that owned two gears accounted for 23.6 % on average. Multi-gear fishing operation was not widely spread over the three barangays: fishers were engaged in single-gear fishing.

Table 3-3. No. of fishing gears owned by households

Kinds of gear	Unit: No. of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
One	32 (62.7)	9 (40.9)	12 (75)	53 (59.6)
Two	12 (23.5)	6 (27.3)	3 (18.8)	21 (23.6)
Three	2 (3.9)	5 (22.7)	1 (6.3)	8 (9)
No answer	5 (9.8)	2 (9.1)	0 (0)	7 (7.9)
Total	51 (100)	22 (100)	16 (100)	89 (100)

(2) Gears owned in Alacaygan

Those households owing only one fishing gear were 62.7% of the total number, while those owing two gears were 23.5 %. Seventy (70) % of the low income group (less than 5000 peso per month) owned one fishing gear. In the middle income group, the possession of single gear was almost equal to that of plural gears. The low income group of fisheries households tended to depend only on the use of single gear.

Major fishing gears employed were push net, gill net, shallow fish corral, and bottom set gill net.

(3) Gears owned in Bularan

The percentage of households with one fishing gear was slightly lower than Alacaygan. Those households owning two and three fishing gears accounted for 27.3% and 22.7%, respectively. The possession of single or plural was not in relation to the level of income.

Major fishing gears were hand line and push net.

(4) Gears owned in San Francisco

The percentage of households owing one fishing gear was the highest among three barangays, being 75 %. Owing two gears shared 18.8% only. Regardless of whether or not households were grouped into the low or middle income group, they concentrated their investment on the use of single gear.

Long line was the sole gear that fisheries households owned. Gill net, ranked at the second, amounted to 4 only.

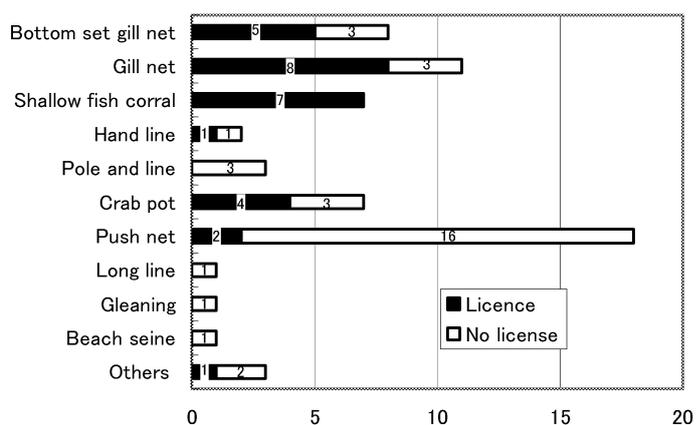


Figure 3-1. Fishing gears owned, shown by type in Alacaygan

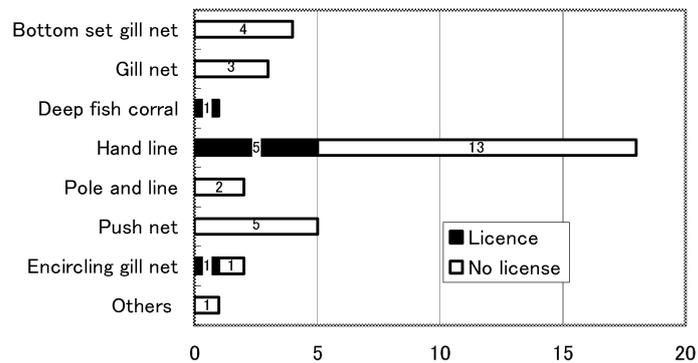


Figure 3-2. Fishing gears owned, shown by type in Bularan

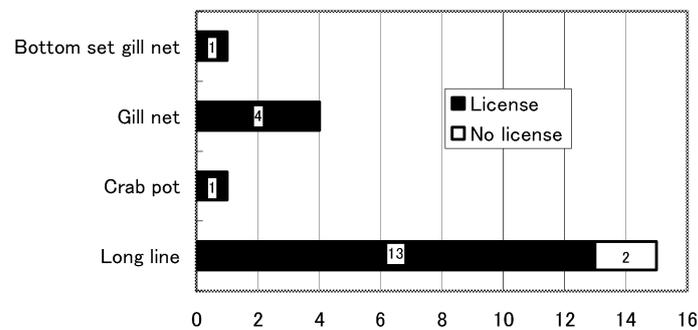


Figure 3-3. Fishing gears owned, shown by type in San Francisco

3.3. Characteristics of fishing operation

To identify characteristics of fishing operation in the Banate Bay area, we inquired fishers how often they used the fishing gears they owned, and how important in economic terms the gears were. There had been a hypothesis that a considerable number of fishers possessed multi types of gears and conducted multi-gear fishing operations, targeting valuable species.

(1) Total trends of three barangays

There were at least twelve major fishing gears in three sampled barangays that fishers often used. Fishers were using different types of gears in a barangay from others.

It is noteworthy that fisheries households in three barangays usually possessed only one or two fishing gears. They did not undertake multi-gears fishing operation. Major fishing gears were push net, hand line, gill net, long line and bottom set gill net, as illustrated by Table 3-4. Push net and hand line were the gears that fishers most often used. The operations of these five gears had a great contribution to sustain a household economy in Banate Bay.

Table 3-4. Major fishing gears often used in three barangays

Unit: No.of households , (%)

	Rank1	Rank2	Rank3	Total	
Push net	8	11	2	21	(18.1)
Hand line	19	2	0	21	(18.1)
Gill net	10	7	1	18	(15.5)
Long line	15	1	0	16	(13.8)
Bottom set gill net	9	1	4	14	(12.1)
Shallow fish corral	7	0	0	7	(6)
Crab pot	7	1	0	8	(6.9)
Pole and line	3	1	0	4	(3.4)
Gleaning	1	1	0	2	(1.7)
Encircling gill net	0	2	0	2	(1.7)
Deep sea fish corral	1	0	0	1	(0.9)
Beach seine	1	0	0	1	(0.9)
Others net	1	0	0	1	(0.9)
(no-answer)	7	62	82	151	-

Table 3-5. Major fishing gears economically important in three barangays

Unit: No.of households , (%)

	Rank1	Rank2	Rank3	Total	
Push net	11	9	1	21	(18.3)
Hand line	17	3	0	20	(17.4)
Gill net	7	9	2	18	(15.7)
Long line	15	1	0	16	(13.9)
Bottom set gill net	10	0	4	14	(12.2)
Shallow fish corral	7	0	0	7	(6.1)
Crab pot	7	1	0	8	(7)
Pole and line	3	1	0	4	(3.5)
Gleaning	1	1	0	2	(1.7)
Encircling gill net	0	2	0	2	(1.7)
Beach seine	1	0	0	1	(0.9)
Deep sea fish corral	1	0	0	1	(0.9)
others net	1	0	0	1	(0.9)
(no-answer)	8	62	82	152	-

(2) Fishing gears used in Alacaygan

In Alacaygan, those fishers owned only one gear accounted for 62.7 % of the total.

The major fishing gears that they most often used were push net, gill net, bottom set gill net, shallow fish coral, and crab pot. Push net was ranked first among them. In economic terms, 11 fishers gave the first rank to the push net (28.3 %), following by bottom set gill net (15.0 %), shallow fish coral (11.7 %), crab pot (11.7 %), and gill net (18.3 %).

Table 3-6. Major fishing gears economically important in Alacaygan

Unit: No.of households , (%)				
	Rank1	Rank2	Rank3	Total
Push net	11	6	0	17 (28.3)
Gill net	5	5	1	11 (18.3)
Bottom set gill net	9	0	0	9 (15)
Shallow fish corral	7	0	0	7 (11.7)
Crab pot	7	0	0	7 (11.7)
Pole and line	3	0	0	3 (5)
Gleaning	1	1	0	2 (3.3)
Beach seine	1	0	0	1 (1.7)
Others net	1	0	0	1 (1.7)
Hand line	0	1	0	1 (1.7)
Long line	0	1	0	1 (1.7)
(no-answer)	6	37	50	95 -

(3) Fishing gear used in Bularan

In Bularan, about 40 % of fisheries households we interviewed owned only one fishing gear. Hand line was both the most frequently-used and economically important gear. Other gears, such as bottom set gill net, gill net, and push net, accounted for a minor portion of the total. Quite the contrary to Alacaygan, the possession and operation of fishing gear concentrated on one particular type both at individual and barangay levels.

Table 3-7. Major fishing gears economically important in Bularan

Unit: No.of households , (%)				
	Rank1	Rank2	Rank3	Total
Hand line	17	2	0	19 (54.3)
Bottom set gill net	1	0	4	5 (14.3)
Push net	0	3	1	4 (11.4)
Gill net	1	2	0	3 (8.6)
Encircling gill net	0	2	0	2 (5.7)
Deep sea fish corral	1	0	0	1 (2.9)
Pole and line	0	1	0	1 (2.9)
(no-answer)	2	12	17	31 -

(4) Fishing gear used in San Francisco

Twelve households owned a single gear, and only 4 households had plural types of gears. Long line was the most important fishing gear for fishers in San Francisco. Fifteen fishers answered that they most frequently used long line and depended most heavily on its fishery.

There were 4 fishery households involved in gill net fishery, one of which gave the first rank of economic importance to it. As of September 2004, no households specialized in crab pot fishery.

Table 3-8. Major fishing gears economically important in San Francisco

Unit: No.of households , (%)				
	Rank1	Rank2	Rank3	Total
Long line	15	0	0	15 (75)
Gill net	1	2	1	4 (20)
Crab pot	0	1	0	1 (5)
(no-answer)	0	13	15	20 -

3.4. Target fish species by major fishing gears

(1) Target species in Alacaygan

With the diversification of fishing operations, there were a number of economic important species caught by the major fishing gears.

Push net mostly targeted “Acetes”, but occasionally caught Shrimp. Crab pot specialized in catching Blue swimming crab, and Chinese crab was trapped incidentally. These two gears concentrated on only the one target species.

Other major gears, such as gill net, shallow fish coral, and bottom set gill net, caught several valuable species. Common pony fish, Sand whiting, Mullet, and Goatee croaker were caught mainly by gill net. Blue swimming crab, Milk fish, Shrimp, Squid, and Mullet were the species that would be trapped by shallow water fish coral. These two kinds of gears changed target species according to seasonal changes of stock and climate.

Bottom set gill net might be as if it would be put into operation for catching multi-species. However, blue swimming crab was the sole valuable species which fishers searched for in preference to other species.

Table 3-9. Major species caught by major fishing gears in Alacaygan

Gears	Major species
Push net	Acetes, Shrimp
Gill net	Common pony fish, Sand whiting, Mullet, Goatee croaker.
Bottom set gill net	Blue swimming crab, Thread fin bream, Goatee croaker,
Sallow fish coral	Blue swimming crab, Milk fish, Shrimp, Squid, Mullet
Crab pot	Blue swimming crab, Chinese crab

(2) Target species in Bularan

Thread fin bream was the main species for hand line fishing. Sand whiting and Grouper had the second and third places, respectively, but their portions to total catch were very small. Bottom set gill net mostly targeted Blue swimming crab. Push net caught Acetes and Grouper juvenile fish.

In the operation of these major fishing gears, one particular species accounted for the great portion of total catch.

Table 3-10. Major species caught by major fishing gears in Bularan

Gears	Major species
Hand line	Thread fin bream, Sand whiting, Grouper
Bottom set gill net	Blue swimming crab, Thread fin bream, Sand whiting, Flat fish
Push net	Acetes, Grouper

(3)

Target species in San Francisco

Long line fishery caught several valuable species, among which Thread fin bream could gain the highest market value in Banate markets. Gill net caught several species, but Common pony fish was the most preferable one. Fishers depended thoroughly on the operation of long line, so that a catch of Thread fin bream might affect the fisheries economy of San Francisco.

Table 3-11. Major species caught by major fishing gears in San Francisco

Gears	Major species
Long line	Thread fin bream, Sand whiting, Goatee croaker, Grouper
Gill net	Common pony fish, Scad, Sand whiting, Therapun

3.5. Relationship between income and expenditure

3.5.1. Catch and income per trip

This report hereafter focuses on the catch and income of major fishing gears employed in three barangays. Table 3-12 includes figures concerning total catch per trip, average income, and expenditure for fishing operations. All these figures are roughly estimated, with focusing on single gear operation.

Table 3-12. Catch by major fishing gears in three barangays

Area and gears	Total catch per trip (kg)		Average income per trip (peso)				Total expenditure (peso)
	Minimum	Maximum	Peak season		Lean season		
			Minimum	Maximum	Minimum	Maximum	
Unit: kg, peso							
Alacaygan							
Push net	2.4	32.9	231.4	757.1	57.1	178.6	23.7
Gill net	3.4	18.8	304.0	880.0	75.0	195.0	93.6
Bottom set gill net	2.5	15.0	480.0	1640.0	120.0	420.0	188.0
Shallow fish corral	1.8	12.8	286.0	660.0	97.5	128.0	0.0
Crab pot	2.8	9.8	204.0	898.0	126.0	317.0	104.0
Bularan							
Hand line	0.9	3.6	80.0	280.0	18.3	100.0	30.6
San Francisco							
Long line	5.3	17.5	372.9	829.2	114.6	307.5	265.5
Gill net	1.0	5.0	300.0	500.0	100.0	200.0	62.0

(1) Alacaygan

Bottom set gill net targeting blue swimming crab gained the most amount of income per trip in the five major fishing gears, as Table 3-12 shows. In the peak season, the maximum income of bottom set gill net per trip obtained 1640 peso, while minimum income was 480 peso. Even if total direct expenditure was very high, its fishing operation realized efficiency and profitability. Crab pot that also caught Blue swimming crab obtained a maximum of 898 peso, being equal to that of gill net.

Push net, whose fishing period was relatively short, brought a high income per trip (day) to fishers. A number of fishers in Alacaygan operated this gear, since direct expenditure was not much and net income was higher than other fisheries.

In the case of push net fishing, there was a large gap between maximum and minimum catch per trip. The catch sharply fluctuated, so that a gap reached by more than 100 kg. Other fishing gears had almost the same gap between maximum and minimum catch per trip, except for some fishers.

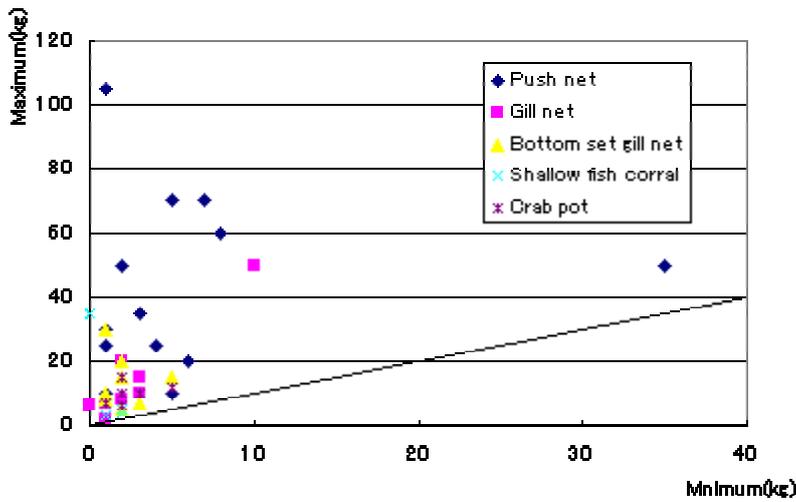


Figure 3-4. Relationship between max. and min. on total catch(kg) per a trip in Alacaygan

Average catch per trip in Alacaygan was lower in peak and lean seasons, compared to other two barangays. This brought lower average income per trip. In the peak season, fishers obtained a 610 of maximum income per trip and a 189 peso of minimum income. In the lean season, the maximum income on average was 126 peso, while the minimum was 89 peso.

Single-gear fisheries tended to secure more volume of catch than multi-gear ones in the peak season. A decisive factor to stimulate fishers for concentrating on the operation of single-gear fishing was effectiveness in economic terms, shown in Figure 3-5.

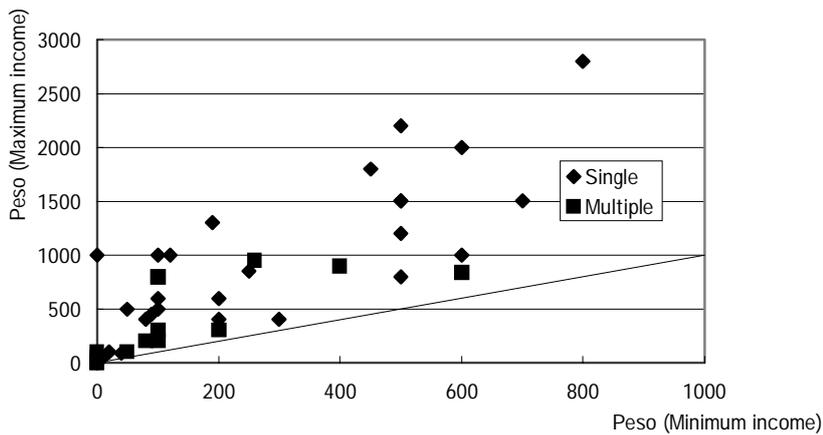


Figure 3-5. Average income of fishing operation by single and multi gears (Average income per a trip in peak season)

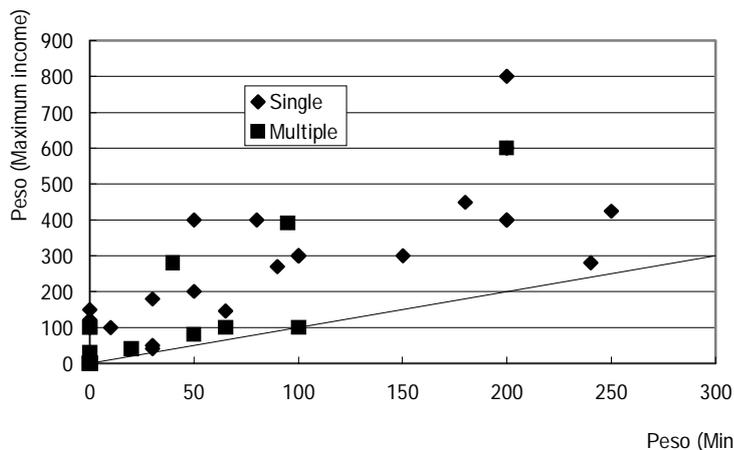


Figure 3-6. Average income of fishing operation by single and multi gears (Average income per a trip in lean season)

(2) Bularan

Nineteen (19) fishers used hand line and some of them owned non-powered boats. This simple gear brought a minimum catch of 0.9 kg per trip and a maximum catch of 3.6 kg. Average income per trip ranged between 80 and 280 peso in the peak season. In the lean season, average income fell by 18.3 peso for minimum and 100 peso for maximum, respectively. Thus, fishing operation in this barangay seems to have been less attractive to fishers to reinvest. They searched for alternative job opportunities outside fisheries, not concerned fisheries business.

A gap between maximum and minimum catch per trip was not large in hand line fishery. However, other fisheries like push net and bottom set gill net had a large gap between maximum and minimum catch.

In the peak season, maximum income per trip attained 1120 peso, while minimum income was 410 peso. In addition, encircling gill net and deep fish coral raised the level of average income.

In the lean season, 20 of 22 respondents were categorized into the group with fisheries income being less than 100 peso per trip. This was the lowest level among three barangays. Even in the peak season, more than half respondents remained in 100 peso or less than 100 peso. As figures of Table 2-6 indicate, they were engaged mainly in fisheries sector, not in non-fisheries sector to diversify income sources. Naturally, monthly income of household was below 5000 peso.

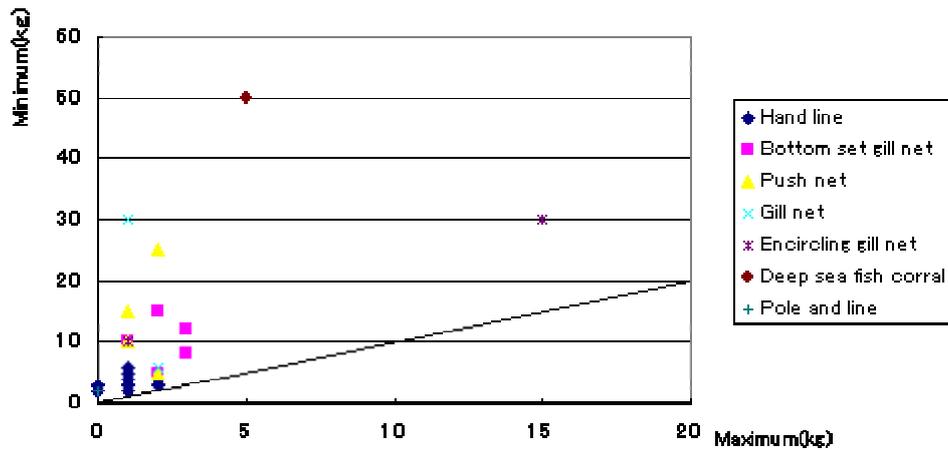


Figure 3-7. Relationship between max. and min. on total catch(kg) per a trip in Bularan

(3)San Francisco

Fishers in San Francisco tended to specialize in long line fishery. The total direct expenditure for this fishery amounted to 266 peso, which was more expensive than any other major fishing gears in three barangays. They were, of course, meager scale in capital investment, but its operation was relatively cost-intensive in nature and mechanized. This was in a much contrast to hand line fishery in Bularan. The long line fishery was not so attractive as long as its average income per trip was concerned.

A gap between maximum and minimum catch was not wide as that in other barangays, although volume of catch seasonally changed.

Maximum and minimum incomes did not concentrate, but being dispersed both in peak and lean season, even if most of fishers engaged in the same type of fishery. This means that some factors, like scales of boat and equipment, fishing techniques, experience and knowledge, might affect such an expanded gap.

In the peak season, minimum income on average was 308 peso, and maximum was 1589 peso. Ten of 16 fishers belonged to the income group with gaining more than 700 peso, so their maximum incomes were much higher than other barangays. Meanwhile, maximum income in the lean season was three times as much as minimum one. Since they undertook cost-intensive fishing operation, they earned more amount of income all year around.

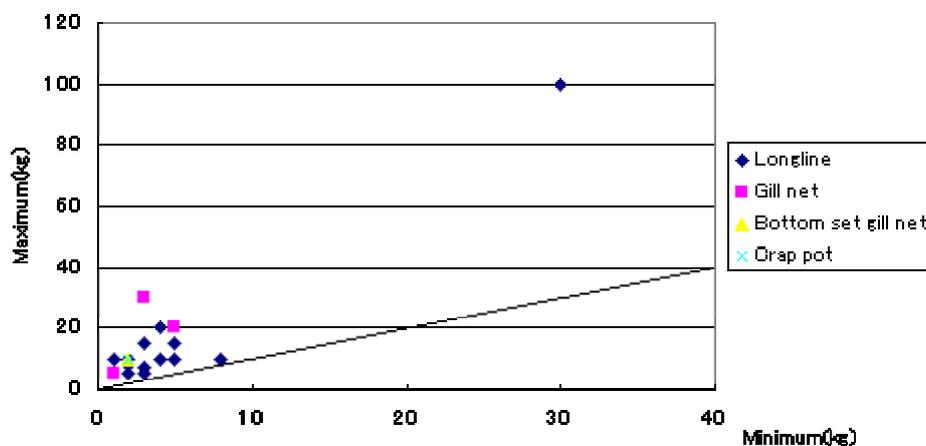


Figure 3-8. Relationship between max. and min. on total catch(kg) per a trip in San Francisco

3.5.2 Expenditures of fishing operation

Fisheries expenditures varied according to type and size of fishing gear as well as type and scale of fishing boats, as Table 3-13 indicates.

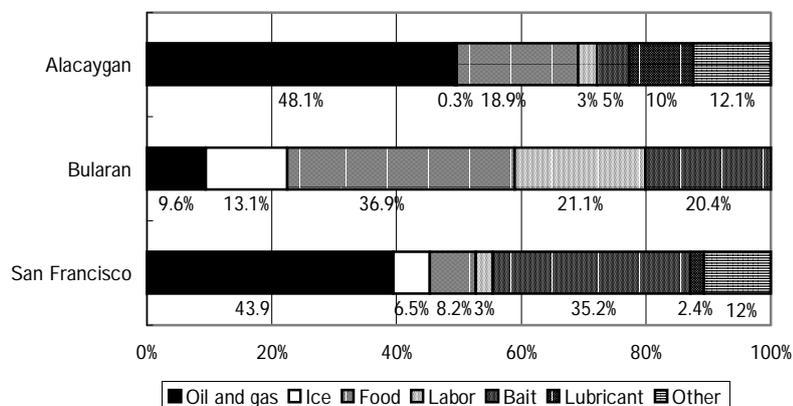


Figure 3-9. Percentages of expenditures in three barangays

Table 3-13. Expenditure of major fishing gears in three barangays

	Unit: peso							Total
	Fuel oil	Ice	Food	Labor	Bait	Lubricant	Others	
Alacaygan								
Push net	8	0	3.6	0	0	12.1	0	23.7
Gill net	50.8	2	10.8	0	8	17.4	4.6	93.6
Bottom set gill net	120.8	0	18.6	16	0	16.8	15.8	188
Shallow fish corral	0	0	0	0	0	0	0	0
Crab pot	43	0	16	0	17.6	9.4	18	104
Bularan								
Hand line	0	5	12.2	5.6	7.8	0	0	30.6
San Francisco								
Long line	100.1	14.6	24.6	12.5	109.4	1.8	2.5	265.5
Gill net	56	0	5	0	0	1	0	62

(1) Alacaygan

Fuel oil accounted for 48.1% of total direct costs. Almost all fishers stressed that payment to fuel oil was a heavy burden for the management of capture fisheries. Very few fishers concerned ice as an important item, since the use of ice was not common here. They were mostly undertaking self-employed fisheries, without hiring any laborers. Push net and shallow fish corral never appropriated for the payment of fishing trip. These fisheries were the cost-extensive ones in economic nature.

(2) Bularan

Total amount of expenditures for a fishing operation was lower than other two barangays. Hand line fishery was less costly, like push net and shallow water corral fish in Alacaygan. Many fishers answered that food was the most important expense accounting for 38.9% of the total costs. They rarely paid any costs for buying ice and hiring crews. Hand line fisheries spent mainly for bait.

(3) San Francisco

Fishing operation in San Francisco was basically small scale, but cost-intensive. Fuel and

bait represented 43.9 % and 35.2 % of the total, respectively. Fishers used ice, but its percentage of the total was not much. They undertook small-scale fishing operations with employing family members.

3.6. Distribution channel of fish

According to the survey conducted in 2004, more than 90 % of catch was marketed through various channels. Fishers and their family consumed less than 10 % of fish landed. San Francisco indicated only a 7 % of household consumption to total catch, which was the smallest among three barangays. Any types of capture fisheries in San Francisco were highly commercialized. Fishing operations were characterized as market-oriented nature, which purposed to increase catch for sale, even if the scale of individual fisheries was small scale.

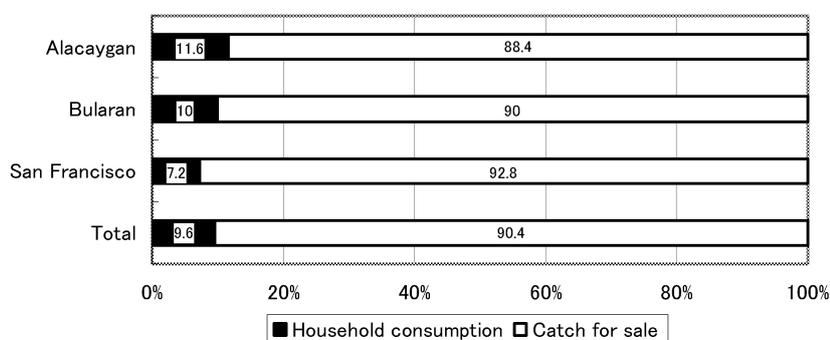


Figure 3-10. Ratio of household consumption and sale

(2) Alacaygan

Fishers and their family consumed 10 % of total catch, while 90 % were sold to markets. Push netters sold 95.4 % of catch (mainly “Acetes”, fresh or processed). Bottom set gill net, which caught Blue swimming crab, showed a high percentage of the sale. Gill net fishing showed a 9.0 % of household consumption.

(2) Bularan

The percentage of household consumption was almost equal to those in other barangays. However, hand line, which was the major fishing gear fishers employed, represented 14.3 % of the total catch. This was probably because hand line fishery was neither mechanized nor highly commercialized. The fishers tended to depend on other income sources rather than fishing business.

(3) San Francisco

The percentage of sale was 92.8 % of the total catch on average. Since long line in San Francisco was commercial-oriented and cost-intensive in its operation, fishers marketed their products mainly through the fishery cooperative in order to cover the expenditures for fishing operations.

4. Utilization and management of the mangroves

In the questionnaire sheet, we inquired fishers about the utilization of mangrove forestry in their immediate vicinity. Answers varied according to geographic and environmental conditions surrounding their barangays. Alacaygan had the largest mangrove forests in three barangays, where local residents utilized for various purposes on a daily basis. Fishers and local residents used mangrove trees mainly for fuel. Even if they understood the importance of conserving mangrove forests, they might face dilemma between keeping the rules of preserving mangrove forests and demand for the use for fuel.

4.1. Use of mangrove resources

According to the results of the questionnaires, the majority of fishers in Alacaygan usually utilized mangrove resources. Only some respondents in Bularan, where their residences were located close to small mangrove forests in Belen, utilized occasionally. Few respondents in San Francisco had experienced in using mangrove resources.

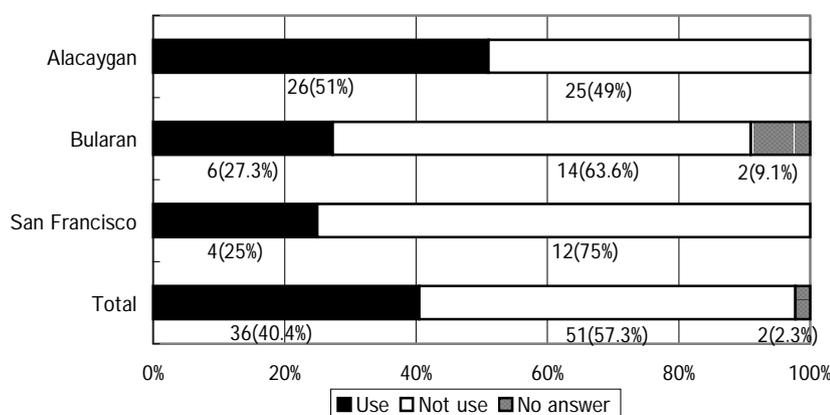


Figure 4-1. Use of mangrove resources

4.2. Purpose of mangrove resources

Table 4-1 shows that the main purposes of utilizing mangrove trees were fuel and building materials. In Alacaygan, 39.2% of respondent cut off trees and obtained firewood for cooking. In Bularan, four respondents used the same purpose. In San Francisco, two respondents cut off trees for fishing purposes.

Table 4-1. Purposes of cutting mangrove trees

	Unit: No. of households, %			
	Alacaygan	Bularan	San Francisco	Total
Fuel	20 (39.2)	4 (18.2)	1 (6.3)	25 (28.1)
Fishing	2 (3.9)	0 (0)	2 (12.5)	4 (4.5)
Building materials	3 (5.9)	2 (9.1)	1 (6.3)	6 (6.7)
Medicine	0 (0)	0 (0)	1 (6.3)	1 (1.1)
Day stuffs	0 (0)	0 (0)	0 (0)	0 (0)
Feed	0 (0)	0 (0)	0 (0)	0 (0)
Handicraft	0 (0)	0 (0)	0 (0)	0 (0)
Timber	0 (0)	0 (0)	0 (0)	0 (0)
Pond	0 (0)	0 (0)	0 (0)	0 (0)
Others	6 (11.8)	1 (4.5)	3 (18.8)	10 (11.2)

Many of respondents stressed that mangrove forests blocked high wave and strong wind and then protected their residences and properties. Their wooden-made houses standing on beach were easily destroyed by waves and wind. Some fishers also pointed out the problem of soil erosion. They considered planting mangrove trees as effective tools to protect their property.

4.3. Experiences of participating in planting mangrove trees

In Alacaygan, 60.8 % of respondents had ever experienced in planting mangrove trees. Thirteen respondents (25.5 %) joined mangrove projects with certain kinds of help. Eighteen respondents (35.3 %) made a voluntary planting mainly around their houses. The great majority of them were willing to join any mangrove planting projects.

Table 4-2. Experience of planting mangrove

Unit: No. of households , (%)				
	Alacaygan	Bularan	San Francisco	Total
Yes	31 (60.8)	6 (27.3)	11 (68.8)	48 (53.9)
with help	13 (25.5)	5 (22.7)	8 (50)	26 (29.2)
without help	18 (35.3)	1 (4.5)	3 (18.8)	22 (24.7)
No	18 (35.3)	11 (50)	4 (25)	33 (37.1)
No answer	2 (3.9)	5 (22.7)	1 (6.3)	8 (8.99)
Total	51 (100)	22 (100)	16 (100)	89 (100)

In Bularan, only 6 respondents had experiences in planting mangrove trees. Of course, most of fishers had intention to join mangrove conservation projects.

In San Francisco, eleven respondents (68.6 %) joined mangrove planting activities with certain types of assists.

4.4. Expectation and problems of planting mangrove trees

In three barangays, many of fishers expected that the expansion of mangrove areas would lead to the increase of marine resources as well as protecting their properties from high waves and strong wind.

However, there was little space that would be preserved for reforestation. Lack of budget earmarked for planting trees was also a severe problem. Some fishers mentioned that they would have been more active in planting mangrove trees with solving these problems.

Table 4-3. Outcome expected by increase of mangrove

Unit: No. of households , (%)				
Expecting outcome	Alacaygan	Bularan	San Francisco	Total
Increase of marine resources	29 (56.9)	9 (40.9)	10 (62.5)	48 (53.9)
Improvement of the quality of water	6 (11.8)	2 (9.1)	0 (0)	8 (9)
Increase of income	14 (27.5)	3 (13.6)	0 (0)	17 (19.1)
Reduce the oil erosion	14 (27.5)	6 (27.3)	2 (12.5)	22 (24.7)
Scenery	3 (5.9)	0 (0)	2 (12.5)	5 (5.6)
Others	23 (45.1)	7 (31.8)	10 (62.5)	40 (44.9)

5. Awareness and Problems of Coastal Resource Utilization

5.1 Problems

According to our observation in the Banate area, we prepared the question table of problems on coastal fisheries management with choices of ten. The problems consisted of low catch, conflict among users, illegal fishing, strict regulations, high costs of investment, low price of catch, weak law enforcement, water pollution, mangrove destruction, and so on. The answer was chosen from three choices of ten and to be its order, which were considered the most important problems.

(1) Major problems in three barangays

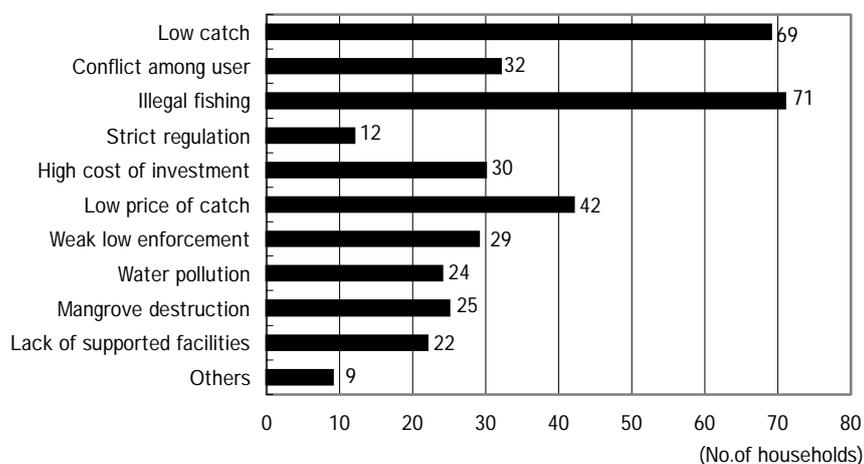


Figure 5-1. Major problems in three Barangays

Shown in Figure 5-1, people recognized that low catch and illegal fishing operation were the serious problems to be solved above all, followed by low price of catch and conflicts among users. They condemned illegal fishing operations, and then strongly demanded the solution of this problem from related organizations, such as BFARMC, BBRMCI and “Banday Dagat”, by enforcing laws and ordinances. They were possibly dissatisfied with these organizations due to inadequate planning, lack of coordination, and low enforcement. Adjustment of conflicts among resource users was a very hard task, and law enforcement could hardly succeed. People usually had a negative view of coastal resource management.

(2) Low catch and low market prices of fish

Fishers (both owner-operators and crews) mentioned that low catch and low prices of fish deteriorated a household economy. Due to the lack of proper resource management, valuable fisheries resources decreased. The fishers were suffering from low market prices, too. As a result, the total value of catch was too low to cover the expenditures for fishing operation and investment costs. Costs & earning was most acute problems in the operations of coastal fishing except for resource management.

(3) Common problems to three barangays

There was not much difference as regards the major problems that fishers pointed out between three barangays. In Alacaygan and Bularan, the great majority of respondents answered that illegal fishing was the most serious problem. In San Francisco, too, fishers complained that illegal fishing by outsiders was rampant in front of their barangays. They were irritate to have not yet controlled illegal fishing and punished violators.

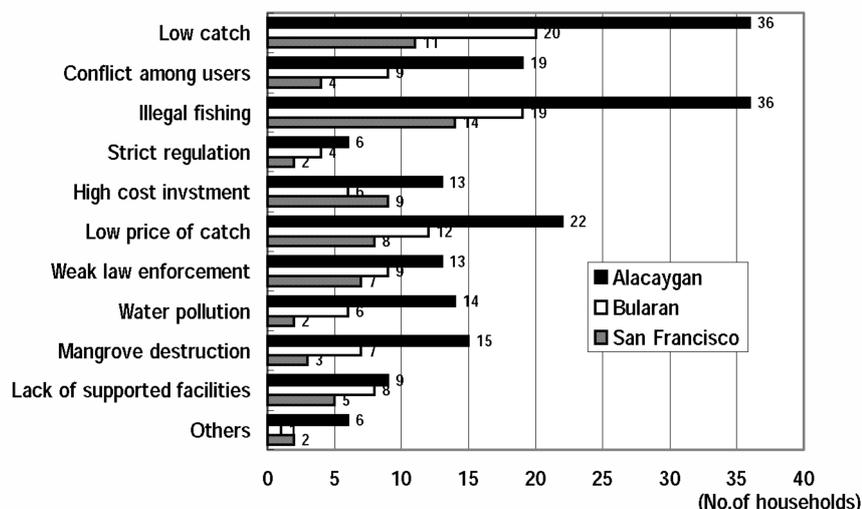


Figure 5-2. Problems listed up in three barangays

5.2. People's Participation in Barangay-based Organizations

(1) Level of participation

A number of formal and/ or informal, bottom-up and/ or top-down, and barangays-based and/ or municipal-based organizations were established through the whole area of four municipalities. Here, fisheries cooperative, fisheries association and BFARMC were the focus of our attention. These were barangays-based organizations.

Table 5-1. People's participation in barangay-based organizations

Unit: No. of households ,
(%)

	Alacaygan	Bularan	San Francisco	Total
Fisheries cooperative	3 (5.9)	2 (9.1)	8 (50)	13 (14.6)
Fisheries association	11 (21.6)	9 (40.9)	13 (81.3)	33 (37.1)
BFARMC	13 (25.5)	8 (36.4)	10 (62.5)	31 (34.8)
Others	2 (3.9)	0 (0)	3 (18.8)	5 (5.62)

Table 5-1 shows the result of a question whether fishers joined the membership of these organizations.

(2) Greater participation in San Francisco

All figures of tables demonstrate that people in San Francisco enthusiastically joined the membership and activity of barangay-based organizations. This may be an exceptional case in the Banate area. A fisheries cooperative flourished business activities, such as the supply of daily goods and fishing equipments, marketing of fish and provision of financial services. Half of the respondents were the cooperative's members. With financial assistance from the municipal government and related government agencies, people in San Francisco organized a fisheries association to accommodate a source of investment in fishing equipments. The size of membership was much larger than that in the other barangays. BFARMC could get enough fishers to take part in its activities, too, accounting for 62.5 % of total respondents.

With reference to fishers' participation in barangays-based organizations, Bularan stood on the middle between San Francisco and Alacaygan. The levels of people's participation in barangay-based organizations in Alacaygan remained quite inactive.

6. People's Evaluation on Activity of BFARMC and BBRMCI
6.1. BFARMC: Acknowledgement and evaluation of BFARMC

(1) BFARMC's activities

According to the basic functions of BFARMC defined by the Fisheries Act 1998, we checked on the following activities, i.e., 1) acting as representative of resource users at barangay level, 2) gaining consensus among resource users at barangay level, 3) suggesting direction of resource management to BBRMCI, 4) undertaking conservation and management activities in line with BBRMCI's agreement and ordinances, 5) enforcing ordinances, monitoring and controlling illegal activities at barangay level, 6) gathering data. The first question was whether or not respondents knew each of these activities.

All coastal barangays should establish a BFARMC as a coastal resource management body within its boundary. Resource users and stakeholders are to participate in its organization and activity vital to planning, controlling, monitoring and surveillance. However, the extent of people's participation in BFARMC differs from barangay to barangay. Even in four municipalities which constitute the BBRMCI's network, there is a large difference in active of performance between barangays.

(2) Acknowledgment of BFARMC's activities

The most well-known activity of BFARMC was the function of acting as representative of resource users. The activity known secondarily was the enforcing of laws and ordinances, followed by undertaking conservation of resources.

In Alacaygan and Bularan, those fishers who knew these three activities accounted for 60 % of total. However, gaining consensus was not well acknowledged as a basic function of BFARMC by fishers in both barangays.

Fishers in San Francisco were well informed of the six activities of BFARMC and the outline including the gathering of data, shown in the figures of Table 6-1. This is in a much contrast to other two barangays in which most of respondents were familiar with two or three activities only.

Table 6-1. Acknowledgement of BFARMC in three barangays

	Unit: No.of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
Acts as representative	35 (68.6)	14 (63.6)	14 (87.5)	63 (70.8)
Gains consensus	25 (49)	12 (54.5)	14 (87.5)	51 (57.3)
Suggests direction	28 (54.9)	10 (45.5)	14 (87.5)	52 (58.4)
Undertakes conservation	30 (58.8)	13 (59.1)	14 (87.5)	57 (64)
Enforces ordinances	31 (60.8)	14 (63.6)	14 (87.5)	59 (66.3)
Data gathering	24 (47.1)	10 (45.5)	14 (87.5)	48 (53.9)
Others	2 (3.92)	0 (0)	0 (0)	2 (2.25)

(3) Evaluation of BFARMC's activities

We needed to inquire a total evaluation of BFARMC activity, in order to get the reality of people's awareness on it and take a look at positive or negative behavior and opinion toward resource management.

Thirteen of 16 respondents in San Francisco gave a high appreciation on their own BFARMC, as shown in Figure 6-1. Representative function, conservation and enforcement made a high score. Fishers trusted entirely on the resource management activity of BFARMC.

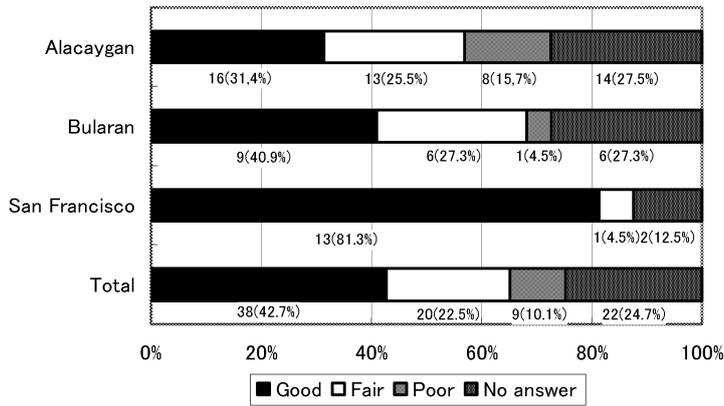


Figure 6-1. Total evaluation of BFARMC's activities in three barangays

Alacaygan showed 31.4 % for good reputation on its BFARMC, while a considerable number of fishers gave no answer. Bularan had the same tendency. In these two barangays, suggesting directions, and gaining consensus were given high reputation, together with representative function and conservation. These four activities ranged between 30 % and 50 %.

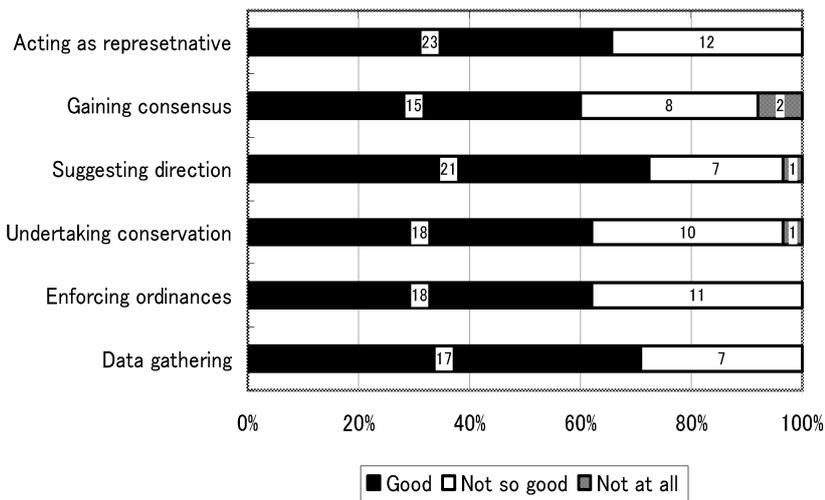


Figure 6-2. Evaluated activities of BFARMC in Alacaygan

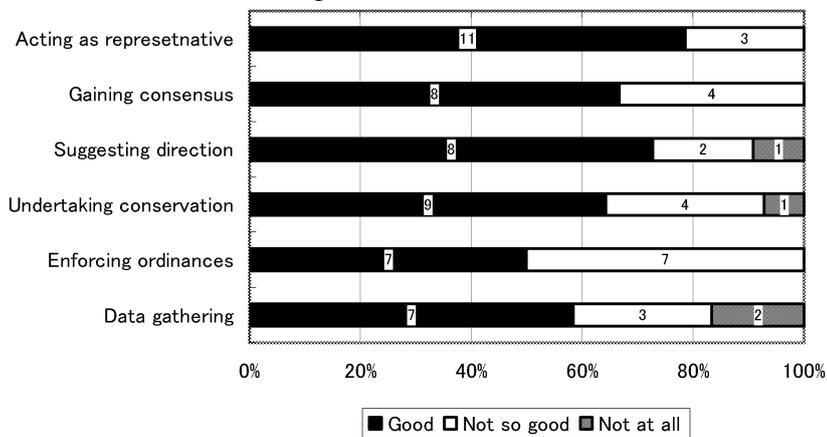


Figure 6-3. Evaluated activities of BFARMC in Bularan

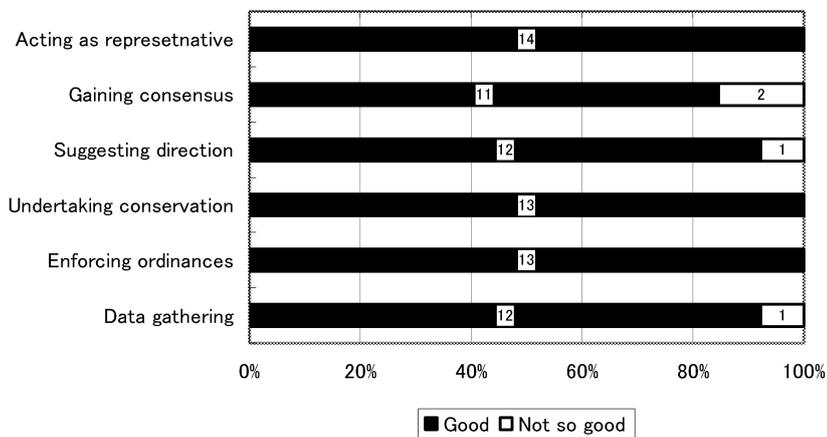


Figure 6-4. Evaluated activities of BFARMC in San Francisco

BFARMCs adopted the same form of organization and undertook the similar activity of resource management under the guidance of Fisheries Act 1998. However, as indicative data illustrate, the content of BFARMC’s activity was greatly different according to barangay.

As a whole, BFAMRC functioned as a representative of resource users at barangay level, undertook conservation and management activities. The resource users and stakeholders often gained consensus and adjusted conflict in the meeting of BFARMC.

6.2. Acknowledgment and Evaluation of BBRMCI

(1) Evaluation of BBRMCI’s activity as a whole

BBRMCI has diversified its roles and functions, covering over all related issues of coastal zone management, livelihood promotion and community development programs. Yet another significant function is the educational and human resource training matter.

First of all, fishers were inquired how they would evaluate the performance of BBRMCI. Most of them gave positive answers with “good” and “fair”, while negative answer was only 4.5 % of the total. The answer “It is very good” accounted for 60.7 %.

Fishers evaluated the activity of BBRMCI high, although the activity of BFARMC was severely evaluated. Only in San Francisco, the fishers gave high reputation on both BFARMC and BBRMCI.

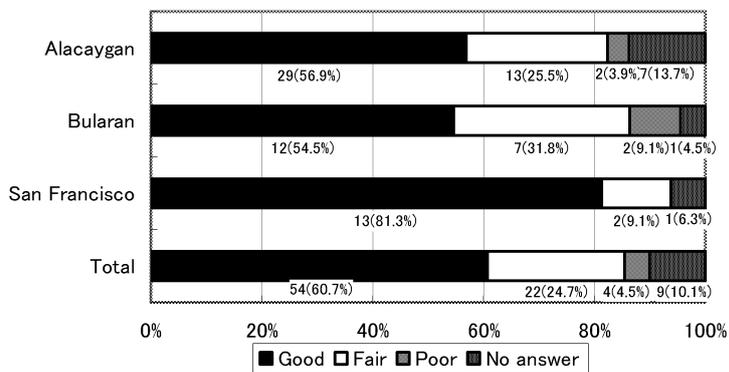


Figure 6-5. Evaluation of BBRMCI’s activity

(2) Acknowledgement level of activity

Eight major activities of BBRMCI were described in the questionnaire. The activities known well were registration scheme and measures in controlling illegal fishing. However, the activity known well was different according to barangay.

In San Francisco, fishers knew almost all the activity of BBRMCI.

In Alacaygan, mangrove planting was widely acknowledged beside registration and controlling illegal fishing. This is because the BBRMCI had ever implemented a mangrove planting in this barangay. In Bularan, fishers were aware of planning of management.

Table 6-2. Knowledge of BBRMCI's activities in three barangays

	Unit: No. of households , (%)			
	Alacaygan	Bularan	San Francisco	Total
Informative meetings	35 (68.6)	15 (68.2)	16 (100)	66 (74.2)
Planning of management	36 (70.6)	15 (68.2)	16 (100)	67 (75.3)
Mangrove planting	43 (84.3)	13 (59.1)	11 (68.8)	67 (75.3)
Measures in controlling illegal fishing	40 (78.4)	18 (81.8)	16 (100)	74 (83.1)
Survey and data gathering	30 (58.8)	14 (63.6)	16 (100)	60 (67.4)
Registration	41 (80.4)	16 (72.7)	16 (100)	73 (82)
Implementing alternative livelihood projects	28 (54.9)	14 (63.6)	16 (100)	58 (65.2)
Skill development	22 (43.1)	12 (54.5)	14 (87.5)	48 (53.9)

(3) Experiences of participation in BBRMCI's activities

The highest percentage of fishers' participation was the registration of fishing boats, gears and fisher folks. Except for the fisher folks registration which is still undertaken on a voluntary basis, all fishers are required to register own fishing gears following the fisheries laws. This is the assigned work by the municipal governments.

More than 40 % of the interviewed fishers had ever joined in other four activities, such as informative meeting, planning of management, measures in controlling illegal fishing, and survey & data gathering.

Table 6-3. Experience of participation in BBRMCI's activities in three barangays

	Unit: No. of households , (%)			
Activity	Alacaygan	Bularan	San Francisco	Total
Informative meetings	20 (39.2)	11 (50)	9 (56.3)	40 (44.9)
Planning of management	21 (41.2)	11 (50)	8 (50)	40 (44.9)
Mangrove planting	17 (33.3)	5 (22.7)	4 (25)	26 (29.2)
Measures in controlling illegal fishing	20 (39.2)	10 (45.5)	8 (50)	38 (42.7)
Survey and data gathering	16 (31.4)	11 (50)	9 (56.3)	36 (40.4)
Registration	25 (49)	10 (45.5)	13 (81.3)	48 (53.9)
Implementing alternative livelihood projects	10 (19.6)	3 (13.6)	10 (62.5)	23 (25.8)
Skill development	6 (11.8)	3 (13.6)	7 (43.8)	16 (18)

In Alacaygan, registration accounted for 49.0 % of the total, followed by the planning of management. Both informative meeting and measures in controlling illegal fishing indicated 39 %, but the percentage of fishers having joined livelihood and skill development projects was less than 20 %.

In Bularan, BBRMCI's activity was widely acknowledged, but participation in mangrove planting, implementing alternative livelihood project and skill development training remained at low level.

In San Francisco, 13 fishers registered fishing boats and gears through BFARMC. They thought that registration belonged to the fishers' responsibility in order to make it effective to monitor and control illegal fishing in the Banate Bay. They would support for the BBRMCI's direction of coastal resource management. A kind of voluntary-based fisher folk registration had been initially

proposed through the BFARMC in San Francisco. Although the number of sampled fishers was not many in this barangay, we would expect that a larger number of fishers in the barangay actively participated in various activities of BBRMCI rather than other two barangays.

(4) Fishers' Request to BBRMCI

Fishers tended to highly appreciate the activities of BBRMCI, but some showed negative appraisal toward the BBRMCI's direction. The particular concerns of fishers in three barangays were as follows;

1. Strengthening the enforcement of laws against illegal fishing operation
2. Planning and implementing new project for an alternative livelihood
3. Improving information and dissemination service

Many of respondents admitted that BBRMCI had made enormous effort to control illegal fishing operations in the Banate Bay. Its management plan and implementation successfully reduced the number of illegal fishing boats and gears near sea shores. The BBRMCI induced local fishers to comply with fisheries laws and regulations through educational and training programs.

On the other hand, a considerable number of fishers pointed out that monitoring and controlling illegal fishing by BBRMCI were not enough to keep coastal resources sustainable. Comprehensive approach was regarded as the most appropriate tool to encourage fishers to adopt sustainable fishing methods and to follow rules and regulations. There was a lot of emphasis on the importance of alternative livelihood programs which would bring them alternative income sources outside fisheries. Overdependence on fisheries business should be declined by creating new jobs and income sources. The fishers' demand for BBRMCI was becoming advanced and complicated.

A more systematic analysis on such a peculiar characteristic of fishing operation and its impact to household economy will be done soon, while describing the results of 2005 survey.

7. Conclusions

This report has just described the results of the questionnaires, not including historical, correlated, and theoretical analysis on the trends of coastal fisheries, the structure of small-scale fisheries, and fishers' attitudes toward coastal resource management. These will be analyzed in depth, by combining data and information derived from the survey conducted in 2005 on household economy and fishing operation.

We found out that small-scale fisheries in the sampled barangays have been highly commercialized and market-oriented in economic nature, even if the scale of fishing operation is very small and adopting simple gears.

Keeping a household economy sustainable, a diversification of income sources is effective tactics. Within fisheries business, plural patterns of fishing operation by using plural types of gears would secure an increase of fisheries income. Alternative jobs outside fisheries would also bring additional income. Many of households adopt both or one of tactics.

In fact, there are a large number of those fisheries households specializing in a sole pattern of fishing operation by using particular type of gear. A heavy dependence on a few valuable species is common among three barangays. This may give some impacts to the utilization and management of coastal resources.

Part II

Basic Analysis on Fishing Operations in Three Barangays: Result of 2005 survey

A Small-scale Fishing Operation to Achieve Livelihoods and Household Economy: Total Trend of Three Barangays

Executive Summary

The main purpose of this survey was to recognize the status of fishing household economy through fishing operation and related activities. The survey was a follow-up activity of the base line survey in September, 2004. This survey still conducted in the similar three barangays namely Alacaygan, Bularan and San Francisco barangays in Banate Bay as already done in 2004. The survey results were anticipated to be useful to concerned policy-maker for properly formulating coastal resource management plan. Therefore, the plan is strategy to physically practice fishers to participate in coastal resource management. According to the survey results, the trend of the three barangays would totally describe a prevailing view of fishing household economy. Afterward, the finding results of each barangay found would be precisely explained the feature of fishing household economy, status and livelihood.

The trend of household economy would be characterized by household's annual income. Considering on the finding results, the household's annual income was categorized based on the amount of the observed range which was PHP 24,000-431,000 in total. The mean of household's annual income in total was PHP 102,851. According to the Asian Development Bank (ADB), 2005 defined a poverty line was the amount of annual income lower than PHP 60,000. In the Philippines, this amount was fundamentally calculated on household's income which had averagely five members in a household.

Number of respondents was 52.83 percent ranked at moderate poverty which was lower than or equal to PHP 60,000. These respondents were determined as poor household according to the Philippines' government poverty line definition. Therefore, there were number of respondents amounted to 22.64 percent earned household's annual income at range of PHP 60,001-120,000. The respondents were only 24.53 percent ranked at the range of higher than PHP 120,000.

The respondents had two major sources of income. One source was coming from fisheries sector, other source was coming from non-fisheries sector. The respondents aggregately gained income from fisheries sector was PHP 79,209 (77.01 percent), meanwhile, they derived income from non-fisheries sector was PHP 23,647 (22.99 percent). According to this result, this meant that household economy of each barangay depended mainly on fisheries sector. An income gained from non-fisheries sector was as additional source of income. Both sources of income were important to stabilize fishers' household economy and livelihood.

In fisheries sector, three basic patterns of establishment in fisheries, which were classified by number of fishing gear used, were clarified. The first pattern was fishers using only one type of fishing gear. The second sequence was fishers using two types of fishing gear. The last pattern was fishers using fishing gear more than two types. Number of respondents used first, second and third patterns were 28, 51 and 21 percent, respectively.

There were eleven major fishing gear employed in capture fisheries folk. The type of fishing gear was stationary fishing gear namely shallow fish corral and stationary lift net. On the other hand, the passive fishing gear type was gill net and bottom set gill net. Other seven types of fishing gear were longline, hand line, push net, crab pot, crab lift net, beach seine and encircling gill net. The top-three ranked fishing gear employments were push net, hand line and bottom set gill-net. Number of respondents used push net, hand line and bottom set gill net were 24, 21 and 17 percent, respectively.

An income gained from fishing operation was presented by type of fishing gear. The bottom set gill-net fishers derived the largest amount of monthly income which was PHP 15,370 on average. The respondents engaged in push net fishing gears earned a monthly income from the gear operation

which was PHP 10,299 on average.

A different fishing gear operation had different targeted species. Major landing species was found such as acetes (hipon), blue crab (kasag), Spanish mackerel (tanghigi), goatee croaker (abo), etc. Main market place for distributing landed catches was pala-pala, crab processor, fisheries cooperative and direct sale. Some of landed catch was consumed at home.

At Alacaygan barangay, a fisheries household has sources of income gained from both fisheries (73%) and non-fisheries (27%) sectors. This means that the fisheries household depends mainly on fisheries sectors. A household debt and savings indicated household economy. The findings of the survey revealed that the ratio of household debt to savings was 9 to 1 (90:10). The amounts of debt were used for the purposes of fisheries investment, child's education and household livelihoods. The fisheries households were 46% of total household found to use a single fishing gear. On the other hand, 54% of the total used more than one type of fishing gear. A type of single fishing gear used such as bottom set gill net, crab pot, gill net, push net, and shallow fish corral operations. The types of plural fishing gear used were such as bottom set gill net and hand line, push net and shallow fish corral, etc. Fisheries products were utilized for the purposes of selling and household consumption.

The fisheries households of Bularan barangay largely depend on fisheries sectors. The income gained from fisheries sectors taken 91% of total household income, while other 9% of the total derived from non-fisheries sectors. Fisheries households had the amount of total household debt greater than total household savings. Total household debt was 98% of the total and total household savings was 2% of the total. The purpose of accessed loan was for investment in fisheries and for household livelihood. A few savings amount was accumulated for livelihood and for emergency. The number of household establishment in fisheries was categorized into three forms. Hand line, which was 100% of total households, commonly found. Within 100% of hand line households, these classified into category of hand line plus one type of fishing gear which amounted to 67% such as hand line and bottom set gill net, push net and longline. On the other, 33% of the total was category of hand line adding two types of fishing gears such as hand line, bottom set gill net and push net. Fisheries products landed at the barangay were for sale and for household subsistence food.

Fisheries households at San Francisco barangay also have a similar source of income as fishers lived in Alacaygan and Bularan barangays. A household obtained three fourth (74%) of total income gained from fisheries sectors and about one fourth (26%) of the total received from non-fisheries sectors. The ratio of total household debt and savings found in the barangay were 79% to 21%, respectively. Main purposes of loan were for investing in fisheries and for livelihood expense. On the other hand, savings was for providing of children's education. Several types of fishing gear were found at San Francisco barangay. A single-gear used household was stationary lift net and long line which amounted to one household for each type. Other ten households interviewed were plural-gear used households. These households composed of two sub-groups. Group 1 is the household using only two types of fishing gears such as bottom set gill net and crab pot and long line and crab pot, crab pot and gill net. Group 2 is the group of household using more than two types of fishing gears. The example of Group 2 is crab pot, gill net and long line. All landing fish products caught by local fishers were mainly sold to fisheries cooperatives.

A Small-scale Fishing Operation to Achieve Livelihoods and Household Economy: Total Trend of Three Barangays

1. Introduction

A fishing operational survey conducted in three barangays namely Alacaygan, Bularan barangays, Banate Municipality and San Francisco barangay, Barotac Viejo Municipality. The survey was a follow-up activity after the base line survey was implemented in September, 2004. The main purpose of the survey was to comprehend the status of fishing household economy through fishing operation and related activities. The survey results were expected to be useful to properly formulate coastal resource management plan for community people. The plan is strategy to physically practice fishers to participate in coastal resource management. Therefore, the plan is strategic mechanism to stabilize livelihoods of fishers and to alleviate a poverty of fishing households.

The contents of this survey results consist of two main parts. Part one is totally described the trend of three barangays which are related to fishing household economy, fishing operation and catch distribution. Part two is given the explanation of fishing household economy in each barangay and including the ways of fishing operation and catch distribution. Total number of the respondents was fifty-eight respondents. These numbers composed of fifty-three boat owners and five crews (see table 1.) The number of respondents interviewed at Alacaygan barangay was twenty-six boat owners and five crews. On the other hand, the number of respondents interviewed at Bularan and San Francisco barangays was fifteen and twelve boat owners, respectively.

Table 1 Number of respondents in Banate Bay, August, 2005

Village	Alacaygan	Bularan	San Francisco
Boat owners	26	15	12
Crew	5	-	-

2. Part I the total trend of household economy

2.1 Households' annual income

Considering on the survey results, a household economy would be described by household's annual income and by source of income. The household's annual income was categorized based on the amount of the observed range as seen in table 2. Respondents were classified in extreme poor, moderate poor and no poor according to the poverty threshold for Region VI (Western Visayas that include Iloilo) in 2003, defined by the National Statistic Coordination Board (NSCB) of Philippine government. NSCB defines for this region as poverty threshold in PHP12,000/year/capita in 2003. According to this number we defined extreme poverty as the people that annual income per capita is less than poverty threshold, and moderate poverty as incomes between 12,000 and 24,000/year/capita. Above poverty line are the people over 24,000/year/capita. The total income per household was calculated using an average of five (5) members. Thus, the extreme poverty line for households was defined as PHP60,000, moderate poverty line between PHP60,000 and PHP120,000 and above poverty line are families with incomes higher than PHP120,000.

The household's annual income in total was the range of PHP 24,000-431,000. The mean of household's annual income in total was PHP 102,851. Number of respondents was 52.83 percent (28 households) ranked at moderate poverty level. These numbers of respondents were determined as poor households according to the national poverty line definition. Furthermore, the results were found that the number of respondents was 22.64 percent (12 households) stayed at the extreme poverty level. The respondents were only 24.53 percent (13 households) ranked at above poverty line.

The mean of household's annual income found in each barangay was PHP 111,960 of Alacaygan, PHP 75,804 of Bularan and PHP 116,964 of San Francisco. In cases of Alacaygan and Bularan barangays, major number of respondents, which was ranked at low level of household's annual income, was 46.15 and 60 percent, respectively. In case of San Francisco barangay, respondents, who had household's annual income amounted to medium level, were the largest number about 41.67 percent.

Table 2 A household's annual income of sampled barangay in Banate Bay, 2005

Barangay	Observed range	Mean	Category	Fishers	
				No	%
Alacaygan	24,000-431,100	111,960	Extreme poverty ($\leq 60,000$)	5	19.23
			Moderate poverty (60,001-120,000)	13	50.00
			Above poverty line ($>120,000$)	8	30.77
			Total	26	
Bularan	34,668-141,996	75,804	Extreme poverty	6	40.00
			Moderate poverty	7	46.67
			Above poverty line	2	13.33
			Total	15	
San Francisco	38,100-297,600	116,964	Extreme poverty	1	8.33
			Moderate poverty	8	66.67
			Above poverty line	3	25.00
			Total	12	
Total	24000-431,100	102,851	Extreme poverty	12	22.64
			Moderate poverty	28	52.83
			Above poverty line	13	24.53
			Total	53	

Remark: Categories of the annual income level based on National Statistic Coordination Board of Philippines (NSCB, 2003)

2.2 Total annual household income by source

A source of total annual household income was classified into two major sources. One was coming from fisheries source. Other source was coming from non-fishery. The total annual income of three barangays on average was PHP 79,209 (77.01 percent) and PHP 23, 647 (22.99 percent) coming from fisheries and non-fisheries sources, respectively (see table 3). Furthermore, an annual income gained from fisheries source was the great part of total annual income on average which generally found every barangays.

The respondents of Bularan solely depended on fisheries. They gained an annual income on average amounted to PHP 69,204 (91.28percent) from fisheries sector. The Alacaygan respondents largely relied on an annual income from fisheries source which amounted to PHP 81,852 (73.10 percent). In case of San Francisco, the respondents earned an annual income from both fisheries and non-fisheries sources which were similar amount. They received PHP 86, 016 (53.06 percent) and PHP 76,104 (46.94 percent) from fisheries and non-fisheries sources, respectively. This meant respondents of San Francisco barangay mainly depended on fisheries. In the meantime, they also had

well-subordinated source of income from non-fisheries sector to stabilize their household economy.

Table 3 Total annual household income by source in Banate Bay, 2005

Barangay	Source income	Mean annual income(PHP)	%
Alacaygan	Fishery	81,852	73.10
	Non-fishery	30,120	26.90
Bularan	Fishery	69,204	91.28
	Non-fishery	6,612	8.72
San Francisco	Fishery	86,016	53.06
	Non-fishery	76,104	46.94
Total	Fishery	79,209	77.01
	Non-fishery	23,647	22.99

According to the results show in the table 3, the respondents have major and minor sources of income from fisheries and non-fisheries sectors, respectively. The survey also deeply interviewed type of occupation which was defined as secondary source of income coming from fisheries and non-fisheries sources. Categories of secondary source of income were found such fish trading, fish processing, rice farming, crew labor, farm labor carpenter labor, remittance, tricycle, pig farm and others (see fig.1). The respondents occupied in fish processing and carpenter labor which were nearly 18 percent of total respondents for each type of job. There were 14 percent of the total received a remittance money to rise household economy.

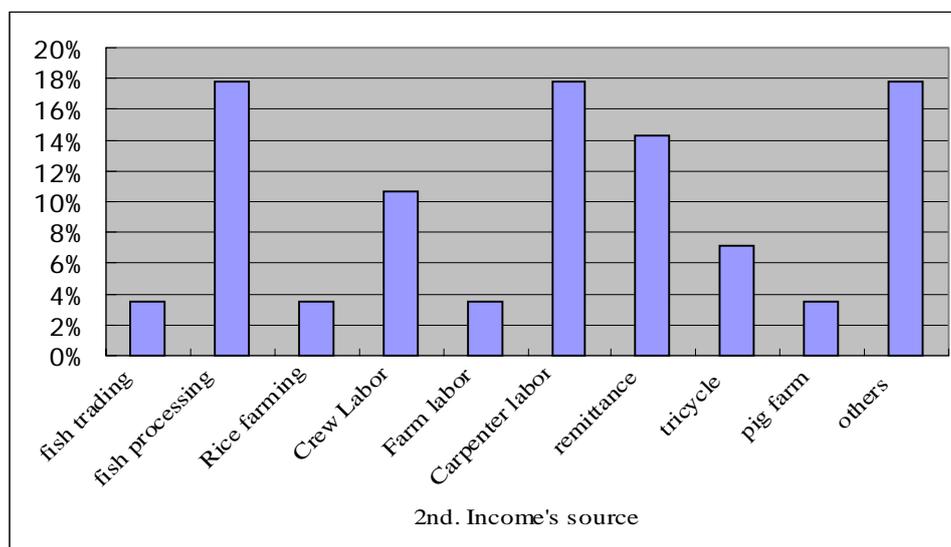


Fig.1 Secondary source of income and number of respondents' involvement

2.3 Fisheries sector in Banate Bay

Fisheries sector existed in Banate Bay was placing an emphasis on capture fisher folks. The capacity of capture fisheries folks was explained through fisheries establishment and fishing operation contributing to the Bay economic development.

2.3.1 Establishment in fisheries and fishing gear use

There were three categories of fishing establishment in a household. A basis pattern of the establishment was classified by number of fishing gear. The first category was fishers using only one type of fishing gear. This category was amounted to 28 percent of total respondent as seen in fig.2. The second category was using two types of fishing gear which was the greatest number amounted to 51 percent of total respondent. The respondents were 21 percent of the total used more than two types of fishing gear.

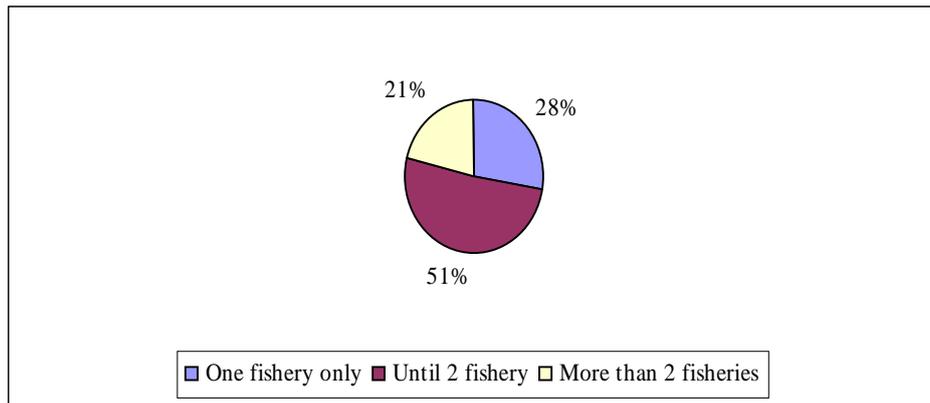


Fig. 2 Number of fishing establishment in a household basis at Banate Bay, 2005

Type of fishing gear use found in Banate Bay was composed of stationary fishing gear and passive fishing gear (see fig.3). Eleven major types of fishing gear occupied in capture fisheries folks in the Bay. Push net, hand line and bottom set gill-net were top-three ranked fishing gear employment which were 24, 21 and 17 percent of total respondent, respectively.

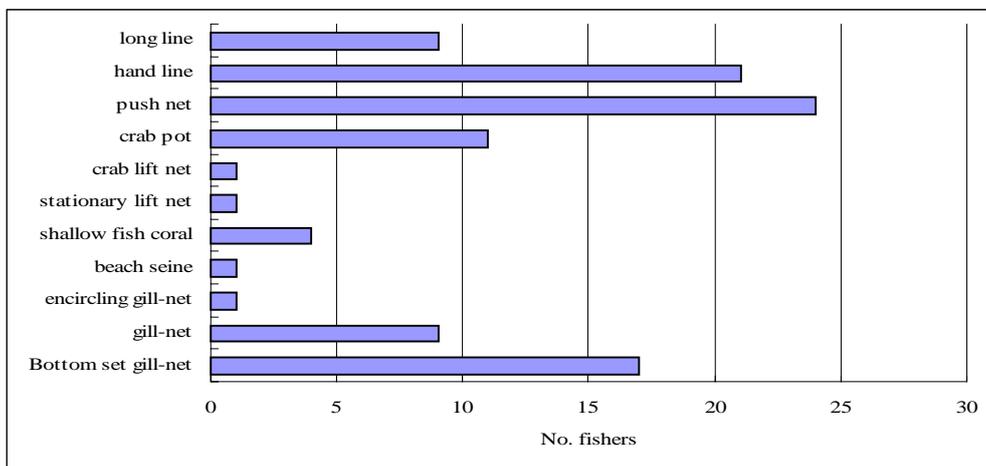


Fig.3 Major type of fishing gear used at Banate Bay, 2005

2.3.2 Fishing operation and operational cost

Considering on the fig.3, top-six ranked fishing gears were representative of eleven major types of fishing gear such push net, hand line, bottom set gill-net, crab pot, gill net and longline. These fishing gear types and their operations gave a view of fisheries involved in community economic development. Each type of fishing gear was displayed number of fishing operational days in one month basis, fishing gear units and cost of fishing gear for a unit. Mean, minimum and maximum values were fundamental statistic measure used to concretely describe number of fishing operation,

fishing gear unit and operational cost as seen in table 4.

Table 4 Fishing operation and operational cost by major type of fishing gear in Banate Bay, 2005

Fishery	Statistic measure	Operation days (ds)	Fishing gear units	Fishing gear cost/unit (PHP)
Push net	Mean	19	2	464
	Minimum	5	1	300
	Maximum	30	3	800
Hand line	Mean	25	3	49
	Minimum	15	1	13
	Maximum	30	8	120
Bottom set gillnet	Mean	26	13	750
	Minimum	15	1	215
	Maximum	30	21	1,600
Crab pot	Mean	23	190	11
	Minimum	20	180	10
	Maximum	25	200	11
Gill net	Mean	24	17	788
	Minimum	20	12	575
	Maximum	27	21	1,000
Longline	Mean	20	137	377
	Minimum	14	1	45
	Maximum	30	500	700

Number of fishing operational day on average was 19 days to 26 days. The respondents used push net averagely operating the gear around 19 days in a month. Number of bottom set gill net operational day was 26 days in a month. Unit of fishing gear has a different unit's name such unit name of bottom set gill net and gill net called prado. One prado is 100 meters long. Crab pot's unit is pot or box. Unit of push net is set. Hand line's and longline's unit is counted number of hook used.

Cost of fishing gear for a unit was also illustrated. This cost was defined as the fixed cost of investment in fisheries. The respondents used gill net fishing gear had to pay PHP 788 for 100 meter long for a ready-to-used net. Similarly, the bottom set gill-net respondents paid PHP 750 for 100 meters long. In case of crab pot, the cost per a unit was only PHP 11. This might be a reason why number of crab pot rapidly increased. This gear was found very few in base line survey in year 2004.

2.3.3 Crew in fishing operation

Crew is an important task force to do fishing. However, the respondents demonstrated fishing operation without crew accompanied. Fig. 4 illustrates crew and relationship with boat owners. The figure displays that 54 percent of total respondent operated fishing without crew. In case of crew assisted, 37 percent of total respondents accompanied with crew who was relative. On the other hand, the respondents amounted to 9 percent of the total operated fishing with non-relative crew.

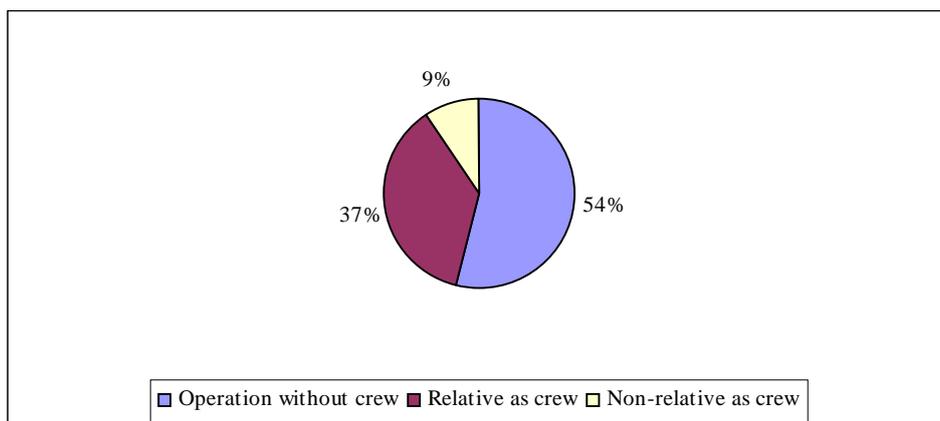


Fig.4 Crew and relationship with boat owners found in Banate Bay, 2005

2.3.4 Catch landing species and distribution

Catch landing species landed in Banate bay had a variety of species composition according to fishing gear operations. Table 5 illustrates catch landing species and composition caught by each type of major fishing gear employed. Certainly, each type of fishing had a different targeted species, but bottom set gill net and crab pot had the same targeted species which was blue crab (kasag in local name). The table gives targeted species composition, local name, quantity of landing catch, price of landing catch per unit and total value in a fishing trip. Therefore, the destination of catch distribution was also figured out.

Main targeted species of push net was acetes (hipon). The landing quantity of this species was averagely 6.02 kg for a set of push net. Mean price of acetes was PHP 33.64 for a kg. Mean total value of acetes in a fishing trip was PHP 203. Acetes distribution had two conventional market channels. One channel was pala-pala place. Other channel was a direct sale to consumers or shrimp paste processor.

Landing species caught by hand line had a list of species more than one species. This was because the respondents used a different size of hook to fish targeted species. Spanish mackerel and thread fin bream were popularized fishing. The landing quantity of these two species was 6.8 and 2.4 kg on average. Mean price of each species was PHP 122.5 and PHP 89.4. Mean total value of each species in a fishing trip was PHP 831 and PHP 215. These two species were sold to various existed market places. Fisheries cooperative was main market place for buying thread fin bream and Spanish mackerel. Pala-pala was also a market place to distribute thread fin bream. Some of thread fin bream was sold directly to consumers.

Blue crab (kasag) was main targeted species of bottom set gill-net and crab pot. The landing quantity of blue crab caught by bottom set gill-net and crab pot was 6.4 and 4.8 kg, respectively. Price of blue crab on average was PHP 112.3 and mean total value was PHP 717.5 of bottom set gill-net and PHP 533 of crab pot. Three important market places for distributing blue crab were pala-pala, crab processor and fisheries cooperative (CO-OP).

Table 5 Monthly income and fishing operational cost according to type of fishing gear in Banate Bay, 2005

Fishery	Species (English name)	Species (Local name)	Mean landings (kg)	Mean Value/unit (PHP)	Mean Total value/trip (PHP)	Market place
Push net	Acetes	Hipon	6.02	33.64	203	Pala-pala, direct sale
Hand line	Sand whiting fish	asohos	0.8	37.5	30.0	Pala-pala, direct sale
	Thread fin bream	lagaw	2.4	89.4	215	Pala-pala, direct sale, Coop
	Spotted scad	kikero	2.3	60.0	135	Pala-pala
	Spanish mackerel	mackerel	6.8	122.5	831	Coop
	Round scad	golunggong	1.5	90	135	direct sale
	Monocole bream	upos-upos	1.3	25	33.3	Own consumption
	Squid	kalambutan	3.6	60.0	216	Coop
		Tabagak	5	30	150	direct sale, own consumption
		Latab	0.75	51.5	38.6	direct sale
		Grouper	Lapu-lapu	1	100	100
Bottom set gillnet		Kugaw	5.0	115.0	575	Coop
	Blue crab	Kasag	6.4	112.3	717.5	Pala-pala, crab processor, Coop
	Goatee croaker	Abo	2.3	33.75	78.8	Pala-pala, direct sale
	Thread fin bream	Lagaw	1.0	89.4	89.4	Pala-pala, direct sale, Coop
Crab pot	Blue crab	Kasag	4.8	112.3	533	

2.3.5 Income and fishing operational cost

An income and fishing operational cost was clarified in amounts which calculated based on a fishing trip in one month basis. The amount of mean monthly income from fishing was a balance of mean total income and mean total operational cost in a month (Mean monthly income = mean total income – mean total operational cost). The mean monthly income was described according to type of fishing gear employment as seen table 6. According to the results show in the table, the fishers gained profit that mean total income in a month was higher than mean total operational cost in a month.

Bottom set gill-net fishers earned the largest amount of mean monthly income which was PHP 15,370. This fishing gear had operated 24.8 trips in one month. This gear spent PHP 2,635 for operational cost in one month. Push net fishers derived mean monthly income from fishing which was PHP 10,299. The mean monthly income of push net operation was at second ranked of six major fishing gears. The reason was probably number of fishing trip on average amounted to 36.58 trips in a month and including low amount of operational cost (PHP 1,700) which compared to amount of mean total income in a month (PHP 11,999).

Table 6 Mean monthly income by major type of fishing gear operation in Banate Bay, 2005

Fishery	Average trip/month (units)	Mean Total value/trip (PHP)	Mean total income/month (PHP)	Mean total Operational costs/trip (PHP)	Mean total Operational costs/month (PHP)	Balance of mean monthly income (PHP)
Push net	36.58	328	11,999	46	1,700	10,299
Hand line	23.94	305	7,309	130	3,107	4,202
Bottom set gillnet	24.8	726	18,005	106	2,635	15,370
Crab pot	32.5	618	20,069	417	13,548	6,521
Gill net	23.5	212	4,982	18	423	4,559
Long line	22.14	489	10,817	192	4,247	6,570

In case of crab pot fishing operation, fishers also gained profit from the operation that meant monthly income was PHP 6,521. This fishing gear operation spent total operational cost in a month larger than 50 percent of total income in a month which were PHP 13,548 and PHP 20,069, respectively.

Fig.5 illustrates monthly income derived from fishing operation by barangay. The fishers of Alacaygan barangay generally earned the highest amount of monthly income which was PHP 11,481. The fishers of Bularan barangay earned monthly income from fishing were amounted to PHP 10,691 at second rank of mean monthly income among three barangays. In San Francisco barangay, fishers derived monthly income from fishing operation which was PHP 7,376.

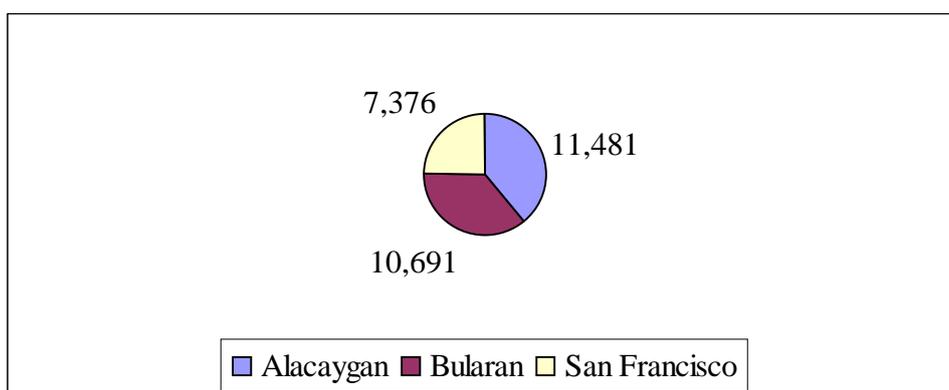


Fig.5 Monthly income from fishing operation by barangay at Banate Bay, 2005

3 Level of Perception of benefits from BBRMCI activities

Level of perception was measured using a simple score scale with 14 activities. A respondent was asked to indicate his evaluation of each BBRMCI activity. In this evaluation each respondent mention awareness and if the BBRMCI activity is important for him or not. A respondent is requested to answer “I don’t know”, “Poor”, “Fair”, and “Good”. Weights assigned to these responses were 0, 1, 2, and 3 respectively. The total score of a respondent was determined by adding up the weights for responses against all 14 activities.

Perception of benefits from each activity implemented by BBRMCI was evaluated using the same system of scoring .

3.1 Findings

The score of perception from BBRMCI activities ranged from 20 – 42 with mean 34.47 and standard deviation 6.09. Based on these scores, the fishers were classified into three categories having “unfavorable perception” (≤ 14), “less favorable” (15-29) and “favorable” (> 29). The distribution of the fishers according to their awareness is presented in Table 7.

Table 7 Perception score by fisher

Perception score by Fisher	Possible range	Observed range	Fishers		Mode	Mean	STD
			No.	%			
Unfavorable (≤ 14)	0-42	20-42	0	0	41	34.47	6.09
Less favorable (15-29)			12	23			
Favorable (> 29)			41	77			

Analysis of data in Table 7 indicates that the majority of the fishers (77%) had favorable perception compared to 23% less favorable regarding to benefits from BBRMCI activities. Mode of 41 also stresses the favorable of the BBRMCI activities.

Table 8 Perception for each BBRMCI’s activity

BBRMCI’s Activities	No aware	Good	Fair	Poor	Rank Order
Boat registration	1	48	3	2	1
Prohibition fishing gears	0	48	2	4	1
Fishing gear registration	2	46	4	2	2
Patrolling, surveillance	0	44	4	6	3
Mangrove reforestation	4	44	4	2	4
Closed season	2	40	9	3	5
Restrictions fish corals	3	43	4	4	5
Promoting BFARMC	5	42	5	2	6
Fishers registration	7	43	3	1	7
Marine protected Areas	5	40	3	6	8
Information on CRM and BBRMCI	12	32	9	1	9
Alternative livelihood projects	10	33	3	7	10
Integrated zoning plan	11	29	8	6	11
Promote new fishing technology	12	31	3	8	12

The activities “Boat registration” and “Prohibition of fishing gears” had the highest perception score and stood first in rank order. About 99% knew about these activity and 91% fishers evaluated them as “good” for their fishing operations. However, “Prohibition of fishing gears” had about 8% evaluation as “poor” (see table 8).

“Fishing gear registration” got the second highest score and stood second in the rank order. About 87% of fishers knew this activity and 87% evaluated it as “good” for their fishing operations. “Patrolling and surveillance” is ranked in third rank and total fishers knew about this activity. These previous activities positioned in the highest ranks are explained due to BBRMCI has been doing a strong campaign to register boat and fishing gears as measure for improving the control of fishery and illegal fishing in the bay.

“Information on CRM and BBRMCI”, “Alternative livelihood projects”, “Integrated zoning plan”, and “Promote new fishing technology” are the activities with less favorable perception. About 19-23% of interviewed responded “No aware”. Also, 11 – 15% of fishers evaluated these activities as “poor” for their fishing operations.

It is important to notice that Marine Protected Areas (MPAs) as important measure for an “Ecosystem-based” approach for resource management is only ranked at eight (8) order.

Most of the respondent knew about the activities of BBRMCI and had a favorable perception of the benefits of BBRMCI’s program. This finding may to conclude that the program is successful from the point of view of perception and level of adherence of the program that are mentioned by the literature, as part of five elements to measure the level of success of participative resource management programs. However, main tools related with Ecosystem-based approach management are not the main activities in importance rank. This situation probably may suggest to strength the diffusion activities for CRM program among the fishers.

A Small-scale Fishing Operation to Achieve Livelihoods and Household Economy: The Case of Alacaygan Barangay, Banate Bay, Panay Island, the Philippines

1. A status of household economy

The results of the barangay survey conducted in 2005 are informative data to illustrate the present socio-economic status of fisheries household at Alacaygan barangay. Household incomes were divided into fisheries sectors and non-fisheries sectors. The household income gained from fisheries sectors was 73% of the total, while, 27% came from non-fisheries sectors. An average monthly income gained from the fisheries sectors and from the non-fisheries sectors were 6,821 pesos and 2,510 pesos, respectively. (Fig. 1)

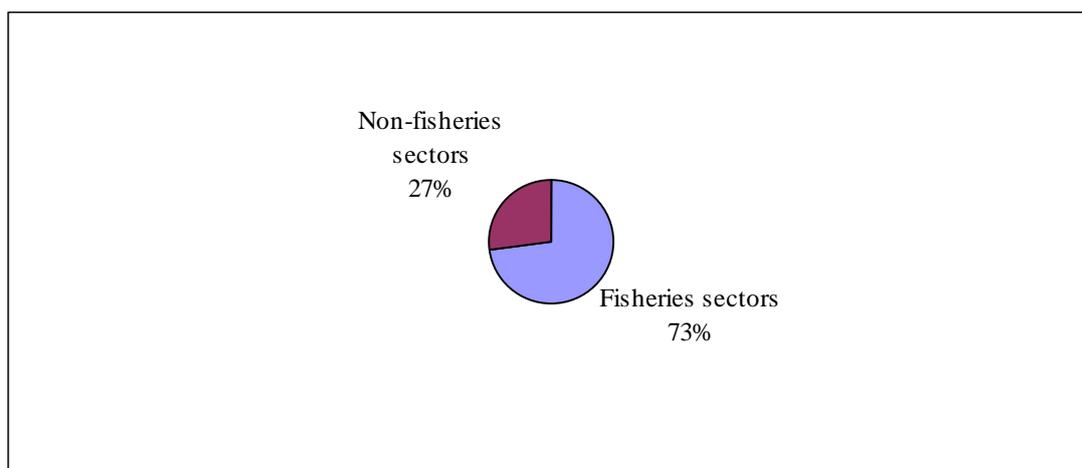


Fig.1 Source of household income in monthly at Alacaygan barangay

Fig.2 describes a source of accessible capital for investment. Respondents had access to the sources of capital for investment. Three main sources of accessible capital were private money-lender (18% of total households), neighbors (12%) and NGOs (12%). The respondents easily obtained loans from private money-lenders. The average amount of loan was 2,300 pesos. NGOs could lend 5,000 pesos per person.

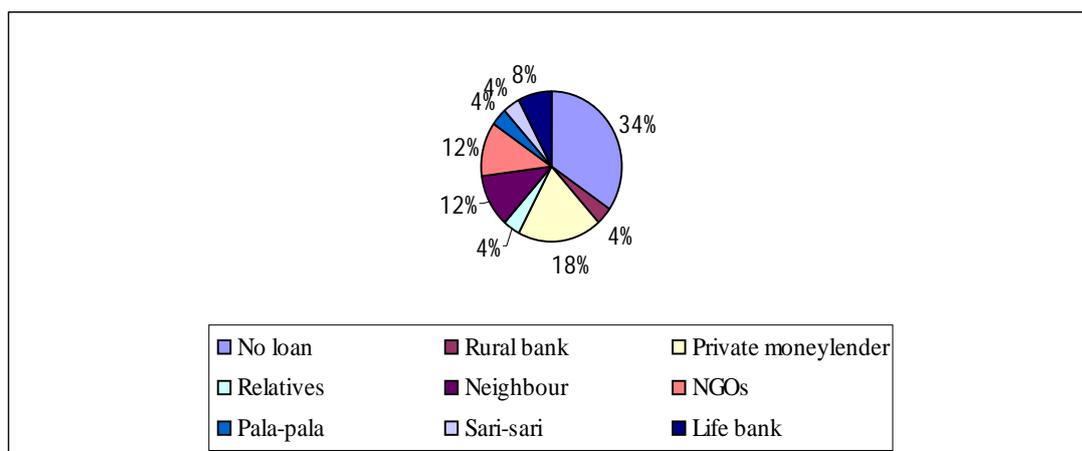


Fig.2 Number of household by source of loan at Alacaygan barangay

Fishers identified the purposes making loans. An investment in fishing equipment was the first

objects, being 27% of total households. The loan for this purpose was 4,571 pesos on average. Livelihood expenditure was ranked as second purpose of obtaining loans, with 23% of the total. This amounted to 1,500 pesos (see Fig.3).

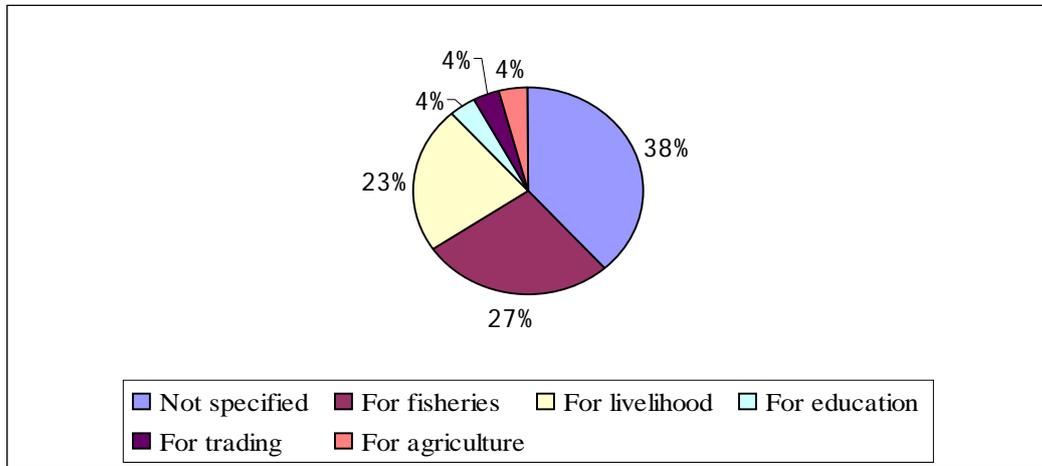


Fig.3 Number of household by purpose of loan at Alacaygan Barangay

In the questionnaire sheet, we interviewed fishers about whether or not they saved money in any financial institutions. Eight-five (85%) of total household had no deposits (see fig.4). However, the respondents who had deposits at the Life Bank accounted for 8% of the total. Both cabinet deposits and ordinary banks were 4%. The amounts of deposits at the Life Bank, home, other banks amounted to 1,850, 3,000 and 2,000 pesos, respectively. The fishers saved money for the purposes of children’s education, trading, fisheries business and moneymaking. The amount of deposits for each purpose is 1,200, 2,500; 2,000 and 3,000 pesos, respectively (see Fig.5).

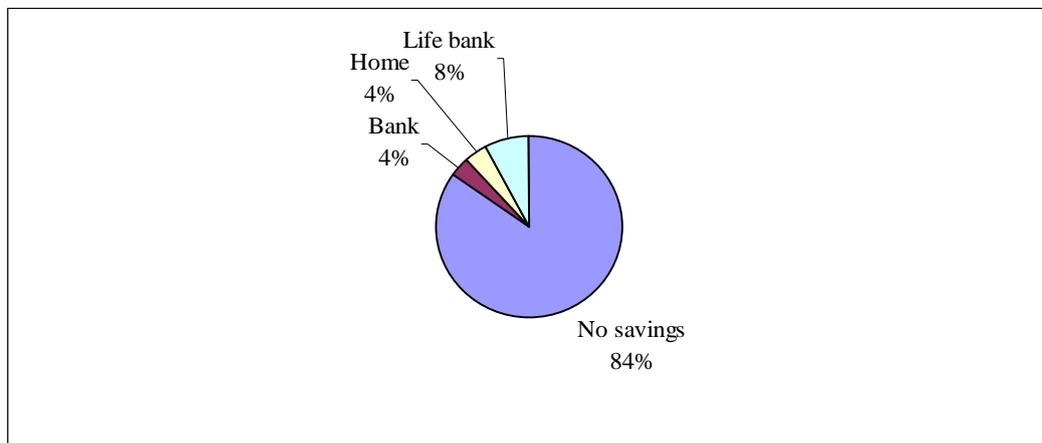


Fig.4 Number of household by source of savings at Alacaygan barangay

A household might have many accessible sources of capital for investment, and then it obtained loans from more than one source. We roughly estimated the total amounts of debts and deposits, according to the survey on the debts and savings status. A household had 335 pesos of savings on average, while it borrowed 3,019 pesos. The ratio of deposits to loan was 1 to 9 (see Fig.6)

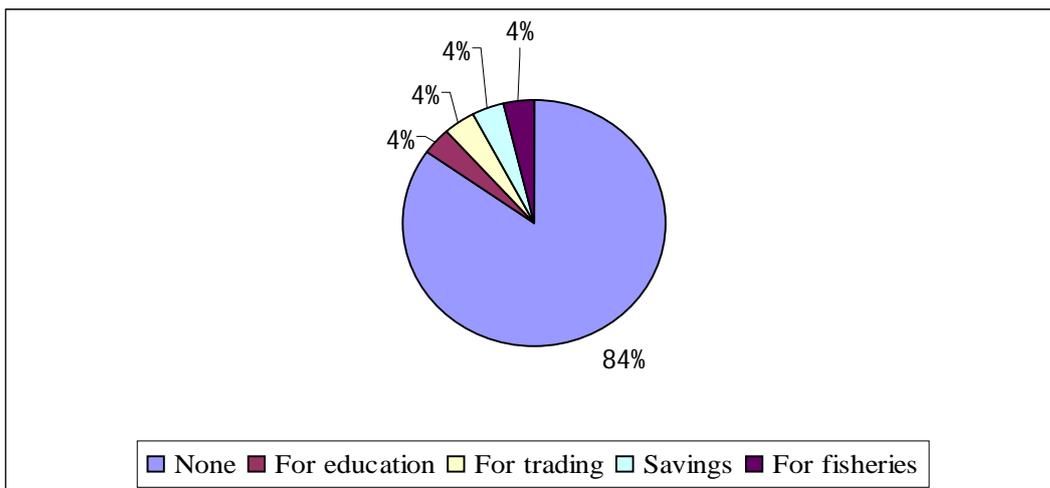


Fig. 5 Number of household by purpose of savings at Alacaygan barangay

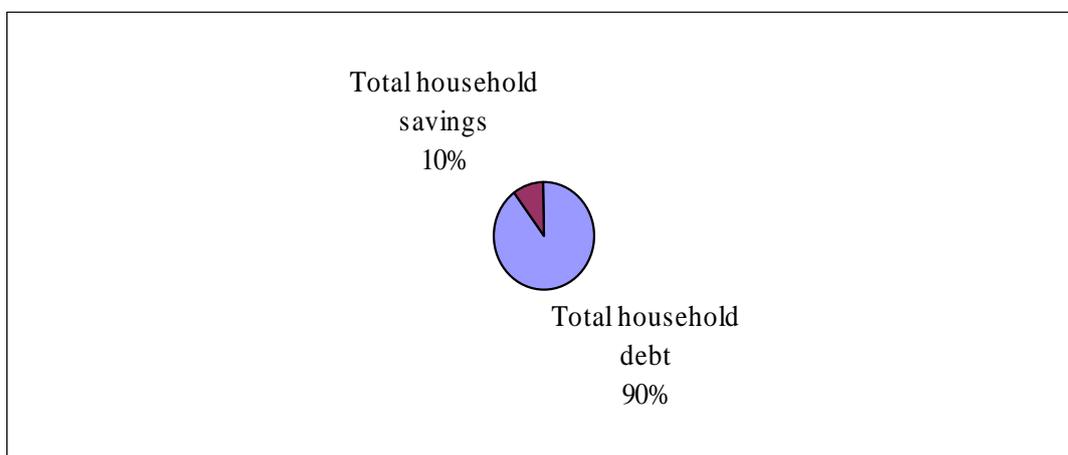


Fig.6 Total household debt and savings at Alacaygan barangay

2. Household income by type of establishment in fisheries

This part would explain household income sources, shown by type of establishment in fisheries. The figures of table 1 consisted of the amount of income derived from head and all member of family. Fisheries establishments (households) were classified by the type of fishing gear that fishers ranked first as regards an economic importance. The households using push net and bottom set gill net accounted for 46.2% and 30.8% of the total households, respectively. Each of the household using gill net and shallow fish corral were 7.7% of the total households. Crab pot and hand line households each shared 3.9%.

The households engaged in longline fishery earned the highest amount of income all other fishing gears, being 14,000 pesos. This amount consisted of 5,000 pesos from fisheries sectors and 9,000 pesos from non-fisheries sectors. The households with push net gained 10,215 pesos on average, consisting of 3,927 pesos from non-fisheries and 6,288 pesos from fisheries sectors. The household using crab pot had 10,000 pesos of monthly income, with 4,000 pesos from fisheries and 6,000 pesos from non-fisheries sectors.

Table 2 shows the total of household income, debt and savings shown by types of establishment. The households employing shallow fish corral earned 5,908 pesos of monthly income, while

Table1 A household income on average by family member contribution at Alacaygan barangay

Type of engagement	No. of household	Total income	Amounts of income							
			Source of income		Contribution by family member					
			fisheries	non-fisheries	head of family	second member	third member	fourth member	fifth member	
bottom set gill net	8	15,238	11,847	3,421	4,500	6,667	1,255	143	125	
gill net	2	5,950	4,500	1,450	4,500	1,450	0	0	0	
shallow fish corral	2	6,250	2,250	4,000	2,250	4,000	0	0	0	
push net	12	6,243	4,351	1,892	4,291	1,536	291	125	0	
hand line	2	14,942	4,031	6,540	4,031	3,440	2,600	500	0	
Total	26									

They had 6,500 pesos of debt. Those households using crab pot, shallow fish corral and hand line each had debt, but they had no deposits. This information is useful to assess the status of household economy and the level of income vital to stabilize household's livelihood and debt repayment.

Table 2 A household income, debt and savings on average by type of fishing gear engagement at Alacaygan barangay

Type of engagement	No. of household	Total household	Total debt	Total savings
bottom set gill net	8	8,776	4000	400
crab pot	1	10,000	5000	0
gill net	2	7,000	2500	1250
shallow fish corral	2	5,908	6500	0
push net	12	10,215	1541.67	250
hand line	2	14,000	5000	0
Total	26			

3. Types of fisheries households, shown by the operation of single or plural fishing gears

Number of households was 12 households (46%) of 26 households used only one kind of fishing gear, while the others used plural kinds of fishing gears. The numbers of households operating solely push net, shallow fish corral and gill net amounted to 6 (50%), 2(17%) and 2 (17%) of 12 households, respectively (see fig. 7).

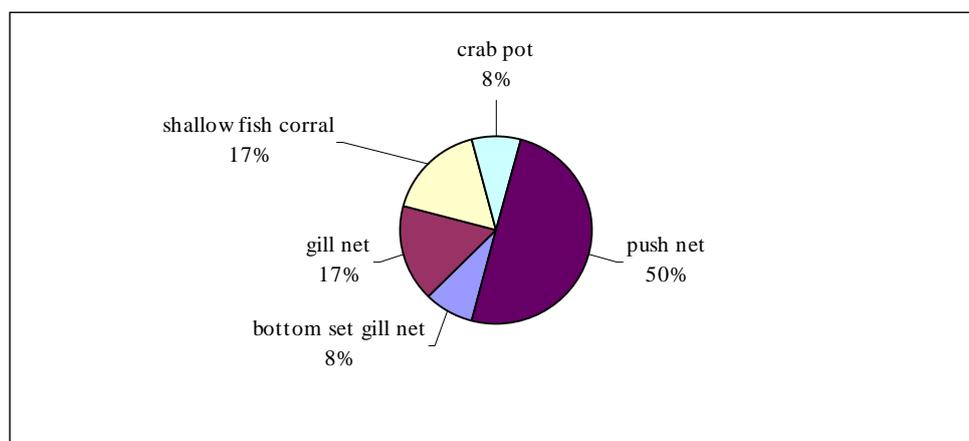


Fig. 7 Number of household engaged in first economic important fishing gear only at Alacaygan barangay

Thirteen households (54%) used plural types of fishing gears, one of which employment three types, such as bottom set gill net, push net and hand line. Twelve households employed two types. These thirteen households ranked first to bottom set gill net in economic term followed by push net.

Those households employing bottom set gill net made several patterns of combination with gill net (2), hand line (2), and push net (2) and collecting mussel (1). In the pattern where push net was the first ranked, household operated shallow fish corral(2), hand line (1), gill net (1) or beach seine(1). Yet another pattern was the combination of hand line and gill net.

There are several factors to generate the pattern of combination of fishing gears in household fisheries, to give examples, available targeted species in immediate fishing grounds, and the

financial capacity of investment by household, market demand, skill, knowledge and experiences.

According to these factors, a pattern of fishing operation on a daily basis may be formed. There are many patterns of plural-gear fishing operations. We found that fishers put two types of fishing gears into operation in the same fishing trip and/ or in a different trip within the same day. Table 13.1 illustrates the pattern of combination of bottom set gill net and hand line. A fisher operated two types of fishing gears in the same fishing trip. Fishers started with bottom set gill net. After lining the net, he operated hand line for 3-4 hours and then went back to shore. He went fishing again in the next day with hand line and hauled the bottom set gill net for harvesting crab.

Table 3 Physical practice of fishing operation pattern by combination of first and second economic important fishing gears at Alacaygan barangay

Second economic important fishing gear	First economic important fishing gear						Total
	bottom set gill net		push net		hand line		
	no. of household	pattern of operation	no. of household	pattern of operation	no. of household	pattern of operation	
beach seine	0	-	1	x	0	-	13
collect mussel	1	x	0	-	0	-	
gill net	2	o	1	x	1	o	
hand line	2	o	1	x	0	-	
push net	2	x	0	-	0	-	
shallow fish corral	0	-	2	x	0	-	
Total	7		5		1		

Remark: one-respondent engage in capture and oyster culture, not include in table 12 and table 13.

- means no combination of fishing gear

x means fishing gear operation is done in the different fishing trip

o means fishing gear operation is done in the same fishing trip

Another, example is the combination of bottom set gill net and push net. A fisher usually selected one of these two gears following the daily change of tidal water. These two gears were put into operation in a different fishing trip. Push net fishing was undertaken in seashore in front of Alacaygan at low tide.

In an economic aspect, such the combination of two types of fishing gears was to secure alternative job opportunities to gain income. The possession and operation of plural fishing gears make fishers and their family members to allocate working time more effectively.

A fishing operation changes according to fishing season. Beach seine, crab pot and shallow fish corral could operate in the whole year round (see Fig. 8). Gill net and bottom set gill net had the peak fishing season which started from September to December and sometimes fishes until February. The peak season of push net fishing was from July to December. Collect mussel operation is practiced only half year started from January to June and fully stopped for other half year from July to December.

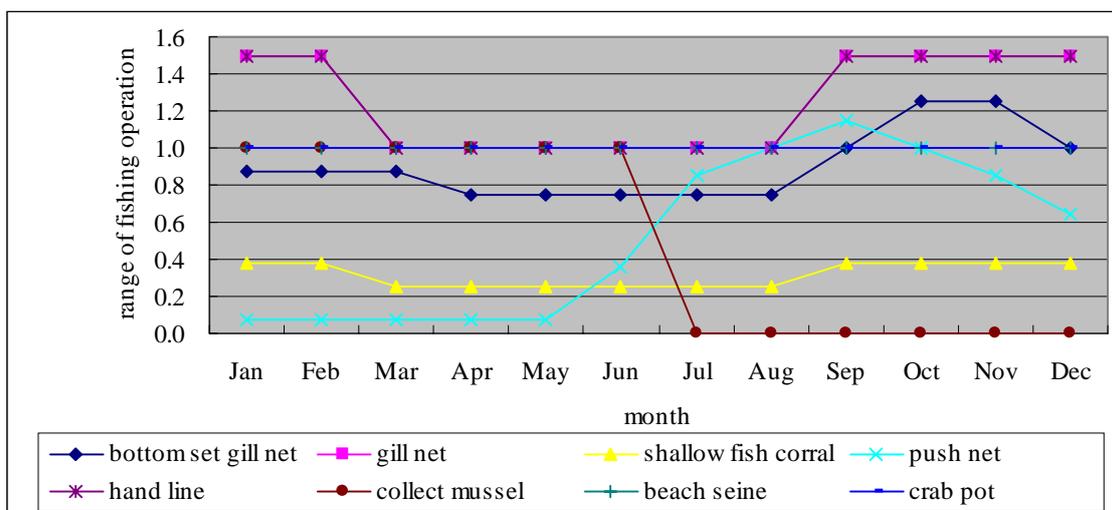


Fig. 8 Fishing gear employment by fishing season at Alacaygan barangay

4. Fisheries production and species composition

In Alacaygan, there were a number of fishing gears that fishers employed. These gears targeted a wide variety of valuable species and caught non-target species. Main target specie of push net was Acetes and shrimp, but Acetes accounted for the great majority of catch (see table 4). Bottom set gill net and crab pot targeted the same target species, blue swimming crab. A high market demand for the crab lead to an increase of blue crab exploitation and a competition between bottom set gill net and crab pot. San whiting fish was caught by gill net, shallow fish corral and beach seine (see Table 5).

5. Market channels and fisheries production distribution

We observed that there were three marketing channels of fisheries products in Alacaygan. The first channel was that fishers sold fish to traders in their immediate vicinity, consisting of Pala-palas and a crab collector. The second channel was direct sell to consumers, not passing through any intermediary. The last one was household consumption.

Table 6 shows the market channels of major species. The table affirms that the Pala-palas' wholesale markets were the major destinations of fisheries products in Alacaygan. The Pala-palas dealt in a larger volume of fish, which was three times as the total volume of crab collector's dealing and household consumption. Some fishers directly sold fresh Acetes and shrimp paste to consumers in order to get better prices, but not transporting to Pala-palas' markets. Recent years have been shown in the change of the marketing channels of blue swimming crab. We found that the crab collector rapidly increased the volume of dealing in crab, which was more than that Pala-palas dealt in.

Table 4 Fisheries production and species composition caught by first economic important fishing gear at Alacaygan barangay

Species composition	Fisheries production (kg)						Total
	bottom set gill net	gill net	shallow fish corral	crab pot	push net	hand line	
acetes	0	0	0	0	73.2	0	73.2
black pamphlet	0	0	2	0	0	0	2
blue crab	46.4	0	0	5.8	0	0	52.2
common pony fish	0	1	0	0	0	0	1
goat fish	0	2.7	0	0	0	0	2.7
goatee croaker	5	0	0	0	0	0	5
lamayang	0	5	0	0	0	0	5
latab	0	7.8	0	0	0	7.9	15.7
milk fish	0	0	1	0	0	0	1
mullet(tangkan)	0	0	2.5	0	0	0	2.5
sand whiting fish	0	2.5	2.7	0	0	0	5.2
sardine	0	0	70	0	0	0	70
shrimp paste	0	0	0	0	17.4	0	17.4
shrimps	0	0	0	0	0.2	0	0.2
thread fin bream	3.58	0	0	0	0	1.33	4.91
others	2	0	0	0	0	0	2
Total	56.98	19	78.2	5.8	90.8	9.23	260.01

Table 5 Fisheries production and species composition caught by second economic important fishing gear at Alacaygan barangay

Species composition	Fisheries production (kg)					
	gill net	beach seine	shallow fish corral	push net	hand line	collect mussel
acetes	0	0	0	114.52	0	0
blue crab	0	2	0	0	0	0
common pony fish	11.5	0	2	0	0	0
goatee croaker	0.5	0	0	0	0	0
half beck	0	0	1.5	0	0	0
monocole bream	0	0	0	0	4	0
mullet	0.5	2	0	0	0	0
mussel	0	0	0	0	0	40
sand whiting fish	4.58	3.33	0	0	3.33	0
sardine	0	0	13.5	0	0	0
shrimps	0	0	0	1.25	0	0
spanish mackerel	0	0	0	0	1	0
spotted scads	0	0	3.5	0	0	0
squid	0	0	2	0	0	0
therapun	3	0	1.5	0	0	0
thread fin bream	1.75	0	0	0	1.75	0
Total	21.83	7.33	24	115.77	10.08	40

Table 6 Fisheries production and species composition according to market channel distribution

Species composition	Market Channel				Total
	Pala-pala	crab processor	direct sale	own consumption	
acetes	61	0	12.2	0	73.2
black pamphlet	2	0	0	0	2
blue crab	11.6	34.8	0	0	46.4
common pony fish	1	0	0	0	1
goat fish	2.7	0	0	0	2.7
goatee croaker	4.5	0	1.5	1.5	7.5
lamayang	5	0	0	0	5
latab	7.88	0	0	0	7.88
milk fish	1	0	0	0	1
mullet(tangkan)	2.5	0	0	0	2.5
sand whiting fish	5.2	0	0	0	5.2
sardine	70	0	0	0	70
shrimp paste	0	0	17.4	0	17.4
shrimps	0	0	0	0.4	0.4
thread fin bream	4.74	0	0	1.33	6.07
others	2	0	0	0	2
Total	181.12	34.8	31.1	3.23	250.25

6. Capacity of fishing efforts

Capacity of fishing efforts were estimated by checking various input factors and materials, such as the number of fishing units used and their size and the number of crews. A price of fishing unit was checked too (see table 7). For example, a unit of bottom set gill net was “Paldo” (local unit). The price of bottom set gill net for one “Paldo” (about 100 meters) is 880 peso. A crab pot was about 10 pesos. It was reported that a shallow fish corral was 11,500 pesos on average. Hand line was a very simple and unique gear, whose price varied by size of hook that targets different species. Fisheries households employed both family members and non-family members for fishing operation. Push net in Alacaygan is namely “man push net” type, being manually operated without using any motorized boat. Some household possessed plural units of push nets and then hired laborers for Acetes catching. The number of fishing days in a month was inquired. By using this essential information, we roughly estimated capacity of fishing efforts by major fishing gears.

7. Income and expenditures of fishing operations

According to the questions of average catch per trip, prices of target species, direct costs for fishing operation and so on, income and expenditures were roughly calculated. Considering the number of fishing trip per month, monthly fisheries income was also estimated.

$$\text{Income} = \text{volume of catch} \times \text{No. of fishing day} \times \text{market prices}$$

Direct expenditure consisted of fuel oil, ice, bait, lubricant and others, prior to disbursement of crew wages. In Alacaygan, crew wages were calculated according to the percentage of gross income (gross income minus direct expenditures)

Table7 Number of fishing days, fishing unit and unit price of first economic ranked fishing gear at Alacaygan barangay

First ranked	No. of household	% of household	number of fishing day (days)			number of fishing unit(units)			price of fishing unit (peso)			no. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
bottom set gill net	8	31	20	30	27	1	21	14	260	1,600	880	1.25	0
crab pot	1	4	30	30	30	50	50	10	10	10	10	0	0
gill net	2	8	20	27	24	12	21	17	575	1,000	788	2	0
hand line	1	4	20	20	20	1	1	1	39	39	39	0	0
push net	12	46	7	30	20	1	3	2	300	800	477	0.5	0
shallow fish corral	2	8	30	30	30	1	1	1	3,000	20,000	11,500	0	0
total	26	100											

The percentages ranged from 30% to 50%, but the average was 33%. Crew wages was income (gross income – direct expenditure) minus crew wages.

All types of fishing gear operation gained profit, as shown in table 8. These tables indicate that shallow fish corral obtained the highest amount of gross income, but paid the least amount of expenditures. This is because those households employing this gear rarely used non-powered boats or did not use. Its operation was less costly. Push net and crab pot fishing operations were similar to shallow fish corral. By contrast, those fishers employing bottom set gill net obtained the largest amount of income among major fishing gears, but this type was cost-intensive in nature. The operation of gill net brought about the deficit with 18 pesos.

Table 8 Total income from fishing and total operational cost in a fishing trip by first economic important fishing gear at Alacaygan barangay

First ranked	No. of household	An average amount in one month					
		No. of fishing day (days)	Total landing catches (kg)	Total amount of income (peso)/(1)	Total operational cost (peso)/(2)	Crew labor wage (peso)/(3)	Income (4) = (1)-{(2)+(3)}
bottom set gill net	8	27	6.68	746	168	249	329
crab pot	1	30	3.5	350	0	0	350
gill net	2	24	6.5	212	159	71	-18
hand line	1	20	3	200	36	0	164
push net	12	20	7.395	284	20	95	170
shallow fish corral	2	30	3.25	485	18	0	468
Total	26						

8. Changes in types of fishing gears employed

We inquired a historical change in the possession of fishing gears and their gears and their operation through a simple question. Fig.9 indicates the changing processes of investment in new fishing gears and fishing operations. The period was roughly divided into two sub-periods: the first from 1995 to 2000 and the second sub-period from 2000 to 2005.

It assumes that previously, hand line and long line were major fishing gears contributing largely to a household economy in Alacaygan. However, most of fishers stopped using long line before 2000 and as of 2005 there was no household using this gear. Many fishers invested and employed crab pot and gill net during the second sub-period. Bottom set gill net, push net and shallow fish corral also had an increasing trend after 2000, too.

In Alacaygan, fisheries in Alacaygan diversified the possession and operation of fishing gears after 2000. It is thought that fishers had used to involve in push net, hand line, long line and fish corral. There appeared several essential factors to diversify fishing operations; in particular, a strong demand for blue swimming crab gave an incentive to such a diversification.

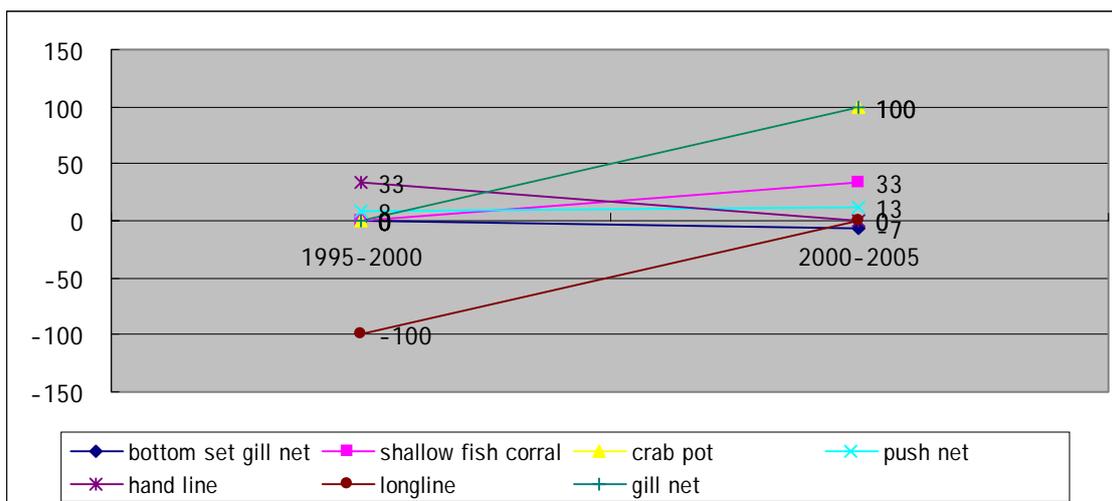


Fig. 9 Percent of change of fishing gear employment in 1995 to 2005

9. Findings of reasons for fishing gear engagement

Table 9 contains the listing of reasons to explain fishers' decision on a fishing gear selection and engagement. Each list of the reason would be responded by all households. Regarding on the reason of "low price of the fishing gear", push net households were 19.23% that they agreed with this. On the second list, push net households were still the highest percent, which amounted of 30.77%, supported this reason. The bottom set gill net fisheries were 11.54% had acceptance of third listed reason. These types of fisheries households, which were 7.96%, also agreed with the reason of "can catch much more fishes than other fishing gears".

Looking at the reason of "can catch target fishes anytime", the bottom set gill net, gill and push net households gave their opinions, which were the same numbers about 3.85%. Let's see the reason of "skillful to operate the fishing gear"; push net and bottom set gill net were 23.08% and 19.23%, respectively, agreed with. Regarding on the seventh reason, the bottom set gill net and push net numbered of 15.38% and 7.96% responded to this. On the reason of "the fishing gear is selective gear to catch proper size of catch", it found only the bottom set gill net, which was 3.85%, agreeing with this.

Summary

The socio-economic status of fisheries households was considered on household income, debt and savings. At Alacaygan barangay, a fisheries household has sources of income gained from both fisheries (73%) and non-fisheries (27%) sectors. This means that the fisheries household depends mainly on fisheries sectors. A household debt and savings indicated household economy. The findings of the survey revealed that the ratio of household debt to savings was 9 to 1 (90:10). The amounts of debt were using for the purposes of fisheries investment, child's' education and household livelihoods. Hand line, push net and gill net households were lower income households. They therefore got income from fishing operation with amounts of 167, 171 and (-57) pesos respectively in a fishing trip.

The fisheries households were 46% of total household found to use a single fishing gear. On the other hand, 54% of the total used more than one fishing gears. A single fishing gear uses from a number of gears such bottom set gill net, crab pot, gill net, push net, and shallow fish corral operations. The types of plural fishing gear use were such bottom set gill net and hand line, push net and shallow fish corral, etc. Fisheries products were used for the purposes of selling and household consumption. The Pala-pala is the major fish auctioning place opened for all kinds and species of fisheries products. The crab processor is main marketing place for crab landings distribution. During 2000 to 2005, the use of fishing gears showed an increasing trend for shallow fish corral, crab pot

and gill net. Push net and bottom set gill net had a decreasing trend. The use of hand line fishing gear has a trend of decrease continually up to the present.

Table 9 Lists of reason for selecting and engaging in first economic ranked fishing gear at Alacaygan barangay

Lists of reasons	First economic ranked fishing gear												Total	
	bottom set gill net		crab pot		gill net		shallow fish corral		push net		hand line			
	agreed	no response	agreed	no response	agreed	no response	agreed	no response	agreed	no response	agreed	no response		
1. Low price of the fishing gear unit	0.00	30.77	0.00	3.85	0.00	7.69	3.85	3.85	3.85	19.23	26.92	3.85	0.00	100
2. Low cost of the fishing gear operation	7.69	23.08	0.00	3.85	0.00	7.69	3.85	3.85	3.85	30.77	15.38	3.85	0.00	100
3. High market demand and good price of target fishes	11.54	19.23	0.00	3.85	0.00	7.69	0.00	0.00	7.69	3.85	42.31	0.00	3.85	100
4. can catch much more fishes than other fishing gears	7.69	23.08	0.00	3.85	3.85	3.85	0.00	0.00	7.69	3.85	42.31	0.00	3.85	100
5. can catch target fishes anytime	3.85	26.92	0.00	3.85	3.85	3.85	0.00	0.00	7.69	3.85	42.31	0.00	3.85	100
6. skillful to operate the fishing gear	19.23	11.54	0.00	3.85	3.85	3.85	3.85	3.85	3.85	23.08	23.08	0.00	3.85	100
7. know very well specific fishing ground	15.38	15.38	0.00	3.85	3.85	3.85	0.00	0.00	7.69	7.69	38.46	0.00	3.85	100
8. the fishing gear is selective gear to catch proper size of catch	3.85	26.92	0.00	3.85	0.00	7.69	0.00	0.00	7.69	0.00	46.15	0.00	3.85	100
9. other, please specify	11.54	19.23	3.85	0.00	0.00	7.69	3.85	3.85	3.85	19.23	26.92	0.00	3.85	100

A Small-scale Fishing Operation to Achieve Livelihoods and Household Economy: The Case of Bularan Barangay, Banate Bay, Panay Island, the Philippines

1. The status of household economy

The number of household was 15 households as sampled group of respondents for the survey in year 2005. The household's socio-economic status would generally explain through source of income. Source of loan and household saving status also describe to provide information of household economy. A household has two main sources of income come from fisheries sector and non-fisheries sector (fig.1). The households earned an income from the fisheries sectors with amounts of 5,767 pesos on average (91% of total household income). They gained amounts of income about 551 pesos on average (9% of total household income). This result means that the household here depended solely on fisheries sectors.

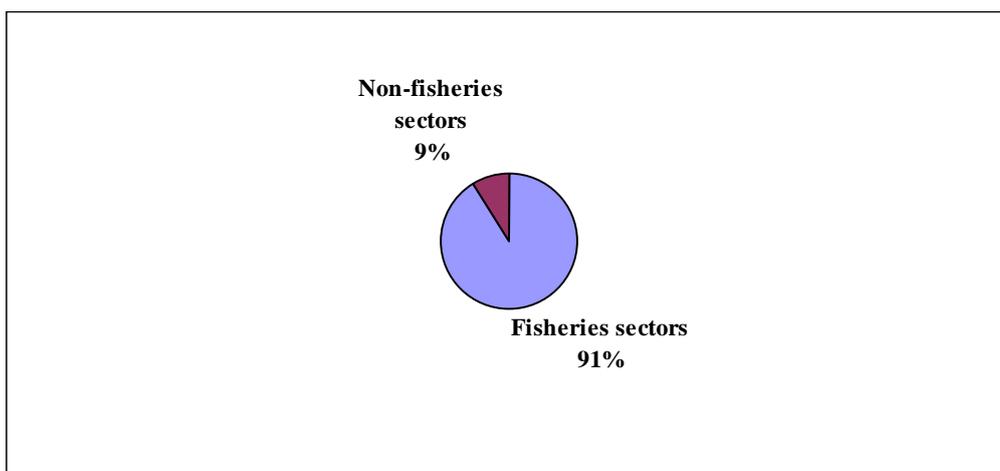


Fig.1 Source of income at Bularan barangay

Fishers are often facing problem of an investment cost deficiency. They make loan with any accessible sources. The finding results found that the respondents borrowed money from private moneylender (53% of total households), fisheries association (13% of total households), rural bank, NGOs, and neighbor (7% of total households for each source) seen in fig.2. However, there were 13% of total households had no loan. A main purpose for spending loan found only for two objects. 60% of total households cited that they spent loan for investing in fisheries sectors. Other 20% of total households clarified that they used loan for household livelihood (see fig.3).

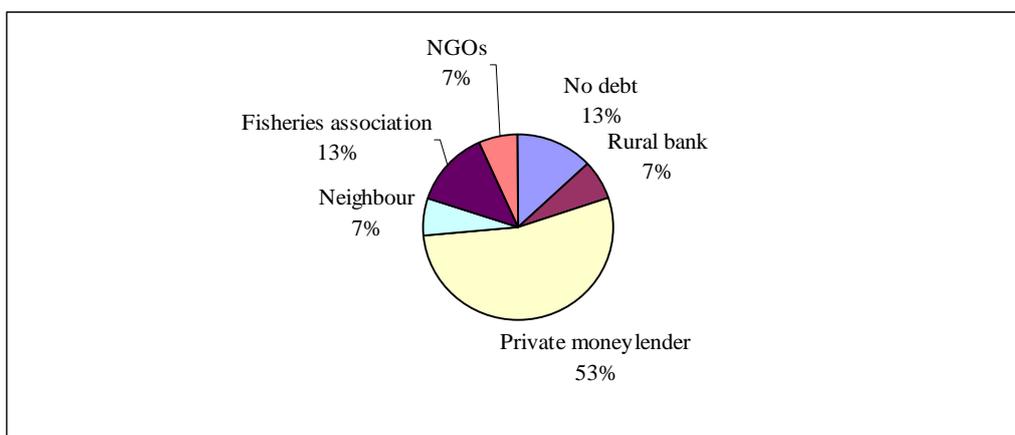


Fig.2 Number of household by source of loan at Bularan barangay

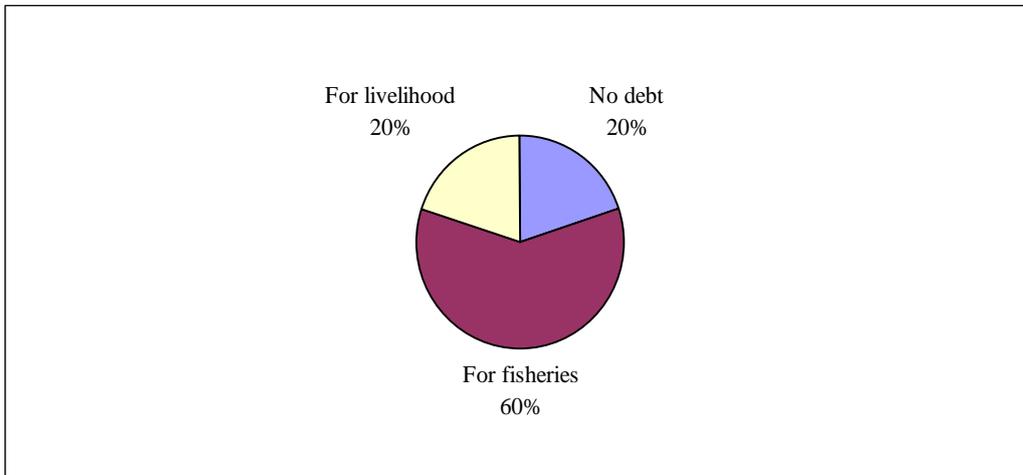


Fig.3 Number of household by purpose of loan at Bularan barangay

Considering on a status of household savings, 80% of total households have no amount of savings (see fig.4). This may be caused by a deficit of earning income. Fortunately, 13% of total households said that they have a savings amount of money kept at home. They further explained that they kept few amounts of savings money by putting in the bamboo stick at home. Other 7% of total households left have deposited their savings money to fisheries association. The purpose of savings money is for taking care of their livelihood (7% of total households) and other is for emergency (see fig.5).

Total household debt is aggregate amount of all loan made from various source. Total household savings is accumulated amount of money from the surplus of household expenditures. Total household debt and total household savings is quite different by amounts of money. A proportion of total household debt and total household savings is 98% and 2% of total amounts which are about 2,633 pesos and 67 pesos, respectively (see fig.6). An amount of debt is a constraint to stabilize household economy.

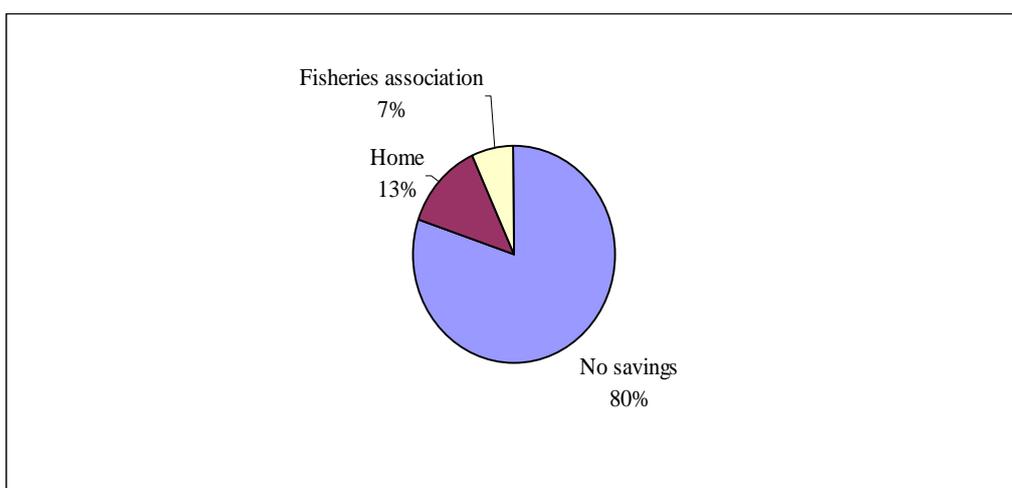


Fig.4 Number of household by source of savings at Bularan barangay

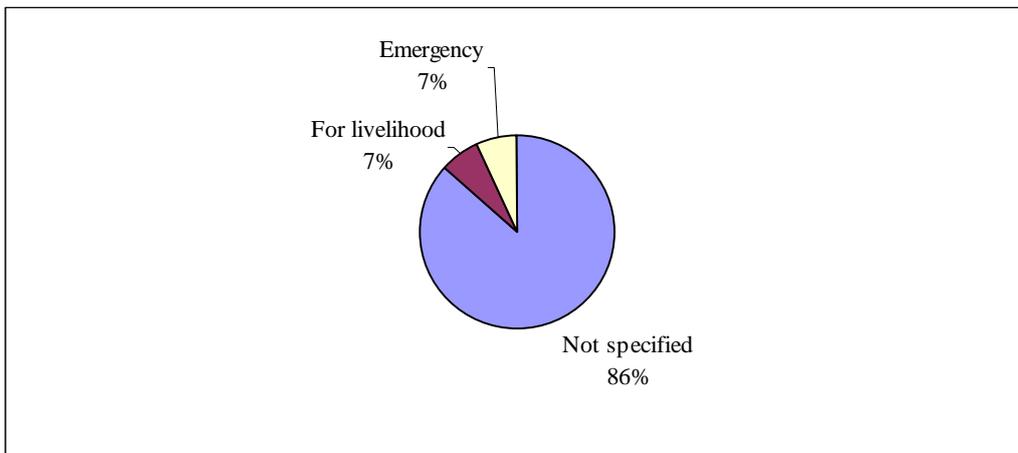


Fig.5 Number of household by purpose of savings at Bularan barangay

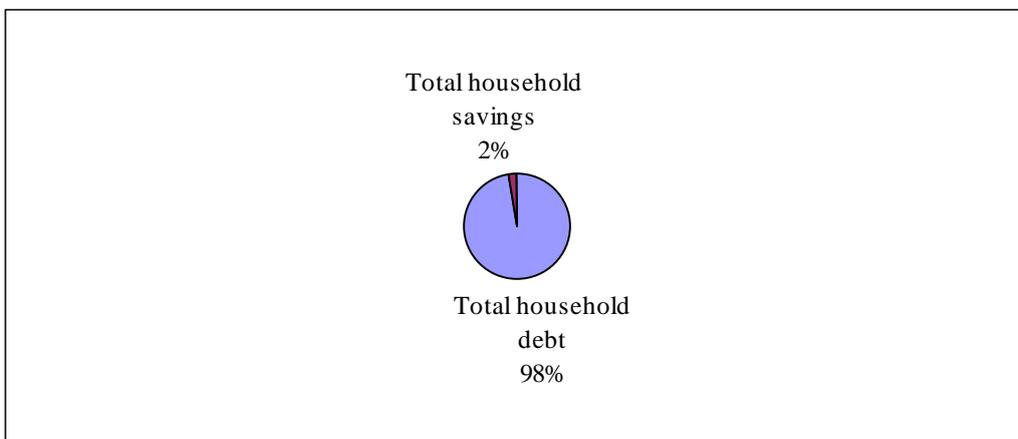


Fig.6 Total household debt and savings at Bularan barangay

2. Household income by type of establishment in fisheries

A household income of the respondent mainly considers on an amount of income aggregates from all members in the same family. The amount of household income is classified by type of head of family's establishment in fisheries. Based on the survey results, all heads of family engaged in hand line. Total household income of these households is 6,317 pesos. These amounts of income gained from fisheries sectors about 5,529 pesos and other 1,057 pesos come from non-fisheries sectors (see table 1). Other family members are contributing to earn income, but not gain much amount.

The separation of totals income, debt and savings proportion is shown in fig. 7. The proportion of total household debt was almost taken the half part of total household income. Total household debt was 2,633 pesos; while, total household income was 6,317 pesos. Therefore, all of household had very low a proportion of savings which was just 67 pesos or only one percent of total proportion.

3. Type of fisheries households

All of respondents engaged in hand line fishing gear as first economic important fishing gear. Nine households of total respondents also combined using hand line with other one type of fishing gears. Table 2 illustrates number of household used a combination of hand line and other one-type of fishing gear such bottom set gill net (38% of 9 households), push net (49% of 9 households) and long line (13% of 9 households). Table 3 displays the number of households used fishing gear more than two types. This table means 5 (33.33%) of 15 households used hand line at every household. These fishers used bottom set gill net, crab lift net and push net as the second economic fishing gear.

These fishers therefore employ in one more type of fishing gear as the third economic important fishing gear namely bottom set gill net, gill net and push net. The number of fishing gear using more than two types of fishing gear, probably, called as multi-type of fishing gear use.

The combination of more than one type of fishing gear use leads to various practical pattern of fishing operation. In case of the combination of two types of fishing gear use, there is not complicated practical pattern of fishing operation. Such combination of hand line with bottom set gill net and/ or hand line with longline can operate in the same fishing trip. But, the combination of hand line with push net has a separation of fishing operation which does not operate in the same fishing trip due to a difference of operational means and fishing ground.

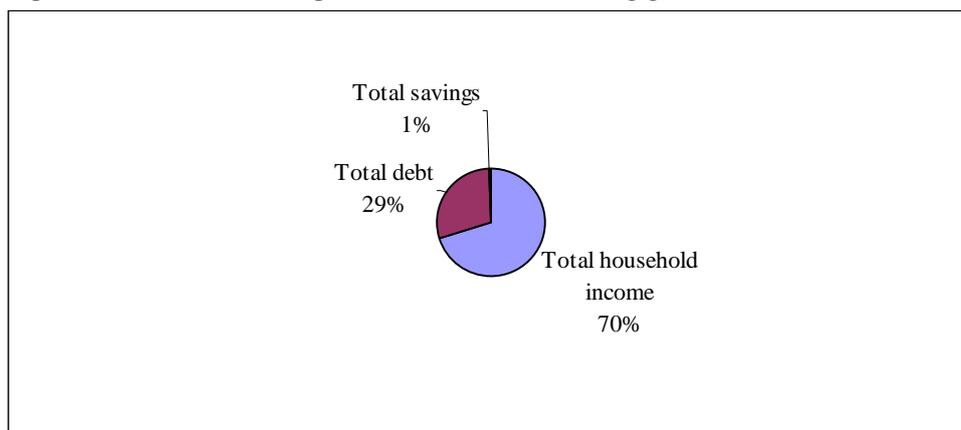


Fig. 7 Household income, debt and savings on average of hand line fisheries household at Bularan barangay

In case of multi-type of fishing gear use, fishers fundamentally operate two types of fishing gears. A couple of fishing gears probably practice in the same fishing trip or not in the same fishing trip. Hand line is mainly occupied. Fishers will select one-type of other two fishing gears left. Then, a couple of hand line and the selected fishing are operated. For instance, fishers have owned hand line, bottom set gill net and push net. They may select bottom set gill net or push net to operate by considering on tide of sea water and targeted species availability. Here, hand line and bottom set gill net can do in the same fishing trip, but hand line and push net has to fish in the difference fishing trip.

Fishers tried to create additional income in fisheries sectors by engaging in various types of fishing gears. Categories of combination of two types of fishing gears and/ or multiple-type of fishing gear are supportive facts. Then, they further earn more amount of income to secure household livelihood and improve household economy.

Fishing season of fishing gear operation depends on an availability of target species and monsoon season. This is natural condition affected to fishers decide to select the type of fishing gear operation. Actually, each type of fishing gear can operate in the whole year round such hand line and longline seen in fig.8. However, the operation of hand line is bit low during June to August annually. Other fishing gears are bottom set gill net, crab lift net and push net favored to operate in monsoon season. Bottom set gill net earlier starts fishing in April to October which is faster than other fishing gear. Crab lift net has peak fishing season during June to August. Push net fishing operation usually practices from June to September.

Table 1 A household income on average by family member contribution at Bularan barangay

Type of engagement	No. of household	Total income	Amounts of income						
			Source of income		Contribution by family member				
			fisheries	non-fisheries	head of family	second member	third member	fourth member	fifth member
hand line	15	6,317	5,259	1,057	5,423	518	362	13	0
Total	15								

Table 2 Number of household by combination of hand line with second economic important fishing gear at Bularan barangay

Second ranked	First ranked		Total
	hand line only	hand line combined with	
no engaged	1	0	1
bottom set gill net	0	3	3
push net	0	5	5
longline	0	1	1
Total	1	9	10

Table 3 Number of household by combination of first, second and third economic important fishing gear at Bularan barangay

First ranked	Second ranked	Third ranked			Total
		bottom set gill net	gill net	push net	
hand line	bottom set gill net	0	1	2	3
	crab lift net	0	0	1	1
	push net	1	0	0	1
Total		1	1	3	5

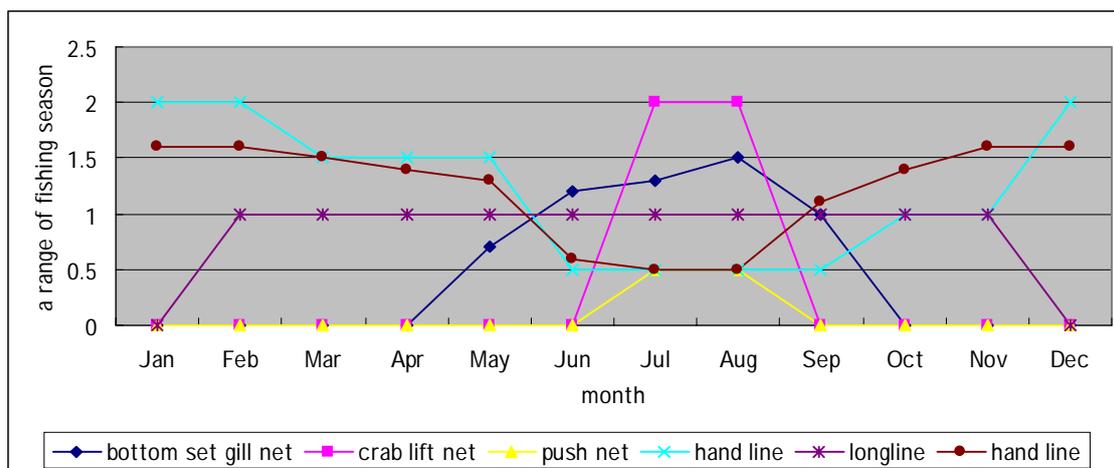


Fig. 8 Fishing gear employment by fishing season at Bularan barangay

4. Fisheries productions and species composition

A hand line is a traditional and selective fishing gear. The use of hand line with different shape of hook and size caught a specific target species. Table 4 details fisheries production in quantity and species composition caught by hand line. Spanish mackerel, thread fin bream and squid are top-three ranked species by weight of landed catches. Fisheries production landed at the Bularan barangay also found blue crab caught bottom set gill net and crab lift net (see tables 5 and 6). Certainly, acetes caught by push net. Gill net operation mainly caught mullet and threadfin bream.

Table 4 Fisheries production and species composition by first economic important fishing gear at Bularan barangay

Species composition	Fisheries production (kg)
	hand line
grouper	3
monocole bream	4
round scad	1.50
sand whiting fish	5.51
spanish mackerel	52
spotted scad	2.25
squid	18
thread fin bream	32
others	1
Total	119.56

Table 5 Fisheries production and species composition caught by second economic important fishing gear at Bularan barangay

Species composition	Fisheries production (kg)		
	bottom set gill net	push net	longline
acetes	0	11	0
blue crab	22.38	0	0
fourfinger threadfin	0	0	1
prawn	0	1	0
shrimp paste	0	6	0
spanish mackerel	0	0	0
thread fin bream	0	0	1
Total	22.38	18	2

Table 6 Fisheries production and species composition caught by third economic important fishing gear at Bularan barangay

Species composition	Fisheries production (kg)			
	bottom set gill net	Crab lift net	gill net	push net
acetes	0	0	0	45.22
blue crab	5	3.73	0	0
mullet	0	0	15	0
fourfinger threadfin brems	0	0	15	0
grouper	2	0	0	0
shrimp paste	0	0	0	0
shrimps	0	0	0	0.5
thread fin bream	3.5	0	0	0
Total	10.5	3.73	30	45.72

5. Market channels and fisheries production distribution

Distribution of several landed fisheries productions is observed by purposes and places. On purposed point, fishers caught fishes for sale and for own consumption as subsistence food. Fishers consume a low quantity of fishes compared with a quantity of fishes for sale. Many of fishers sell fishes to local immediate fish trader such pala-pala and crab processor. Some of which directly sell fishes to consumer. But, such fresh acetes was sold to other shrimp paste processor. This way is to earn a better income than sell to pala-pala.

The pala-pala takes an important role to distribute landed fisheries production to local and urban markets. Tables 7 and 9 display the route of fish distribution from fishers carried to intermediate market. The pala-pala buys a largest quantity of fishes from fishers. The pala-pala's business on buying fishes is greater than crab process and direct sale. Regarding on table 8 affirms that crab processor is gradually taking place of pala-pala to distribute crab catches to urban and international markets.

Table 7 Fisheries production and species composition according to market channel distribution at Bularan barangay

Species composition	Market channels		
	pala-pala	direct sale	own consumption
grouper	1	1	0
monocole bream	3	0	1
round scad	0	1.5	0
sand whiting fish	1.34	3.01	1.17
spanish mackerel	48	4	0
spotted scad	2.25	0	0
squid	9.5	0	4.25
tabagak	0	5	0
thread fin bream	17.055	14.044	0
others	0	1	0
Total	82.145	28.554	6.42

remark: all fisheries production caught by first economic ranked fishing gear

Table 8 Fisheries production and species composition according to market channel distribution at Bularan barangay

Species composition	Market channel			
	pala-pala	crab processor	direct sale	own consumption
acetes	5.5	0	5.5	0
blue crab	0	22.38	0	0
fourfinger threadfin	1	0	0	0
prawn	0	0	0	1
shrimp paste	0	0	2	0
spanish mackerel	0	0	1	0
thread fin bream	0	0	2	0
Total	6.5	22.38	10.5	1

remark: all fisheries production caught by second economic ranked fishing gear

Table 9 Fisheries production and species composition according to market channel distribution at Bularan barangay

Species composition	Market channel			
	pala-pala	crab processor	direct sale	private moneylender
acetes	20.86	0	24.36	0
blue crab	0	5	0	0
fourfinger threadfin	15	0	0	0
grouper	0	0	2	0
mullet	15	0	0	0
shrimp paste	0	0	0	1
shrimps	0	0	0.5	0
thread fin bream	0	0	3	0
others	0	0	1	0
Total	50.86	5	30.86	1

remark: all fisheries production caught by third economic ranked fishing gear

6. Capacity of fishing efforts

The capacity of fishing efforts is explained by number of fishing units, and number of crews. All of these information is contained in table 10 including number of fishing day and unit price of fishing gear. The table consists of three sub-tables. Each table clarifies the efforts of fishing gear, number of fishing day and price of fishing unit categorized by rank of economic important fishing gear establishment. Hand line fishers go to the sea for fishing for 25 days on average. These fishers used number of hand line (hooks) on average around 3.53 pieces with costs of 48.67 pesos a pieces. The average number of family member is 1.4 person assisted to operate hand line fishing.

Considering on table of second economic important fishing gear, bottom set gill net fishers spend 19 days to work in the sea. They have owned 2.17 units of the fishing gears on average. One unit of bottom set gill net is basically 100 meters long. Price of one unit of this gear means a price for 100 meters long which costs 1,650 pesos. Crew of this fishing gear operation is a family member and non- family member about 0.67 and 0.33 person on average. This means that some of the bottom set gill net operation does not need crew to assist. Gill net is ranked at the table of third economic important fishing gear. However, fisher operates this gear for 30 days. Number of gill net fishing unit and price for a unit is 15 units and 1,000 pesos, respectively. Number of push net fishing gear is found 1.4 and 1.3 units of second ranked and of third ranked economic important fishing gears on average. Push net fishing operation spend around 14.2 and 17 days by each priority of economic rank.

Table 10 Number of fishing day, fishing units and unit price of fishing gear by rank of economic important fishing gear at Bularan barangay

First ranked	No. of household	% of household	number of fishing day (days)			number of fishing units (units)			price of fishing unit (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
hand line	15	100	15	30	25.2	1	8	3.53	2	120	48.67	1.4	0.33
Total	15	100											

Second ranked	No. of household	% of household	number of fishing day (days)			number of fishing units (units)			price of fishing unit (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
no engaged bottom set gill net	1	7	0	0	0	0	0	0	0	0	0	0	0
crab lift net	6	40	1	30	19	1	5	2.17	0	4500	1650	0.67	0.33
push net	1	7	20	20	20	50	50	5	5	5	5	1	0
hand line	5	33	6	23	14.2	1	2	1.4	16	500	272.2	0.2	0
longline	1	7	25	25	25	1	1	1	100	100	100	0	0
Total	1	7	13	13	13	0	0	0	0	0	0	0	0
Total	15	100											

Third ranked	No. of household	% of household	number of fishing day (days)			number of fishing units (units)			price of fishing unit (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
not engaged bottom set gill net	9	60	0	0	0	0	0	0	0	0	0	0	0
gill net	1	7	17	17	17	5	5	5	200	200	200	1	0
push net	1	7	30	30	30	15	15	15	1000	1000	1000	1	2
hand line	3	20	10	26	17	1	2	1.3	300	500	433	0	0
Total	1	7	25	25	25	1	1	1	25	25	25	0	0
Total	15	100											

7. Income and expenditures of fishing operations

Income of fishing operation is computed by total income from fishing, total operational costs and wage of crew or labor in fishing. Table 11 shows that hand line earned income from the fishing gear operation about 334 pesos. A proportion of total income from fishing and total operational costs is 573 pesos and 48 pesos. Other types of fishing gear operation are such bottom set gill net, crab lift net, long line and push net benefit which is 228, 52, 430 and 190 pesos, respectively, seen in table 12. A result of table 13 details income of bottom set gill net, gill net and push net which is 524, 704, and 183 pesos. Total income is higher than total operational cost. This is main reason that fishers try to entry in fisheries as possible as they can.

Table 11 Total amount of income from fishing and total operational cost in a fishing trip by hand line operation at Bularan barangay

First ranked	No. of household	An average amount in one month					
		No. of fishing day (days)	Total landing catches (kg)	Total income (peso)	Total operational cost (peso)	Crew labor wage (peso)	Net Income (4) = (1)-{(2)+(3)}
hand line	15	25.2	27	573	48	191	334
Total	15						

remark: Total operational cost= Cost of (fueloil+ice+bait+lubricant+others)
 crew labor wage= 1/3 of total income

8. Changes in type of fishing gear employed

The trend and the current status of fishing gear employment is monitored in years 1995 to 2005. During 1995 to 2005, time was split into two periods. One was during 1995 to 2000, other was during 2000 to 2005. Fig. 9 illustrates that bottom set gill net had increased to 33% during 1995 to 2000. This fishing gear had enlarged using to 55% during 2000 to 2005, continually. Longline and gill net had a similar trend which increased from zero percent during 1995 to 2000 to 100% during 2000 to 2005. The trend of hand line increased very little which enlarged from zero percent during 1995 to 2000 to 11% during 2000 to 2005, respectively. In case of crab pot fishing gear had no any change from 1995 to 2005. Bottom set gill net had a trend of diminishing from 8% during 1995 to 2000 to 7% during 2000 to 2005.

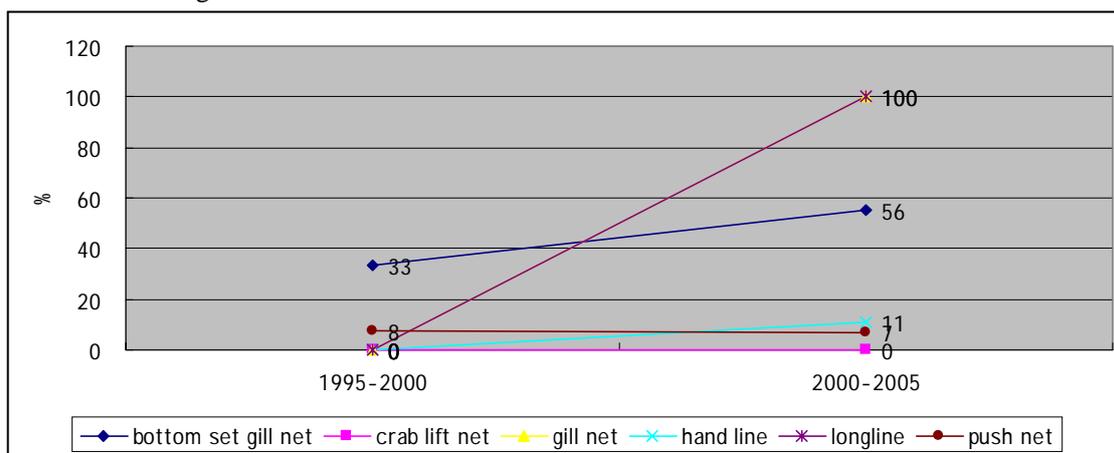


Fig. 9 Percent of change of fishing gear employment in years 1995 to 2005

9. Findings of reasons for fishing gear engagement

Nine reasons were raised to understand how fishers decided to select or engage in each type of fishing gear. Hand line is an ordinary fishing gear found every household. Many of the respondents accepted five reasons of the list. The three of five reasons were “skillful to operate the fishing gear”, “low cost of the fishing gear operation” and “low price of the fishing gear units” which amounted to 46.67%, 40% and 33.33% of total households for each reason, separately (see table 14). In addition, other fishing gear was such bottom set gill net, crab lift net, push net and longline affirmed each reason (see table 15). Among nine reasons, bottom set gill net fishers similarly numbered of 15.38% of total households accepted the second reason of “low cost of the fishing gear operation” and the sixth reason of “skillful to operate the fishing gear”. Crab lift net fishers, which were the same 7.69 % of total households, agreed with the first reason of “low price of the fishing gear” and the sixth reason of “skillful to operate the fishing gear”. In case of push net households, the similar number of 7.69% of total households mentioned on the first reason of “low price of the fishing gear unit” and the second reason of “low cost of the fishing gear operation”. Longline cited the fourth and sixth reason which amounted of 7.69 % of total households.

Summary:

The fisheries households of Bularan barangay largely depend on fisheries sectors. The sources of household income were supportive information which consisted of fisheries and non-fisheries sectors. The income gained from fisheries sectors taken 91% of total household income, while other 9% of the total derived from non-fisheries sectors. Fisheries households had the amount of total household debt greater than total household savings. Total household debt was 98% of the total and total household savings was 2% of the total. The purpose of accessed loan was for investment in fisheries and for household livelihood. A few savings amount was accumulated for livelihood and for emergency.

The number of household establishment in fisheries was categorized into three forms. Hand line, which was 100% of total households, commonly found. Within 100% of hand line households, these classified into category of hand line pulsing one type of fishing gear which amounted to 67% such hand line and bottom set gill net, push net and longline. On the other, 33% of the total were category of hand line adding two types of fishing gears such hand line, bottom set gill net and push net. The different sized hook of hand line brought up several fish landing composition, for example, Spanish mackerel, thread fin breams, etc. Push net has targeted Acetes, while crab lift net aims blue crabs.

Fisheries products landed at the barangay were for sale and for household subsistence food. The purpose of selling fish landing catches commonly found two patterns. One is fishes sold to fish collectors or wholesaler. Other is fishes directly sold to consumers. This is because fishers caught very few volume of catch and expected to receive better income. The Pala-pala and crab processor are main fish marketing places. Fishers almost brought blue crab yields to the crab processors according to receiving extra price. The Pala-pala is fish auctioning place that fishers brought all caught fishes to make auction here.

At recent, longline and gill net sharply increased to 100% and 56% during 2000 to 2005, respectively. Hand line was increasing a little the same period. Crab lift net did not change in trend since 1995. But, bottom set gill net was a decreasing trend from during 1995 to 2000 to present.

Table 12 Total income from fishing and total operational cost in a fishing trip by second economic important fishing gear at Bularan barangay

Second ranked	No. of household	% of household	An average amount					
			No. of fishing day (days)	Total landing catches (kg)	Total income (peso)/(1)	Total operational cost (peso)/(2)	Crew labor wage (peso)/(3)	Income (4) = (1)-{(2)+(3)}
no engaged	1	7	0	0	0	0	0	0
bottom set gill net	6	40	19	66	378	24	126	228
crab lift net	1	7	20	40	100	15	33	52
hand line	1	7	25	0	0	0	0	0
longline	1	7	13	143	825	120	275	430
push net	5	33	14.2	88	300	10	100	190
Total	15	100						

Table 13 Total income from fishing and total operational cost in a fishing trip by third economic important fishing gear at Bularan barangay

Third ranked	No. of household	% of household	An average amount					
			No. of fishing day (days)	Total landing catches (kg)	Total income (peso)/(1)	Total operational cost (peso)/(2)	Crew labor wage (peso)/(3)	Income (4) = (1)-{(2)+(3)}
not engaged	9	60	0	0	0	0	0	0
bottom set gill net	1	7	17	10	865	53	288	524
gill net	1	7	30	9	1,200	96	400	704
push net	3	20	17	9	301	17	100	183
hand line	1	7	25	0	0	0	0	0
Total	15	100						

remark: Total operational cost= Cost of (fueloil+ice+bait+lubricant+others)
crew labor wage= 1/3 of total income

Table 14 Lists of reason for selecting and engaging in first economic important fishing gear at Bularan barangay

Lists of reasons	Hand line (households)			Hand line (%)		
	agreed	no response	Total	agreed	no response	Total
1. Low price of the fishing gear unit	5	10	15	33.33	66.67	100.00
2. Low cost of the fishing gear operation	6	9	15	40.00	60.00	100.00
3. High market demand and good price of target fishes	0	15	15	0.00	100.00	100.00
4. Can catch much more fishes than other fishing gears	1	14	15	6.67	93.33	100.00
5. Can catch target fishes anytime	1	14	15	6.67	93.33	100.00
6. Skillful to operate the fishing gear	7	8	15	46.67	53.33	100.00
7. Know very well specific fishing ground	0	15	15	0.00	100.00	100.00
8. The fishing gear is selective gear to catch proper size of catch	0	15	15	0.00	100.00	100.00
9. Other, please specify	7	8	15	46.67	53.33	100.00

Table 15 Lists of reason for selecting and engaging in second economic ranked fishing gear at Bularan barangay

Lists of reasons	Total	No. of household		Second economic important fishing gear												Total
		not engaged	engaged	bottom set gill net		crab lift net		push net		longline		no response	Total			
				agreed	no response	agreed	no response	agreed	no response	agreed	no response					
1. Low price of the fishing gear unit	15	2	13	7.69	61.54	7.69	0.00	7.69	0.00	7.69	7.69	0.00	7.69	7.69	100	
2. Low cost of the fishing gear operation	15	2	13	15.38	53.85	0.00	7.69	7.69	0.00	7.69	7.69	0.00	7.69	7.69	100	
3. High market demand and good price of target fishes	15	2	13	7.69	61.54	0.00	7.69	0.00	0.00	15.38	0.00	0.00	7.69	7.69	100	
4. can catch much more fishes than other fishing gears	15	2	13	7.69	61.54	0.00	7.69	0.00	0.00	15.38	7.69	0.00	0.00	0.00	100	
5. can catch target fishes anytime	15	2	13	7.69	61.54	0.00	7.69	0.00	0.00	15.38	0.00	0.00	7.69	7.69	100	
6. skillful to operate the fishing gear	15	2	13	15.38	53.85	7.69	0.00	0.00	0.00	15.38	7.69	0.00	0.00	0.00	100	
7. know very well specific fishing ground	15	2	13	0.00	69.23	0.00	7.69	0.00	0.00	15.38	0.00	0.00	7.69	7.69	100	
8. the fishing gear is selective gear to catch proper size of catch	15	2	13	0.00	69.23	0.00	7.69	0.00	0.00	15.38	0.00	0.00	0.00	7.69	100	
9. other, please specify	15	2	13	23.08	46.15	0.00	7.69	7.69	0.00	7.69	7.69	0.00	0.00	7.69	100	

A Small-scale Fishing Operation to Achieve Livelihoods and Household Economy: The Case of San Francisco Barangay, Banate Bay, Panay Island, the Philippines

1. Introduction

By referring to the results of the survey conducted in 2004, we would focus on the fisheries households engaged mainly in the operation of long line. In San Francisco, the economy of fisheries households heavily depend on long line fisheries which target a few economic valuable species such Thread fin bream, San whiting fish, Goatee croaker and Grouper. Under geographic surrounding of this barangay, local people have few alternative job opportunities outside the fisheries sectors and their business activities. The result of the survey conducted in 2005 shows that fishers have started with crab pot fisheries and engaged in multi- gear fishing operations. This is a remarkable change during this year.

2. The status of household economy

The number of households interviewed was twelve. All were owner-operators of fishing boats. The average households income per year was 116,964, ranging between 38,100 and 297,600 pesos. Fifty-three (53%) of household income came from the fisheries sectors, being 7,168 pesos. Non-fisheries sectors contributed the 47% of household income, being 6,342 pesos (see fig.1).

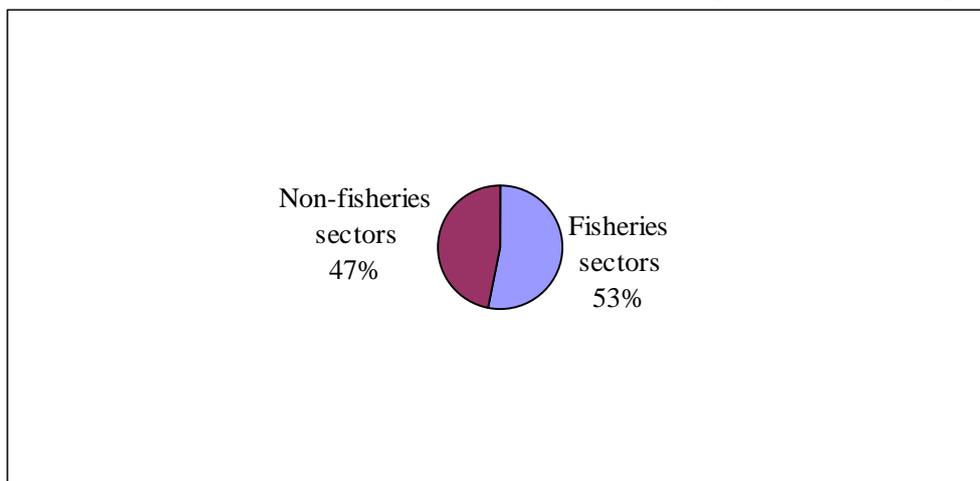


Fig.1 Source of household income at San Francisco barangay

To identify the financial situation of a fisheries household, the amounts of debt and savings were inquired. Table 1 shows the sources of loan from which respondents obtained. Except for informal sources such as friends, relatives and money-lenders, there were three main institutional sources in San Francisco, namely the fisheries cooperative, the Land Bank and the Small-scale Fisher Folk Association. The fisheries cooperative was a major source of loans from which 9 households (75%) obtained loans. The cooperative could afford to lend 10,222 pesos to a respondent on average.

Two households accessed to the Land Bank: one fisher borrowed 5,000 pesos and the other did 14,800 pesos. The Fisheries Association also provided 1,000 pesos to one fisher. The major purpose of loans was investment in fisheries. Other purposes such as livelihood, education and health accounted for 33% of the total, show in fig.2.

Table 1 Source of loan and amount of debt at San Francisco barangay

Source of loan	No. of household	% of household	Range of amounts		
			minimum amount (peso)	maximum amount (peso)	mean amount (peso)
CO-OP in San Francisco	9	75	1,000	35,000	10,222
fish association	1	8	1,000	1,000	1,000
land bank	2	17	5,000	24,600	14,800
total	12	100			

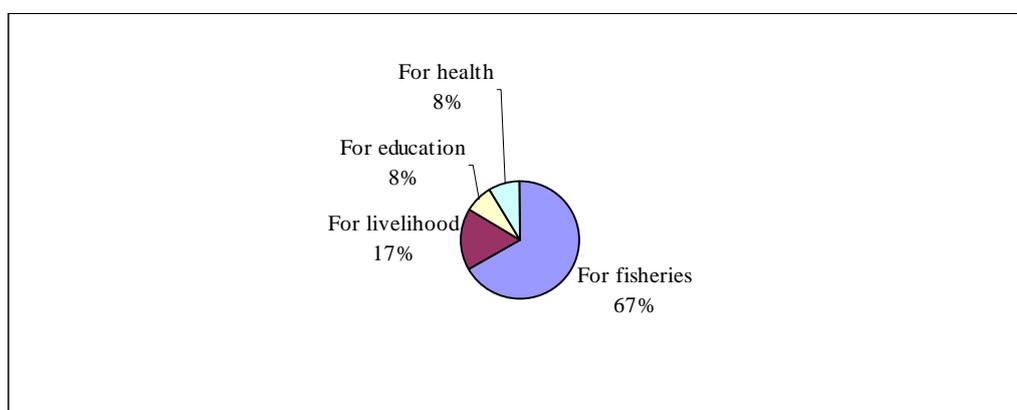


Fig. 2 Number of household by purpose of loan at San Francisco barangay

Seven (7) households had savings in the fisheries cooperative. The amount of savings per household was 4,686 pesos. Five (5) households did not have any savings (see fig.3). Purposes of savings were deposit (33%), education (17%) and livelihood (8%). Fishers regarded preparation for children's education as the main cause of deposit money in the cooperative (see fig.4).

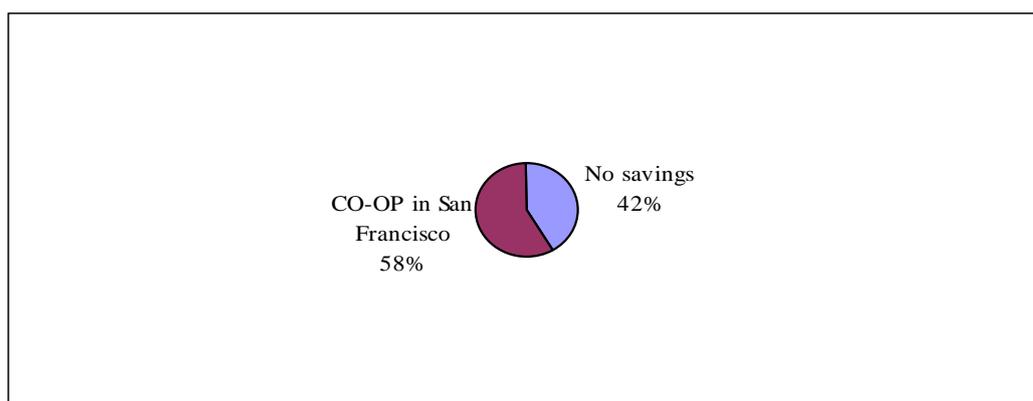


Fig. 3 Number of households by source of savings at San Francisco barangay

The aggregate of debt and savings were roughly estimated in order to check a balance of household economy. The ratio of debt and savings was 3.7 to 1. Total debt amounted to 10,817, accounted for 79% of the aggregate. Savings amounted to 2,825 pesos, being 21% (see fig.5). A household economy was not mature enough to accumulate funds for new investment in fisheries and for livelihood. As a result, formal and semi-formal institutions had a decisive role in securing money.

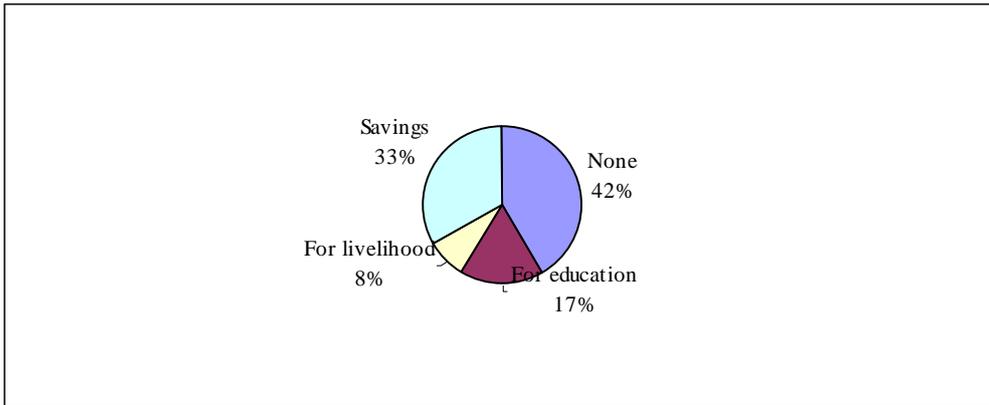


Fig. 4 Number of household by purpose of savings at San Francisco barangay

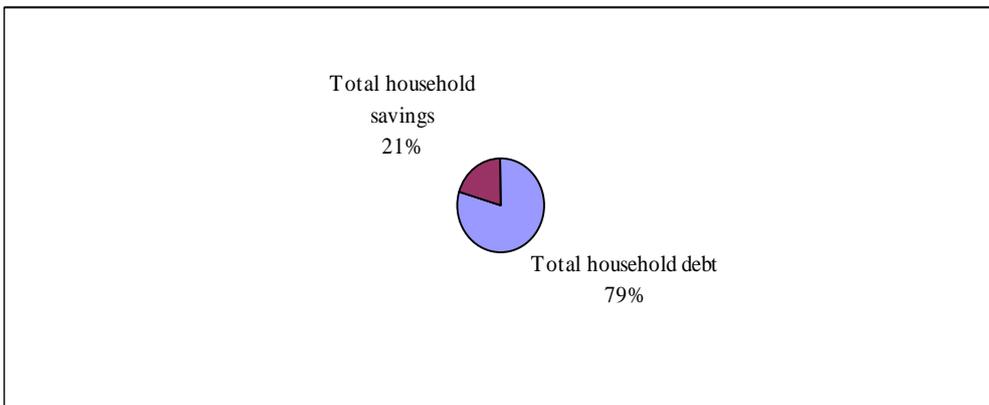


Fig.5 Total household debt and savings at San Francisco barangay

3. Household income by type of establishment in fisheries

Table 2 indicates household income on average, referring to family members' contribution and type of fisheries establishment (households). Fisheries establishment are classified according to the type of fishing gear that fishers give the first priority of economic aspect. Like the result of the baseline survey implemented in year 2004, this survey illustrates that long line establishments accounted for 58% of the total, followed by bottom set gill net (17%) and stationary lift net (18%).

It is a great surprise that crab pot fishery had been extended rapidly, even if crab pot establishment were only 2 in numbers. Stationary lift net households earned the largest amount of fisheries income with 12,000 pesos, in all types of fisheries households. This type of households gained 12,800 pesos from non-fisheries sectors. The total income reached to 24,800 pesos. Bottom set gill net households solely depended on fisheries income which was 5,680 pesos. They did not gain any income from non-fisheries sector. Crab pot and long line households earned 10,458 and 8,544 pesos of total income, respectively. Both types of household gained greater fisheries income than non-fisheries income. Crab pot obtained 9,208 pesos from

Table 2 A household income on average by self earning and family member contribution at San Francisco barangay

Type of engagement	No. of household	% of households	Total household	Amounts of income						
				Source of income		Contribution by family member				
				fisheries	non-fisheries	Head of family	second member	third member	fourth member	fifth member
bottom set gill net	2	17	5,680	0	5,305	375	0	0	0	0
stationary lift net	1	8	24,800	12,800	24,800	0	0	0	0	0
crab pot	2	17	10,458	9,208	10,458	0	0	0	0	0
long line	7	58	8,544	7,455	1,096	729	1,626	571	198	
Total	12	100								

Fisheries and 1,250 from non-fisheries sector, and long line did 7,455 pesos from fisheries and 1,096 pesos from non-fisheries sector, respectively.

Table 3 included household income debt and savings, which give a simple picture of household economy. Bottom set gill net household earned 5,680 pesos of total income, which was less than the debt of 7,000 pesos. They did not have any savings. Crab pot household also had more amount of debt than that of income. Notably, they had savings of 1,100 pesos. In stationary lift net household, total income reached to 24,800 pesos and debt was 24,600 pesos. This had the largest amount of savings with 20,000 pesos. For case of long line household, the total income was 8,548 pesos, while the total debt was 7,286 pesos. The total savings was 1,621 pesos lower than the total debt.

Table 3 Household income, debt and savings on average by type of household establishment in fisheries at San Francisco barangay

Type of engagement	No. of household	Total income	Total debt	Total savings
bottom set gill net	2	5,680	7,000	0
stationary lift net	1	24,800	24,600	20,000
crab pot	2	10,458	20,100	1,100
long line	7	8,548	7,286	1,621
total	12			

4. Types of fisheries households, identified by the single and/or plural fishing gears

Classification of fisheries household is undertaken by referring to the number of fishing gears fishers use. There are two types of fisheries households: single-gear and multi-gears. Fig. 6 presents the number of fisheries household with using a single fishing gear. This figure displays a proportion of type of single gear use in percent which found 50% and 50% of long line and stationary lift net.

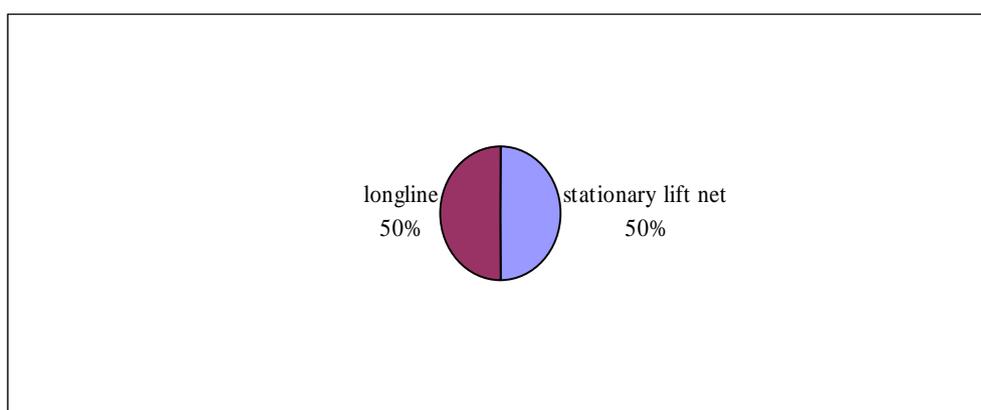


Fig. 6 Number of households engaged in first economic ranked fishing gear only at San Francisco barangay

Households operating plural types of fishing gears are grouped into Group 1 and Group 2. Group 1 is the group of household operating only two types of fishing gears. Group 2 is that of households with more than two types of fishing gears.

In Group 1, there were several patterns of combination of two types of gears, such as bottom set gill net and crab pot, and crab pot and gill net (see fig.7). The combination of long line and crab pot was

the major pattern. The combination of gill net and crab pot was only one in number.

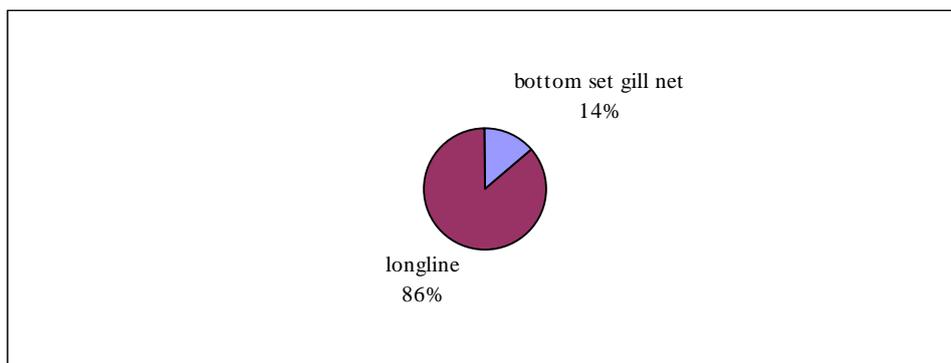


Fig.7 Number of households engaged in first economic ranked fishing gear combined with crab pot at San Francisco barangay

Group 2 consists of two households only. One household used bottom set gill net, crab pot and gill net. The other used crab pot, gill net and long line (see table 4). According to our interviews, there were the numbers of operational patterns of plural fishing gears. Fishers flexibly varied operational patterns. In general, each pattern and practice occurs due to various factors: fishing season brings a monthly basis of fishing operation, while sea tidal water strongly effects to a daily basis of fishing operation.

Table 4 Number of household engaged in a combination of first, second and third economic important fishing gear at San Francisco barangay

First ranked	Second ranked	Third ranked		Total
		gill net	long line	
bottom set gill net	crab pot	1	0	
sub-total		1	0	1
crab pot	gill net	0	1	
sub-total		0	1	1
Total				2

Such a combination of bottom set gill net and crab pot operation is an example of daily basis operational pattern. Both of these gears have the same targeted species as blue crabs. The bottom set gill net is operating beforehand with lining down the net into the sea. The number of crab pots is deployed after finished lining down of bottom set gill net. These gears are harvested in the next trip after one night past. Such patterns of combination of plural gears spend two days for a set of fishing trips.

There was one household using three kinds of fishing gears, namely crab pot, gill net and long line. Naturally, any fisher considers fishing season of each gear. These three gears can be put into operating in the whole year, especially long line (see fig.8). Of course, each gear has a different fishing period; June to February for gill net, September to December for crab pot. Gill net and long line can be operated in the same day. In the case of crab pot with long line or crab pit with gill net, fishers had a different fishing trip. Crab pot operation would be undertaken in the next day after he used other two gears.

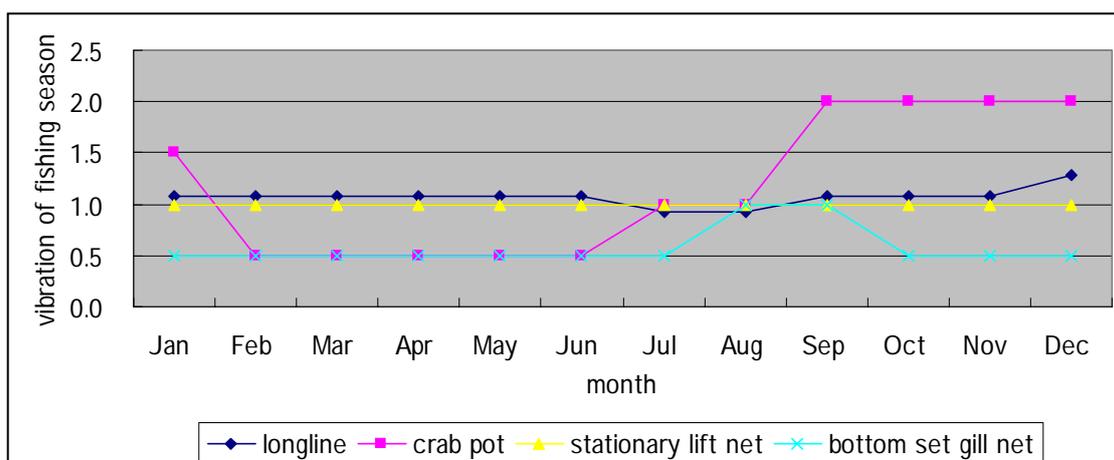


Fig.8 Fishing gear employment by fishing season at San Francisco barangay

As the 2004 survey indicates, in San Francisco, long line has been widely used for a long time. This gear, which is a means of traditional fishing technology, is less costly. Thus, fishers easily employ in this gear larger than other fishing gear.

5. Fisheries production and species composition

Landing and species composition were sorted by type of fishing gear operation. Blue crabs were targeted by bottom set gill net and crab pot, as seen in table 5. The stationary lift net mainly caught squid, goatee croaker and common pony fish. Long line used a different shape of hook to catch various economic valuable species such sand whiting fish, goatee croaker, and thread fin breams. Table 6 shows the fish production caught by the second third ranked fishing gears.

Table 5 Fisheries productions and species composition by first economic important fishing gear at San Francisco barangay

Species	Fisheries production (kg)			
	bottom set gill net	stationary lift net	crab pot	long line
blue crab	6.4	0	12.8	0
common pony fish	0	2	0	0
four finger threadfin	0	0	0	0
goatee croaker	0	1.5	0	41.5
grouper	0	0	0	4.2
half beck	0.9	0	0	0
sand whiting fish	0	0	0	57.5
squid	0	8	0	0
thread fin bream	5	0	0	24.5
others	0	0	0	0
Total	12.3	11.5	12.8	127.7

Table 6 Fisheries productions and species composition by second economic important fishing gear at San Francisco barangay

species	Fisheries production (kg)	
	gill net	crab pot
blue crab	0	41.3
common pony fish	1.5	0
goatee croaker	7	2
mullet	2.5	0
sand whiting fish	5	3
thread fin bream	7	7
others	0	1.3
Total	2	8

6. Market channels and fisheries production distribution

Not like other barangays, fishers in San Francisco marketed fish through the fisheries cooperative. Non-member dealt with the cooperative's marketing business, too. This business bought all kinds of fish products. In our interview, the volume of respondents dealing with the cooperative was twice as much as direct sale (see table 7). Grouper, squid and blue crab were the main species to be sold to the fisheries cooperative. It transported all collected fish to Pala-palas' wholesale market and other buyers.

Table 7 Fisheries production and species composition according to market channel distribution at San Francisco barangay

Species	Market channels			
	not specify	direct sale	CO-OP	own consumption
blue crab	102.4	0	60.8	0
common pony fish	0	0	4	0
four finger threadfin	0	0	25	0
goatee croaker	0	81.5	4.5	0
grouper	0	85	195.5	0
half beck	0	0	0	0.9
sand whiting fish	0	50	12	0
squid	0	0	64	0
thread fin bream	0	10.5	36.75	0
others	0	0	0	0
Total	102.4	227	402.55	0.9

remark: all fisheries productions caught by first economic ranked fishing gear

Some fishers directly sold to consumers. They got more benefit from direct sale to consumers. Species were grouper, goatee croaker and sand whiting fish. Meanwhile, the estimated volume of household consumption was only 0.9 kg.

As of August, 2005, the marketing channels of blue crab were not identified; however, a large part of crab collectors in Banate through the cooperative. The fisheries cooperative provides an immediate

fish marketing channel to fishers in San Francisco. It adopts a principle of cooperative movement. A surplus gained through fish marketing and trade will be refunded to members. A distributed refund considers basically on quantity of fish sold to the cooperative. The amount of refund and incentive coming from fish sale are strategy to attract members to sell more fishes to the cooperative.

7. Capacity of fishing efforts

A capacity of fishing efforts fundamentally consists of numbers of fishing unit, and crew for each type of fishing gear. Table 8 shows fishing units, crews, fishing days and price of fishing gear unit. Bottom set gill net was around 7 prado (100 meters = 1 prado) on average. Its price per prado was 227.5 pesos. A stationary lift net was about 23,000 pesos. The operation of this gear hired four crews who were not family members. The operation of crab pot households had 190 pots on average. One pot was 10.5 pesos. Long line or bottom set of long line had around 137.29 pesos hooks a unit. The price of the long line was 367.71 pesos on average. The number of accompanied crew was 1.29 persons, were family member.

Stationary lift net could fish around 24 days in a month. Bottoms set gill net and crab pot was put into operation only for 20 and 22.5 days in a month, respectively. Long line spent 19.71 days for fishing.

8. Income and expenditures of fishing operation

Table 9 provides a detail of gross income and total operational cost, and net income per a fishing trip. These costs and incomes were calculated by type of fishing gear. Each type of fishing gear gained total income from fishing operation more than total operational costs. Crab pot fishing, it spent only 79 pesos for fuel oil, bait and so on, but it gained total income about 618 pesos. Crew wage of this gear shared 206 pesos; fisheries income amounted to 333 pesos.

Income obtain from the fishing operation of logline was 66 pesos on average. The household involved in this fishery earned 489 pesos of gross income. Total direct costs and crew wage were 260 and 163 pesos, respectively. Bottom set net earned an income of 160 pesos and spent 271 pesos for costs. Stationary lift net got 292 pesos of income and its operational cost was 188 pesos.

9. Type of fishing gear displacement

The survey checked a change of fishing gear use from 1995 to 2005. Fig.9 illustrates a change in two periods: from 1995 to 2000 and from 2000 to 2005. Long line sharply decreased 33% in 1995 to 2000, but this gear increased by 50% in 2000 to 2005. Bottom set gill net increased from 0% in 1995 to 50% in the second period. Crab pot shown an increasing trend from 50% to 67%. Gill net diminished 25% during the period from 1995 to 2000, but increased 25% from 2000 to 2005. Stationary lift net increased by 8% in the period of 2000 to 2005.

10. Findings reason of fishing gear engagement

Table 10 shows reasons for choosing the first economic important fishing gear. In case of long line, three main reasons were explained. Fishers said that they were skillful to operate the fishing gear (33.33%), a high market demand and good price of target species (25%) and low cost of operation (25%). Those fishers starting with crab pot fishery mentioned that a high

Table 8 Number of fishing day, fishing units, price of fishing unit and crew by type of fishing gear at San Francisco Barangay

	No. of household	% of household	No. of fishing day (days)			No. of fishing units (units)			Price of fishing gear (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
First ranked													
bottom set gill net	2	17	15	25	20	4	10	7	215	240	227.5	0.5	0
stationary lift net	1	8	24	24	24	1	1	1	23000	23000	23000	0	4
crab pot	2	17	22	25	22.5	180	200	190	10	11	10.5	1	0
long line	7	58	14	30	19.71	1	500	137.29	45	700	376.71	1.29	0.14
Total	12	100											

	No. of household	% of household	No. of fishing day (days)			No. of fishing units (units)			Price of fishing gear (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
Second ranked													
not engaged gill net	2	17	0	0	0	0	0	0	0	0	0	0	0
crab pot	2	17	10	15	12.5	1	300	150	250	250	250	0.5	0.5
Total	8	67	10	26	19.25	1	300	161.38	10	12	11.5	1	0

	No. of household	% of household	No. of fishing day (days)			No. of fishing units (units)			Price of fishing gear (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
Third ranked													
not engaged gill net	10	83	0	0	0	0	0	0	0	0	0	0	0
long line	1	8	7	7	7	3	3	3	1500	1500	1500	1	0
Total	1	8	10	10	10	400	400	400	590	590	590	1	1

	No. of household	% of household	No. of fishing day (days)			No. of fishing units (units)			Price of fishing gear (peso)			No. of crew	
			min	max	mean	min	max	mean	min	max	mean	family	non-family
Fourth ranked													
not engaged long line total	11	92	0	0	0	0	0	0	0	0	0	0	0
	1	8	2	2	2	1	1	1	400	400	400	0	1
	12	100											

Table 9 Total income from fishing and total operational cost in a fishing trip by first to fourth economic important fishing gear at San Francisco barangay

First ranked	No. of household	An average amount in a fishing trip					
		No. of fishing day (days)	Total landing catches (kg)	Total income (peso)/ (1)	Total operational cost (peso)/ (2)	Crew labor wage (peso)/ (4)	Income (4) = (1)-{(2)+(3)}
bottom set gill net	2	20	5.5	648	160	216	271
stationary lift net	1	24	24	720	188	240	292
crab pot	2	22.5	5	618	79	206	333
long line	7	19.71	20	489	260	163	66
Total	12						
Second ranked							
not engaged	2	0	0	0	0	0	0
gill net	2	12.5	10	563	136	188	239
crab pot	8	19.25	7	594	277	198	118
Total	12						
Third ranked							
not engaged	10	0	0	0	0	0	0
gill net	1	7	7	850	186	283	381
long line	1	10	13	670	108	223	339
Total	12						
Fourth ranked							
not engaged	11	0	0	0	0	0	0
long line	1	2	6.5	520	226.1	173	121
total	12						

remark: Total operational cost= Cost of (fueloil+ice+bait+lubricant+others)

crew labor wage= 1/3 of total income

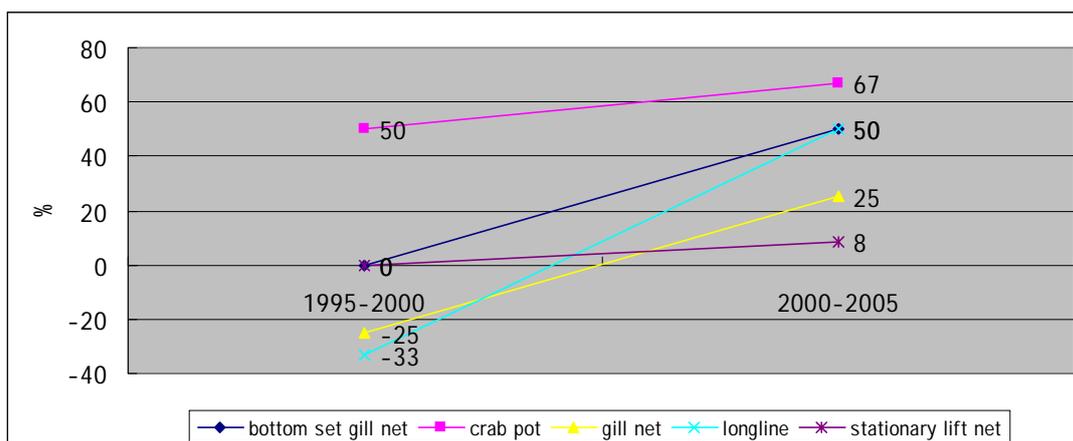


Fig. 9 Number of fishing gear displacement in years 1995 to 2005 at San Francisco barangay

Table 10 Lists of reason for selecting and engaging in first economic ranked fishing gear at San Francisco barangay

Lists of reasons	First economic ranked fishing gear												Total
	bottom set gill net		stationary lift net		crab pot		long line						
	agreed	no response	agreed	no response	agreed	no response	agreed	no response					
1. Low price of the fishing gear unit	0.00	8.33	8.33	0.00	0.00	0.00	25.00	0.00	58.33				100
2. Low cost of the fishing gear operation	0.00	8.33	8.33	0.00	0.00	0.00	25.00	25.00	33.33				100
3. High market demand and good price of target fishes	0.00	8.33	0.00	8.33	0.00	25.00	0.00	25.00	33.33				100
4. Can catch much more fishes than other fishing gears	8.33	0.00	8.33	0.00	0.00	0.00	25.00	8.33	50.00				100
5. Can catch target fishes anytime	0.00	8.33	8.33	0.00	0.00	0.00	25.00	0.00	58.33				100
6. Skillful to operate the fishing gear	0.00	8.33	0.00	8.33	0.00	0.00	25.00	33.33	25.00				100
7. Know very well specific fishing ground	0.00	8.33	0.00	8.33	0.00	8.33	16.67	8.33	50.00				100
8. The fishing gear is selective gear to catch proper size of catch	0.00	8.33	0.00	8.33	0.00	0.00	25.00	0.00	58.33				100
9. Other, please specify	0.00	8.33	8.33	0.00	0.00	16.67	8.33	25.00	33.33				100

Market demand and good price of target fishes were very attractive (25%). Also they knew fishing grounds very well (8.3%). In case of stationary lift net, there were three reasons such as a low cost of fishing gear (8.3%), a large amount of catch (8.3%), and target fishes available anytime (8.3%). Meanwhile, those fishers engaged in bottom set gill net mentioned a larger amount of catch than other fishing gears.

Summary:

Fisheries households at San Francisco barangay also have a similar source of income as fishers lived in Alacaygan and Bularan barangays. Three-fourth (74%) of total income gained from fisheries sectors and about one-fourth (26%) of the total received from non-fisheries sectors. The ratio of total household debt and savings found in the barangay were 79% to 21%, respectively. Main purposes of loan were for investing in fisheries and for livelihood expense. On the other hand, savings was for providing of children's education.

Several types of fishing gear were found at San Francisco. Therefore, a household used single-gear and/ or multi-gear in number to employ in fisheries. A single-gear use household was stationary lift net and long line which amounted to one household for each type. Other ten households interviewed were plural-gear use households. These households composed of two sub-groups. Group 1 is the household using only two types of fishing gears such as bottom set gill net and crab pot and long line and crab pot, crab pot and gill net. Group 2 is the group of household using more than two types of fishing gears. The example of Group 2 is crab pot, gill net and long line.

All landing fish products caught by local fishers were mainly sold to fisheries cooperatives. The fisheries cooperative is taking role as community- fish marketing managers. It provides service on fish trading business and distribution to member and non-member local fishers. Normally, member fishers receive amounts of refund which is a surplus gained from fish marketing and trade. Received amount of refunds is varied by quantity of fishes sold to the cooperative. This is a unique type of self- marketed management for fish trade to bring a reasonable amount of income and benefit for the members

At present, local fishers favored to use crab pot fishing gear according to higher market demand for blue crabs in adjacent fishing communities. Similarly bottom set gill net increased from 0% in 1995-2000 periods to 50% in the period of 2000 - 2005. Long line and gill net fishing gears had decreased trends in 1995 to 2000, but progressively increased at present. Use of stationary lift net just started using during 2000 to 2005 period.

Part III

New Trends of Coastal Fisheries in San Francisco: Roles and Functions of Barangay-based Organizations in Fisheries Development

**Current Situation of Fisheries in San Francisco, Barotac Viejo:
Results of 2004 Survey**

1 General Information

Barangay San Francisco is located in Barotac Viejo, whose household economy is heavily dependent on fisheries and fisheries-related business. The number of households is 160 with the total population being 870. Almost all households are, more or less, involved in fisheries. There are not many households engaged in agriculture, due to the scarcity of agricultural land resources. The area of paddy fields amounts to 14 ha only. People have tended to concentrate their effort for the development of capture fisheries. The number of fishers is 132, all having registered as “fishers” defined by the BBRMCI.

Generally speaking, the living and producing conditions of San Francisco is worse compared to Bularan and Alacaygan. Alternative job opportunities outside fisheries are scarce. Part-time fisheries can hardly survive. Level of household income seems lower than other barangays, since household economy has less incentive to diversify its income sources.

Fishers have so far suffered from vulnerable marketing conditions of fisheries products, such as long distance from the municipal town and terrible road conditions accessing to Banate’s markets where most of fishers transport their catch. Not many buyers had appeared to purchase fisheries products unloaded until a fishery cooperative was established in 1996.

People in San Francisco are likely to cooperate together to solve such economic disadvantages. They have joined many types of both self-help and government-sponsored organizations, to name a few, fishery cooperative, small-scale fisher folk association, and women’s association. They actively participate in these barangay-based organizations and gain benefits from their economic and social activities. Moreover, BFARMC in San Francisco is one of the most active one among all BFARMCs in four municipalities, through which local people can avail information on resource management in the Banate Bay.

2 Current Situation of Fisheries: The Results of Household Survey in 2004

2.1 Fisheries Households and Major Fisheries

According to the statistical data of BBRMCI, the number of fishers in San Francisco was 60: all were categorized as full-time fishers. Boats amounted to 62, out of which 47 boats were motorized. The major fishing gear was long line, being 38 in number with 458 % of the total. The next was gill net, followed by encircling gill net. These three gears accounted for 88% of the total. The extent of concentration on particular type of fishing gears, targeting valuable species, was

very high like other barangays in the Banate Bay.

Table 1 Number of Fishers in San Francisco

Unit: No.

	Full-time Fishers	Part-time Fishers	Total
San Francisco	60	0	60
Barotac Viejo	282	24	306

(Source) BBRMCI

Table 2 Ownership of Fishing Boats in San Francisco

Unit: No.

	Motorized	Non-motorized	Total
San Francisco	47	15	62
Barotac Viejo	143	142	285

(Source) BBRMCI

2.2 Level of Income and Income Sources

In 2004, we made a sampling survey by cluster randomized system in San Francisco. This survey targeted 18 fisheries households, consisting of 16 owner-operator and 2 boat-crew households. The number of family members ranged from 3 to 10, being 5.6 persons on average. All heads of the families engaged in fisheries and fisheries-related activities. As far as owner-operators were concerned, full-time fisheries households amounted to 6 while part-time fisheries households amounted to 10. No family was categorized into the income group with more than 10000 peso per month. Nine families belonged to the group with income ranging from 5001 to 10000 peso, while the remaining had less than 5000 peso.

Those fisheries households in San Francisco were more likely to engage in fisheries on full-time basis, less likely to diversify their income sources. Capture fisheries contributed the major part of income sources (70%), with exception of one family. The fisheries and their related activities were providing with primary jobs in San Francisco. They lacked alternative job opportunities outside capture fisheries.

Table 3 Type of Households and Range of Income in San Francisco

Unit: No., %

Range of monthly income	Full-time fisheries households	Part-time fisheries households	%
<5000	6	2	20.0
5001-10000	0	8	80.0
>10000	0	0	0.0
Total	6	10	100

Table 4 Income Sources and Occupations in San Francisco

Number of income sources	type of income	frequency
one	fisheries	6
two	fisheries + agriculture	1
	fisheries + fish trading	3
	fisheries + agriculture	1
	fisheries + self employed	2
	agriculture + fisheries	1
three	fisheries + fish trading + government employee	1
	fisheries + government employee + self employed	1

Only two families were classified into as crews. They did not have any fishing boats, but they were hired by boat owners. The remaining fishers (households) were owner-operators, whose boats were inboard types equipped with engines. The total number of fishing boats was 22, out of which only one boat was not yet registered. The length of boat ranged between 6 and 30 feet. Boats with 16-20 feet in length amounted to 10, while the boats with more than 20 feet were 6 in number. The power of engine was very small, 15 boats being less than 10 HP. Compared to Alacaygan and Bularan, boats in San Francisco were relatively larger in size with more powered engines. Nineteen boats were in use between 1 and 5 years, as a whole, many of the boats were newly constructed. Cost of constructing (buying) one boat was less than 10,000 peso, although investment cost differs from boat to boat.

Table 5 Possession of Fishing Boats

(1) Length of boats (feet)

Total	6-10	11-15	16-20	21-25	26-30	unknown
22	1	4	10	3	3	1

(2) Horse power of engine

Total	1-5	6-10	11-15	16-20	21-25	26-30
22	5	10	0	7	0	0

2.3 Less Diversification of Fishing Operation

Long line was the most significant gear in San Francisco. Thirteen households employed this gear through the whole year, targeting mainly Thread fin bream, Sand whiting, Goatee croaker, and Grouper which were high valuable species in markets. As a whole, the fishers that employed long line depended heavily on one or two species from such species as Thread fin bream, Sand whiting, and Goatee croaker. Gill net was ranked at the second, but only three fishers used it. The main fish that gill net caught were Common pony fish and others.

Table 6 Gears Often Used in San Francisco

	1st rank	2nd rank	3rd rank
longline	14	1	0
gill net	1	2	1
bottom set gill net	1	0	0
hand line	1	0	0
encircling gill net	1	0	0
crab pot	0	1	0
No answer	0	14	17

It appears that fishers concentrated on the single use of the first ranked fishing gear in the same way as did fishers in other barangays. Fishers did not diversify the patterns of fishing operation by using plural fishing gears; only 6 households used plural gears. There was not much seasonal change in fishing operation in San Francisco, but they were engaged in the operation of long line all

the year around.

The operation of long line targeted high valuable species. Thread fin bream was the most important target by the long-line fishers among other important species. It seems strange that fishers were likely to continuously use a single fishing gear for catching one or two particular species, even if these might have seasonal changes of resource abundance.

Total catch per trip ranged from a 2-3 kg of minimum during the lean season to a 10-15 kg of maximum in the peak season. There was a gap between maximum and minimum of catch per trip, although this might not be so large as Alacaygan and Bularan showed. The figures tabulated indicate that the fishers in San Francisco had acquired almost at the same level of fishing technology since there was not much difference as regards volume of catch per trip between them.

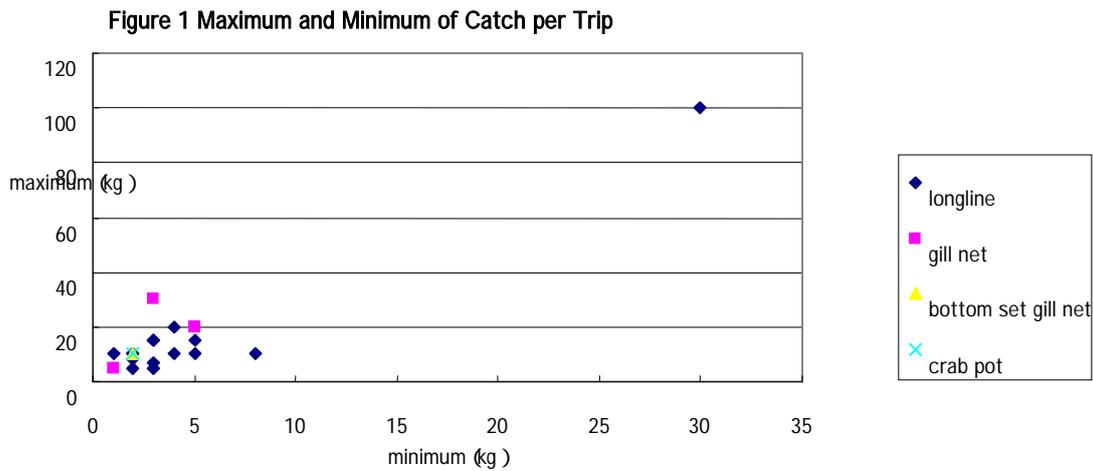
Table 7 Species Caught in San Francisco

(1) Longline

	1st rank	2nd rank	3rd rank
Thread fin bream	13	1	1
Goatee croaker	1	4	5
Fourfinger thredfin	1		
Sand Whiting		5	5
Grouper		3	1
No answer		2	3

(2) Gill net

	1st rank	2nd rank	3rd rank
Common pony fish	2	1	
Sand Whiting		1	
Scad		1	1
Therapun		1	
Others	2		
No answer			3



2.4 Heavy Dependence on Fisheries Income

The average income per trip differed from season to season. During peak season, fisheries households earned 1559 peso per trip as a maximum, while they often suffered a small catch with a 308 peso of low income on average. This is a very large gap. In lean season, in spite of not much change in daily income, they encountered low catch and low income that ranged between 100 and 330 peso. Such a low level of fisheries income could not cover expenditures, thereby making fisheries households face a difficulty in accumulating funds for a new investment. In addition, boat crews might be forced to be stuck to the “vicious circle of poverty” due to a very low level of wages, which were calculated according to the fisheries income deducting direct costs from gross revenue.

Fisheries households in San Francisco could earn more income than those in other two barangays, while they need to spend more expenditure. In fact, the operation cost for long line fishing were 291 peso, consisting of fuel, lubricant oil, bait, ice and so on. Following the fuel and gas, bite was ranked at the second, accounting for 35.2 % of the total cost. Ice had a small portion of costs, but fishers usually brought ice to fishing grounds to keep freshness of fish. In a much contrast, those households in Alacaygan spent 198 peso per trip; they spared neither for bite nor for ice, since their fishing activities were mainly push net, gill net and fish coral. In Bularan, a number of fishing boats were not motorized, by which many fishers engaged in hand line near seashore. Cost-extensive fisheries were extended widely, while they engaged in other jobs outside fisheries. In San Francisco, those fishers depending heavily on fisheries income operated in cost-intensive manner.

Table 8 Operation Costs for Fishing in San Francisco

	Unit: No., %	
	No. of households	%
0	0	0
1 ~ 50	0	0
51 ~ 100	3	18.8
101 ~ 150	0	0
151 ~ 200	2	12.5
201 ~ 250	2	12.5
251 ~ 300	6	37.5
more than 301	3	18.8

In the meantime, the result of the survey conducted in July 2005 shows that such a concentration on a single gear has gradually diminished and some fishers began to own and operate plural fishing gears. However, as of September 2004, there seem to have little incentive to the diversification of fishing operation and fisheries income.

2.5 Backgrounds of Concentration on Long Line Fishing

According to the statistical data of BBRMCI, encircling gill net was at the third rank in the total of registered gears. It caught mainly sardine and sardine-like species, some of which were processed into dried-and-salted fish. This sort of fisheries was slightly capital-intensive in nature than long line and gill net fisheries, absorbing a considerable number of laborers. Young generations in fisheries households were often hired by the establishments of encircling gill net, and then they saved money enough to purchase a small-scale pump boat. When starting with self-employed fisheries activity, they were likely to prefer to long line rather than any other gears. One of the main reasons for this they cited was “atmosphere of the barangays”, which implied that local fishers were very familiar with long line as regards skill and marketing. Their parents, relatives and neighbors had so far enthusiastically involved in long line fishing. Techniques and knowledge of fishing grounds were not new even to new fishers. Moreover, through the marketing channels currently existing, fishers could easily market particular target species of long line.

In other words, in San Francisco, social capital that would stimulate for fishers to concentrate on one particular type of fishing has been accumulated enough so far.

2.6 Commercialization of Fish Production

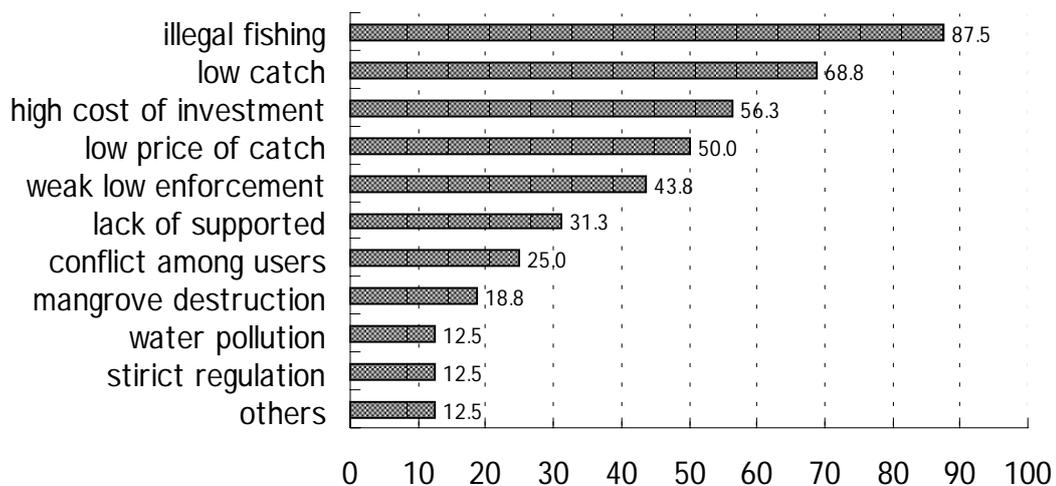
The results of the survey do not show any marketing channels of fish, but indicate that most of fishers employing long line were to purpose production for sale, but not for household consumption. More than 92% of their catch was marketed on average, while only one family showed a 70% of share. Other two barangays indicated a slightly lower ratio, while household consumption accounted for a higher ratio than in San Francisco. Alacaygan and Bularan showed 88.4% and 90% for sale, respectively.

Referring to such a high ratio of product for sale, those fisheries households interviewed in three barangays were in highly commercial production rather than we had expected. Under the scarcity of job opportunities, the households in San Francisco were likely to depend heavily on fisheries business as their sole livelihood. The degree of self-sufficiency in fisheries might be almost none.

2.7 Problems and Constraints of Fisheries in San Francisco

As well as other barangays, fishers in San Francisco faced several constraints. Their major concerns were coastal resource utilization and management, such as illegal fishing, weak law enforcement, lack of strict regulation, mangrove destruction, and so on. 87.5 % of total respondents pointed out: illegal fishing was the most terrible problem, because it had so far damaged the valuable coastal resources fishers targeted, and destroyed the sustainable utilization of fisheries resource in the Banate Bay. Therefore, the fishers gave high appreciation about the “Banday Dagat” and BBRMCI’s patrolling and surveillance of illegal fishing operations, as will be later discussed.

Figure 2 Problem about fishries activities in San Francisco



Low catch is 77.8% at the second rank. Moreover, fishers were much concerned about high-investment cost and low price of catch, since their fishing activities were relatively cost-intensive in nature.

2.8 People's Participation in Organization and Activity

In San Francisco, people were enthusiastically involved in the activities of various types of organization. They were characterized as barangay-based in nature. The rate of people's participation may be the highest among all coastal barangays in four municipalities of the Banate Bay. Of course, compared with Alacaygan and Bularan, people's cohesion in San Francisco was much stronger. They participated in the membership of barangay-based organizations to cooperate together to achieve various economic and social purposes. As far as we knew as of 2004, there existed three organizations whose activities were engaged in fisheries management and development: BFARMC, a fishery cooperative and a fishery association. Besides these formal organizations, the people flexibly established informal organizations such as saving and loan group, and women's group. Regardless of whether or not both formal and informal organizations were sustainable, they had given great impetus to the improvement of fisheries production and household economy.

Those fishers interviewed mostly joined the Small-scale Fisher Folk Association (SFFA), being 81.3 % of the total. BFARMC and the fishery cooperative showed 62.5% and 50.0%, respectively.

Table 9 Level of participation in fisher's organization (three barangays)

	Alacaygan	Bularan	San Francisco
Fisheries cooperative	3 (5.9%)	2 (9.1%)	8 (50.0%)
Fisheries association	11 (21.6%)	9 (40.9%)	13 (81.3%)
BFARMC	13 (25.5%)	8 (36.4%)	10 (62.5%)
Others	2 (3.9%)	0 (0%)	3 (18.8%)

(1) People's Awareness of BFARMC's Activities and Evaluation

The Fisheries Act 1998 proclaims that resource users and stakeholders should establish a BEFARMC at barangay level to conduct several functions of resource management, i.e., 1) acting as representative of barangay, 2) gaining consensus among resource users, 3) suggesting direction of resource management to BBRMCI, 4) undertaking conservation and management activities in line

with BBRMCI's agreement and ordinances, 5) enforcing ordinances, monitoring and controlling illegal fishing, 6) gathering data and information on resources. A series of questionnaires asked about whether or not fishers knew the above-mentioned activities of the BBRMCI in San Francisco.

It is a great surprise that almost all fishers recognized all activities of the BFARMC that were defined by the Fisheries Act 1998. This BFARMC functioned on full-scale basis. In a much contrast, the BFARMCs in Alacaygan and Bularan had some limited functions, such as representing barangay's residents, enforcing ordinances and undertaking conservation. They did not work for gaining consensus among residents, suggesting directions of the BBRMCI, and gathering data and information on coastal resources.

Fishers in San Francisco put a high value on the organization and activity of BFARMC as a whole, while many of the fishers in Alacaygan and Bularan gave negative appraisal to their own BFARMCs. In fact, in San Francisco, more than 60 % of fishers realized that they had fully participated in the organization of the BFARMC, following the highest percentage of the fishery association. In the fisheries laws, BFARMC should be a primary unit of coastal resource management at barangay level, so that as many resource users and stakeholders as possible are expected to participate it. However, their participation is affected directly by the success or failure of resource management at barangay level. Leadership may be another important factor to encourage the people to join management activities.

Figure 3-1 Recognizing the activity of BFARMC (Alacaygan)

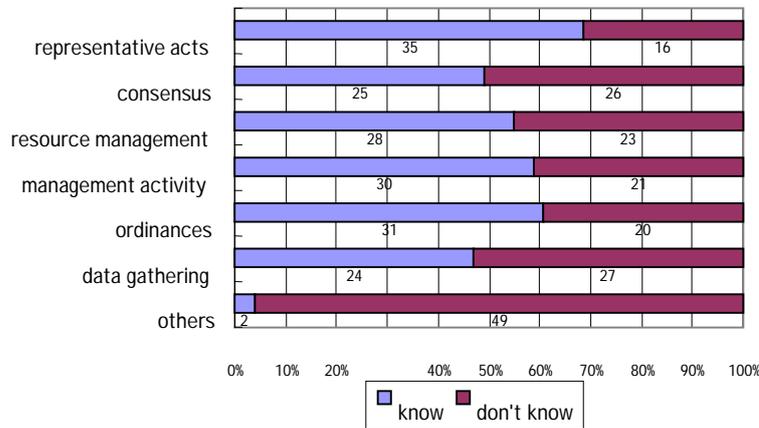


Figure 3-2 Recognizing the activity of BFARMC (Bularan)

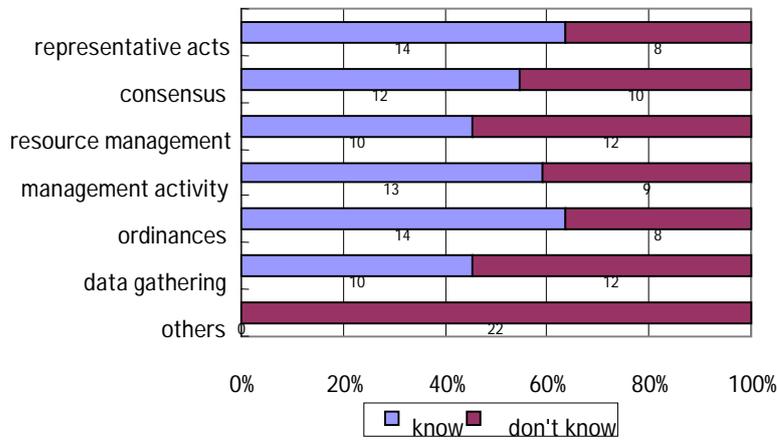


Figure 3-3 Recognizing the activity of BFARMC (San Francisco)

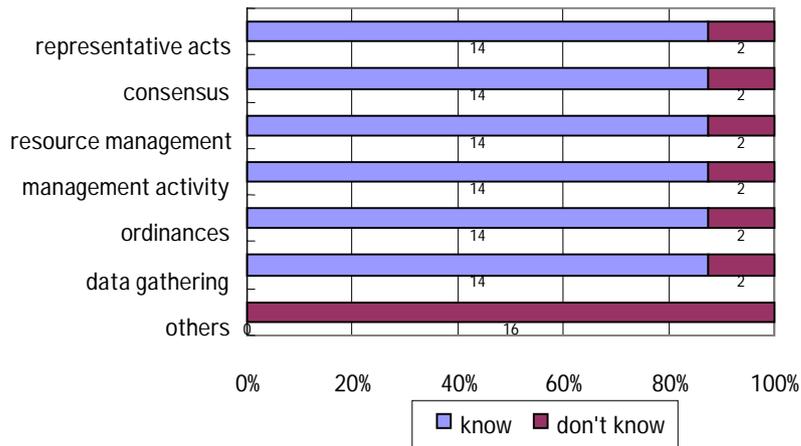


Table 10 Evaluation of BFARMC as a whole in three barangays

	good	fair	poor
Alacaygan	16 (31.4%)	13 (25.5%)	8 (15.7%)
Bularan	9 (40.9%)	6 (27.3%)	1(4.5%)
San Francisco	13 (81.3%)	1 (6.3%)	0 (0%)

(2) Evaluation of the BBRMCI's activities

It appears that the majority of fishers interviewed respected the BBRMCI as good. However, there was much difference as regards the level of evaluation among three barangays; in particular, San Francisco showed the highest percentage of “good.”

Figure 4 Evaluation of BBRMCI's activities in three barangays

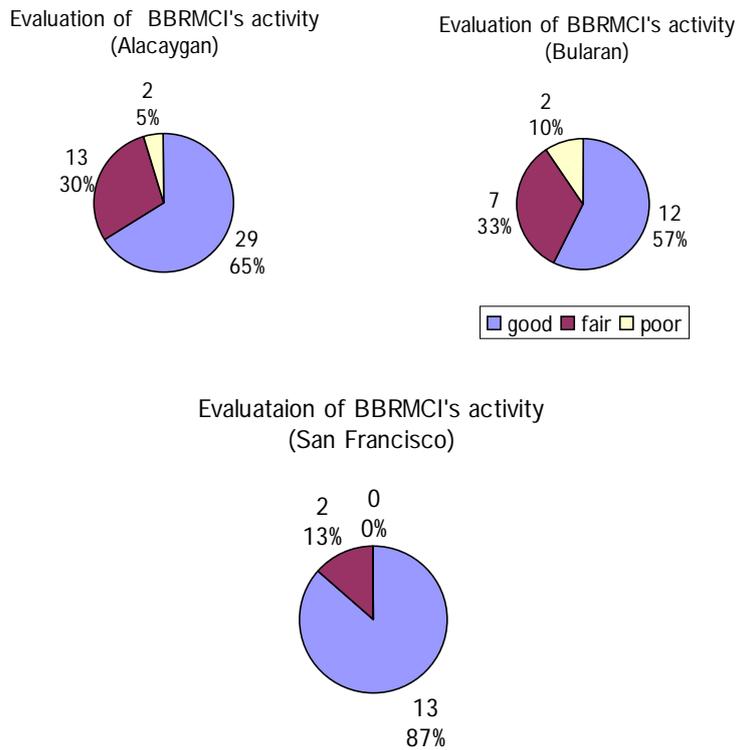
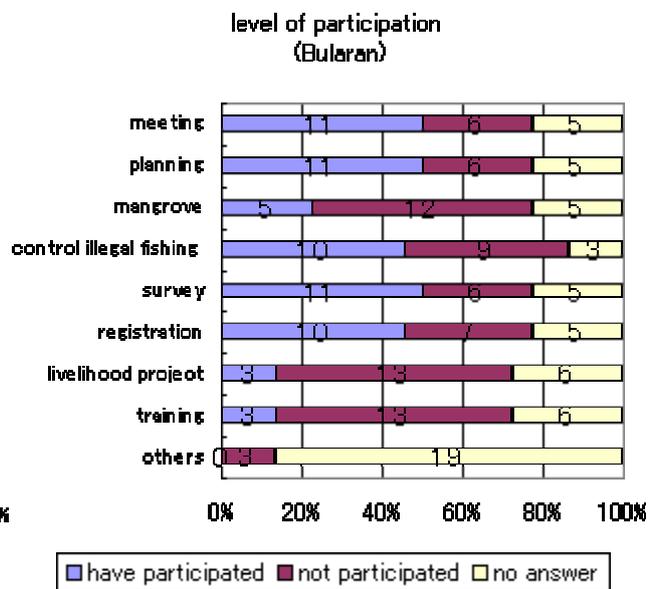
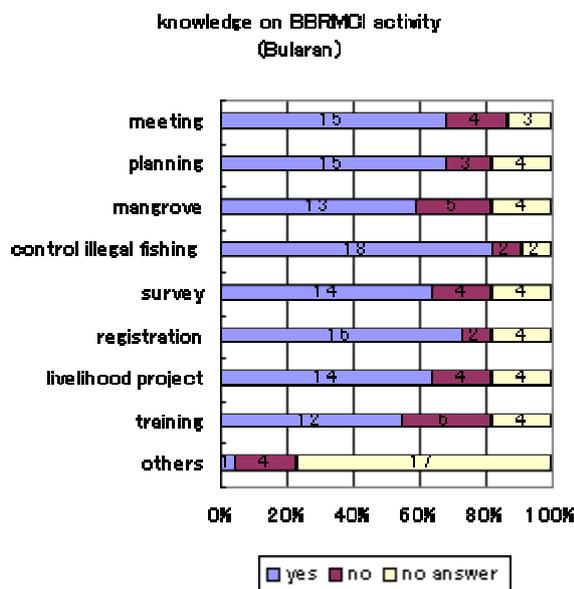
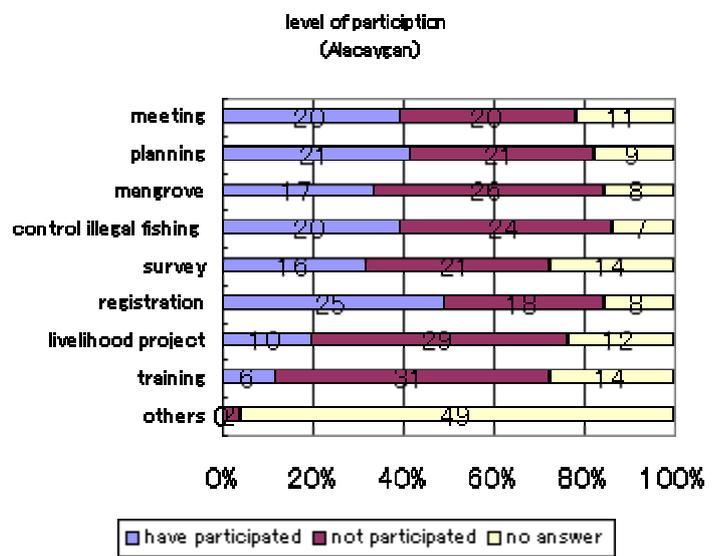
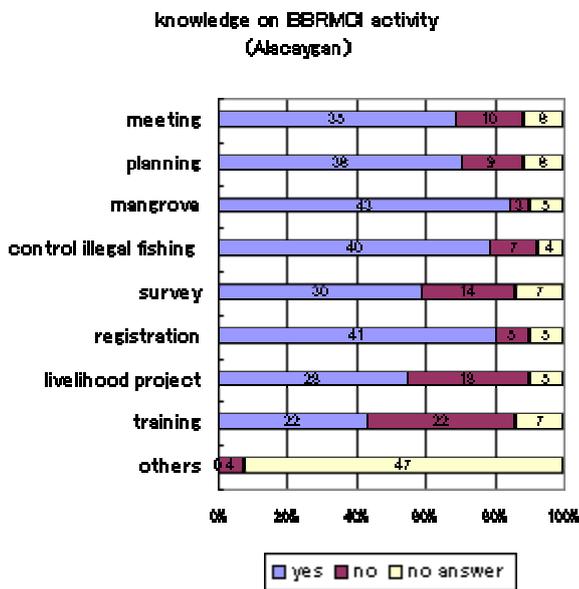
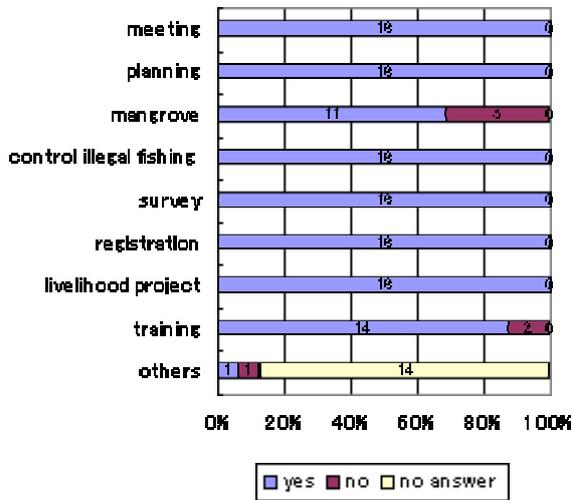


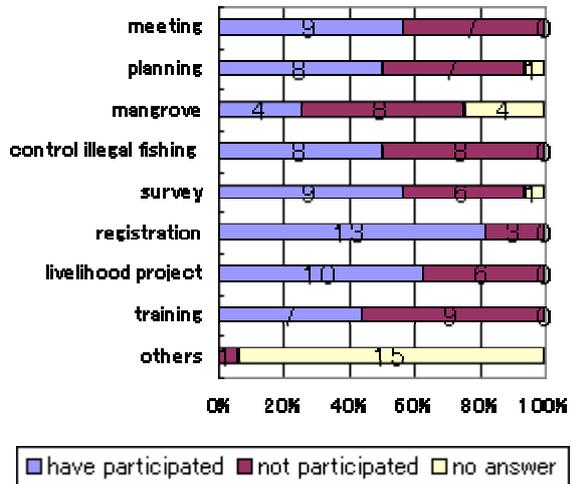
Figure 5 Knowledge of activities implemented by BBRMCI Figure 6 Level of Participation in BBRMCI



knowledge on BBRMCI activity
(San Francisco)



level of participation
(San Francisco)



The level of knowledge about what activities the BBRMCI had undertaken was correlated to the rate of evaluation on it. In Alacaygan, mangrove planting, registration schemes, and measures in controlling illegal fishing were widely acknowledged by fishers. Bularan showed the same tendency, but planning of management measures was ranked third. All fishers interviewed in San Francisco knew six out of eight activities that we listed up. Figures tabulated were a very high ratio. Fishers may get accurate information coming from the BBRMCI through a representative of their barangay. They were very familiar with management measures the BBRMCI adopted and implemented. Therefore, the BFARMC of San Francisco acted as a real conduit of the BBRMCI. Fishers in San Francisco realized the importance of BBRMCI's roles and functions: this may be attributed to the good practices of the BFARMC in which its leaders and the barangay captain usually guided local people to participate. Naturally, staff of the BBRMCI considered San Francisco as one of the best BFARMCs along the coastlines of Banate Bay.

The figures of registered boats and gears indicate that fishers widely acknowledged the necessity of coastal fisheries management. Those fishers we interviewed often mentioned that licensing and registration were not any special, but quite usual with them. They thought that, for controlling over illegal fishing operations from both inside and outside, all fishers should apply the BBRMCI's fishers registration system that were introduced on a voluntary basis.

(3) Expectation and suggestion for the BBRMCI

Like other barangays, fishers in San Francisco expected for the BBRMCI to further strengthen controlling and surveillance over illegal fishing operations. Creation of alternative job opportunities inside and outside fisheries was another request for the BBRMCI: however, since they mostly joined the fishers' association actively preparing for livelihood projects, they were less likely to expect for the BBRMCI's involvement in any livelihood projects. They required it to disseminate more information on the situation of coastal marine resources and its management strategy. Most of respondents highly appreciated the activity and organization of the BBRMCI.

3 Conclusions

The results of the survey conducted in 2004 reveal that fisheries households in San Francisco tended to depend heavily on fisheries business, not diversifying income sources and jobs. Moreover, fishers employed a sole fishing gear, long line, with concentrating their capital and labor on its operation. There were probably several reasons why local fishers preferred to long line than any other gears. Social and economic conditions of this barangay were better suited to the wide spread of long line fisheries, to name a few, accumulated knowledge of fishing grounds and target species, success of fishing technology, marketing networks dealing in the particular species long line

catch, easy access to means of production for this particular fishing, and so on. In other words, fishers and residents had successfully built institutional arrangements that would stimulate them for profitably operating long line fisheries.

However, such a heavy dependence on one sole fishery might be risky for sustaining household economy. Although it seems rationale in economic terms, fishers and local residents may have searched for alternative income sources mainly inside fisheries. The 2005 survey will show how, in fact, enthusiastically they have begun to involve in a new type of fisheries, in addition to the operation of long line.

People's Participation in Barangay-Based Organizations in San Francisco

1 Introduction

It is a great surprise that, in San Francisco, local people are actively joining various types of barangay-based institutions on voluntary basis. The cohesion among them is so strong that these organizations seem to work effectively to improve the living and producing conditions of members. This is in a much contrast to other two barangays we surveyed in Banate Municipality (Table 1). This paper will focus on the activity and organization of barangay-based institutions, such as Small-scale Fisher Folk Association (SFFA), Fishery Cooperative, and BFARMC. Special attention will be paid on how the fishery cooperative successfully gives economic incentives to members through the operation of cooperative business. We prepare for another paper analyzing the outcome of the cooperative's business activities by referring to the results of questionnaires.

Table 1 Level of participation in fisher's organization (three barangays)

	Alacaygan	Bularan	San Francisco
Fisheries cooperative	3 (5.9%)	2 (9.1%)	8 (50.0%)
Fisheries association	11 (21.6%)	9 (40.9%)	13 (81.3%)
BFARMC	13 (25.5%)	8 (36.4%)	10 (62.5%)
Others	2 (3.9%)	0 (0%)	3 (18.8%)

2 Small-scale Fisher Folk Association (SFFA)

2.1 As A Conduit

The most popular organization in San Francisco is the Small-scale Fisher Folk Association (SFFA), since most of the respondents join it. As will be later discussed, the association is not a real economic organization that provides any meaningful business services to members, but acts as a conduit of government's subsidies toward the barangay's members.

The SFFA was established in 2002, with all fisher folks joining its membership. At this moment, 87 fishers are still actively involved in the SFFA. The total amount of its treasury is 50,000 peso.

2.2 Project Activities

Three kinds of projects for the improvement of livelihood were proposed to Barotac Viejo Municipality by the SFFA, through consultation with the BBRMC, namely the long line project, the stationary lift net project, and the green mussel culture project. Each project had a different aim and owned a target group of fishers.

Associations in the Banate Bay may concentrate on lending money to members in order to enable them to purchase fishing gears and equipments. In the same way as do these associations, the SFFA depends thoroughly on the subsidies given by the municipal government, and then generates a monetary circulation among the members. Within a certain period, borrowers should repay a principal without any interest charge. Therefore, the association does not have any mechanism through which it accumulates funds to fulfill with an increasing demand for finance.

(1) Long line project

The SFFA also implemented collaborative producing activities, besides microfinance activities. The long line project purposed to expand the scale of production by purchasing additional gears. As of August 2005, 42 members joined this activity. A number of respondents stressed that this

activity benefited them by increasing catch effort. However, a respondent was financed 2000 peso with an interest of 1% per month for repairing pump boats. Another member also borrowed the same amount for her vending business. Thus the association tried to supply various financial demands from members.

(2) Stationary lift net project

The unique activity was found in the stationary lift net project. A stationary lift net was built in front of San Francisco by the SFFA. Participating members were grouped into a unit of three. They collaborated together to catch fish, unload, and market to the fishery cooperative. Expenses would first be deducted from the turnover of the catch; 50% of the remainder would be saved for the association, while half would be shared equally among these three members. Such a barangay-based cooperation may derive from cohesion among people in San Francisco.

There are several reasons for the investment and operation of stationary lift net. This gear is getting popular and popular in coast lines of the eastern part of Panay. An increasing number of the net have been constructed along the beach of the Banate Bay, too, targeting squid, common pony fish, and valuable fish. However, the total amount of investment is much higher than other kinds of fishing gear. In San Francisco, the members of the association prefer to share investment costs than on individual basis. Yet another reason is that squid becomes more lucrative in Banate markets.

(3) Green mussel project

This project started in December 2004, together with the operation of the stationary lift net. As of July in 2005, green mussel was not yet harvested. Culture grounds were located in the same area of stationary lift net. Eight-seven (87) members joined this project with financial support from the National Agricultural Council and worked together for cultivation and harvesting.

Cultivation and harvest were based on cooperative works among the members of the association. Therefore, the association functioned as a business body whose members shared capital, worked together and divided benefits. The ownership of a stationary lift net and the management of green mussel cultural grounds belonged to the association.

In our observation, the association worked as if it was a production cooperative, and sold a large part of catch through the fishery cooperative that worked as a marketing entity.

3 Fishery Cooperative

3.1 Development of Cooperative Business

A fishery cooperative was established in 1996 by 23 members. The primary purpose of this cooperative was that members would procure production materials such as gears, equipment, fuel, and daily goods at reasonable prices. At this moment, the number of members joining its membership is 76. They have been attracted to deal in with the cooperative business that effectively supplies goods and brings dividends. The cooperative is becoming an indispensable element of fisheries household economy. Fishers establish an integrated business link with the cooperative that has diversified its economic activities. It operates the supplying of daily goods and producing materials, the marketing of fish, the lending of money, and the receiving of savings.

(1) A multi-purpose type of business operation

A great impetus to attract a number of fishers to join the cooperative's membership was the success of marketing business. It started in 1999. The cooperative purchased fish from fisher folks and sold to a particular fish trader who transported to markets in Iloilo. This marketing service was very much appreciated by the local fishers, since they had to consume time for transportation and spend costs for marketing their catch to the Banate's markets. The cooperative has successfully diversified its economic activity, at the core of which the marketing service stands. This cooperative is a multi-purpose type, conducting multifarious activities at one and the same time. Members purchase goods in credit, market their product and deposit money as saving.

As illustrated in Figure 1, the turnover of marketed fish flows into a member's account and is settled up with part of his debt to the cooperative. It has set up a particular system controlling the members' balance, thereby securing the collection of credits extended in various purposes and forms.

Such an interrelationship between business activities of the cooperative is quite similar to that of a conventional type of trader like Pala-pala.

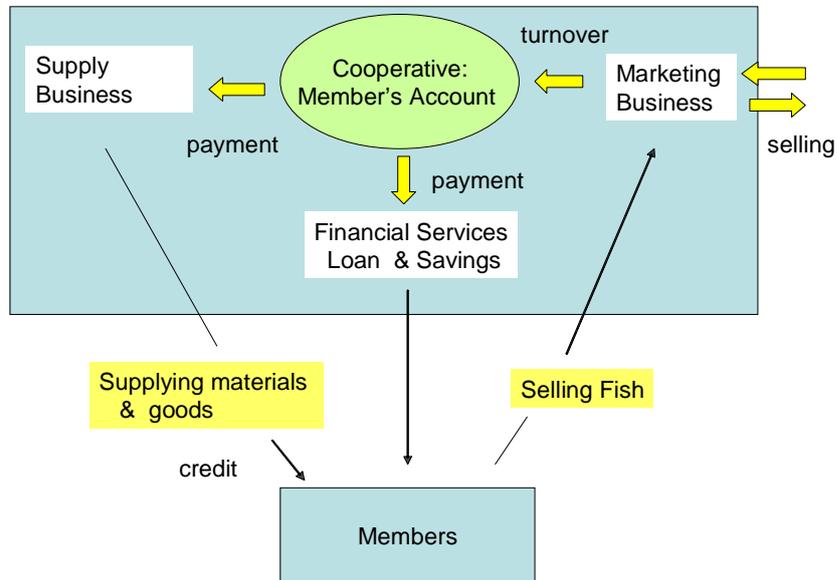


Figure Interrelationship between Business Activities of Cooperative

(2) Functions of Member’s Account

From a viewpoint of dealing with the cooperative’s business, member’s balance account has two functions. Firstly, it receives the turnover that a member sells fish to the marketing business, which becomes a source of repayment for any liabilities he holds. Secondly, the account has the function of overdue that makes members purchase fishing gears, fuel, bite and daily goods in credit. This function attracts a number of fisher folks to deal in with the supply business. Due to isolation from town’s markets, too, they much prefer to purchase many items from the cooperative’s business. Without any services of overdue, fisher folks could not afford to continue commercial production.

The system of member’s balance account is quite unique, but similar to advance payment that is provided to client-fishers by fish traders.



Figure 2. Notebook of a member's account controlling the inflow and outflow of money.

(3) Interlinked Business Activities

In the Banate area, conventional types of traders, like Pala-pala, might have used to conduct multifarious activities, covering the whole process from purchasing, producing and marketing. However, at this moment, they tend to specialize in marketing and financing, not supplying any goods. The fishery cooperative has evolved into a multi-purpose type from the stage of single-purpose one. Its supply business is production-oriented. The stimulation of one side of the business affects the expansion of other business activities, although there may be a time-lag as regards the expansion of each business aspect.

3.2 Advantageous Points

(1) Advantageous points for business management

A continuous trading relationship between the fishery cooperative and member is seen as the main element which enhances the financial ability of business administration. The operation of marketing activity mitigates risks resulting from transactions with marginal small-scale fishers.

A wide range of activities makes the fishery cooperative balance working capital in various sections of its business administration.

The cooperative's president mentioned that it would provide meaningful services of supply business at lower costs to members as long as the marketing business generated profits. This means that members would be able to receive a wide variety of costless services from the cooperative. Naturally, they are required to continuously transact with the marketing business, through which the cooperative secures a source of repayment.

(2) Advantageous point for members

According to the interviews with fisher folks in July 2005, the fishery cooperative encouraged them to increase production. Some fisher folks pointed out that they would have hardly survived without any cooperative business. In particular, the supplying of producing materials in credit helped members continue fishing activities. They very much appreciated this business. Some members stressed that the cooperative provided a saving scheme through which they could accumulate even meager amount of deposits that would become a source of investment. Not only sharing capital but also saving deposits brought the revenues of interests to members. Many of members have successfully improved their ability of self-financing.

Supply business eases members to reduce costs for procuring fishing materials and daily goods. Marketing business enables them to cut off transportation costs when they bring fish to

Banate and Barotac Viejo markets. Since the fishery cooperative has increased its bargaining power against fish traders, members enjoy selling at higher prices than they had marketed by themselves. They really get two aspects of benefits from the marketing business.

The fishery cooperative tends to act as a financial-trader who affects the whole process from production to distribution. They will receive dividends according to the amount of members' dealing in with the cooperative's businesses.

4 BFARMC

4.1 High Appreciation of BFARMC

According to the interviews last year, we recognized that fisher folks in San Francisco gave a high appreciation on BFARMC's activities. They self-evaluated that they had actively participated in the BFARMC.

The Fisheries Act 1995 defines that all coastal barangays should establish a BFARMC as legal management body, but not all BFARMCs take responsibility for coastal resource management. In the Banate Bay, some BFARMCs are actively undertaking various programs of management with people's participation, while some only extend the information given by the BBRMCI.

The BFARMC in San Francisco is one of the best practices among all of four municipalities. It has a monthly meeting when people gather together at the barangay's regular meeting. The BFARMC's leader informs on the policy and implementation of the BBRMCI. He acts as the representative of the barangay for the BBRMCI.

Moreover, the BFARMC proposed to set up a registration system of fisher folks within the Banate Bay. This proposal was later shaped into "ID blue card". All fisher folks are now encouraged to hold this ID card, when fishing within the sea territories of four municipalities. The BFARMC suggests a direction of resource management.

4.2 High Percentage of Licensed Gears and Boats

The BFARMC in San Francisco undertakes conservation and management activities in line with the BBRMCI's agreement and management. In 2004, all boats were registered, and the great majority of fishing gears got license from the municipal government. In Alacaygan and Bularan, licensed gears showed a lower percentage, and the fishers did not pay much attention to legal issues. In San Francisco, the royalty of fishers to their BFARCM brought a higher appreciation of the BBRMCI.

4.3 Dilemmas of BFARMC

Fishers pointed out that they hardly had the feeling of stewardship in the Banate Bay, because it was too wide to manage. They did not make sense of the fact that those fishers coming from outside the Barangay set up stationary lift net in front of San Francisco, even if they were allowed to fish by the municipal government. Naturally, they were dissatisfied with the BFARMCs' irresponsible behaviors towards illegal and exploitative fishing operations in front of their beach.

5 Conclusions

In San Francisco, local people tend to cooperate and work together in many fields. This may be attributed to geographical, culture and social surroundings of this barangays. Access to markets is so hard that fisher folks have so far suffered lower prices of fish and higher costs of distribution.

Due to scarcity of alternative job opportunities outside fisheries, they depend heavily on fisheries business. Fishing and its related activities are the major income sources for the people. Very few traders have arranged lucrative marketing channels from San Francisco to Barotac Viejo and Banate. People regard the lack of marketing channels as a big constraint to sustain a household economy, so that they are likely to join any membership of cooperative organizations. They may expect that the organizations act as an agency that would bring them concessive support from governmental agencies.

Yet another important factor to stimulate people's organizations is the leadership of

barangay captain, and leaders of the cooperative, the BFARMC, and the association. We were very impressed that many of the fishers we interviewed stressed these leaders guided them to self-help and cooperative activities.

The practices and experiences of people's cooperation could be transformed to other barangays.

Business activities of fisheries cooperative and its incentive to improve: Household economy in San Francisco

1 Introduction

The activities of Fisheries Cooperative, which was registered at Cooperative Development Authority (CDA) in 2001, started in 1996. The number of the member is 53 in total in 2005 while there are 146 fishermen in San Francisco. The total number of boat owners in the Cooperative is 31 at peak, and 26 at lean season out of 60 boat owners. The business activities of the Cooperative are consumer business, marketing and financial management.

2 Consumer business

The Cooperative sells rice, milk, gasoline fuel, fishing supplies, food and daily goods to the villagers. Selling ice, which is the most important sale good, and gasoline are of benefit. On the other hand, both selling fishing supplies and bait are unprofitable.

2.1 Rice

Firstly, the Cooperative buys 100 Kg rice per day from rice millers at 17 peso/Kg in 50% cash and 50% credit and sell to the villagers at 19.5 peso/Kg by credit (see Table 1). In 1996, the price of rice was 11 peso/Kg and increased to 17 peso/Kg rapidly in 10 years. The profit on rice is 228 peso per day.

Table 1 Consumer business – rice

	Price	Amount	Paying	Expenditure
Buying	17 peso/Kg	2 sack/day=100 Kg/day (1 sack = 50 Kg) 50sak/week=250Kg/week	50% in cash 50% by credit (15 days)	transportation 10 peso/sack=0.2peso/Kg Carrying fees 1 peso/sack= 0.02 peso/Kg loss during transport 1Kg/sak (0.34peso/kg)
Selling	19.50 peso/Kg		by credit	
Income	Gross income: 2.5 peso/Kg	Gross income/day: 100×2.5=250 peso/day		Net income: 2.5-0.2-0.02=2.28 peso/Kg 100×2.28=228 peso/day

2.2 Gasoline

Secondly, the Cooperative buys 80ℓ gasoline everyday from gasoline station at 34 peso/ℓ in cash, and sell at 36 peso/ℓ by credit (see Table 2). The profit on gasoline is 140 peso per day.

Table 2 Consumer business – Gasoline

	Price	Amount	Paying	Expenditure
Buying	34 peso/ℓ	80ℓ/every day 2,400ℓ/month	in cash	transportation 5 peso/20ℓ=0.25 peso/ℓ loss during transport 1ℓ/20ℓ
Selling	36 peso/ℓ		by credit	
Income	Gross income: 2.0 peso/ℓ	Gross income/day: 80ℓ×2.0=160 peso/day		Net income: 2.0-0.25=1.75 peso/ℓ 80×1.75=140 peso/day

2.3 Fishing gear supply

Thirdly, the Cooperative sells fishing gear supplies such as rope for crab pot, nylon for crab pot and long-line, and polythelyn for crab pot (see Table 3). They do not provide crab pot but lend money to the member to buy crab pot. They buy them in cash and sell by credit. The

business is of no profit. The activity is one of the services for members.

Table 3 Consumer business – fishing gears

	Supplies	Price & amount	Paying
Buying at Banate market	rope for crab pot (main) nylon for crab pot & longline polythelyn for crab pot	330 peso/roll (No.8)	in cash
Selling	As above	330 peso/roll (No.8) 3,000 peso/5months/fishermen×31	by credit
Income		No profit	

2.4 Bait

Fourthly, the Cooperative buys bait such as sardine from member fishermen in cash and sells by credit without profit (see Table 4). The activity is also one of the services for members to increase their income.

Table 4 Consumer business – Bait

	Supplies	Price	Paying
Buying	Many kinds of sardine	25 peso/Kg	In cash
Selling	As above	25 peso/Kg	by credit
Income		No profit	

3 Marketing activities

The members and non-members sell their catch to the Cooperative and they sell them to buyers such as processors and retailers in cash (see Table 5). The species which are dealt by the Cooperative are blue crab, Goatee croaker, and grouper (see Table 6). The blue swimming crab became the most profitable species (see Table 7). There is a drastic change in fishing operation and marketing.

The number of buyers is between 6 and 10. The inside buyers are able to buy “Lagaw” at 83 peso/Kg. On the other hand, the price of it for outsiders is 85 peso/Kg, which price is higher than that for inside buyers. The retailers including restaurant in Iloilo normally buy all kinds of fish except blue crab. The Cooperative has “suki” relationship with them.

There are peak and lean season in dealing amount. From November to march, when is the peak season for blue crab. On the other hand, from April to October it is the lean and agriculture season.

Marketing is at the core of the Cooperative activities, because this brings a large portion of profit, there is no need to charge any commission to supply fishing gears. That is why people call the Cooperative “Mini pala-pala”.

Table 5 Marketing channels

Rank	Fish species	Buyer	Settlement
1	Blue Crab	100%: Processor*1 (Jerry in Banate)	in cash
2	Lagaw	100%: 3 retailers in Banate*2	
3	Abo		
4	Lapu-lapu		
5	Asohos		

*1: Mr. Jerry who buys from coop may pay in advance for collection of crab.

*2: Retailers normally buy all kinds of fish except blue crab. The manager mentions that coop has “suki” relationship with them.

Table 6 Marketing business – dealing in species

Local name	English name	Rank
Kasag	Blue Crab	1
Bisugo (Lagaw)	Thread fin bream	2 (1 st last year)
Abo	Goatee croaker	3
Lapu-lapu (Inid)	Grouper	4
Asuhos/Asoos	Sand Whiting	5
Kugaw	Fourfinger threadfin	6
Upos-upos	Monocle bream	
Ingatan	Scad	
Kikero	Spotted scad	
Kalambutan	Squid	
Alatan	Painted sweetlip	
Alimusan	Sea Catfish	
Lupoy	Sardine	
Pagi	Spotted eagle ray	
Nipa	Yellow pike conger	

Table 7 Marketing business – profit

Rank	Fish spp.	Gear & No. of fishermen	Volume (Kg/day)	Buying Price (Peso/Kg)	Selling (Peso/Kg)	Profit (Peso/Kg)
1	Blue Crab	Crab pot(21) Bottom set gill net(3)	P:360 a *1	85	90	5
			L:120 b	120	150	30
2	Lagaw	Longline(45)	P:180 c L:90 d	80	85	5
3	Abo	Longline(45)	P:450 e	40	45	5
			L:180 f	50	60	10
4	Lapu-lapu	Longline(45)	P:135 g	80	90	10
			L:45 h	90	100	10
5	Asoos	Longline(45)	P:180 i	45	50	5
			L:45 j	50	60	10

*1: every other day

Note:

a: 15Kg/fisherman×24 person=360 Kg/day

b: 5Kg×24=120

c: 4Kg×45=180

d: 2Kg×45=90

e: 10Kg×45=450

f: 5Kg×24=120

g: 3Kg×45=135

h: 1Kg×45=45

i: 4Kg×45=180

j: 1Kg×45=45

4 Financial management

4.1 Loan

The Cooperative borrows 1.3 million peso from the Land Bank of the Philippines, and lend 600,000 peso to 26 fishermen (see Table 8). The interest rate of the bank is 1% and the Cooperative lends at 3% interest.

Table 8 Financial management

	Borrowing	Lending
Bank	Land Bank of the Philippines	26 fishermen
Total	1.3 million peso (limit)	600,000 peso/26 fishermen (26,400/fisherman)
Interest	1%	3%: Breakdown 1%: Land bank 1%: coop. 1%: processor
Term of payment	2 years	1,300/month for 2 years*1
Purpose		To buy motorboat

*1: Coop repays for 18 months.

4.2 Investment

The Cooperative invests their profits from selling catch. For instance, there is a 5 peso/Kg profit from blue crab. Three-peso is used to save for the Cooperative itself and another 2-peso are for re-lending money with 3 % interest to the members. On the other hand, member fishermen can get 10% profit from their stock investment. The Cooperative encourages the member fishermen to save a peso a day.

5 Results of survey

According to the results of 12 samples, more than 80% of respondents belong to the Cooperative and the reasons why they became members were firstly to expect to receive many kinds of services including dividends. Their contribution ranges between 200 and 8,000 peso. As above mentioned, the members receive 10% profit from their contribution. All members know the Cooperative activities such as general meeting, election system, selection of committee, and setting by-laws, and most members have participated in the activities. All members buy daily goods, fishing gears and fuels at the Cooperative (see Table 9). Because firstly the goods provided by the Cooperative are reasonable, and secondly there is no other shop, nor service available in the village. More than 80% of the members sell their catch to the Cooperative because of convenient.

Table 9 User circumstances

	Daily good		Fishing gears			
	goods	frequency	paying	gears	frequency	paying
1.coffee		64%: always	55%: credit	1.hooks	36%:always	50%: credit
2.soap		36%: often	45%: cash	2.fuels	18%:sometimes	30%: cash
3.rice/ sugar,milk				3.nylon		20%:
4.salt				4.rope,/bait		credit/cash

According to the results of evaluation survey on the Cooperative service (see Table 10), 40% of the respondents evaluate whole activities are excellent, and other 40% is good, and the other 20% is fair. It means that 80% of member-respondents appreciate the Cooperative activities. Moreover, 90% of the member-respondents agree that their living conditions are getting better after joined the Cooperative.

On the other hand, the members expected other services to the Cooperative such as providing livelihood project, job opportunities, new skill, financial services, and insurance. To sum up, the Cooperative plays the vital role to make the fishermen's living better.

Table 10 Evaluation survey

Supplying goods	Marketing catch	Loan	Whole activities	Living conditions
70%: very satisfied 30%: satisfied	60%: very satisfied 40%: satisfied	60%: very satisfied 30%: satisfied 10%: fair	40%: excellent 40%: good 20%: fair	90%: agree 10%: undecided

Shift from Single-Gear Operation to Multi-Gear Fisheries in San Francisco

1 Introduction

As the results of 2004 Survey shows, many of fisher folks we interviewed with were undertaking the operation of single gear fisheries. They heavily depended on a particular type of fishing gear, targeting specific valuable species. Even if they had plural gears, concentration on the first and second ranked gears, which they often used and depended in economic terms, was very high. In San Francisco, most of fisher folks employed long line as of September, 2004. In July 2005, however, we confirmed that many of the respondents interviewed had recently shifted from single-gear operation to multi-gear fisheries.

This paper intends to indicate a tendency towards the operation of multi-gear fishing, and to discuss several substantial factors to stimulate the introduction of crab pot fishing in San Francisco.

2 Incentives to Multi-gears Fisheries in San Francisco

2.1 Results of 2004 Survey

In the last year's survey, we found that the fisher folks we interviewed employed mainly long line, and that patterns of their fishing operation on a daily and on a yearly basis were very simple. Sampling number of respondents was 16 (including one crew family). Total number of fishing gears was 21; the long line amounted to 15, and the second major gear was gill net, being 4 only. Bottom set gill net and crab pot, both catching blue swimming crab, were only one, respectively. Thread fin bream was the most important species for long line fisher folks; the second and third ranked species were Goatee croaker and Sand whitening. Gill net fishers caught common pony fish and other species. The operation of long line covered the whole year long.

It would appear that fisheries household economy relied entirely on fishing activities. Their fishing operations needed more amount of expenditures for fuel, ice and bait. Some fisher folks spent far over 300 peso per trip. Their fisheries were regarded cost-intensive in nature.

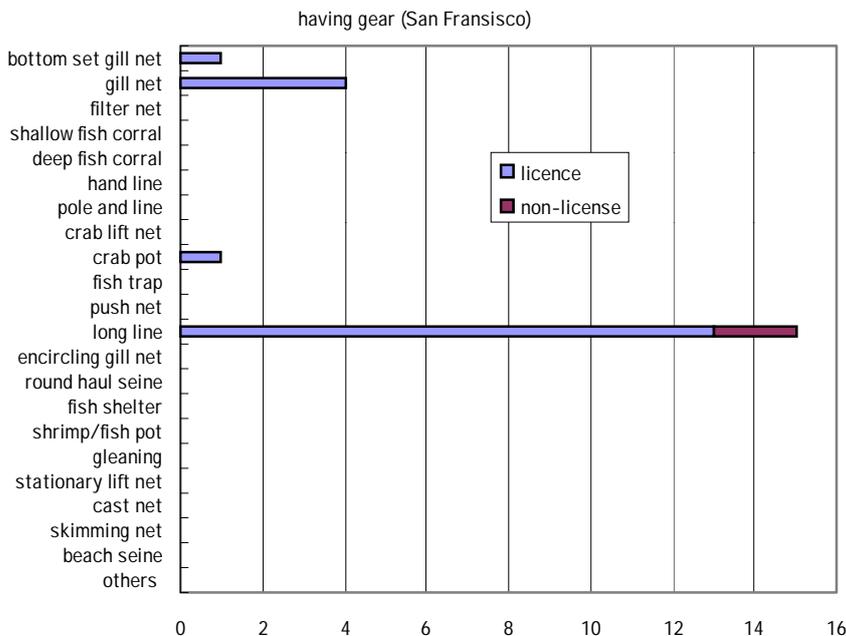


Figure 1 Number of Fishing Gears Possessed in San Francisco

2.2 New Trends of Fishing Operation: Diversification

We got a great surprise of the rapid expansion of crab fisheries in San Francisco, since a good number of fisher folks had used to specialize in long line fisheries until the last year's survey. Prior to statistical analysis, some cases are described hereafter in order to identify a trigger to the investment of plural-fishing gears.

(1) Expansion of Crab Pot Fisheries

The figures of Table 1 show how rapidly fisher folks have changed the patterns of fishing operations. The major fishing gear is still long line. Out of twelve households with the single operation of long line in 2004, six households started with the combination of long line and crab pot. There are several patterns of combination, but crab pot is the most important gear in these patterns. Moreover, two households rank bottom set gill net first.

The new target species is blue swimming crab that fisher folks here had rarely been given any incentive to exploit until recently. The form of fishery has become suddenly variegated since last year.

Table 1 Shift of Fishing Gears in San Francisco (2004 and 2005)

ID	Survey in 2004						Survey in 2005				
	income	often used gear			economic important gear			economic important gear			
		Rank 1	Rank 2	Rank 3	Rank 1	Rank 2	Rank 3	Rank 1	Rank 2	Rank 3	Rank 4
1	L	long line			long line		long line	crab pot			
2	L	long line	gill net		long line	gill net	-				
3	L	long line			long line		long line	crab pot			
4	L	long line	gill net		long line	gill net	-				
5	M	long line			long line		long line	crab pot			
6	L	long line			long line		bottom set gill net	crab pot	gill net	long line	
7	M	gill net			gill net		-				
8	L	long line			long line		crab pot				
9	M	long line			long line		long line	crab pot			
10	M	long line	crab net	gill net	long line	crab net	crab pot	gill net	long line		
11	M	long line			long line		long line	crab pot			

ID	Survey in 2004										Survey in 2005			
	income	often used gear			economic important gear			economic important gear						
		Rank 1	Rank 2	Rank 3	Rank 1	Rank 2	Rank 3	Rank 1	Rank 2	Rank 3	Rank 4			
12	L	long line			long line			long line	crab pot					
13	M	long line			long line			long line	crab pot					
14	L	long line			long line			-						
17	M	long line			long line			long line						
18	M	long line			long line			stationary lift net						

Note: *income L: <P5000 , M: P5000-10000 , H: P10000<

(2) A Case of Crab Pot Fishery: Mr. J

Mr. J., still young less than 30 years old, started with crab pot fisheries in December, 2004. He had involved in long line fisheries, catching Thread fin bream, Sand whiting, and Grouper for almost 8 years. When he got a fishing boat, he started long line without any hesitation. Fisher folks in San Francisco were very familiar with its techniques, fishing grounds, and target species. In such surroundings, therefore, a rapid investment in crab pots is like an epoch-making progress of fisheries development in San Francisco.

Mr. J. stressed that the barangay captain, the leaders of the association and BFARMC guided a rapid expansion of crab pot fisheries. He decided to invest in crab pot fisheries.

There were two factors to make him successfully diversify his fishing operation.

Firstly, he borrowed 1000 peso for purchasing crab pots from the fishery cooperative, and 2000 peso for repairing his pump boat from the association. For both cases interest rate was 1% per month. In addition, his household economy accumulated even a small amount of deposits as share capital of the cooperative, from which he obtained a 1% of annual interests.

Secondly, the fishery cooperative enthusiastically enlarged crab marketing business by establishing a special contract with a crab collector in Banate. This crab collector stood on the apex position of marketing channel which were directed to an export-oriented processing company in Estancia. He had purchased an ever-increasing volume of blue swimming crab from fisher folks (who were involved in crab pot and bottom set gill net fisheries), and from fish (crab) collectors in far wider areas.

The cooperative began to work like his agent in San Francisco. His advance payment given to the cooperative became a great impetus for the expansion of crab fisheries in the barangay. Those fishers who newly invested in crab fisheries could access to a certain marketing channel for crab through the cooperative.

(3) Combination of long line and crab pot

Mr. J. was put into the operation of multi-fishing gears by using long line and crab pot. As of July, 2005, he almost fixed the patterns of multi-gear fishing operation. As illustrated in Figure 2, he often employed two gears in one trip and in a day. Before going to fishing grounds for long line, he deployed 100 crab pots. After finishing long line fishing, he unloaded the catch at 2 p.m. and sold it to the fishery cooperative. After harvesting blue swimming crab started at 4 p.m., he came back at 5 p.m. The fishing grounds of crab were very near to the beach. Of course, he often operated long line only.

Figure 2. A pattern of multi-gears operation in a day

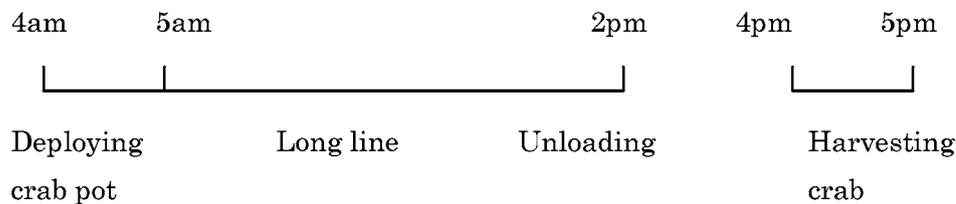


Table 2 Catch and Fisheries Income (Mr. Johnny Balayo's case)

		Long line	Crab pot
Peak season	Total catch	10 kg	8kg
	Total income	600 peso	920 peso
	Species	Thread fin bream (Lagaw) 4kg Sand whiting (Asohos) 3kg Grouper (Lap-lap) 3kg	Blue swimming crab 6.4kg Other crab 1.6kg
Lean season	Total catch	5kg	5kg
	Total income	350 peso	600 peso
	Species	Thread fin bream (Lagaw) 2kg Sand whiting (Asohos) 1.5kg Grouper (Lap-lap) 1.5 kg	Blue swimming crab 4kg Other crab 1kg

Table 3 Expenditure of fishing operation (Mr. J.)

Item	Long line (single gear operation)	Long line + crab pot (multi-gear operation in the same trip)
Average gross income	475	1235
Fuel	140 (4 litter)	175
Ice	15	15
Bait	75	115
Lubricant oil	3.2	3.2
Others		
Wages (crews)	one crew, 25%	one crew, 25%
-estimated	60.5	60.5 *
Total costs *	293.7	368.7
Fisheries income	181.3	866.3

* Income of crab pot fishing is not included.

* Direct costs excluding fixed costs and

There was much difference as regards average catch between peak and lean seasons. As regards long line, Mr. J. caught 10 kg on average during the period from September to December, being equivalent to 600 peso per trip. In the lean season (July and August), the average catch fell

by 5 kg, being 350 peso in value.

(4) Costs

Mr. J was not sure the profitability of crab pot fishery, because expenditure for buying crab pots was much higher than he had expected. The average catch per trip ranged between 5 and 8 kg, being 600 peso and 920 peso, respectively. The fishery cooperative offered 115-120 peso per kg. Such a high price attracted a number of fisher folks who had used to specialize in the operation of long line.

As far as direct costs were concerned, the combination of long line and crab pot seems very lucrative. Since he used both gears in the same trip (and in the same day), direct costs did not rise sharply in proportion to increased catch effort. He appreciated that his fisheries income (after deducting direct costs) was much larger than he had expected. He mentioned the reasons for preferring to crab pot: 1) the market price of blue swimming crab was very high due to large market demand; 2) fishery income sharply increased; and 3) the barangay captain suggested to invest in this fishery.

Mr. J. stressed that he would like to continue the present pattern of multi-gear fishing operation. His household economy got stability and constancy by diversifying income sources.

At this moment, it is still questionable whether or not such a diversification of fishing operation would be adaptable to other households in San Francisco. This is because Mr. J. was in the twenties to endure hard work of deploying and pulling up a number of crab pots. As of July, 2005, he did not hire any new crews for crab pot fishery. Together with his crew and wife, he managed multi-gear fishing operations in the same trip and in the same day. If he would employ another crew, costs of fishing operation would rise sharply.

3 Factors to Expand Crab Port Fishery

Diversification of fishing operation may lead to the improvement of a household economy in San Francisco. Compared to a single-gear operation, it reduces overdependence on particular species in economic terms, and allocates capital and labor force proportionately according to seasonal changes of targeted resources.

There are following factors to develop the diversification of fishing operations at individual and community levels:

- 1) A sharp rise of market prices of blue swimming crab caused by an increasing demand.
- 2) The fishery cooperative has established lucrative marketing channels of blue swimming crab.
- 3) Fishers can buy crab pot at reasonable price. One pot costs 10-12 peso only.
- 4) Fishing grounds of blue swimming crab are very near from the beaches of San Francisco. Access to the grounds is less costly.
- 5) There is no need to reinvest in fishing boats for utilizing crab pots.
- 6) Fisher folks can borrow money to buy new kinds of fishing gears from the association and the fishery cooperative.

Fisher folks have easy access to financial sources. This is the decisive factor to stimulate the diversification of fishing operations. Without the fishery cooperative and the association, they could hardly have invested in other fishing gears rather than long line

Part IV

Marketing System and its change in Banate Area

Economic Functions of *Pala-Pala* Fish Traders and their Marketing Systems in Banate

1 Introduction

Various types of fish traders mediate the flow of fishery products from producing sites to consumption markets that are located inside and outside Banate. Their amounts of dealings have both the large and the small one. Some extends their marketing networks towards abroad, while some vend meager amount of fish in adjacent rural areas. Marketing outlets differ from species to species. Therefore, it is very hard to illustrate the marketing channels and systems currently prevailing in Banate.

The particular type of wholesale trader, called as *Pala-pala* in local dialect, stands at the apex position of very complicated marketing channels and systems in Banate. There are at least four fish traders who are grouped into this type. It seems that *Pala-palas* dominate the flow of fishery products by functioning as wholesalers. They often provide financial services with the client-fishers and collectors that need advance payment. *Pala-palas* might be the kind of old-fashioned financial traders.

This paper purposes to identify the economic function of *Pala-pala* fish traders in fish marketing systems of the Banate Bay areas, according to observations and interviews. Firstly, the marketing channels of fresh and processed fish that *Pala-pala* has arranged so far will be described roughly. Secondly, based on interviews with three *Pala-palas*, the continuous processes of collection, auction and delivering will be analyzed. This part includes analytical description on “*suki*” relationship with client-fishers, collectors and buyers. In the last part, impetus from *Pala-pala*’s business to fisheries development will be considered.

Surveys on *Pala-pala*’s function to collect primary data were conducted in July and August, 2005, together with interviewing fishers in Alacaygan, Bularan (Banate municipality) and San Francisco (Barotac Viejo).

2 Main Marketing Channels of Fishers in Target Barangays

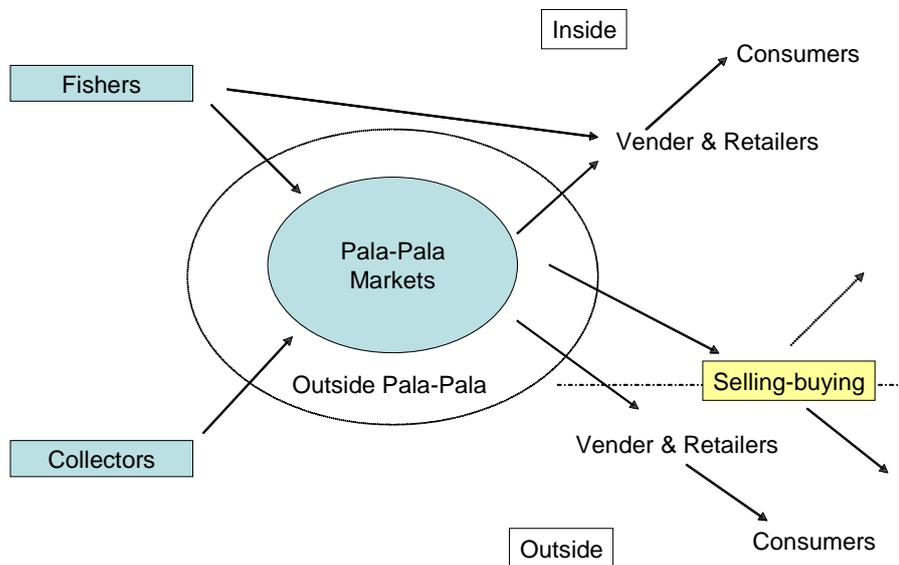
2.1 *Pala-pala* stands at apex position of marketing systems in Banate

There are tremendous numbers of fish traders in Banate area, including both large and meager scale of traders. Many types of fish traders function in wholesale and retail trades. According to interviews about marketing channels of fishery products in the Banate areas, a large number of fishers responded that they usually marketed a large portion of their catch to *Pala-palas* (and their market places). However, in Banate, only three fish traders are registered as a *Pala-pala* at the municipality. The volume that a *Pala-pala* deals in is very huge. It operates fish auction every day, which attract fishers, collectors and buyers. Fishers and collectors normally consign their fishery products to the *Pala-pala* who negotiates to fetch them at the highest price through auction.

Auction places that *Pala-palas* manage are located at the center of Banate municipality, where wholesale and retail trades are undertaken. Any buyer can join a systematic auction there. It often happens that fishers deal directly with venders and retailers just in front of *Pala-pala*’s markets, not passing through any auction. Fishers and their family easily sell their catch at markets, even if it is too small to vend or retail. Small venders and retailers who want to secure a certain volume of fish on a daily basis prefer to deal with a *Pala-pala*.

Pala-palas stand at the apex position through the daily operation of auction at the center of Banate. Figure 1 roughly shows the flow of fresh fish from production to consumption sites, through a distribution stage.

Figure 1 Main Channels of Fresh Fish in Banate



2.2 Assembly point of fishery products in the Banate bay

Banate is an assembly point which absorbs a huge amount of fishery products from both inside and outside Banate. Some Pala-palas deal in a wide variety of species with fish collectors in adjacent areas, and transact exclusively with particular fishers who have a financial link with them.

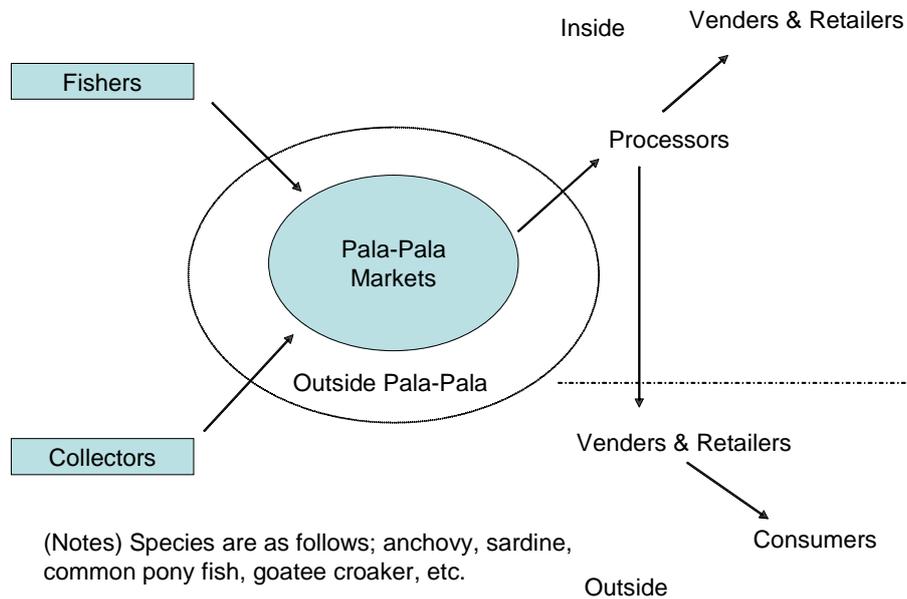
During the closed season in the Banate Bay, Pala-palas as well as other traders suffer from the scarcity of fish landed and transported. They are eager to deal with fish collectors outside the Banate Bay rather than fishers, who transport fishery product to Pala-pala's markets.

In the assembly point, Pala-pala markets mediate at least three distribution channels of fish. Firstly, small venders and retailers purchase fish there, and sell to consumers in Banate. Their amount of dealing is a meager scale. Everyday a vender procures fish between 100 peso and a few hundreds. Secondly, a number of venders and retailers come from outside to bring fish back to their towns. Thirdly, several types of buying-sellers deal in large volume of fish with Pala-palas. Some buying-sellers market fish mainly to restaurants and retailers including super markets in Iloilo. The amount of fish that they buy at the Pala-pala market reaches to 20,000-30,000 peso/ day.

2.3 Marketing channels of dried and salted fish

In Banate, Common pony fish ("Sap-sap"), Anchovy ("Anchovice"), Coatee croker ("Abo") and sardine are processed into dried and salted products. Fishers and their family often process their own catch. Normally, processors purchase raw material fish through Pala-pala markets. During a peak season of fishing, they increasingly process dried-and-salted, fermented and smoked products. Venders and retailers purchase these products and sell them to consumers.

Figure 2 Main Channels of Processed Fish in Banate



2.4 Processing of “Acetes” and marketing channels

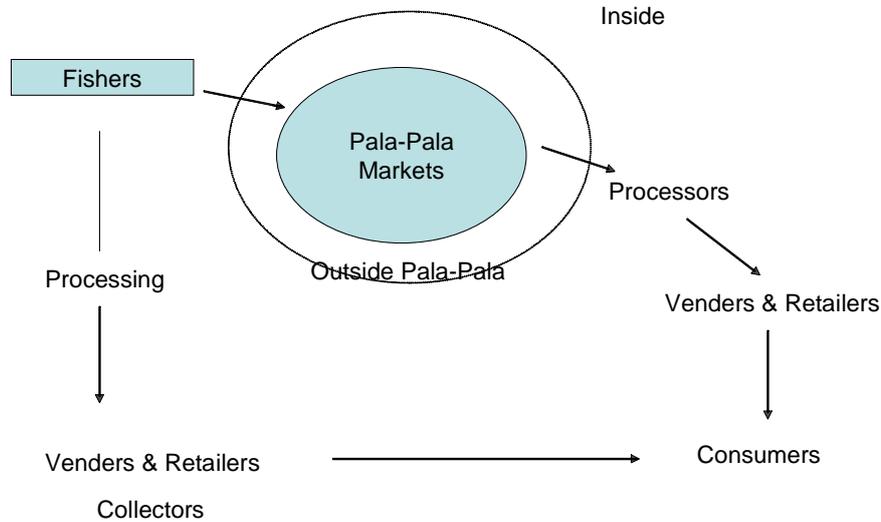
“Acetes” is one of the most important species, bringing income sources to local residents in several barangays. They normally employ “push net” (local name is *hudhud*). It is a triangularly framed collapsible net being operated by one or more fishers at 0.5-1.5 m in depth along the coastal areas. Peak season of catching acetes is from September to December, during which fishers are seasonally engaged in this lucrative fishery. There are several kinds of processed acetes, but pastes and dried ones are the most important in volume and value. Processing acetes into shrimp paste is very profitable.

After catching acetes, fishers and their family dry it immediately and make pastes. In cases where landing is too much, they sell fresh acetes in Pala-pala markets or transport directly to processors. In Alacaygan, at least one trader engages in the collection of shrimp paste while processing by himself. His collection networks extend in Banate and over Negros island. He retails and wholesales the shrimp paste collected in Banate markets.

Banate is also an assembly and distribution point of shrimp paste in eastern coast of Panay island, its marketing channels being extended over Iloilo and other municipal towns.

A Pala-pala seems to have a minor role in the marketing channels of acetes, since fishers self-process and sell products to particular traders specialized in paste marketing.

Figure 3 Main Channels of Acetes (Fresh, Dried & Paste)



2.5 Rapid change in the marketing of Blue Swimming Crab

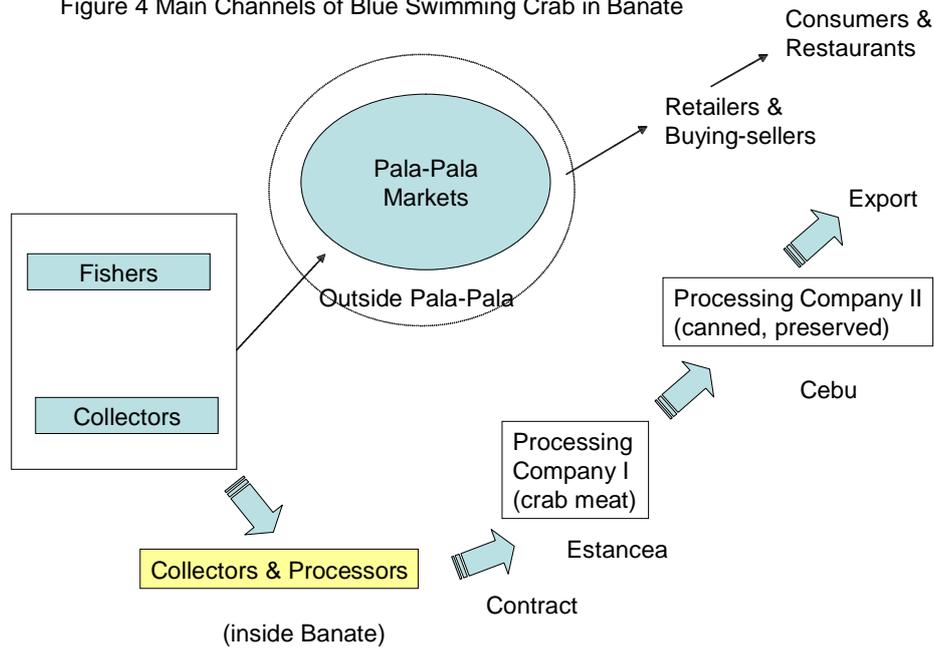
Rapid changes have been seen in the marketing of blue swimming crab, accompanied by the improvement of crab fisheries, during these three years.

2.5.1 New type of collectors

Three remarkable changes have caused. Firstly, the price level of medium and large sized crab has sharply risen from 30-40 peso/kg in 2002 to 130 peso/kg for big size and 60 peso/kg for small one. Such a sharp rise is caused by a new type of crab collectors that concentrates on dealing in blue swimming crab and offer much higher prices than those in the Pala-pala's markets. Naturally, fishers prefer to transact with these collectors, as a result of which the volume of crab auctioned in Pala-pala markets decreases.

Three years ago, a new type of collectors began to gather and process blue swimming crab. At present, only one collector can afford to transact with those fishers who are engaged in bottom set gill net and crab pot, and other buying-selling traders. He builds an assembly point, absorbing the huge volume of crab from Banate and its adjacent municipalities.

Figure 4 Main Channels of Blue Swimming Crab in Banate



The crab collector deals only in live blue swimming crab, with the sizes of 3.5-4.0 inches and 4.1 inches up. After he grades by size and quality, crab is steamed, dried for one hour, and then packed into a box with ice. The collector is an agent of the Cebu-based export company of canned crab meat, whose processing factory for making crab meat is located in Estancea. The canned products are exported mainly to the USA and EU. With financial support from the GER, the collector has expanded the scale of gathering fresh blue swimming crab.

2.5.2 Pala-pala market and their role

Medium and large sized blue swimming crab with good quality are marketed through the collectors' marketing networks. This collectors' strong demand for crab has raised the level of wholesale prices in Banate, thereby simulating for fishers to newly invest in crab pot and bottom set gill net.

On the other hand, Pala-pala markets have rapidly decreased the volume of dealing in blue swimming crab. Dead and smaller sized crab are transacted there. Pala-pala's role in the Banate markets has become smaller and marginal. This has caused a remarkable change of "suki" relationship between Pala-pala and crab fishers.

The collector of blue swimming crab provides some financial supports, such as the provision of money for buying nets, pots, fuel and other materials, in the same way as does a Pala-pala. Due to higher purchasing prices, many crab fishers have shifted from Pala-palas to crab collectors. Some fishers have just started with the operation of bottom set gill net or crab pot fishing.

As the case of blue swimming crab shows, even if a Pala-pala stands on the apex position of marketing channels, its position is not absolute, but changeable.

3. Economic Characteristics of Pala-pala

3.1 Multiple functions of Pala-pala in wholesale trading

Pala-palas have multiple functions in wholesale trading of fisheries products. They should be distinguished in several aspects from collectors, buying-sellers, brokers and retailers, even if they occasionally function as these types of traders.

Firstly, as illustrated in the above flow charts of fishery products, three Pala-palas in Banate stand at the apex position of collection and distribution processes, in the production site.

They function as wholesalers.

Secondly, the operation of auction is a key function in Pala-palas' business, through which it generates the flow of fisheries products from fishers (and primary collectors) to buyers. It owns and manages market facilities, including an auction hall, handling sites and ice storage. Therefore, Pala-pala is the organizer of wholesale market in production site. In the auction, it has double profiles, both auctioneer and consigner.

Thirdly, for the smooth and stable operation of auction, Pala-pala prepares a unique clearing system through which both consignor (fishers and collectors) and buyers will utilize financial services. Consignors will get their turnover immediately after their products will have been sold out. Buyers will get fish on credit, not paying in cash. Without this system, a Pala-pala's market would have hardly attracted a number of consignors and buyers and increased the volume of transactions.

3.2 As a financial trader

Pala-pala is characterized as a financial trader, providing particular fishers with a source of investment in fishing gear and boat, and with funds for a daily fishing operation. It often gives generously to client-fishers for emergency relief. Such financial activities, which might be regarded paternalistic in nature, enables the Pala-palas to collect exclusively catch from particular client-fishers and client-collectors.

Transaction between Pala-pala and fishers is based on exclusive business link, called as "suki". Suki relationship is a kind of patron-client relationship, including both exploitation and paternalism. Very few client-fishers participate in the process of price formation at the Pala-pala market.

Beside a 6-7% of commission on handling, a Pala-pala will deduct a certain amount of payment from the turnover of client fishers, if they borrow money from it. It often happens that borrowers would escape from the Pala-pala without paying any frozen loans.

3.3 System and procedures of auction

In Banate, the present auction system had been established by Pala-palas 20-30 years ago. The auction was an effective tool to make it possible for Pala-pala to expand the volume of transaction while reducing risks that they had faced in dealing with small-scale fishers. The Pala-palas concentrating their function on auctioneers would avoid direct transactions with the fishers, just innerving any flows of fishery product between production site and wholesale process.

In general, auction's procedures are as follows:

- a. weighing unloaded fish
- b. grading size and quality
- c. setting up auction price (by manager)
- d. starting auction
- e. after successful bidding, consignors can receive money from Pala-pala's accountant
- f. buyer will pay after selling fish.

The Pala-pala No.2 adopts slightly different method of auction from others, since fishers and buyers directly negotiate. In addition, outside Pala-pala markets, fishers and buyers meet together to directly negotiate selling prices, too.

Buyers usually pay by credit, not in cash. They have "lab aseto" relationship with Pala-pala. They are allowed to buy a certain limited amount of fish, and return money within 1-3 days. Small venders and retailers normally repay the next day. Of course, any newcomer can join auction anytime, but should pay in cash.

Pala-pala will pay the turnover of fish to consignors instead of buyers, immediately after transaction is settled down. A 6-7% of commission will be deducted automatically by the Pala-pala.

Table 1 Outlines of Pala-Pala's Business Activities

	Length of business	Type of business	Species dealt	Five important species				
				1st	2nd	3rd	4th	5th
1 Pe Pe Pala-pala	unknown	wholesale accounting financing	Almost all species except round scad and flying fish	Gulao & Gumaa	Squid	Thread fin bream	Milk fish	Common pony fish
2 Carlings' Pala-pala	41 years	wholesale accounting financing	Almost all species except flying fish	Thread fin bream	Common pony fish	Anchovy	Squid	Goat fish
3 ETICK Pala-pala	20 years	wholesale accounting financing	Almost all species except bonito and flying fish	Squid	Common pony fish	Anchovy	Goatee croaker	Thread fin bream

3.4 Almost all species are dealt in Pala-pala markets

Pala-pala deals in almost all species of marine fish landed in Banate , and fresh water fish. The Pala-pala market is characterized into a wholesale market in producing area. Not only fishers but also collectors bring huge amount of fish from outside Banate. Pala-palas' collection networks extend over far wider areas, such as Estancia and other towns in the eastern part of Panay island. Some collectors transport the species of fish that are not unloaded in Banate to Pala-pala markets.

3.5 Difference of collection process

Three Pala-palas deal in almost all species, but there is much difference as regards the economic important species that each Pala-pala prefers.

Shown in Table 1, the species that encircling gill net and drift gill net target are brought into the market of Pala-pala No.2. Seventy percent (70 %) of the volume come from fishers outside Banate, while only 30 % are from inside Banate.

Pala-pala No.3 deals in a large volume of fish caught by stationary lift net, round whole seine, hand line and trawl. Squid is the most valuable species here. Seventy percent (70 %) of the volume comes from fishers inside Banate, who are grouped into small-scale fisheries.

Table 2 shows that Pala-pala No.1 much prefer to transact with collectors rather than fishers due to several reasons: 1) no need to give financial assistance to collectors; 2) securing stable volume of marketable species. Bulao & Gumaa are target species, not landed in Banate. During the closed seasons (November to March), the volume of dealing is quite small in Banate. The least volume of transaction per day falls down by 150 kg.

3.6 Distribution process through auction

A number of fish buyers come to Banate to buy fish. In Pala-pala No.3, the average number of buyers per day is 100. Buyers amount to 50 per day in Pala-pala No.2. The number of buyers seasonally fluctuates. During the closed seasons, only 30 buyers deal in with this Pala-pala.

There are many types of buyers, but they mostly are small-scale venders and retailers. Venders are from Banate and its adjacent areas, while retailers come from the Banate's wet markets and any conceivable markets in Iloilo city. The amount of dealing ranges on average between 100 and a few hundred pesos.

Table 2 Characteristics of Collection Process

	Collection channels (No.)						Remarks of collection
	Fishers	inside	outside	Collectors	inside	outside	
1 Pe Pe Pala-pala (suki-relation)	30-40	20-25	10-15	15	1	14	Prefer to collectors; 1) no need to give financial assistance; 2) fishers' supply is not enough; 3) securing stable business. Bulao & Gumaa are target species, not landed in Banate.
	20-25	20-25	0	0	0	0	
2 Carlings' Pala-pala (suki-relation)	30-50	9-15	21-35	0	0	0	Only from fishers, including those catching in Estancea. Encircling drift gill net is a major supplier. Target species is Lagaw (Goatee croaker).
	30-50	9-15	21-35	0	0	0	
3 ETICK Pala-pala (suki-relation)	50	30	20	0	0	0	Collection from inside Banate is the major route. A number of small boats are included. Squid is target species. Stationary lift net supplies squid and common pony fish mainly.
	50	30	20	0	0	0	

Table 3 Destinations of Five Important Species and Buyers

	No. of buyers	Major destinations of five important species				
		1st	2nd	3rd	4th	5th
1 Pe Pe Pala-pala (suki-relation)	unknown	Gulao & Gumaa Buying-selling inside: 50%, Retailers outside: 50%	Squid Buying-selling inside : 50%, Retailers outside: 50%	Thread fin bream Buying-selling inside : 50%, Retailers outside: 50%	Milk fish Retailers 100% (inside: 70%, outside: 30%)	Common pony fish Processors 100% (inside only)
2 Carlings' Pala-pala (suki-relation)	30-50	Goatee croaker & Retailers Venders: both inside and outside	Common pony fish Venders: both inside and outside	Anchovy Venders: 40% Processors: 60%	Squid Retailers: both inside and outside	Goat fish Retailers & Venders: (Retailers>Venders)
3 ETICK Pala-pala (suki-relation)	100	Squid Retailers inside: 50%, outside: 50%	Common pony fish Retailers and Processors: in peak season 80% for processors inside: 70%, outside: 30%	Anchovy Retailers and Processors: in peak season 80% for processors inside: 100%	Goatee croaker Retailers and Processors: in peak season 70% for processors Peak: inside 50%, outside 50%	Thread fin bream Retailers inside: 100%

Some buying-sellers dealing in large volume with Pala-pala No.1 purchase 20,000-30,000 peso/day.

3.7 Impetus of Pala-pala given to fisheries development

The expansion of Pala-pala markets has so far brought a great impetus to the development of fisheries in Banate.

In production site, fishers can obtain the financial source of investment and operating funds from a Pala-pala. It is a financial trader that tends to monopolize the fishery products of client-fishers. Without such an exclusive link, the fishers would have hardly enlarged fishery production on commercial basis due to the lack of own accumulated funds.

Instead, client-fishers should be subordinate to the Pala-pala in selling products at market. They may stand on vulnerable position in the negotiation of prices. The relationship of debtor-and-creditor might be endless, as long as the fishers would not clear out all debts from accumulate funds enough to become independent in economic terms.

In wholesale stage, a Pala-pala organizes its own marketing networks by extending financial services to whatever the type of buyers. It has own mechanism of price formation through the operation of auction.

Newcomers often shake conventional exclusive relationship between fishers and Pala-pala. A new type of crab collectors appear to buy at much higher prices than buyers at Pala-pala markets. Those fishers catching blue swimming crab used to hide themselves and sell their catch outside the Pala-pala channels, and then shifted to the new collectors with depending on their provision of advance payment. Thus, such an exclusive relationship between fishers and Pala-pala might be weakened rather than before.

According to the answers to a series of questions about financial source of investment, those small-scale fishers engaged in some gears, such as hand line, gill net and push net, no longer depend on Pala-pala's financial support. They are free from exclusive business link with Pala-pala, and then they can deal with any buyers outside there on a cash basis.

Impetus from Pala-pala's Business to Fisheries Development

A wide variety of functions built into Pala-pala establishment are necessary for the wholesale markets in producing sites.

- (1) With the existence of these markets, even small-scale fishers have gained a higher rate of commodity to the total catch. It is easy for them to sell their catch as commodity. On a contrary, the rate of household consumption is considerably low.
- (2) Such marketing surroundings in Banate urge most of fishers to engage in commercial production and enlarge the scale of production. This leads to a decrease of economic important species and often overexploitation.

Coastal resource management of BBRMCI should pay more attention on marketing aspects.

Business of Crab Collector and Its Impact to Crab Fisheries in the Banate Bay

1 Introduction

More than three years ago, crab fisheries had been one of the most lucrative fisheries in the Banate Bay, so that a number of fisher folks had been engaged in this fishery by employing bottom set gill net. They transported a large portion of blue swimming crab to Pala-pala wholesale markets in Banate, and sold through their auction. Crab fishery was a kind of ordinal fishery.

However, after a new type of traders specializing in trading crab appeared, this fishery has become so attractive that an increasing number of fisher folks have enthusiastically started with the operation of crab fishing. The results of household survey that were conducted in July, 2005, show a rapid expansion of crab fishery through coast lines of the Banate Bay. In particular, crab pot fishery has been widely extended since 2004, with new patterns of fishing operations. In San Francisco, fisher folks who used to concentrate on long line fishing started to invest in crab pot fishery. Their fishing operation is now a multi-gear and multi-species type, with the combination of long line and crab pot. Thus, the appearance of crab collectors has given a great impact to coastal small-scale fisheries in the Banate Bay.

The purpose of this paper is to describe the business activities of a crab collector in Barangay Zonur, focusing on the collection process of crab from fisher folks and collectors. Interviewing with a crab collector was done in August, 2005.

2 Outlines of Crab Collector's Business

2.1 Backgrounds of Collector's Business

Mr. Jerry Bacayo started with the trading of blue swimming crab three years ago. Before then he had been employed by a fish trading company located in Iloilo city. As a procurement staff, he had involved in gathering and marketing fish. Being independent from the company, he began to gather crab in Banate and send it to the fish trading company that he had worked for. He acted like an agent of the company. He stopped transacting with this company; at present, he transports crab only to the crab meat factory located in Estancea, which is a subsidiary of the GRE Company whose processing plant is situated in Cebu island. This company produces canned products that are exported mainly to EU and USA.

The rapid growth of the crab collector's business is attributed to an increasing demand for crab meat coming from the GRE's factory in Estancea. Establishing a business contract with the factory, he obtains the financial sources of purchasing crab, and secures the sustainable outlets of crab.

2.2 Collection and Marketing

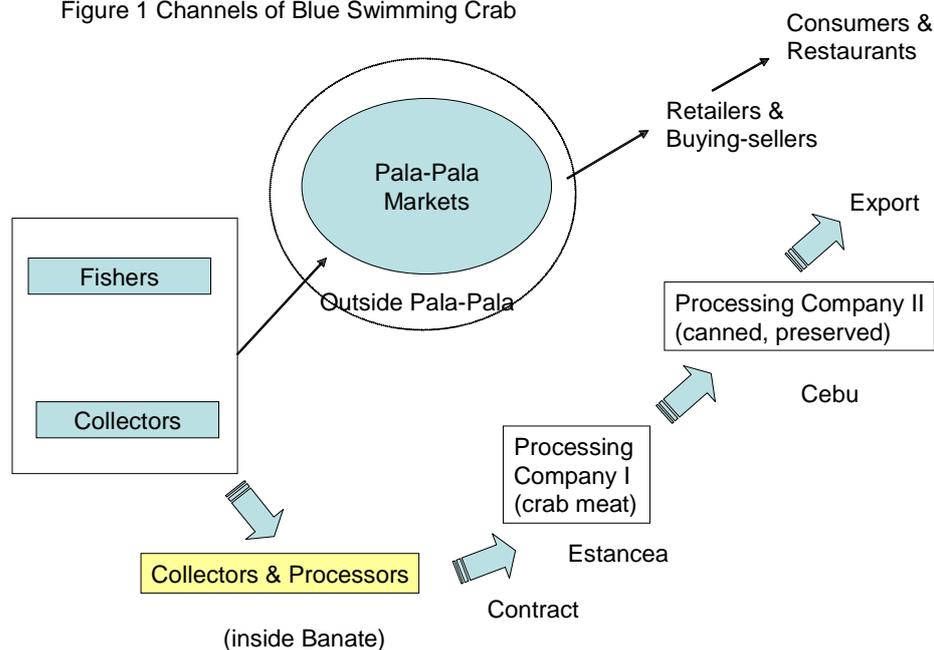
2.2.1 Marketing channels in Banate

There are two main marketing channels of blue swimming crab in Banate, shown in Figure 1. The one is that Pala-pala dominates the flow of crab between fisher folks and any types of buyers, dealing in almost all kinds of crabs and any grades if they are marketable. The other one is through crab collectors. Their business method is quite unique as follows:

Dealing in live crab only.

Size and quality of crab that he will procure are strictly controlled.

Figure 1 Channels of Blue Swimming Crab



2.2.2 Procedures of collection

- 1) The crab collector’s office is open till a late hour from early morning. Fisher folks normally bring their catch early in the morning. Traders who gather crab from fisher folks transport a large volume of crab after 6:00 pm.
- 2) The crab collector purchases blue swimming crab (both female and male) with the size of 3.5 inches up. Sizes of live blue swimming crab are as follows:

Medium size 3.5-4.0 inches
 Large size 4.1 inches up

- 3) The collector and his workers strictly check size and quality of crab brought into his factory. Appropriate selection and grading are the requirements leading his business to a great success, since the GRE factory examines all pieces of crab when purchasing raw materials from any collectors. Not following the factory’s instructions, any out-graded products will be rejected, and then the collectors get a loss.

Table 1 Purchasing and selling prices of Blue swimming crab by the collector

Unit: peso/ kg

	Purchasing price		Selling price	
	Big size	Small size	Big size	Small size
From traders	130 peso	60 peso	140 peso	65 peso
From fishers	120 peso	45 peso		

4) Table 1 shows the purchasing and selling prices of crab according to size. The crab

collector tries to purchase as much volume of large-sized crab as possible, since the factory offers a higher price to this size. He can gain a larger profit margin from selling large-sized crab to the factory.

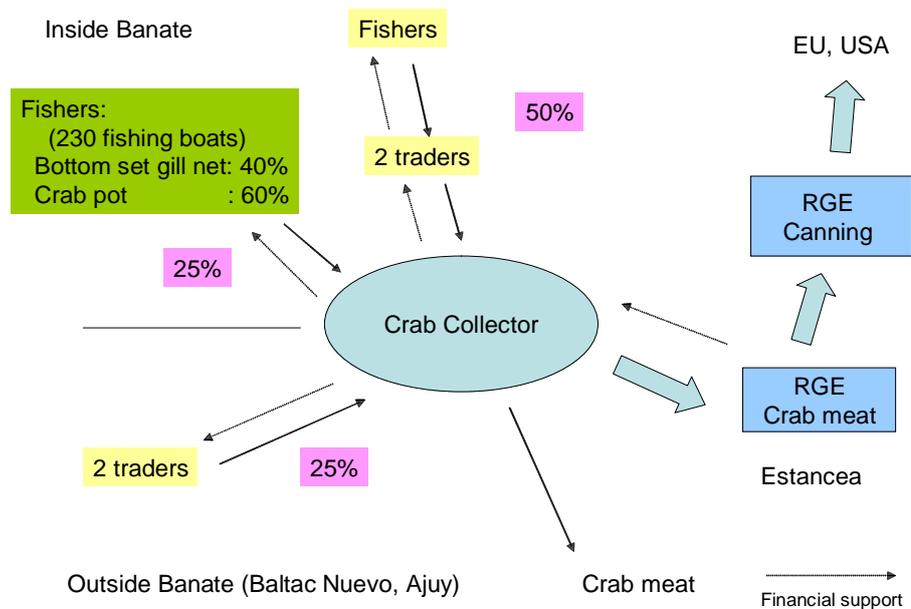
- Once the crab collector selects and grades crab, he will immediately pay in cash to both fishers and traders.

2.2.3 Collection channels from fisher folks

The crab collector purchases crab from fishers and traders, but gives far better conditions to the traders, as the figures of Table 1 prove.

As Figure 2 shows, the crab collector has a direct link with 230 boats in Banate that are equipped with bottom set gill net and crab pot. Bottom set gill net used to be the major gear catching blue swimming crab: but recently, the fisher folks using crab pot has increased in number because of its effective catch. At this moment, those boats equipped with crab pot which he collects from account for 60% of the total. The remaining 40% are bottom set gill net boats.

Figure 2 Process of Collection & Its Impact



2.2.4 Collection channels from fish traders

Seventy-five percent (75%) of the volume of crab comes from traders both inside and outside Banate. The inside-traders share 50% of the total, while the outside has a 25% of share. The crab collector provides financial supports to two traders in Talokgangan and San Francisco (outside Banate). The trader in San Francisco is the leader of the fishery cooperative that operates marketing business. Two traders in Barotac Nuevo and Ajuy join his collection networks, too.

The crab collector can afford to provide these traders with enormous amount of funds for gathering crab. Without such advance payment, they would hardly gather enough volume to transport exclusively. The fishery cooperative in San Francisco buys 115 peso/kg, and then sells to the crab collector at 120 peso or 130 peso.

2.2.5 Processing, packing and transportation

Immediately after purchasing crab, the crab collector steams it for 20-30 minutes and then dries off for one hour inside the room by using small electric fans. One kg of crab will be reduced

approximately by 0.75 kg. The RGE Company estimates the loss of weight as 25% and then converts 0.75 kg into 1 kg, when it procures the steamed-and-dried crab from the collector.

The crab collector packs 18 kg of steamed-and-dried crab into a box with ice, which is equal to 24 kg of live crab by the factory. This is the warranty scheme that the factory promises him.

Transporting the boxes by truck takes almost two hours to the REG factory in Estancia. The collector should pay the transportation expenses by himself.

2.2.6 Rejection and reprocessing

Though being strictly selected and graded by following the terms of contract, a few boxes are often rejected by the RGE factory.

The RGE factory opens all boxes and carefully checks all crab piece by piece. The boxes with smashed and inadequately-steamed crab would be excluded, so that the collector has to bring them back to Banate.

To reduce the loss derived from the rejection of crab, the crab collector has begun to process crab meat by himself in his own factory, and sell it to local markets. One kg of crab meat needs 4 kg of 4.5 kg as raw materials: the total expenditure, including worker's wage transportation, is approximately 686 peso/ kg. Selling price of crab meat is only 200 peso/ kg: as a result, the collector should have a large amount of loss. He is making a plan for investment in a crab meat processing factory for utilizing out-graded and rejected raw materials.

2.3 Operation and Management of Business

2.3.1 Cost and profit

Following the purchasing prices of the RGE factory in Estancia, the crab collector offers the prices of crab in Banate which are fixed for a long period.

Costs for processing, packing and transportation are approximately 2.5 peso/ kg. As a result, the profits of large size are 7.5 peso from traders and 17.5 peso per kg from fisher folks, respectively. The profits of small size are 2.5 peso from trader and 17.5 peso from fisher folks, respectively. The collector realizes that dealing with traders seems stable even if profit margin would be smaller compared to transactions with fisher folks.

Table 2 Profit from collection and processing

	Unit: peso/ kg			
	From traders		From fishers	
	Big size	Small size	Big size	Small size
Purchasing price	130 peso	60 peso	120 peso	45 peso
Selling price	140 peso	65 peso	140 peso	65 peso
Costs for processing	2.5 peso	2.5 peso	2.5 peso	2.5 peso
Profit	7.5 peso	2.5 peso	17.5 peso	17.5 peso

Note: 1) Costs for processing include direct cost only.

2) The figures do not include any costs and losses for the rejected crab.

2.3.2 Management aspect

The crab collector function as an agent of the RGE factory that provides a large part of working capital required for collecting and processing crab. Depending heavily on this capital, he generates his own money circulation with putting his accumulated capital into business management.

During the peak season (from September to February), the average volume of dealing in crab is 1-2 tons per day, or 30-60 tons per month. In the lean season, the volume reduces by 300-400 kg per day.

The RGE factory advances 1.5 millions peso to the crab collector for a week during the peak season. He can afford to continuously procure crab by paying in cash to any sellers. This enables him to keep a large number of fisher folks and several influential traders in his collection networks. Advance payment may be the most effective tool to rapidly expand the volume of gathering crab, too. Those fishing boats which rely on the advance payment of the crab collector amount to 180, being 78% of the total that he transacts with. His financial activity gives a great impetus to the growth of crab fishery in the Banate Bay.

Despite such concessive financial support from the RGE factory, the collector should take any risks in collection, processing and delivering, in cases where it would reject to purchase some parts of the raw materials he transports. Naturally, he has made much effort to enhance the capacity of quality control all over the process of collection, steaming-and-drying, and delivering.

It is noteworthy that a computerized system has been introduced in his accounting and management for sustaining effective money circulation and watching outstanding bills.

3 Impacts to Crab Fisheries in the Banate Bay

3.1 Changes in Fishing Operations

3.1.1 Booming of crab pot

An increasing demand for blue swimming crab, coming from a new type of crab collectors, has accelerated the expansion of crab fishery, especially crab pot fishing. Before the crab collector had begun with collection and processing, one kg of crab was about 30-40 peso. The present market price is almost three times as much as three years ago. Higher purchasing prices the crab collector offers are very attractive to fisher folks.

Crab pot has widely been extended over Banate besides bottom set gill net. A number of fisher folks have just started with crab pot fishing, while some have enlarged the scale of fishing operation by buying additional gears. As a whole, the total of catch effort put into in the Banate Bay has increased at a higher pace. Crab fishery is now becoming a boom.

3.1.2 Diversification of capture fisheries

Diversification of capture fisheries advances at a high speed. Those fishers who got involved in the operation of single fishing gear have started with multi-gear fishing operation. The results of Survey 2005 indicates clearly that, in San Francisco, fisher folks shifts from the single gear operation of long line to the combination of long line and crab pot. This is a notable change in the pattern of fishing operation that fisher folks got accustomed to. As far as our interviewing is concerned, the diversification of fishing operations brings an increasing fisheries income to the fisher folks in San Francisco.

A considerable number of fisher folks are incorporated into crab export business through the crab collector's networks.

3.2 Impact to Marketing System

3.2.1 New marketing channels

The flows of blue swimming crab traded by the crab collector are completely separated from the conventional routes of fresh (dead), small and/ or out-graded crab.

A considerable volume of crab landed in Banate tends to be directed toward such a new route set up by the crab collector. Pala-palas have reduced the roles of crab trading in Banate markets. They have neither influenced on the formation of crab's prices nor dominated the marketing of crab, anymore. Market prices in Banate change largely according to the offer of the crab collector.

3.2.2 "Suki"-based financial relationship still exists

A kind of "suki" relationship is established between the crab collector and fisher folks.

The way in which he adopts is not new characteristic of fish trading in small-scale fishing community. Regardless of whether or not his collection activity is old-fashioned in nature, he has thoroughly changed the marketing surroundings of blue swimming crab in Banate markets and its immediate vicinity. He has successfully obtained the power of price formation in local markets.

4 Conclusions

The growth of crab fishery leads to an increasing fisheries income of fisher folks; however, it is wondering whether or not it will keep sustainability in resource and economic terms. Such a rapid expansion may give a negative impact to crab resources or bring overexploitation. This will have to be examined carefully. Sustainable growth of crab business should be a strategic target of the BBRMCI and BFARMCs.

Part V

Economic Conditions of Crews and Livelihood Projects

Economic Condition of Crews in Banate Bay: Results of Supplementary Survey

1. Introduction

Crews seem to be in the lowest level in term of poverty among the fishing communities of Banate Bay. It is an important research interest to know how they cover their basic needs. Data obtained from the previous surveys did not exactly cover the issues like level of incomes (only range of incomes was investigated) and its sources. In this backdrop, the present survey attempted to attain the following objectives:

- a) to clarify level and sources of incomes of crews in Banate Bay
- b) to determine the contribution of fishing operations as crew to the total household's income.

2. Methodology

Survey was conducted in barangay Alacaygan. From the total number of 16 crews, nine were randomly selected. Data were collected between February, 4th – 10th, 2006. A semi-structured questionnaire, which contained both open ended and closed questions, was to collect data by conducting face-to-face interview of the crews.

Respondents were classified into categories such as extreme poor, moderate poor and no poor according to the poverty threshold for Region VI (Western Visayas that include Iloilo) in 2003, defined by the National Statistic Coordination Board (NSCB) of the Philippines government. NSCB defines for this region as poverty threshold in PHP12,000/year/capita in 2003. According to this figure, we defined extreme poverty as per capital annual income less than the poverty threshold (i.e., PHP 12,000/year) and moderate poverty as income between PHP 12,000 and 24,000/year. Above poverty line are the people having per capital annual income over PHP 24,000. As indicator, we also used the relative poverty as used by Asian Development Bank (ADB, 2003). A relative poverty line defines the poor as those with per capita income or expenditure level below a certain percentage of the mean or median for the country. In this case 50% of the mean is used. The national average income is PHP 74,000/year/ household.

3. Findings

3.1 Crews' income

Per capital annual income of the respondent crews ranged between PHP 6,563 – 24,000 with the mean of PHP12,450 (Table 1). Majority of respondents (54.5%) were considered to be in the level of extreme poverty. The remaining crews fell in the moderate poverty. Considering the relative poverty line as reference we found that 72.7% of the households are poor.

Table 1. Categories of crews according to their level of poverty on the basis of per capital annual income

Observed range	Mean	Categories on level of poverty	No. of households	%
6,563-24,000	12,450	Extreme or absolute poverty (<PHP12,000/year/cap)	6	54.5
		Moderate poverty (PHP12,000-24,000/year/cap)	5	45.5
		Above poverty line (>24,000/year/cap)	0	0
		Relative poverty (*) (below 74,000/year/household)	8	72.7

(*) On the basis of family with 5 members

Table 2 shows some salient features of the crews under investigation. Age of fishers was found to vary between 20- 51 years.

Table 2. Summary of the salient features of the households of the respondents

Household No	Age	Education	Household size		Household Incomes			Per capita Annual income (PHP)
			No.	No. of active workers	member	Source of income	Annual income (PHP)	
1	34	4	5	2	Head	Crew	55,968	14,554
						Carpenter	1,800	
					Wife	BBQ banana	15,000	
						Total	72,768	
2	33	6	7	1	Head	Crew	24,000	10,371
						Fishing	48,600	
						Total	72,600	
3	38	6	9	2	Head	Crew	48,000	9,333
					wife	Fish selling	36,000	
						Total	84,000	
4	29	6	8	1	Head	Crew	52,500	6,563
						Total	52,500	
5	37	6	5	1	Head	Crew	69,504	15,101
						Remittance	6,000	
						Total	75,504	
6	27	9	8	4	son	crew	50,912	20,528
					Wife	Fish vending	38,400	
					Head	Tricycle	24,000	
					son	Crew	50,912	
						Total	164,225	
7	26	6	7	2	Head	Crew	30,000	8,571
					brother	Crew	30,000	
						Total	60,000	
8	51	5	7	3	Head	Crew	12,000	8,571
					son	Crew	24,000	
					son	crew	24,000	
						Total	60,000	
9	38	4	3	1	Head	crew	72,000	24,000
						Total	72,000	
10	20	6	8	2	son	crew	50,000	12,500
					Head	fishing	50,000	
						Total	100,000	
11	28	2	7	4	son	crew	12,000	6,857
					son	crew	12,000	
					son	crew	12,000	
					son	crew	12,000	
						Total	48,000	
Average	32.8	5.5	6.7	2.1			78,327	12,450

The mean was 32.8 years, which is more than 10 years lower than the total fishers' mean. This number could be lower if we incorporate the age of the crews that were not interviewed.

In terms of level of education most of the respondents didn't finished high school, while the average years of schooling was 5.5. The mean of household size was 6.7 that it is higher than the national average (5) for rural families. The mean of active workforce per family was 2.1. Majority of respondents were head of household and married. However, if we consider the total member of the households, we found that the number of crews increases to 20. This increase is because of the fact that sons of the family heads also work as crews. There were no women in the study area working as crew.

Main source of income were the activities as crew. Only in one case, income from crew activities did not cover more than 50% of total income of the household. Other alternative sources of incomes usually were contribution by the wife and other members working as crew. Some other income sources were: fish vending, BBQ banana, working as carpenter, tricycle, and remittance of other family members residing outside.

3.2 Fishery Operation

From the eleven crews interviewed, six of them mentioned that they worked for owner of "*Pakaroy*" (drift net) and four worked in "*Lahang*" (bottom set-gillnet) (Table 3). For *Pakaroy* usually the number of crews oscillated between 6 and 7 in boats that in the legal limit of 3 tons. Usual operation is year round but peak season is mentioned between February and May (Figure 1). Lean season is between December and February. The average of number of trips is 23.3 days/month and the time average expended in operations is 13.6 H/trip. There is no variation between peak and lean season. The usual schedule for operations is between 4PM and 8AM. After the arrival to the beach, the crews spend around one hour in landings operation in "*Pala-Pala*." After that they return to home and rest until next fishing operation. *Pakaroy* is operated during 15 consecutive days. At the day 16th in some cases, the owner delivers all the catch to be shared for the crews. This operation day is called "*Palhok*". After that, they rest for at least 2 days followed by continuation with the cycle of 15 days and "*Palhok*".

In the case of "*Lahang*" fishing operations are shorter with the average of 4.25 hours/trip. Boats are smaller, less than 2 tons. The total number of crew does not exceed 3 members. Similar to "*Pakaroy*" the number of days of operations is 23.7 days/month and also there is not difference between peak and lean seasons. Usual schedule of operation starts at 3-5AM and continues until 9AM. After that, catches are sold at *Pala-pala* . After returned to house, the crews rest and repair nets. There are not other special activities except during "acetes" (shrimps) season, when they dedicate to fish for some hours or even stop "*Lahang*" operations.

Main species captured by "*Pakaroy*" are "*Lagaw*" (Thread fin bream), Abo (Goatee croaker) and sap-sap (Common pony fish) (Table 4). Table 5 shows that average of landings and prices by trip for "*Lagaw*" were 39.9 kg and PHP 100.7, respectively. In the case of "*Lahang*" main target specie is "*Kasag*" (Blue swimming crab). Its average of landings was 7.4 kg per trip and the mean price per trip was PHP 124.

Table 3. Seasons and schedule of main crews' fishing operations

Fishing gear	Peak season				Lean season			
	Months	Trip/month	Schedule	Time/trip (H)	Months	Trip/month	Schedule	Time/ trip (H)
Pakaroy	Feb-May	25	NA	2.5	Dec-Jan	25	NA	2.5
Pakaroy	Feb-May	20	4PM-8AM	16	Dec-Jan	20	4PM-8AM	16
Lahang	Oct-Dec	20	3AM-9AM	6	Jan-Feb	20	3AM-9AM	6
Pakaroy	Mar-May	20	4PM-9AM	17	Dec-Jan	20		17
Pakaroy	Feb-May	25	3PM-7AM	16	Jan-Feb	25	3PM-7AM	16
Pakaroy	Mar-Sep	25	4PM-6AM	14	January	25	4PM-6AM	14
Pakaroy	NA	25	4PM-8AM	16	NA	25	4PM-8AM	16
Lahang	Sep-Dec	25	5AM-9AM	4	Jan-Feb	25	5AM-9AM	4
Lahang	Aug-Dec	25	NA	6	Jan-Feb	25	NA	6
Pukot	Feb-Oct	25	NA	3	January	25	NA	3
Lahang	Oct-Dec	25	NA	1	Jan-Feb	25	NA	1
Avg.		23.6		9.23		23.6		9.2

Figure 1: Seasons of fishing operation of main crews' fishery

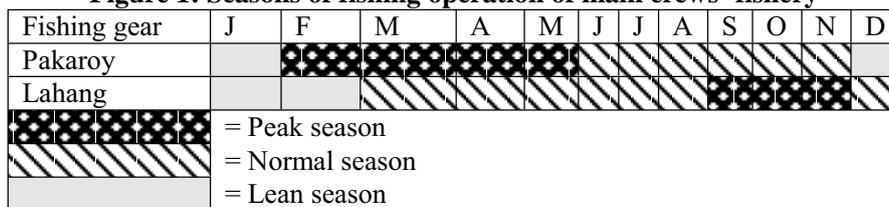


Table 4. Main target species of fishing operations during peak and lean season

Fishing gear	Peak season			Lean season		
	Target species	Landings (kg)	Price/kg (PHP)	Target species	Landings (kg)	Price/kg (PHP)
Pakaroy	Lagaw	40	110	Lagaw	10	95
	sap-sap	20	65	sap-sap	5	90
	Hippun	1.5	225			
Pakaroy	Lagaw	100	65	Lagaw	20	95
	Abo	30	70	Abo	7.5	75
	sap-sap	20	85	sap-sap	5	100
Lahang	Kasag	13	115	Kasag	3	115
	Lagaw	4	150			
Pakaroy	Lagaw	40	70	Lagaw	5	100
	Abo	10	45	Abo	5	70
	Lawayan	10	50	Lawayan	5	80
	Kasag	2	100	Kasag	2	100
Pakaroy	Lagawn	NA	NA	Lagaw	NA	NA
	Abo	NA	NA	Abo	NA	NA
	Lawayan	NA	NA	Lawayan	NA	NA
Pakaroy	Lagaw	60	80	Lagaw	10	115
	Abo	50	55	Abo	20	40
	Latab	50	55	Latab	20	40
	sap-sap	50	55	sap-sap	20	40
Pakaroy	Lagaw	25	150	Lagaw	15	90
	Lawayan	30	80	Lawayan	15	50
	Kasag	2	150			
Lahang	Insik-insik	10	20	Insik-insik	10	20
	Kasag	10	115	Kasag	5	115
Lahang	abo	10	40	Kasag	5	140
	lagaw	10	150			
	sap-sap	10	60			
Pukot	asohos	5	60	asohos	2.5	70
	salmonities	5	50	salmonities	2.5	55
Lahang	Kasag	10	140	Kasag	1	140
	Abo	35	70	Abo	35	70

Table 5. Summary of main target species of crews' fishing operations

Target species	Landings (kg)				Price/kg (PHP)			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Lagaw	4	100	39.9	32.7	65	150	110.7	39.4
Abo	10	50	27.0	17.2	40	70	56.0	13.9
Kasag	2	13	7.4	5.1	100	150	124.0	20.4
Sap-sap	10	50	25.0	17.3	55	85	66.3	13.1

3.3 Evaluation of crews of their present condition

Most of the respondents did not clearly express their level of satisfaction for their present condition; some even mentioned “quite satisfied.” However, answering the questions like “why don’t you change the present occupation” or “why did you decide to be a crew,” many of them mentioned that non-existence of alternative jobs and lack of capital to initiate other activity as the main reason of having present status.

On regard of BBRMCI most of the crews mentioned that they did not aware about its activities and sometimes only by known the name. In the case of crews’ knowledge about BBRMCI, it was indicated that the main function was the control of illegal fishing.

4. Conclusion

The findings confirm the extreme situation of crews, more than 50% of whom were living in absolute poverty and the rest in moderate poverty. Most of the families interviewed paradoxically showed apparently conformity with their living standard covering their alimentary needs with low nutritional diets. Diets are composed mainly with fish and rice.

Lack of job opportunities was mentioned as important reason to explain their present condition. Probably this is a clear reflex of the economic situation in Banate bay that also coincides with the recent poverty reports in the country, which mentions that 40% of the Filipinos live with less then 1 US\$/day. It is clear how the poverty has important implications in the success of sustainable management of fishing resources in Banate bay.

Part VI

Mudcrab Culture in Mangroves: Analysis of a Livelihoods Project in a Coastal Barangay of Banate Bay, the Philippines

Mudcrab Culture in Mangroves: Analysis of a Livelihoods Project in a Coastal Barangay of Banate Bay, the Philippines

1. Preamble

Talokgangan, a costal barangay of Banate bay, seems a common and traditional locality like numerous costal barangays in the Philippines. The members of the Talokgangan Small Fishermen Association (TSFA) may deserve a special attention for their effort to manage a traditional costal resource – the mangroves – in a unique way. Mudcrab culture in Mangrove, a FAO funded and BBRMCI coordinated livelihood project, started in 2005, is one of the major attractions of the barangay.

2. The Project

The Banate Bay Coastal Resource Management Council, Inc. (BBRMCI) is supervising the livelihood project with the financial collaboration of Food and Agriculture Organization (FAO) channeled through the Telefood Special Fund. Talokgangan is one of the coastal barangays managed by the BBRMCI since 1996. The BBRMCI activities in the area include the continuous education regarding coastal resource management, enforcement of fishing and forest law and mangrove reforestation project. Up to December 2005, there were 3.5 hectares of mangrove reforested along the coastal area of Talokgangan, which is now considered as a potential area for mudcrab culture.

The objectives of the livelihood project were: (i) to provide additional and sustainable sources of family income for fishermen, (ii) to utilize mangrove areas for aquaculture friendly projects, and (iii) to replicate the existing mudcrab culture in the area. The target beneficiaries are the members of the Talokgangan Small Fishermen Association (TSFA). The association was registered with the Security and Exchange Commission in November 2002 with 37 members. The total project life is one year which is further divided into two distinct phases: six months period of establishment and another six months for culture and marketing. The establishment phase completed on December 2005 and the culture period should be continued up to July 2005 which will be followed by the marketing period.

The project site has been a pilot area of a research study conducted by the University of the Philippines in the Visayas (UPV) funded by FAO entitled “Use of Demographic Profile in Coastal Resource Management Planning.” The total cost of the project was estimated to be US\$ 13,000, the FAO contribution amounts to US\$ 10,000.00 while the rest of the cost should be covered by the beneficiaries



A scenic view of the mangrove forest to be used for mudcrab culture



The signboard of the project besides the barangay road

themselves. The FAO contribution covered the material costs which include the fencing materials (bamboos, net screen and ropes) and seeds (crablets), while the beneficiaries were to pay for labor, supplementary feeds, transportation and other small items. Table 1 presents a brief outline of the inputs and budget of the project.

Table 1 Inputs and budget for the mudcrab culture project (in US\$)

Inputs	FAO contribution	Beneficiaries contribution	Total
Fencing materials (bamboos, net screen and ropes)	5,000.00		5,000.00
Tools (weighing scales, steel tapes)		100.00	100.00
Labor		2,700.00	2,700.00
Seeds (crablets) 30,000 pieces	5,000.00		5,000.00
Supplementary feeds		100.00	100.00
Transport		100.00	100.00
Total	10,000.00	3,000.00	13,000.00

Source: BBRMCI, 2006

The project started with the following expected outputs: (i) mudcrab culture in mangroves will be a potential source of alternative livelihood aside from fishing, (ii) it will maximize the utilization of 3.5 ha mangrove forest, and (iii) the project will provide new skills and knowledge in aquaculture to fishermen beneficiaries. A cost benefit analysis projects possible profits of US\$ 2,750.00 and US\$ 5,663.00 in first and second years, respectively (Table 2).

Table 2 Simple cost benefit analysis of the mudcrab culture project (in US\$)

<u>Start – up cost, year 1</u>	
Fencing materials: bamboo, nets, ropes	5,000.00
Tools: weighing scale, steel tapes (beneficiaries)	100.00
Land: mangrove forest (Local Government Unit)	100.00
<u>Operating cost, year 1</u>	
Crablets: 30,000 pcs	5,000.00
Supplementary feeds (beneficiaries)	100.00
Labor: 60 fishermen for a month (beneficiaries)	2,600.00
Transport (beneficiaries)	100.00
Total Expenditure (Year 1)	13,000.00
<u>Income, year 1</u>	
Sales of crabs: 21,000 pcs at 70% survival rate 5,250 kgs (4 pcs/kg) @ 3.00	15,750.00
PROFIT (Year 1)	<u>2,750.00</u>
<u>Year 2 onwards (costs)</u>	
Crablets	5,000.00
Feeds	100.00
Labor (60 fishermen)	2,600.00
Total Expenditure	7,700.00
Net income: Sale of crabs	13,363.00
PROFIT	5,663.00

Source: BBRMCI, 2006

The BBRMCI is responsible for the overall management and monitoring of the project activities. A technical person of the Council is supposed to conduct a weekly monitoring of the project. The Council could prepare interim and final report as per instruction coming from FAO.

The mangrove forest has been divided into three zones and also allotted to three groups of fishermen. The first group is consists of 15 members and is termed as the men's group. The Group 2 is a women's group consists of 15 members while the Group 3 is called as Family Group or Family Enterprise which is consists of seven members of a single family.



Trenches for mudcrab have been constructed throughout the mangrove



Marilyn, leader of the women group, shows a mudcrab lifted from a trench

3. From Mangrove Plantation to Mudcrab Culture: An Overview

The members of the TSFA informed that the mangrove planting was started in 1996 after the Presidential Proclamation encouraged the development of mangrove across the coastal areas of the Philippines. The BBRMCI particularly encouraged the locales to participate in mangrove plantation at Talokgangan. After the plantation of mangroves the fishermen undertook a number of experiments to cultivate some species (shells, fishes and some other marine species). But all the efforts ended without success mainly because of the species' failure to survive. The BBRMCI in 2000 came with the idea of mudcrab culture in the mangroves, which the locales gladly accepted. The FAO funded project came into being in the year 2005. The fishermen had the observation that the population of mudcrabs were increasing in the area with the increase of mangrove culture. "Before 1996, when there were only few mangrove trees, there were some mudcrabs. Once population of mangrove trees started to increase due to the plantation program, number of mudcrabs also started increasing" – mentioned an elderly member of the TFSA.

There were a number of reasons for selecting of mudcrab culture in the area. Firstly, the BBRMCI encouraged the fishermen to cultivate the species because of its potential high survival rate (70% in estimation). Secondly, the market price of mudcrab is lucrative; and thirdly, there exists a local marketing opportunity and if the production is good enough, the mudcrab could also be exported to foreign markets.



Nets are erected to restrict movement of mudcrab



The caretaker's hut cum office of the project (incomplete)

4. Operation, Risk and Optimism

As mentioned earlier, the mangrove forest has been divided into three zones. The first zone comprised of 1.5 ha forest which is being operated by the men's group. The second zone is consists of 1.2 ha and is being operated by the women's group, while the third zone, the smallest one with 0.25 ha of land, is allotted for the family enterprise.

The beneficiaries constructed a caretaker hut cum office in the mid of the mangrove. The bamboo-made elevated house will be the center of the activities of the fishing community working for the mangrove development as well as mudcrab culture. A bamboo cut-walk, with a number of branches, has been constructed to facilitate beneficiaries' movement in and across the zones.

The fishermen constructed nets and fences in the mangrove forest to delineate the zones for each group and also to restrict the movement of mudcrabs from crossing the respective zones as well as the mangrove forest. A number of trenches have been constructed to facilitate the mudcrab culture. Each group member has definite routine of work for the development of the project. The responsibilities of the members are followed by a combined work schedule. There is no labor crisis in the project so far.

The fishermen and BBRMCI have a certain plan for the sustainability of the venture when the support period is over in July 2006. Ten percent of the total income will be deposited to a bank account as a 'community fund,' which will be managed by the BBRMCI. The money will be used as future operating capital.

There is also a considerable risk as recognized by the members. Bad weather like strong typhoon can damage the nets, fences and lives of the mudcrabs. Typhoons occur during the rainy months from June to November of every year, which is the planned marketing period of the mudcrabs. Construction of higher nets and fences secured firmly in the ground may mitigate the potential damage.



“Working in the mangrove has become my favorite pastime” – Boquiren, the head of the family group



Some members of the women group standing besides the bamboo made cutwalk

“We started mudcrab culture in the mangrove with a great hope” – said Marilyn Regalado, the leader of the women group. “Most of the women members are aged and they have time in hand to work in the project. The success of the project may bring some important financial support for maintaining their daily life” – she continued. Marilyn is the Chairwoman of BFARMC in Talokgangan and she is also a member of TSFA. Like a typically good organizer, she always motives the fellow members to

increase their contribution to the project. The women members of the group also showed their determination to work together for the common cause.

“Working in the mangrove for mudcrab culture has become my favorable pastime nowadays” – told an enthusiastic Eduardo Boquiren, head of the family enterprise. We found him working in the trench and he was pleased to invite us into his nearby house for a discussion. “Sometimes I work 7 to 8 hours a day in the mangrove and I need to work hard in order to maximize the benefit” – explained the 65 year old veteran, who retired from the police department seven years ago.

Although the project beneficiaries are supposed to receive technical support from the BBRMCI, they lack technical knowledge on mudcrab culture. They never have had the experience of this type of program. The fishermen were found acquiring knowledge on mudcrab culture by experimenting and learning from their practices. “Training on mudcrab culture could help us to maximize benefits from the project” – said one female member which was echoed by others.

Many of the project beneficiaries are poor and struggling to earn their livelihoods. But the poverty could not hinder their strong determination to continue with mudcrab culture which may be a ray of hope.

5. Conclusions

The scenic beauty of the mangrove with its lush green canopy in the background of the vast sea is really enjoyable. The strip of small flowerbed besides the nearby barangay road gives a reminder of the locales' fondness for natural beauty. It might be concluded that the effort of the fishing community of the Talokgangan barangay for sustainable management of mangrove forest is quite praiseworthy not only from the economic point of view, but also from the view of attaining sustainable livelihoods. Such a livelihood project needs proper attention of the policymakers to shape proper policy for sustainable coastal resource management.

Presentations

Status of Fisheries Households and Their Fishing Operation - Results of 2004 Survey-

Hiroshima University
Collaborators: Dr. Evelyn Belleza, Ms. Didi B. Batcados
Staff of Banate Bay Resource Management Council Inc.

1

Introduction

Baseline survey for the 1st year focused on the followings:

- 1) To collect household and fisheries information on three barangays: Alacaygan, Bularan and San Francisco in four municipalities
- 2) To collect data of household and fishing activities through interviews with fishers and community people
- 3) To inquire their opinions and evaluation on BFARMC & BBRMCI

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Contents of today's presentation

1. Methodology
2. General information on fisheries households
3. Status of fishing operation
4. Mangrove resource management
5. People's evaluation on activities of BFARMC and BBRMCI
6. Characteristic on structure of fisheries
7. Recommendations

3

1. Methodology

- Interview to fisheries households along barangays: Alacaygan, Bularan and San Francisco at Banate Bay area
- Interview to staff of BBRMCI
- Analysis of data on BFARMC and other organizations
- Analysis of items from all above-mentioned data
 - (1) Information of fisheries households and status of the households economy
 - (2) Status of fishing operation
 - (3) Evaluation on activities of BFARMC and BBRMCI

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2. General information on fisheries households

(1) No. of Family Members

- **Total fishers households interviewed: 89**
 - **Alacaygan: 51**
 - **Bularan: 22**
 - **San Francisco: 16**
- **Average number of members per family: 5**
- **Total family members: 468 (55% male and 45% female)**
- **Average age: 25 years**

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(2) Income level

- As a whole, 64% of households are grouped into "less than 5000."
- It appears income level of Bularan fishers is quite low.
- There may be an income gap between people in San Francisco.

Category of monthly income in three barangays

Income category	Percentage of fisheries households			
	Alacaygan	Bularan	San Francisco	Total
<5000 peso	59	86	50	64
5001 - 10000 peso	35	5	50	30
>10000 peso	6	9	0	6

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3 Status of fishing operation

(1) Type of fishing boats

- Percentage of possession of fishing boats was 65.2% of total.
- Type of fishing boats were motorized inboard engine.
- Fishing boats were mostly small-scale inboard type.
- As a whole, percentage of registration of the boats was 76.1%.

Number of fishing boats shown by type

	Non-motorized		Motorized		Unit: No., %
	Boats	%	Boats	%	
Alacaygan	4	14.3	24	85.7	28
Bularan	12	57.1	9	42.9	21
San Francisco	0	0	22	100	22
Total	16	22.5	55	77.5	71

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(2) Type of fishing gears

- Percentage of households with one fishing gear were about 60% of total.
- In San Francisco, 75% fishers possessed only one fishing gear.
- In Bularan, about 41% fishers possessed only one gear, while 27% of them possessed three gears.

No. of fishing gear owned by fishers

No. of gear	One		Two		Three		No answer	
	Households	%	Households	%	Households	%	Households	%
Alacaygan	32	82.7	12	23.5	2	3.8	5	9.8
Bularan	9	40.9	8	27.3	5	22.7	2	9.1
San Francisco	12	75.0	3	18.8	1	6.3	0	0.0
Total	53	58.8	23	23.8	8	9.0	7	7.9

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(3) Major fishing gear owned

- **Alacaygan**
 - Push net
 - Gill net
 - Bottom set gill net
 - Shallow fish corral
 - Crab pot
- **Bularan**
 - Hand line
 - Push net
- **San Francisco**
 - Long line

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(4) Economically important fishing gears

- Often-used and economically important fishing gears were almost same in the barangays.
- In three barangays, some types of fishing gears were concentrated to use.
- Especially, in Bularan and San Francisco, single type of fishing gear was used.

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(5) Target fish

In each barangay, the main fishing gears concentrate on specific fish species as target.

Major species caught in Alacaygan

Push net	Acetes, Shrimp
Gill net	Common pony fish, Sand whiting, Mullet, Goatee croaker
Bottom set gill net	Blue swimming crab, Thread fin bream, Goatee croaker
Sallow fish corral	Blue swimming crab, Milk fish, Shrimp, Squid, Mullet
Crab pot	Blue swimming crab, Chinese crab

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(5) Target fish (contd.)

Major species caught in Bularan and San Francisco

	Gear	Target species
Bularan	Hand line	Thread fin bream, Sand whiting, Grouper
	Bottom set gill net	Blue swimming crab, Thread fin bream, Sand whiting, Flat fish
	Push net	Acetes, Grouper
San Francisco	Long line	Thread fin bream, Sand whiting, Goatee croaker, Grouper
	Gill net	Common pony fish, Scad, Sand whiting, Therapun

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(6) Expenditure

- Percentage of expenditure items differed from each barangay.
- The percentage of each expenditure depended on fishing operation.

Average percentage accounted on each category of all expenditure

	Unit: %						
	Oil and gas	Ice	Food	Labor	Bait	Lubricant	Other
Alacaygan	48.1	0.3	18.3	3.0	5.0	10.0	12.1
Bularan	8.6	13.1	36.3	21.1	20.4	0	0.0
San Francisco	43.3	6.5	8.2	3.0	35.2	7.4	12.0

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(7) Average income per trip

- In Alacaygan, income per trip in both peak and lean seasons were smaller than two barangays.
- In contrast, in San Francisco, the income in peak and lean seasons were higher than other two barangays.

Average income per trip in peak and lean seasons

	Unit: Peso			
	Peak season		Lean season	
	Maximum	Minimum	Maximum	Minimum
Alacaygan	610.4	188.6	126.3	89.8
Bularan	1199.6	410.0	171.8	48.0
San Francisco	1588.9	307.5	330.0	100.8

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(8) Major problems of coastal resource utilization

- Low catch
- Illegal fishing
- Low price of catching
- Conflict among users
- Weak law enforcement
- High cost of investment
- Mangrove destruction
- Lack of supporting facilities
- Water pollution
- Strict regulation
- Others

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Short Summary-1

Status of fishing operation and its major problems

- As a whole, fisher households in three barangays largely depended on fishing for major employment and main income source.
- More than one half of the fishers households belonged to low income group having income of 5000 peso or less.
- Fishers owned a variety of fishing gears. However, the fishers intensively used different type of fishing gears in each barangay, and mostly operated as single fishing gear.
- The species of fish catch was a tendency concentrated on some kinds according to the type of fishing gear used.
- As a whole, fishers in three barangays identified low catch and illegal fishing as their major problems.

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4. Mangrove resource management

(1) Purpose of using mangrove

Major purposes of using mangrove, as indicated by the respondents, were as follows:

- Building materials
- Source of fuel
- Fishing
- Medicines
- Protection from tidal wave and wind
- Others

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(2) Experience of mangrove planting

- In San Francisco, majority of fishers had experience of planting mangrove trees with assists.
- In Alacaygan, more than 60% of fishers had experience of the planting, and they were willing to plant the mangrove by themselves without help.
- In three barangays, majority of fishers had intention to plant mangrove tree in the future.

Experience of mangrove planting in three barangays

	Unit: No. of households, %				
	Experience of mangrove planting				
	Yes	with help	without help	No	No answer
Alacaygan	31 (60.8%)	13 (25.5%)	18 (35.3%)	18 (35.3%)	2 (3.9%)
Bularan	6 (27.3%)	5 (22.7%)	1 (4.5%)	11 (50.0%)	5 (22.7%)
San Francisco	11 (68.8%)	8 (50.0%)	3 (18.8%)	4 (25.0%)	1 (6.3%)

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(3) Outcome expected by planting mangrove tree

- As a whole, majority of the fishers expected that planting mangrove would increase marine resources and protect their properties from strong waves and wind.
- However, many fishers in three barangays had some problems such as lack of space and shortage of funds to plant mangrove trees.

Figure: Expecting outcome by planting mangrove tree

Outcome	Percentage (%)
Increase of marine resources	55
Increase of income	20
Improve the quality of water	15
Reduce the soil erosion	10
Scenery	5
Others	5

Short summary-2

Mangrove resource management

- As a whole, majority of fishers had experience of planting mangrove trees, and they had intention to plant these in future.
- High percentage of fishers expected that planting mangrove would increase marine resources and protect their properties from strong waves and wind.
- However, many fishers faced some problems regarding lack of space and short of funds to plant mangrove trees.
- And, especially in Alacaygan, despite fishers' high recognition on importance of planting mangrove tree, they might have dilemma between the rules to preserve mangrove area and their demand to use mangrove trees for fuel.

5. People's evaluation on activities of BFAMC and BBRMCI

(1) People's participation in organization

- In San Francisco, level of fishers' participation in barangay-based organization was highest among the three barangays.
- In contrast to case in San Francisco, the level of people's participation in Alacaygan was quite low.

People's participation in barangay-based organizations

	Unit: No., %			
	Fisheries cooperative	Fisheries association	BFARMC	Others
Alacaygan	3 (5.9%)	11 (21.6%)	13 (25.5%)	2 (3.9%)
Bularan	2 (9.1%)	9 (40.9%)	8 (36.4%)	0 (0%)
San Francisco	8 (50.0%)	13 (81.3%)	10 (62.5%)	3 (18.8%)

(2) Acknowledgement of BFARMC

Acknowledgement of BFARMC in three barangays

Activity Item	Unit: No., %	
	No.	%
Alacaygan	Acting as representative of resource users	35 (68.6)
	Enforcing ordinances	31 (60.8)
	Undertaking conservation	30 (58.8)
Bularan	Acting as representative of resource users	14 (63.6)
	Enforcing ordinances	14 (63.6)
	Undertaking conservation	13 (59.1)
San Francisco	Acting as representative of resource users	14 (87.5)
	Gaining consensus among resource users	14 (87.5)
	Suggesting direction of resource management	14 (87.5)
	Undertaking conservation	14 (87.5)
	Gathering data	14 (87.5)

(3) Evaluation of activity of BFARMC

In three barangays, the well recognized activity of BFARMC was the function of acting as representative of resource users.

In San Francisco, especially, all six activities of BFARMC were well-known and well-evaluated by fishers.

Fewer number of fishers of Alacaygan and Bularan evaluated BFARMC activities as good compare to their fellow fishers in San Francisco.

Evaluation of all activities of BFARMC in three barangays

Activity	Unit: No of households, %					
	Alacaygan		Bularan		San Francisco	
	No.	%	No.	%	No.	%
Acting as representative of resource users	33	45.1	11	30.0	14	87.5
Gaining consensus among resource users	10	25.4	8	38.4	11	68.8
Suggesting direction of resource management	21	41.2	8	38.4	12	75.0
Undertaking conservation	18	33.3	9	40.9	13	81.3
Enforcing ordinances	18	33.3	7	31.8	13	81.3
Gathering data	17	33.3	7	31.8	12	75.0
Others	0	0	0	0	0	0

(4) Acknowledgement of BBRMCI's activities

In three barangays, well-known activities of BBRMCI were registration of fishing boats and gears, etc. and measures in controlling illegal fishing.

As a whole, the highest percentage of fishers' participation was registration of fishing boats and gears, etc.

Acknowledgement of BBRMCI's activities

Activity Item	Unit: No., %	
	No.	%
Alacaygan	Mangrove planting	43 (84.3)
	Registration	41 (80.4)
Bularan	Measures in controlling illegal fishing	40 (78.4)
	Registration	18 (81.2)
San Francisco	Measures in controlling illegal fishing	16 (72.7)
	Registration	15 (81.2)
	Forming of management measures	16 (100)
San Francisco	Forming of management measures	16 (100)
	Measures in controlling illegal fishing	16 (100)
	Survey and gathering data	16 (100)
	Registration	16 (100)
Others	Implementing alternative livelihood projects	16 (100)

(5) Evaluation of BBRMCI's activities

- As a whole, majority of fishers evaluated the activities of BBRMCI as good.
- Among the three barangays, highest number of fishers in San Francisco could make good evaluation of the activities of BBRMCI.
- In contrast to San Francisco, fewer number of fishers in Alacaygan and Bularan could make good evaluation of the same.

Evaluation of BBRMCI's activities

	Good	Fair	Poor	No answer
Alacaygan	29 (56.9%)	13 (25.5%)	2 (3.9%)	7 (13.7%)
Bularan	12 (54.5%)	7 (31.8%)	2 (9.1%)	1 (4.5%)
San Francisco	13 (81.3%)	2 (12.5%)	0 (0%)	1 (6.3%)
Total	54 (60.7%)	22 (24.7%)	4 (4.5%)	9 (10.1%)

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Short summary-3

BBRMCI's activities

- Fishers' acknowledgement and participation differed from among barangays. As a whole, they realized BBRMCI's activity as good, while they still suffered from illegal fishing and low catch.

BFARMC's activities

- Fishers' acknowledgement and evaluation were lower level excepting San Francisco.
- People may not understand what functions BFARMC undertaken less than BBRMCI's activities.

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6. Characteristic on structure of fisheries

- In Banate bay area, fishing operation was diversified. However, the tendency of use concentrated on some specific type fishing gears in each barangay.
- Generally speaking, the fishers operated different types of fishing gears as single fishing gear in their households.
- It was the tendency which concentrated on some fish species although the species for catch differed in each barangays. And, the catch amount per trip were not at a constant throughout the year.
- Fisher households in three barangays mainly depended on fisheries for their main employment and major source of income.

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7. Recommendation

On coastal resource management

- Establishment of closed fishing area and season according to target fish species
- Education and extension programs for fishers and communities to built up awareness on coastal resources

On fishers' house management

- Implementation of livelihood project for alternative income (ex. artificial fish reef, artificial floating reef)
- Assistance for alternative and supplementary income related with fisheries
ex. aquaculture of seaweed, extension of new food processing technology

On Institution

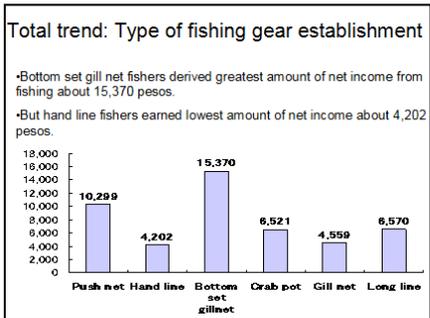
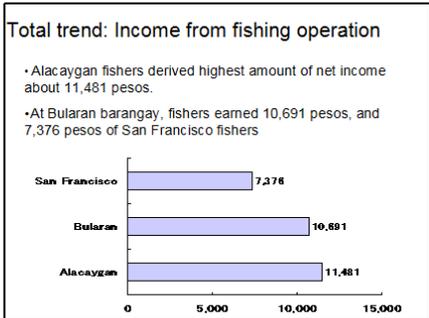
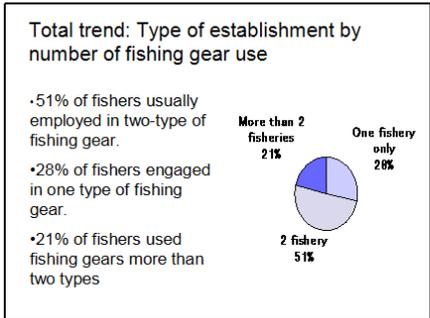
- Implementation on systematic approach including fund supply to fishers by BBRMCI and local government units

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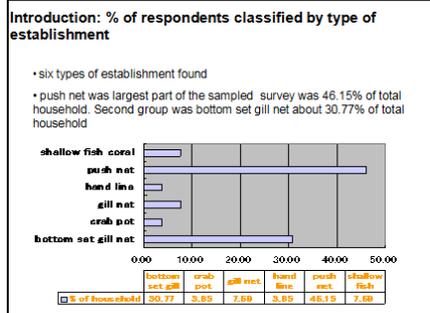


A small-scale fishing operation to achieve livelihoods and household economy:
the case of Banate Bay, the Philippines

- Objectives of the presentation
- To recognize a general socio-economic status of fishing household
 - To identify household establishment in fisheries
 - To describe the purposes of fish landing utilization and distribution

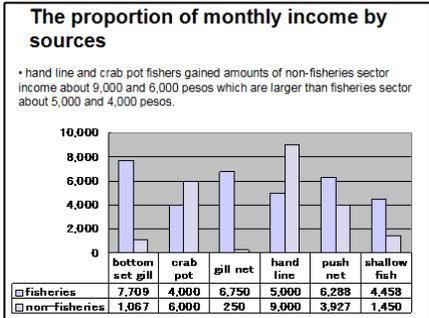
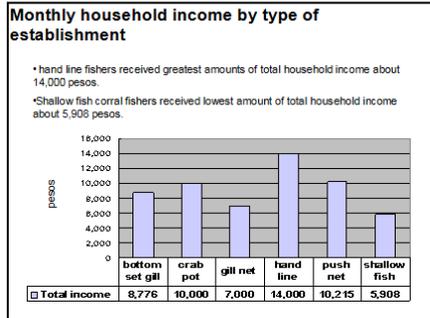
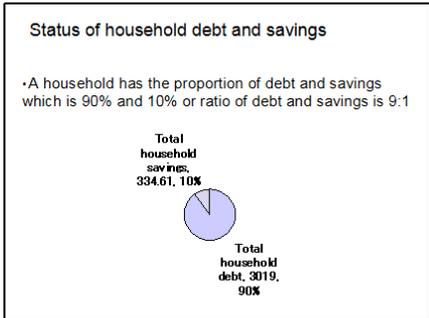
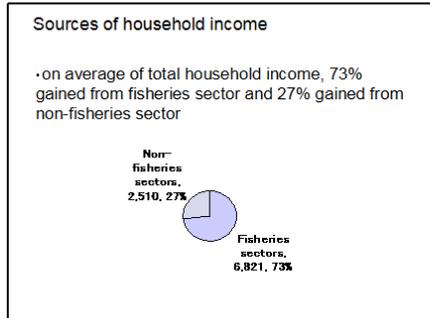


The case of Alacaygan barangay



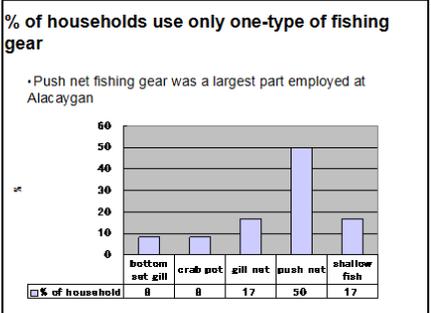
Finding result:

General socio-economic status



Household establishment in fisheries

- 46 % of total households are the households use only one-type of fishing gear
- 54% of total households are the households use a combination of two types of fishing gear

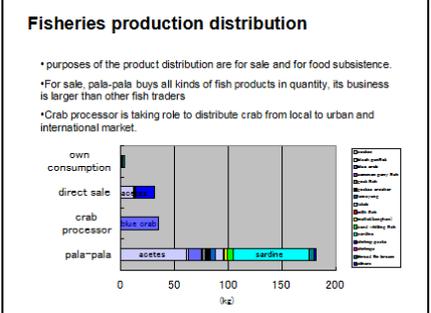
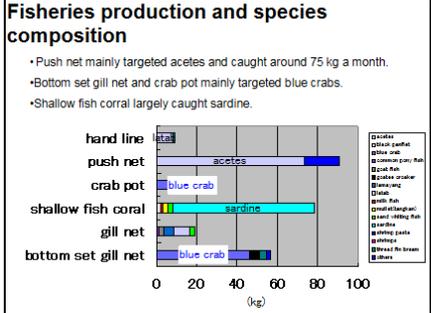


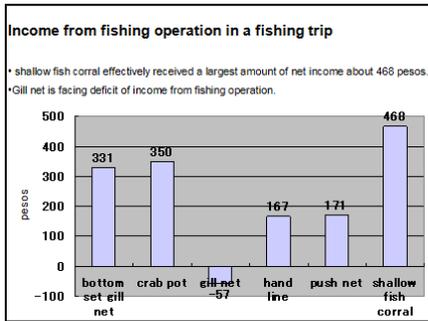
Combination of bottom set gill net with other important fishing gear:

Combination	%
Bottom set gill net + Collect mussel	14
Bottom set gill net + Gill net	28
Bottom set gill net + Hand line	29
Bottom set gill net + Push net	29

Combination of push net with other important fishing gear:

Combination	%
Push net +beach seine	20
Push net + gill net	20
Push net + hand line	20
Push net + shallow fish corral	40





Conclusion

1. Main proportion of household income earned from fisheries sectors (73%) larger than non-fisheries sectors (27%).
2. the proportion of household debt and savings is 9:1. Debt becomes a constraint to stabilize household livelihood and economy
3. 46% of fishers depend solely on single-type of fishing gear employment to earn income.
4. 54% of fishers employed in two-type of fishing gears. This is to further create additional income.

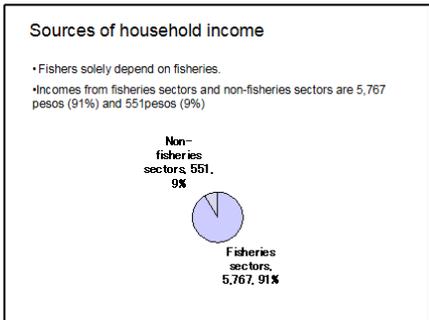
The case of Bularan barangay

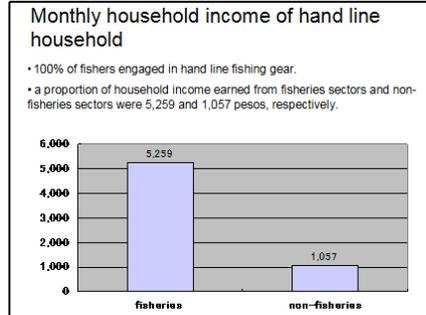
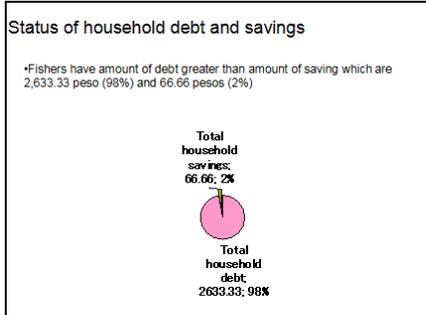
Introduction

- No. of sample: 15 households
- Major fishing gear: hand line

Finding result:

General socio-economic status: barangay level.





Household establishment in fisheries

- hand line is an ordinary fishing gear found at every respondents' establishment.
- 67% of fishers employed in hand line with one-type of fishing gear.
- 33% of fishers employed in hand line with two types of fishing gear.

Category I	Category II	Category III
Hand line	Hand line + One fishing gear	Hand line+ Two fishing gears
(100%)	(67%)	(33%)

Category II: Hand line + one fishing gear

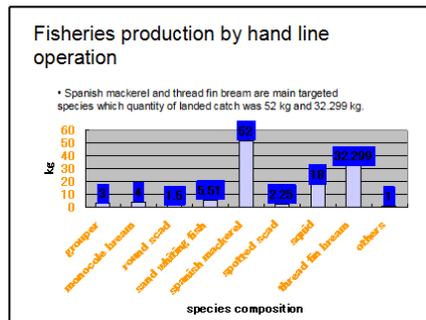
- in this group of fishers found 56% of hand line and push net fishers
- 33% of fishers are hand line and bottom set gill net.

Category II	%
Hand line +bottom set gill net	33
Hand line +push net	56
Hand line + longline	11

Category III: Hand line + 2 fishing gears

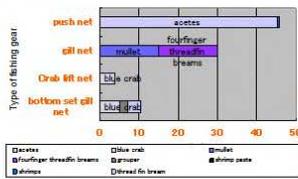
- 40% of fishers in this category use hand line, push net, bottom set gill net

Category III	%
Hand line + bottom set gill + push net	20
Hand line + gill net + bottom set gill net	20
Hand line + push net + crab lift net	20
Hand line + push net + bottom set gill net	40



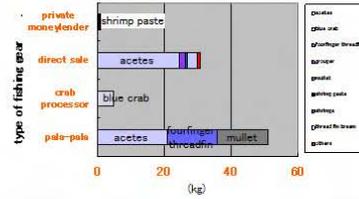
Fisheries productions caught by economic important fishing gear use

- gill net targeted mullet and four finger thread fin beams.
- Bottom set gill net and crab lift net targeted blue crabs.
- Push net certainly targeted acetes.



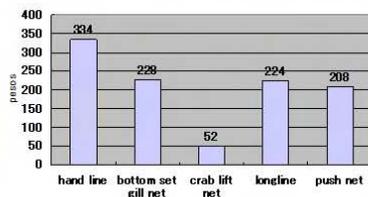
Distribution of fisheries production

- blue crab is certainly sold to crab processor
- fishes are sold to pala-pala.



Income from economic important fishing gear operation

- an amount of income from crab lift net operation is lowest, only 52 pesos, probably a few unit of crab lift net employed.

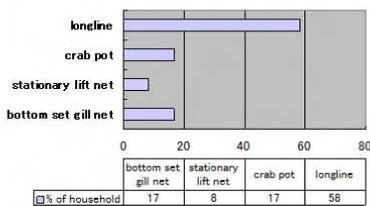


Conclusion:

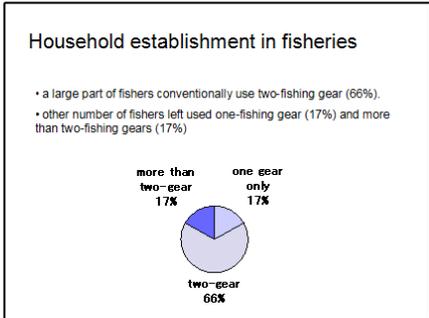
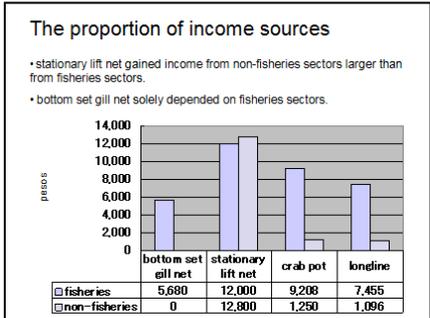
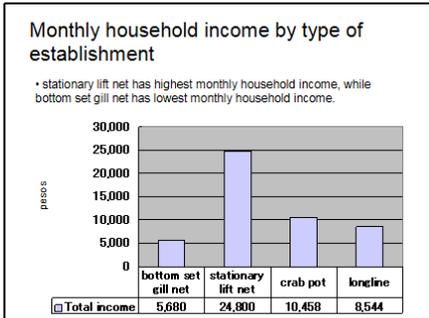
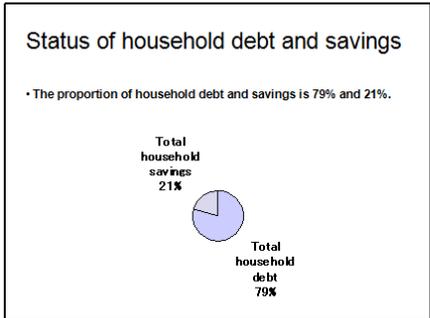
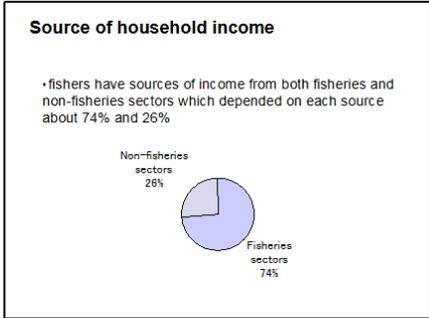
1. 91% of household income obtained from fisheries
2. The lack of savings (2%), but the large amount of debt (98%) mainly limit an improve of household livelihood
3. Hand line is ordinary fishing gear, often found and practiced.
4. 67% of fishers use hand line with other one-type of fishing gear. 33% of fishers use more than two-type of fishing gears.

The case of San Francisco Barangay

Introduction: % of respondents classified by type of establishment



Finding result:
General socio-economic status



Combination of 2 fishing gears

- 75% of fishers used longline and crab pot.
- a use of crab pot and gill net fishers are 12.5%.
- Other 12.5% left is fishers used bottom set gill net and crab pot

Combination	%
Crab pot + gill net	12.5
Bottom set gill net + crab pot	12.5
Longline + crab pot	75

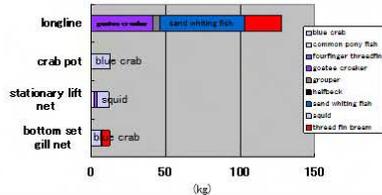
Combination of more than two fishing gears

- this group of fishers used three types of fishing gears to earn income from fisheries, here found such a use of bottom set gill net, crab pot and gill net. Other uses of fishing gear are crab pot, gill net and longline.

Combination	%
Bottom set gill net + crab pot+ gill net	50
Crab pot + gill net + longline	50

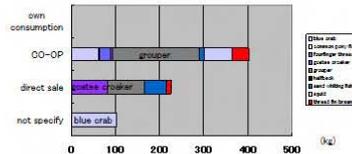
Fisheries production and species composition

- bottom set gill net and crab pot targeted blue crabs.
- Stationary lift net targeted squid mainly.
- longline targeted various species depends on hooks use.



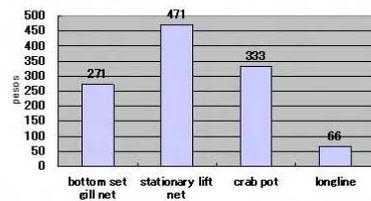
Fisheries production distribution

- CO-OP is main immediate market place in the barangay. This place buys all species of landed catches.
- some fishers sell fishes directly to consumer in the barangay.
- Very few quantity of catches consume at home.



Income from fishing operation in a fishing trip

- stationary lift net received income from fishing for a trip about 471 pesos.
- crab pot also gained a good income about 333 pesos for a fishing trip.



Conclusion:

- 74% of household income come from fisheries sectors and 26% of which come from non-fisheries.
- Ratio of savings and debt is 1: 3.7 (21%: 79%)
- 66% of fishers use two fishing gears
- CO-OP is main immediate market place to distribute fish products to urban markets.

Coastal Resource Management Organizations in the Philippines
Case study in Banate Bay, Panay Island, Philippines

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Objective:
Investigate a fishing village of Banate Bay, explain the placement of Resource Management Organization for people, and consider how organization cooperate with local people to conduct resource management.

Points at this issue:

1. Introduce new current of coastal resource management.
2. Focus on Resource Management Council (BBRMCI) and village resource management organization (BFARMC). Explain those activity and characteristics, analyze people's knowledge and participation for project.
3. Discuss the problems that Resource Management Council face on.

Outline

1. Study area and methods: Banate Bay, Panay Island
2. New current of Coastal Resource Management in the Philippine
3. Actual condition of people's participation to organization BBRMCI (Banate Bay Resource management council Inc.) and BFARMC (Barangay Fisheries and Aquatic Resource Management Council)
4. The future of wide resource management organization

1-1. Study Area

1-2. Methods

- Field survey - visiting fishery households
Alacaygan: 71
Bularan: 26
San Francisco: 18
- Banate Bay Resource Management Council Inc. (BBRMCI)
- Material analysis about Philippine's marine resource and refer to other information

New current of Coastal Resource Management in Philippines

~ Experiment of Banate Bay, Panay island ~

2-1. Development of CBRM and Decentralization

- After the enforcement of Local Government Code in 1991, Coastal Resource Management of the Philippines has been changed from conventional top-down approach to Community-Based Resource Management.
- CBRM has conducted originally as participatory resource management from 1980's. The characteristic was pilot project type, and they have many kinds of activities around barangays.
- At present their activity includes improvement of living condition, it is comprehensive development strategy.

2-2. Institutionalization of CBRM and new trend

- Main legal body: Fishery Code, 1998
 - Local Government Unit, Municipality establish RMC, start more effective resource management in each region.
 - Fishery Code promote people's oriented resource use.
 - BFARMC at Barangay level
- The Fisheries Agency of the Philippines
 - select 13 bay areas, promote wide resource management. CBRM become widespread in the Philippines, Each LGU form network to each other.
- The tendency of forming network shows the new trend of CBRM under the decentralization.

2-3. Development of CBRM

Pilot project	Network	Policy suggestion
Accumulation of experience, advanced case	Exchange of experience Common management with surrounding areas	Suggestion of policy based on experience

Banate Bay has good reputation as advanced area of CBRM network.

Regional management	Network management in wider scale	Reform of policy
People's participation		Decentralization

source: Yameo 2005

2-4. The process of forming BBRMCI network

Resource Management Council (RMC)

- based on LGU code and Fishery code
- effective use of coastal resource, conservation

Three municipalities started program in 1996.
Another municipality joined in 2002.

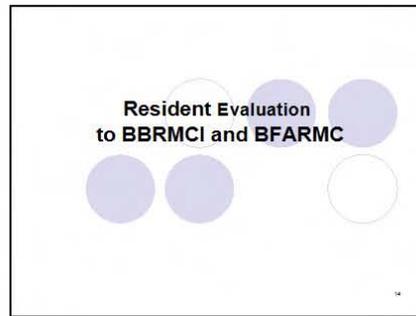
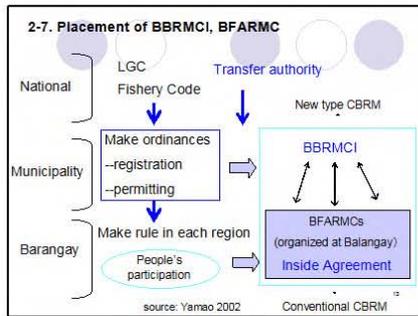
2-5. The purpose of BBRMCI's activity

- Institutional development
Organization of community, education
- Fishery law enforcement
patrol, check fishing gear, license
- Resource regeneration/
mangrove reforestation
make conservation area, mangrove
- Coastal zone research and data banking
joint research, monitoring
- Livelihood development
suggest alternative livelihood plan
introduce aquaculture of oyster
- Infrastructure development
establish coastal resource center

2-6. The feature of BBRMCI

Advanced example of wide resource management

- Management area covers four municipalities
 - Across the boundary of administration
 - Advanced example of Bay-wide management
- Common regulation about resource management and fishing activity
- New relationship with municipalities,
make clear division of responsibility with municipality
 - Registration of fishing operation, boat resource use plan
- Developed CBRM
 - CBRM Networks of CBRMs
 - Decentralized Managements



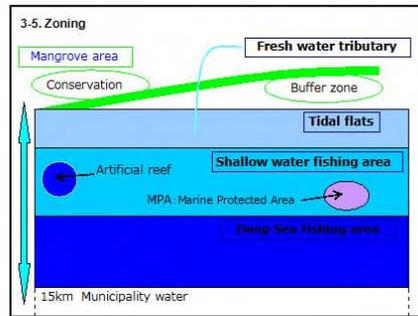
- 3-1. The problems around fishery resource**
- As the area of resource management expands, what kinds of problems happen around regional fishery resources?
 - Conducted questionnaire survey, asked people to select three problems, and confirmed what problem is most important
- low catch
 - low price
 - conflict among users
 - weak law enforcement
 - illegal fishing
 - water pollution
 - high cost of investment
 - destruction of mangrove
 - strict regulations
 - lack of supported facilities

3-2. Result - problems around fishery resource-

	Problems	the number of household
Alacaygan	1. illegal fishing	51 (71.8%)
	2. low catch	50 (70.4%)
	3. low price of catch	30 (42.3%)
Bularan	1. low catch	24 (92.3%)
	2. illegal fishing	22 (84.6%)
	3. low price of catch	16 (61.5%)
San Francisco	1. illegal fishing	14 (77.8%)
	2. low catch	13 (72.2%)
	3. low price of catch	10 (55.6%)
	high cost of investment	

- 3-3. The problems about fishery resource in Banate Bay**
- Problems**
illegal fishing, low catch, low price: these problems are higher ranked. Especially, most households identified illegal fishing as the most important problem.
 - Illegal fishing**
 - A poaching boat invade from surrounding areas and Negros island (opposite shore).
 - Dynamite fishing, small mesh
 - Poacher exist in even BBRMCI's jurisdiction.
-

- 3-4. BBRMCI Activities**
- Informative meetings/ consultation
 - Planning of management measures
 - Mangrove planting
 - Measures in controlling illegal fishing
 - Survey and data gathering
 - Registration
 - Implementing alternative livelihood projects
 - Skill development training



3-6. Residents' knowledge about BBRMCI activity

	Well known activity	% and No. of households
Alacaygan	1. Measures in control illegal fishing 2. Registration 3. Mangrove planting	80.3% 57 78.9% 56 77.5% 55
Bularan	1. Measures in control illegal fishing 2. Registration Information meeting Planning of management	84.6% 22 73.1% 19
San Francisco	Except for mangrove planting and skill development, all households know all BBRMCI's activities. Mangrove planting ← more than 70% Skill development ← more than 80%	

3-7. Actual situation: people's participation to BBRMCI

	Well participated activity and project
Alacaygan	1. Registration ←50% 2. Measures ←40% Planning of management 3. Information meeting ←40%
Bularan	1. Planning of management ←50% 2. Information meeting ←50% 3. Measures ←50%
San Francisco	1. Registration ←40% 2. Livelihood project ←70% 3. Survey and data gathering ←60%

3-8. Residents Evaluation for BBRMCI

	Evaluation		
	Good	Fair	Poor
Alacaygan	57.7%(41世帯)	23.9%(17世帯)	5.6%(4世帯)
Bularan	53.8%(14世帯)	34.6%(9世帯)	7.7%(2世帯)
San Francisco	83.3%(15世帯)	11.1%(2世帯)	0%

- 3-9. Residents' demand to BBRMCI**
- Publicity and transmission
hold the meeting, conduct project, etc
← the short of BBRMCI function
 - More stronger control of illegal fishing
The control of illegal fishing gets best reputation.
However, some people criticize that poacher exist in BBRMCI's jurisdiction ← problem of BBRMCI
 - Enrich livelihood project
Suggest new livelihood project
Financial assistance

3-10. BFARMC Function: Barangay level

1 Representative	Represent opinions of resource users
2 Consensus	Consensus among users
3 Suggestion	Suggest resource management plan and fishery development plan to administration, network
4 Implementation	Following agreement and consensus, conduct resource management, conservation
5 Enforcement	Enforce regulations, monitoring
6 Adjustment	Coordinate the difference of opinion, interest among users

3-11. Residents' knowledge about BFARMC

	Well known activity	% and no. of household
Alacaygan	1. Acts as representative	← 62% 44
	2. Enforces ordinances	← 57.7% 41
	3. Undertakes conservation	← 56.3% 40
Bularan	1. Acts as representative, Enforces ordinances	← 69.2% 18
	2. Undertakes conservation	← 65.4% 17
	3. Suggests direction, Data gathering	← 53.8% 14
San Francisco	83.3%	15 households know all activities of BFARMC

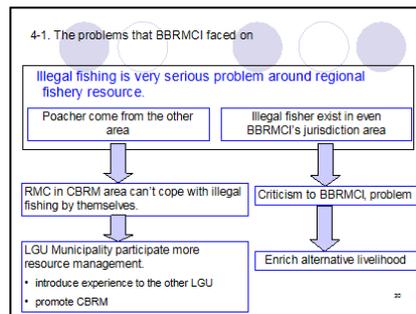
3-12. Good activity of BFARMC

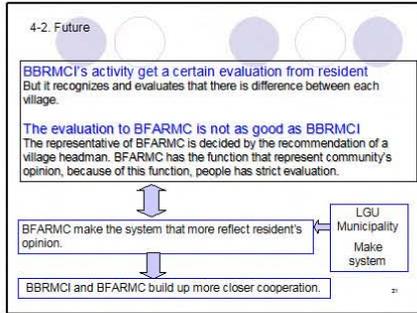
	Activity	Select Good (% and number of households)
Alacaygan	1. Acts as representative	← 40.8% 29
	2. Enforces ordinances	← 33.8% 24
	3. Undertakes conservation	← 32.4% 23
Bularan	1. Acts as representative, Enforces ordinances	← 57.7% 15
	2. Undertakes conservation	← 46.2% 12
	3. Suggests direction, Data gathering	← 42.3% 11
San Francisco	1. Acts as representative	← 83.3% 15
	2. Enforces ordinances	← 77.8% 14
	3. Suggests direction	← 72.2% 13

3-13. Residents' Evaluation for BFARMC

	Evaluation		
	Good	Fair	Poor
Alacaygan	29.6%(21世帯)	23.9%(17世帯)	15.5%(11世帯)
Bularan	50%(13世帯)	23.1%(6世帯)	3.8%(1世帯)
San Francisco	77.8%(14世帯)	5.6%(1世帯)	0%

The future of wide resource management organization





ANNEX

General information of the household

Table No.of families and range of no.of families

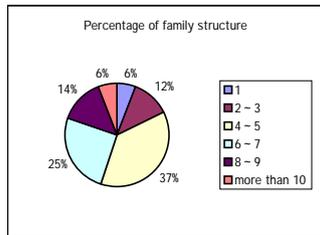
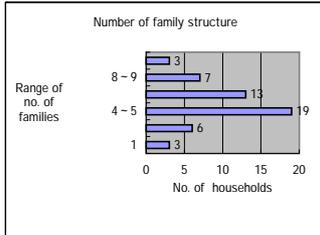
							Unit: No.,%
							Alacaygan
							Bularan
							San Francisco
No. of families	Persons		Persons		Persons		
Sub total	277		103		88		
Male	145	52.3	63	61.2	48	54.5	
Female	132	47.7	40	38.8	40	45.5	
Range of no. of families	Households		Households		Households		
1	3	5.9	0	0	0	0	
2 ~ 3	6	11.8	4	18.2	2	12.5	
4 ~ 5	19	37.3	12	54.5	7	43.8	
6 ~ 7	13	25.5	5	22.7	4	25	
8 ~ 9	7	13.7	1	4.5	2	12.5	
more than 10	3	5.9	0	0	1	6.3	
Family form	Households		Households		Households		
Single	3	5.3	0	0	0	0	
Couple	2	3.5	1	4.5	0	0	
Two generations	37	64.9	19	86.4	16	100	
Three generations	1	1.8	0	0	0	0	
others	8	14.0	2	9.1	0	0	
Unknown	0	0.0	0	0	0	0	
Mean of no. families	5.4		4.7		5.7		

Table Age structure

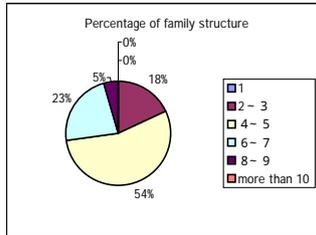
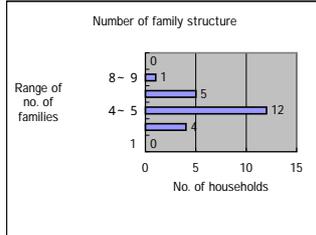
							Unit: No.,%
							Alacaygan
							Bularan
							San Francisco
Age range	Persons		Persons		Persons		
10>	71	25.7	24	23.3	25	28.4	
11-20	78	28.3	24	23.3	23	26.1	
21-30	23	8.3	17	16.5	14	15.9	
31-40	43	15.6	12	11.7	12	13.6	
41-50	31	11.2	11	10.7	9	10.2	
51-60	16	5.8	7	6.8	5	5.7	
61-70	13	4.7	7	6.8	0	0.0	
70<	1	0.4	1	1.0	0	0.0	
Mean	26.7		26.7		22.1		

Figure Family structure

Alacaygan



Bularan



San Francisco

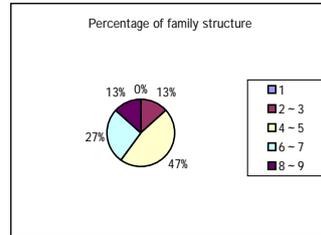
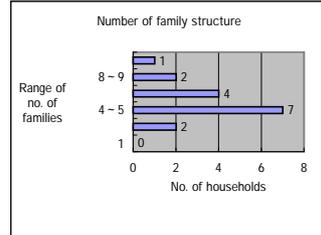
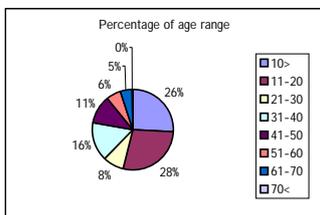
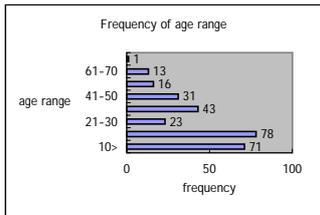
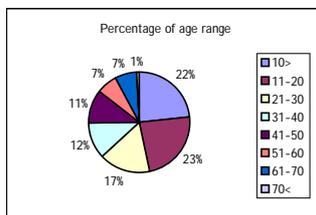
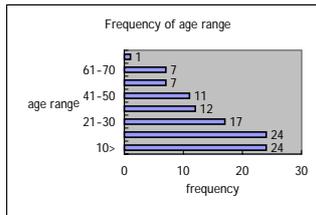


Figure Structure of age range

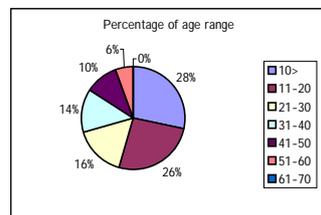
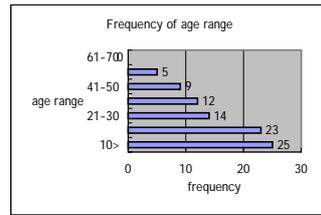
Alacaygan



Bularan



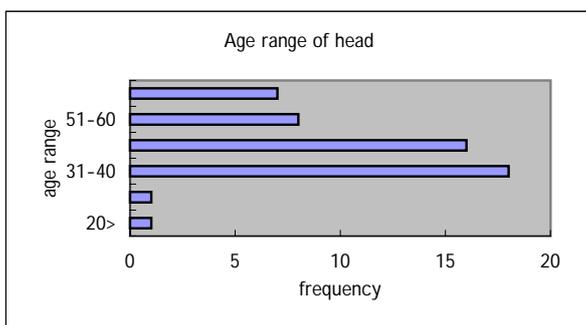
San Francisco



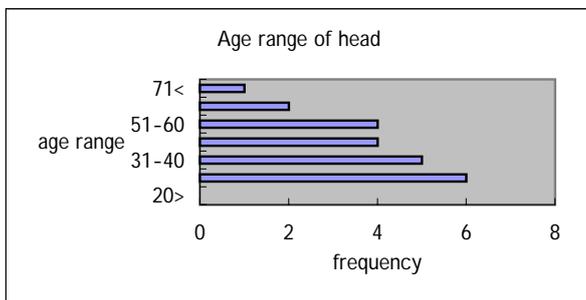
**Table Age structure of head
Head**

age range	Alacaygan		Bularan		San Francisco		total	
	persons	%	persons	%	persons	%	persons	%
20>	1	2.0	0	0.0	0	0.0	1	1.1
21-30	1	2.0	6	27.3	2	12.5	9	10.1
31-40	18	35.3	5	22.7	6	37.5	29	32.6
41-50	16	31.4	4	18.2	4	25.0	24	27.0
51-60	8	15.7	4	18.2	4	25.0	16	18.0
61-70	7	13.7	2	9.1	0	0.0	9	10.1
71<	0	0.0	1	4.5	0	0.0	1	1.1
mean of age	46.1		42.7		41.9		43.6	

**Figure Age range of head
Alacaygan**



Bularan



San Francisco

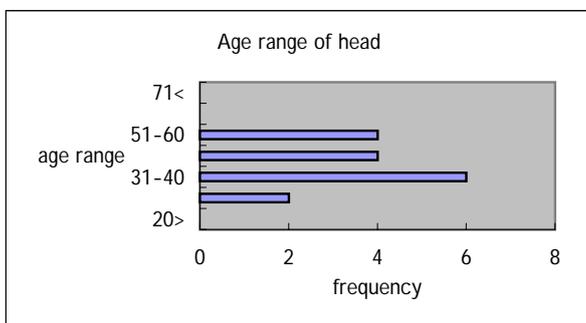
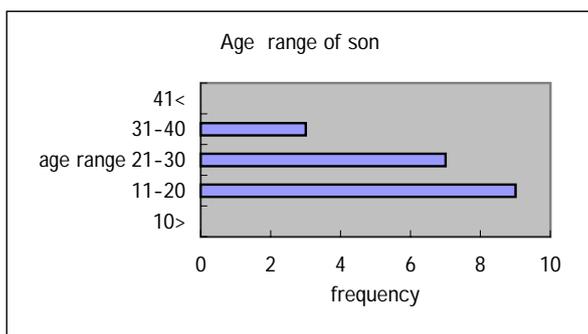


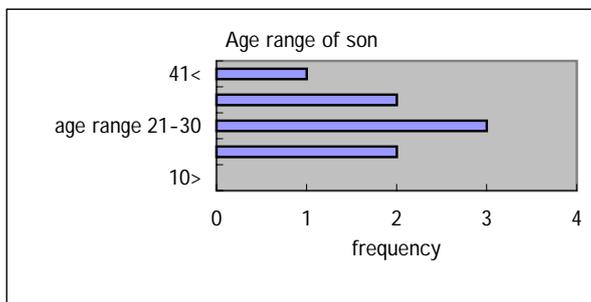
Table Age structure of sons

age range	Alacayagn		Bularan		San Francisco		total	
	persons	%	persons	%	persons	%	persons	%
10>	0	0.0	0	0.0	0	0.0	0	0
11-20	9	47.4	2	25.0	4	44.4	15	41.7
21-30	7	36.8	3	37.5	4	44.4	14	38.9
31-40	3	15.8	2	25.0	1	11.1	6	16.7
41<	0	0.0	1	12.5	0	0.0	1	2.8
mean of age	23.2		27.6		22.2		24.3	

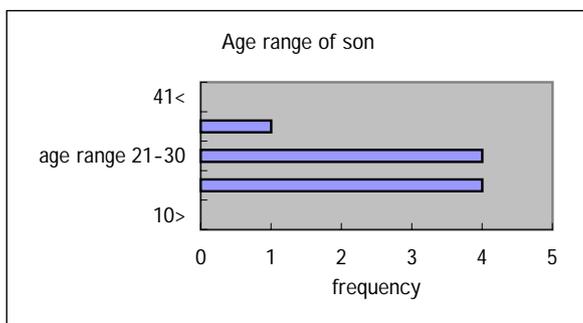
**Figure Age range of son
Alacaygan**



Bularan



San Francisco



Occupation

**Table Occupation types of the family members
Atacaygan**

Family member	Occupation type	Households	Unit: no., %
Head	Head		
	Fishing	8	15.7
	Fisheris&trading	3	5.9
	Others	1	2.0
	Fisheris&labor	2	3.9
	Fishing+others	4	7.8
	Fisheris&trading+others	1	2.0
	Fishing+self employed	1	2.0
	Fisheris&processing	1	2.0
	Fishing+agriculture	0	0.0
	Fisheris&processing+labor	1	2.0
	Fishing+culture+trading	1	2.0
	Wife		
	Fisheris&trading	1	2.0
Head+wife	Head		
	Fishing	2	3.9
	Culture	1	2.0
	Fishing	1	2.0
	fisheris&labor	1	2.0
	Fishing+others	1	2.0
	Fisheris&trading	1	2.0
	Fisheris&processing	1	2.0
	Fishing+agriculture	0	0.0
	Fisheris&trading+others	1	2.0
	Fisheris&labor	1	2.0
	Fishing+culture	1	2.0
	Wife		
	Culture	1	2.0
Head+wife+son	Fishing+culture	1	2.0
	Fishing+others	1	2.0
	Fishing+others	1	2.0
	Others	1	2.0
	Fishing	1	2.0
	Fisheris&trading	1	2.0
	Head		
	Fisheris&processing	1	2.0
	Fishing	0	0.0
	Fisheris&trading+fisheris&processing	1	2.0
	Fisheris&processing	1	2.0
	Fishing	1	2.0
	Fishing	1	2.0
	Fisheris&labor	1	2.0
Head			
Fishing	1	2.0	
Head+son+daughter	Fishing	0	0.0
	Fisheris&trading+fisheris&processing	1	2.0
	Fisheris&processing	1	2.0
	Fishing	1	2.0
	Fisheris&labor	1	2.0
	Head		
	Fishing	1	2.0
	Laborer	0	0.0
	Head		
	Fishing	1	2.0
	Trading	1	2.0
	Head		
	Fisheris&processing	1	2.0
	Head		
Fishing	1	2.0	
Head+grandparents+others	Head		
	Fishing	1	2.0
	Head		
	Fishing	1	2.0
	Fishing+others	1	2.0
	Fishing+agriculture	0	0.0
	Fishing+others	0	0.0
	Fishing	0	0.0

Table Occupation types of the family members
Bularan

Family member	Occupation type				Households	Unit: no., %
Head	Head				6	27.3
	Fishing				1	4.5
	Fisheries&trading				0	0.0
	Fishing+agriculture				1	4.5
	Fishing+laborer				1	4.5
Son	Fisheries&processing					
	Son					
Head+wife	Fishing				1	4.5
	Head		Wife			
	Fishing		Fisheries&trading		3	13.6
	Fisheries&trading		Fisheries&trading		1	4.5
	Fisheries&trading+fisheries&processing		Fisheries&trading+fisheries&processing		1	4.5
Head+wife+son	Fisheries&processing		Others		0	0.0
	Head		Wife	Son1		
	Fishing		Self employed	Fishing		
	Fishing		Agriculture	Agriculture	1	4.5
	Fishing		Fisheries&trading	Agriculture	1	4.5
	Fishing		Agriculture	Fishing	1	4.5
	Head		Son			
	Fisheries&processing		Fisheries&processing		1	4.5
	Head		Wife	Son1		
	Fisheries&labor		Fisheries&trading	Fisheries&trading	0	0.0
Head+others	head		Others1	Others2		
	Fishing+agriculture		Agriculture		1	4.5
	Fisheries&laborer		Fisheries&laborer		0	0.0
	Others		Fishing		1	4.5

Table Occupation types of the family members
San Francisco

Family member	Occupation type			Households	Unit: No., %
					%
Head	Head				
	Fishing			4	25.0
	Fishing+agriculture			1	6.3
	Fisheriest&laborer			2	12.5
	Fisheriest&trading			1	6.3
Head+wife	Fishing+culture+agriculture			1	6.3
	Head	Wife			
	Fishing	Self employed		1	6.3
	Fishing	Others		0	0.0
	Fishing	Fisheriest&trading		0	0.0
Head+wife+son	Head	Wife	Son1	Son2	Son3
	Fishing	Fisheriest&trading	Fishing	Fishing	1
	Fishing	Fisheriest&trading	Fishing	Fishing	1
Head+son	Head	Son1	Son2		
	Fishing	Fishing	Fisheriest		2
Head+wife+daughter	Head	Wife	Daughter		
	Fisheriest&trading	Fisheriest&trading	Others	1	6.3
	Fishing	Government employed	Self employed.+Others	1	6.3

Alacaygan

source of income 1

	No. of full-time fishermen	Percentage of full-time fishermen in all households (%)	Percentage of full-time fishermen in all full-time fishermen (%)	No. of part-time fishermen	Percentage of part-time fishermen in all households (%)	Percentage of part-time fishermen in all part-time fishermen (%)	Percentage of full-time fishermen (%)	Percentage of part-time fishermen (%)	Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen
<5000	12	23.5	80.0	16	31.4	51.6	40.0	53.3	Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen
5001-10000	3	5.9	20.0	13	25.5	41.9	16.7	72.2	Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen
>10001	0	0.0	0.0	2	3.9	6.5	0.0	66.7	Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen
total	15			31							

	No. of others work type household	Percentage of others work type household in all households (%)	Percentage of others type household in all others type households (%)	Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen	Percentage of others type household fishermen (%)
<5000	2	3.9	40.0	6.7			
5001-10000	2	3.9	40.0	11.1			
>10001	1	2.0	20.0	33.3			
total	5						

Bularan

		source of income 1						
	No. of full-time fishermen	Percentage of full-time fishermen in all full-time fishermen in all households (%)	Percentage of full-time fishermen in all full-time fishermen (%)	No. of part-time fishermen	Percentage of part-time fishermen in all households (%)	Percentage of part-time fishermen in all part-time fishermen (%)	Percentage of full-time fishermen (%)	Percentage of part-time fishermen (%)
<5000	8	36.4	100.0	10	45.5	83.3	42.1	52.6
5001-10000	0	0.0	0.0	1	4.5	8.3	0.0	100.0
>10001	0	0.0	0.0	1	4.5	8.3	0.0	50.0
total	8			12				

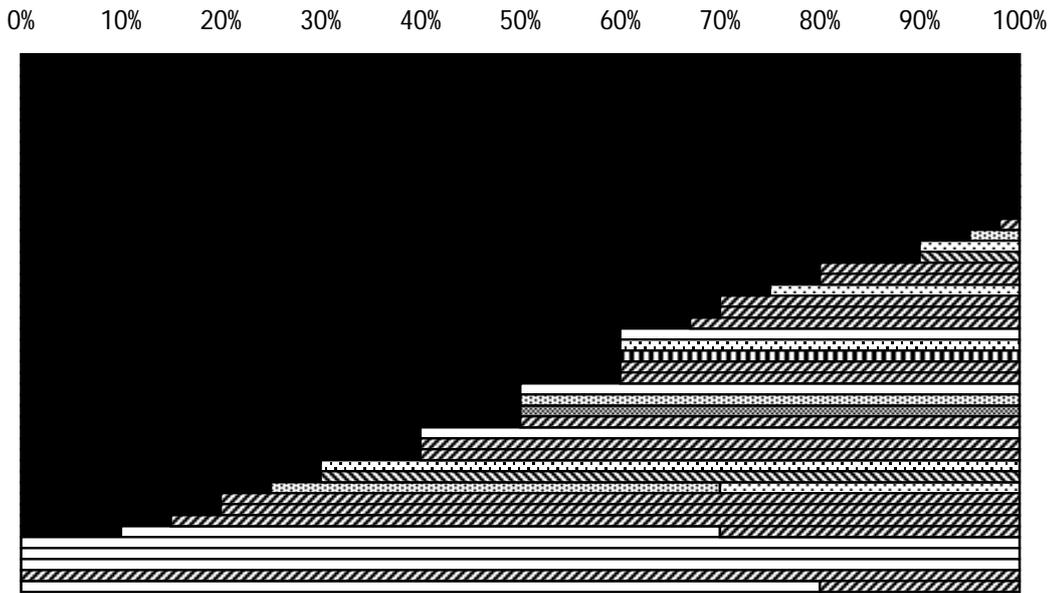
		Percentage of others type household in all households (%)			Percentage of others type household fishermen (%)		
	No. of others work type household	Percentage of others work type household in all households (%)	Percentage of others type household in all others type households (%)		Percentage of low income fishermen	Percentage of middle income fishermen	Percentage of high income fishermen
<5000	1	4.5	50.0		5.3		
5001-10000	0	0.0	0.0				
>10001	1	4.5	50.0		50.0		
total	2						

**Table Relationship between the occupational type & monthly income of the fishers
San Francisco**

	source of income 1									
	No. of full-time fisherman	Percentage of full-time fisherman in all households (%)	Percentage of full-time fisherman in all full-time fisherman (%)	No. of part-time fisherman	Percentage of part-time fisherman in all households (%)	Percentage of part-time fisherman in all part-time fisherman (%)	Percentage of full-time fishermen (%)	Percentage of part-time fishermen (%)		Percentage of part-time fishermen (%)
<5000	6	37.5	100.0	2	12.5	20.0	Percentage of low income fishermen	75.0	Percentage of low income fishermen	25.0
5001-10000	0	0	0	8	50.0	80.0	Percentage of middle income fishermen	0.0	Percentage of middle income fishermen	100.0
>10001	0	0	0	0	0.0	0.0	Percentage of high income fishermen	0.0	Percentage of high income fishermen	0.0
total	6			10						

No others work type household

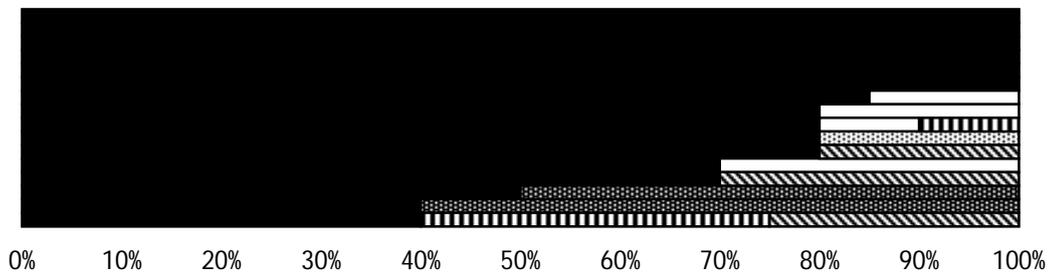
Alacavdan



Bularan



San Francisco



■ Fisheries	□ Fish trading	▨ Fish processing	▩ Agriculture
▧ Trading	▤ Laborer	▥ Processing	▦ Government employed
▨ Self employed	▩ Others		

Figure Ratio of major income sources o total household income

Table Possession of assets

	Alacaygan		Bularan		San Francisco		Total	
	Households	%	Households	%	Households	%	Households	%
Fishing boats	28	51.0	14	63.6	16	100	58	65.2
Engine	24	47.1	3	13.6	13	81.3	40	44.9
Fishing gear	45	88.2	17	77.3	14	87.5	76	85.4
Farm land	3	5.9	1	4.5	1	6.3	5	5.6
House lot	15	29.4	3	13.6	1	6.3	19	21.3
House	51	100	20	90.9	16	100	87	97.8
TV	36	70.6	8	36.4	6	37.5	50	56.2
Refrigerator	16	31.4	1	4.5	2	12.5	19	21.3
Vehicles	8	15.7	4	18.2	0	0	12	13.5

Unit: No., %

Table Financial sources of investment

	Alacaygan		Bularan		San Francisco		Total	
	Households	%	Households	%	Households	%	Households	%
Personal Traders	37	72.5	18	81.8	12	75.0	67	75.3
Financial institution	0	0	0	0	0	0	0	0.0
Money lender	4	7.8	1	4.5	0	0	5	5.6
Co-ops / association	3	5.9	6	27.3	1	6.3	10	11.2
Relatives	0	0	1	4.5	3	18.8	4	4.5
Friends	13	25.5	5	22.7	5	31.3	23	25.8
Others	7	13.7	3	13.6	2	12.5	12	13.5
	3	5.9	1	4.5	1	6.3	5	5.6

Unit: No., %

Boat information

Table Boat type

	Unit: No., %				Total of boats
	Non-motorized		Motorized (inboard)		
	Boats	%	Boats	%	
Alacaygan	4	14.3	24	85.7	28
Bularan	12	57.1	9	42.9	21
San Francisco	0	0	22	100	22
total	16	22.5	55	77.5	71

Table Number of boats

No. of boats	Unit: No., %							
	Alacaygan		Bularan		San Francisco		Total	
	Households	%	Households	%	Households	%	Households	%
0	25	49.0	5	22.7	0	0	30	33.7
1	24	47.1	14	63.6	13	81.3	51	57.3
2	2	3.9	2	9.1	2	12.5	6	6.7
more than 3	0	0	1	4.5	1	6.3	2	2.2

Table Registration

	Unit: No., %			
	Yes		No	
	Boats	%	Boats	%
Alacaygan	20	71.4	8	28.6
Bularan	13	61.9	7	33.3
San Francisco	21	95.5	1	4.5
Total	54	76.1	16	22.5

Table Ownership

	Unit: No., %			
	Own		Rent	
	Boats	%	Boats	%
Alacaygan	22	78.6	2	7.1
Bularan	19	90.5	1	4.8
San Francisco	20	90.9	0	0
Total	61	85.9	3	4.2

Table Boat size (ft.)

Range of boat	Unit: No., %							
	1 ~ 5	6 ~ 10	11 ~ 15	16 ~ 20	21 ~ 25	26 ~ 30	more than 31	Total
Alacaygan	0	3	8	14	1	1	1	28
Bularan	0	5	10	2	0	1	2	20
San Francisco	0	1	4	10	3	3	0	21
Total	0	9	22	26	4	5	3	69

Table Engine size (HP)

Range of engine	Unit: No., %							
	1 ~ 5	6 ~ 10	11 ~ 15	16 ~ 20	21 ~ 25	26 ~ 30	more than 31	total
Alacaygan	9	7	0	8	0	0	0	24
Bularan	4	0	0	4	0	0	0	8
San Francisco	5	10	0	7	0	0	0	22
Total	18	17	0	19	0	0	0	54

Table Number of year in use

Range of year	Unit: No. of year							
	1 ~ 5	6 ~ 10	11 ~ 15	16 ~ 20	21 ~ 25	26 ~ 30	more than 31	Total
Alacaygan	19	4	3	0	0	0	0	26
Bularan	17	2	0	0	0	0	0	19
San Francisco	19	2	0	1	0	0	0	22
Total	55	8	3	1	0	0	0	67

Table Cost of boat (peso)

Range of cost	Unit: No. of boats							
	1 ~ 10000	10001 ~	20001 ~	30001 ~	40001 ~ 50000	50001 ~	more than	Total
Alacaygan	11	11	1	2	1	1	1	28
Bularan	16	0	0	1	0	0	1	18
San Francisco	10	6	2	3	0	0	0	21
Total	37	17	3	6	1	1	2	67

Information of fishing gear

Table No. of fishing gear owned by households in three barangays

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
Alacaygan	32	12	2
	62.7	23.5	3.9
	5		9.8
Bularan	9	6	5
	40.9	27.3	22.7
	2		9.1
San Francisco	12	3	1
	75.0	18.8	6.3
	0		0.0
Total	53	21	8
	59.6	23.6	9.0
	7		7.9

Table Relationship between income and No. of owned fishing gear
(percentage of all households)

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	23	4	1
	45.1	7.8	2.0
	2		3.9
5001-10000	8	7	1
	15.7	13.7	2.0
	2		3.9
>10001	1	1	0
	2.0	2.0	0.0
	1		2.0

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	7	6	5
	31.8	27.3	22.7
	1		4.5
5001-10000	1	0	0
	4.5	0	0
	0		0
>10001	1	0	0
	4.5	0	0
	1		4.5

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	5	3	0
	31.3	18.8	0
	0		0
5001-10000	7	0	1
	43.8	0	6.3
	0		0
>10001	0	0	0
	0	0	0
	0		0

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	35	7	6
	39.3	7.9	6.7
	3		3.4
5001-10000	16	7	2
	18.0	7.9	2.2
	2		2.2
>10001	2	1	0
	2.2	1.1	0
	2		2.2

Table Relationship between income and No. of owned fishing gear
(percentage of each income category group)

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	23	4	1
	76.7	13.3	3.3
	2		6.7
5001-10000	8	7	1
	44.4	38.9	5.6
	2		11.1
>10001	1	1	0
	33.3	33.3	0.0
	1		33.3

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	7	6	5
	36.8	31.6	26.3
	1		5.3
5001-10000	1	0	0
	100.0	0	0
	0		0
>10001	1	0	0
	50.0	0	0
	1		50.0

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	5	3	0
	62.5	37.5	0
	0		0
5001-10000	7	0	1
	87.5	0	12.5
	0		0
>10001	0	0	0
	0	0	0
	0		0

No. of fishing gear	Unit: No., %		
	one	two	three
	Households	Households	Households
	%	%	%
	No answer	No answer	No answer
	Households	Households	Households
	%	%	%
<5000	35	7	6
	61.4	12.3	10.5
	3		5.3
5001-10000	16	7	2
	27.4	25.9	7.4
	2		7.4
>10001	2	1	0
	40.0	20.0	0
	2		40.0

Table Fishing gear owned, shown by type

Alacygan Unit: No. of households, %

	Licence	Non-licence	Total	% of all gear owner
Bottom set gill net	5	3	8	12.9
Gill net	8	3	11	17.7
Shallow fish corral	7	0	7	11.3
Hand line	1	1	2	3.2
Pole and line	0	3	3	4.8
Crab pot	4	3	7	11.3
Push net	2	16	18	29.0
Long line	0	1	1	1.6
Gleaning	0	1	1	1.6
beach seine	0	1	1	1.6
Others	1	2	3	4.8

Bularan Unit: No. of households, %

	Licence	Non-licence	Total	% of all gear owner
Bottom set gill net	0	4	4	11.1
Gill net	0	3	3	8.3
Deep fish corral	1	0	1	2.8
Hand line	5	13	18	50.0
Pole and line	0	2	2	5.6
Push net	0	5	5	13.9
Encircling gill net	1	1	2	5.6
Others	0	1	1	2.8

San Francisco Unit: No. of households, %

	License	Non-licence	Total	% of all gear owner
Bottom set gill net	1	0	1	4.8
Gill net	4	0	4	19.0
Crab pot	1	0	1	4.8
Long line	13	2	15	71.4

As a whole Unit: No. of households, %

	Licence	Non-licence	Total	% of all gear owner
Bottom set gill net	6	7	13	10.9
Gill net	12	6	18	15.1
Shallow fish corral	7	0	7	5.9
Deep fish corral	1	0	1	0.8
Hand line	6	14	20	16.8
Pole and line	0	5	5	4.2
Crab pot	5	3	8	6.7
Push net	2	21	23	19.3
Long line	13	3	16	13.4
Encircling gill net	1	1	2	1.7
Gleaning	0	1	1	0.8
Beach seine	0	1	1	0.8
Others	1	3	4	3.4

Bularan

ID	often using gear rank			economic importance rank			num of gear unit	length of net	using days	using season												total catch per trip	total catch per trip max	species caught			for household	for sale				
	rank1	rank2	rank3	rank1	rank2	rank3				1	2	3	4	5	6	7	8	9	10	11	12			rank1	rank2	rank3						
hand line	1	hand line	encircling gill net	bottom set gill net	hand line	encircling	bottom set gill net	2	0	12														2	3	Thread fin bream	Grouper	Goatee croaker	25	75		
	2	hand line			hand line			4	0	30														1	2	Thread fin bream	-	-	-	20	80	
	3	hand line			hand line			2	0	30														1	3	Thread fin bream	Sand Whiting	Monocle bream	5	95		
	6	hand line	gill net	bottom set gill net	hand line	gill net	bottom set gill net	2	0	30														1	3	Thread fin bream	Sand Whiting	-	-	5	95	
	8	gill net	hand line	bottom set gill net	hand line	hand line	bottom set gill net	4	0	10														1	5	Thread fin bream	Sand Whiting	-	-	5	95	
	9	hand line			hand line			2	20	30														0	3	Thread fin bream	Sand Whiting	-	-	20	80	
	10	hand line	push net		hand line	push net		2	100	30														1	4	Thread fin bream	Sand Whiting	-	-	10	90	
	11	bottom set gill net	hand line	push net	bottom set gill net	hand line	push net	0	0	30														0	3	Thread fin bream	Sand Whiting	Grouper	-	0	100	
	12	hand line	push net		hand line	push net		5	0	20														1	3	Thread fin bream	Grouper	Sand Whiting	-	0	0	
	13	hand line	encircling gill net		hand line	encircling gill net		1	0	20														2	4	Thread fin bream	Sand Whiting	Grouper	-	0	0	
	14	hand line			hand line			1	0	30														0	2	Thread fin bream	Sand Whiting	Grouper	-	0	0	
	15	hand line			hand line			2	60	25														1	4	Thread fin bream	Grouper	-	-	4	96	
	17	hand line			hand line			7	200	30														1	6	Thread fin bream	Grouper	Goatee croaker	30	70		
	18	hand line	gill net		hand line	gill net		4	0	30														1	6	Thread fin bream	Sand Whiting	Grouper	-	0	100	
	20	hand line	pole and line		hand line	pole and line		4	0	30														0	3	Thread fin bream	Monocle bream	Sand Whiting	-	10	90	
	23	hand line			hand line			6	250	30														1	5	Thread fin bream	Sand Whiting	Goatee croaker	1	99		
	24	hand line	push net	bottom set gill net	hand line	push net	bottom set gill net	2	0	30														0	3	Thread fin bream	Grouper	-	-	5	95	
	25	hand line			hand line			2	0	28														2	4	Thread fin bream	Grouper	Monocle bream	0	0	0	
	26	hand line			hand line			4	0	30														1	3	Thread fin bream	Sand Whiting	Grouper	-	20	80	
	bottom set gill net	11	bottom set gill net	hand line	push net	hand line	push net	6	1	30														2	5	Blue crab	-	-	-	0	0	
		1	hand line	encircling gill net	bottom set gill net	hand line	encircling gill net	bottom set gill net	18	100	30														3	8	Blue crab	Flat fish	-	-	0	0
		6	hand line	gill net	bottom set gill net	hand line	gill net	bottom set gill net	10	100	30														1	10	Blue crab	-	-	-	5	95
		8	gill net	hand line	bottom set gill net	gill net	hand line	bottom set gill net	2	300	30														3	12	Thread fin bream	Sand Whiting	-	-	5	95
	push net	24	hand line	push net	bottom set gill net	hand line	push net	3	100	30														2	15	Blue crab	-	-	-	0	100	
		10	hand line	push net		hand line	push net	1	0	10														1	10	Acetes	-	-	-	0	100	
		12	hand line	push net		hand line	push net	1	1	7														2	25	Acetes	-	-	-	0	0	
24		hand line	push net	bottom set gill net	hand line	push net	bottom set gill net	1	0	30													1	15	Grouper	-	-	-	0	100		
gill net	11	bottom set gill net	hand line	push net	bottom set gill net	hand line	push net	1	6	30													2	5	Acetes	-	-	-	0	0		
	8	gill net	hand line	bottom set gill net	gill net	hand line	bottom set gill net	6	100	30													2	6	others	Sand Whiting	Mullet	-	5	95		
	6	hand line	gill net	bottom set gill net	hand line	gill net	bottom set gill net	10	100	2													1	30	Mullet	-	-	-	5	95		
	18	hand line	gill net		hand line	gill net		2	50	1													1	10	Blue crab	-	-	-	0	100		
	1	hand line	encircling gill net	bottom set gill net	hand line	encircling gill net	bottom set gill net	0	0	12														1	10	Thread fin bream	Sardine	-	-	0	100	
long line	13	hand line	encircling gill net		hand line	encircling gill net		12	300	10													15	30	Others	Sardine	-	-	0	0		
	5	long line	long line		long line	long line		2	100	25													5	50	Round Scad	Others	-	-	0	100		
crab pot	20	hand line	pole and line		hand line	pole and line		1	0	2													0	2	Sand Whiting	-	-	-	100	0		

*single gear (handline) operation 9 households, percentage of single gear fishermen is 40.9%

San Francisco

ID	often using gear rank			economic importance rank			num of gear unit	length of net	using days	using season												total catch per trip	total catch per trip max	species caught			for household	for sale			
	rank1	rank2	rank3	rank1	rank2	rank3				1	2	3	4	5	6	7	8	9	10	11	12			rank1	rank2	rank3					
longline	1	long line			long line			6	100	20													3	7	Thread fin bream	Grouper	Sand Whiting	-	2	98	
	2	long line	gill net		long line	gill net		6	35	30													2	10	Thread fin bream	Sand Whiting	Goatee croaker	5	95		
	3	long line			long line			6	35	30													2	5	Thread fin bream	Goatee croaker	Sand Whiting	-	0	100	
	4	long line	gill net		long line	gill net		7	700	25														8	10	Thread fin bream	Goatee croaker	Grouper	-	10	90
	5	long line			long line			6	35	24														3	15	Thread fin bream	Grouper	Goatee croaker	10	90	
	6	long line			long line			1	600	7														4	10	Thread fin bream	-	-	-	30	70
	8	long line			long line			6	75	30														2	8	Thread fin bream	Sand Whiting	-	-	5	95
	9	long line			long line			2	400	20														2	10	Thread fin bream	Goatee croaker	Sand Whiting	-	5	95
	10	long line	crab net	gill net	long line	crab net	gill net	1	500	25														4	20	Goatee croaker	Thread fin bream	Sand Whiting	-	5	95
	11	long line			long line			6	35	24														3	15	Thread fin bream	Goatee croaker	Sand Whiting	-	5	95
	12	long line			long line			1	300	25														5	15	Fourfinger thredfin	Grouper	Thread fin bream	10	90	
	13	long line			long line			1	600	28														3	5	Thread fin bream	Sand Whiting	Goatee croaker	5	95	
	14	long line			long line			1	600	21														1	10	Thread fin bream	-	-	-	10	90
	17	long line			long line			2	600	25														5	10	Thread fin bream	Sand Whiting	Goatee croaker	10	90	
	18	long line			long line			5	500	24														30	100	Thread fin bream	Sand Whiting	Goatee croaker	1	99	
	gill net	7	gill net			gill net			7	60	20													1	5	Common ponyfish	Sand Whiting	Scad	-	2	98
		2	long line	gill net		long line	gill net		1	300	30													5	20	others	Common ponyfish	-	-	2	98
		4	long line	gill net		long line	gill net		12	100	4													5	20	Common ponyfish	Scad	-	-	5	95
10		long line	crab net	gill net	long line	crab net	gill net	12	100	7														3	30	others	Therapun	-	-	0	100
crab pot	12	long line			long line			6	40	25													2	10	Fourfinger thredfin	Grouper	Thread fin bream	10	90		
	10	long line	crab net	gill net	long line	crab net	gill net	60	0	30													2	10	Blue crab	-	-	-	5	95	

*single gear (longline) operation 14 households, percentage of single gear fishermen is 87.5%

Table Major fishing gear often used of fishing gear

Alacaygan Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Push net	8	8	1	17	33.3
Gill net	8	3	0	11	21.6
Bottom set gill net	8	1	0	9	17.6
Shallow fish corral	7	0	0	7	13.7
Crab pot	7	0	0	7	13.7
Pole and line	3	0	0	3	5.9
Hand line	2	0	0	2	3.9
Gleaning	1	1	0	2	3.9
Beach seine	1	0	0	1	2.0
Others net	1	0	0	1	2.0
Long line	0	1	0	1	2.0
(no-answer)	5	37	50	92	-

Bularan Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Hand line	17	2	0	19	50.0
Bottom set gill net	1	0	4	5	13.2
Deep sea fish corral	1	0	0	1	2.6
Gill net	1	2	0	3	7.9
Push net	0	3	1	4	10.5
Encircling gill net	0	2	0	2	5.3
Pole and line	0	1	0	1	2.6
(no-answer)	2	12	17	31	-

San Francisco Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Long line	15	0	0	15	75.0
Gill net	1	2	1	4	20.0
Crab pot	0	1	0	1	5.0
(no-answer)	0	13	15	28	-

As a whole Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Push net	8	11	2	21	19.3
Gill net	10	7	1	18	16.5
Bottom set gill net	9	1	4	14	12.8
Shallow fish corral	7	0	0	7	6.4
Crab pot	7	1	0	8	7.3
Pole and line	3	2	0	5	4.6
Hand line	2	0	0	2	1.8
Gleaning	1	1	0	2	1.8
Beach seine	1	0	0	1	0.9
Encircling gill net	0	2	0	2	1.8
Others net	1	0	0	1	0.9
Long line	15	1	0	16	14.7
(no-answer)	7	62	82	151	-

Table Major fishing gears economically important

Alacaygan Unit: No. of households, %

	Rank1	Rank2	Rank3	modified	% of all gear user
Push net	11	6	0	17	28.3
Bottom set gill net	9	0	0	9	15.0
Shallow fish corral	7	0	0	7	11.7
Crab pot	7	0	0	7	11.7
Gill net	5	5	1	11	18.3
Pole and line	3	0	0	3	5.0
Gleaning	1	1	0	2	3.3
Beach seine	1	0	0	1	1.7
Others net	1	0	0	1	1.7
Hand line	0	1	0	1	1.7
Long line	0	1	0	1	1.7
(no-answer)	6	37	50	95	-

Bularan Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Hand line	17	2	0	19	54.3
Gill net	1	2	0	3	8.6
Bottom set gill net	1	0	4	5	14.3
Deep sea fish corral	1	0	0	1	2.9
Push net	0	3	1	4	11.4
Encircling gill net	0	2	0	2	5.7
Pole and line	0	1	0	1	2.9
(no-answer)	2	12	17	31	-

Table 19.3. San Francisco Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Long line	15	0	0	15	75.0
Gill net	1	2	1	4	20.0
Crab pot	0	1	0	1	5.0
(no-answer)	0	13	15	20	-

Table As a whole Unit: No. of households, %

	Rank1	Rank2	Rank3	Total	% of all gear user
Push net	11	9	1	21	21.9
Bottom set gill net	10	0	4	14	14.6
Shallow fish corral	7	0	0	7	7.3
Crab pot	7	1	0	8	8.3
Gill net	7	9	2	18	18.8
Pole and line	3	1	0	4	4.2
Gleaning	1	1	0	2	2.1
Beach seine	1	0	0	1	1.0
others net	1	0	0	1	1.0
Hand line	0	1	0	1	1.0
Long line	15	1	0	16	16.7
Encircling gill net	0	2	0	2	2.1
Deep sea fish corral	1	0	0	1	1.0
(no-answer)	8	62	82	152	-

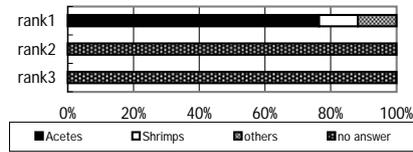
Major fish species caught

Table Major fish species caught in Alacaygan Push net

Unit: No. of households

	Rank1	Rank2	Rank3
Acetes	13	0	0
Shrimps	2	0	0
No answer	2	17	17

Figure Push net

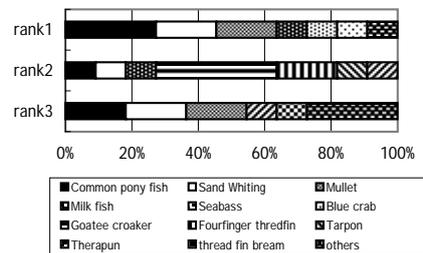


Gill net

Unit: No. of households

	Rank1	Rank2	Rank3
Common pony fish	3	1	2
Sand Whiting	2	1	2
Mullet	2	0	2
Milk fish	1	1	0
Seabass	1	0	0
Blue crab	1	0	0
Fourfinger thredfin	0	2	0
Goatee croaker	0	4	0
Tarpon	0	1	0
Therapun	0	1	1
Thread fin bream	0	0	1
Others	1	0	3

Gill net

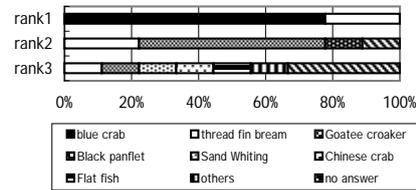


Bottom set gill net

Unit: No. of households

	Rank1	Rank2	Rank3
Blue crab	7	0	0
Thread fin bream	2	2	1
Goatee croaker	0	5	1
Black panflet	0	1	0
Sand Whiting	0	0	1
Chinese crab	0	0	1
Flat fish	0	0	1
Others	0	0	1
No answer	0	1	3

Bottom set gill net

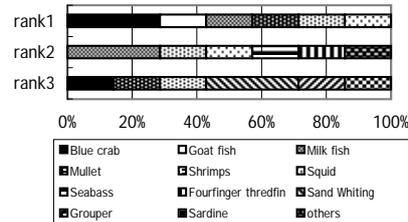


Shallow fish corral

Unit: No. of households

	Rank1	Rank2	Rank3
Blue crab	2		1
Goat fish	1		
Milk fish	1	2	
Mullet	1		1
Shrimps	1	1	1
Squid	1	1	
Seabass		1	
Fourfinger thredfin		1	
Grouper			1
Sand Whiting			2
Sardine			1
Others		1	

Shallow fish corral

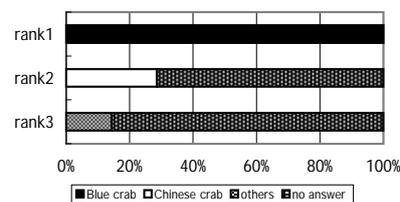


Crab pot

Unit: No. of households

	Rank1	Rank2	Rank3
Blue crab	7		
Chinese crab		2	
Others			1
No answer		5	6

Crab pot

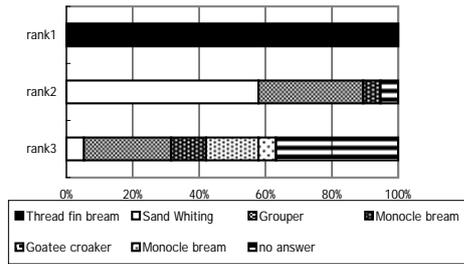


Hand line

Unit: No. of households

	Rank1	Rank2	Rank3
Thread fin bream	19	0	0
Sand Whiting	0	11	0
Grouper	0	6	5
Goatee croaker	0	0	3
Sand Whiting	0	0	2
Monocle bream	0	0	2
No answer	0	1	7

Hand line

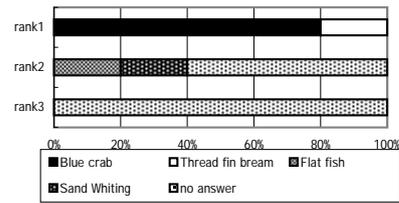


Bottom set gill net

Unit: No. of households

	Rank1	Rank2	Rank3
Blue crab	4	0	0
Thread fin bream	1	0	0
Sand Whiting	0	1	0
Flat fish	0	1	0
No answer	0	3	5

Bottom set gill net



Push net

Unit: No. of households

	Rank1	Rank2	Rank3
Acetes	3	0	0
Grouper	1	0	0
No answer	0	4	4

Push net

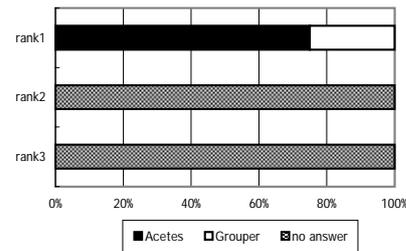


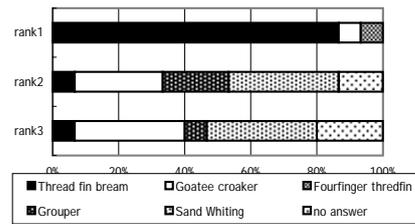
Table Major fish species caught in San Francisco

Longline

Unit: No. of households

	Rank1	Rank2	Rank3
Thread fin bream	13	1	1
Goatee croaker	1	4	5
Fourfinger thred	1	0	0
Sand Whiting	0	5	5
Grouper	0	3	1
No answer	0	2	3

Longline



Gill net

Unit: No. of households

	Rank1	Rank2	Rank3
Common pony f	2	1	0
Sand Whiting	0	1	0
Scad	0	1	1
Therapun	0	1	0
others	2	0	0
no answer	0	0	3

Gill net

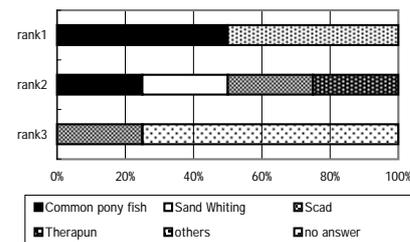


Table Major species caught by major fishing gears in Alacaygan

Gears	Major species
Push net	Acetes, Shrimp
Gill net	Common pony fish, Sand whiting, Mullet, Goatee croaker.
Bottom set gill net	Blue swimming crab, Thread fin bream, Goatee croaker,
Sallow fish coral	Blue swimming crab, Milk fish, Shrimp, Squid, Mullet
Crab pot	Blue swimming crab, Chinese crab

Table Major species caught by major fishing gears in Bularan

Gears	Major species
Hand line	Thread fin bream, Sand whiting, Grouper
Bottom set gill net	Blue swimming crab, Thread fin bream, Sand whiting, Flat fish
Push net	Acetes, Grouper

Table Major species caught by major fishing gears in San Francisco

Gears	Major species
Long line	Thread fin bream, Sand whiting, Goatee croaker, Grouper
Gill net	Common pony fish, Scad, Sand whiting, Therapun

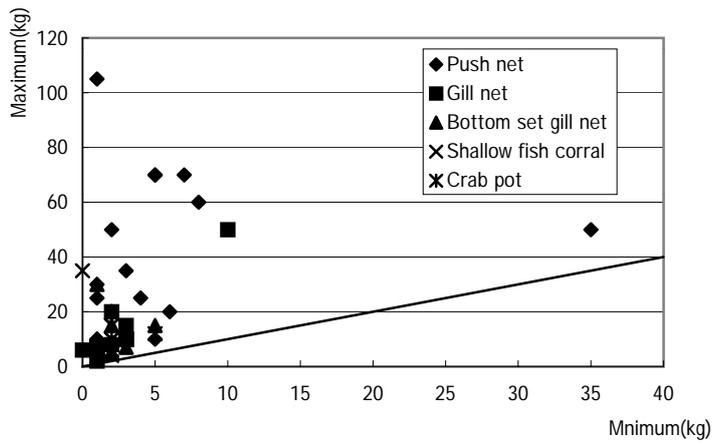


Figure Relationship between max. and min. on total catch(kg) per trip in Alacaygan

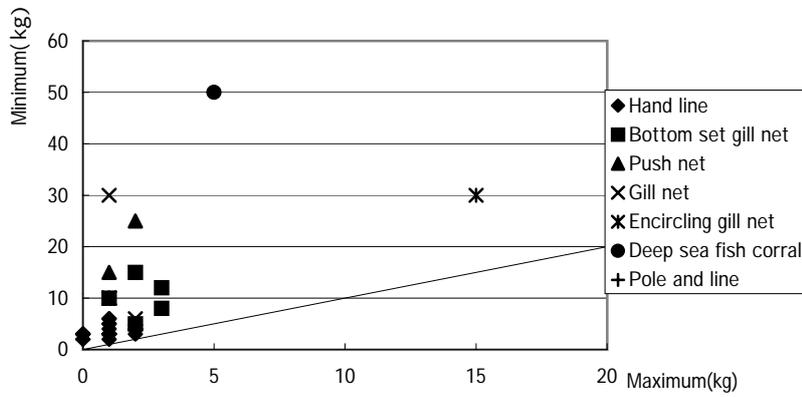


Figure Relationship between max. and min. on total catch(kg) per a trip in Bularan

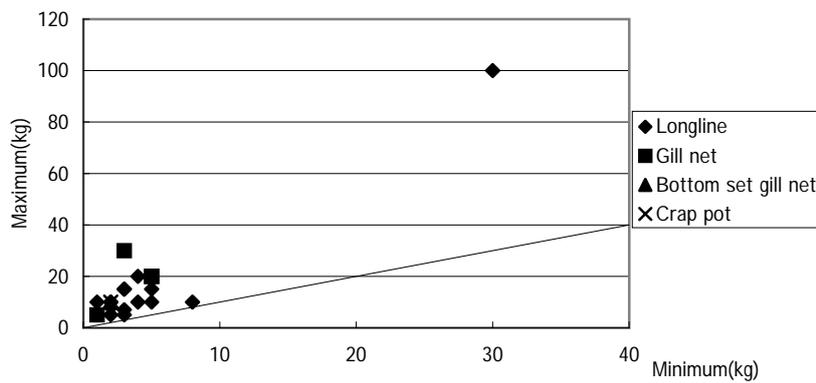


Figure Relationship between max. and min. on total catch(kg) per a trip in San Francisco

**Income per trip
Alacaygan**

Table Peak season minimum

Category (peso)	Unit: No., %	
	Households	%
0	13	25.5
1 ~ 100	19	37.3
101 ~ 200	5	9.8
201 ~ 300	2	3.9
301 ~ 400	1	2
401 ~ 500	6	11.8
501 ~ 600	3	5.9
601 ~ 700	0	0
701 ~ 800	2	3.9
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	51	100
Average	188.6	

Table Peak season maximum

Category (peso)	Unit: No., %	
	Households	%
0	14	27.5
1 ~ 100	5	9.8
101 ~ 200	2	3.9
201 ~ 300	2	3.9
301 ~ 400	3	5.9
401 ~ 500	3	5.9
501 ~ 600	2	3.9
601 ~ 700	0	0
701 ~ 800	3	5.9
801 ~ 900	3	5.9
901 ~ 1000	5	9.8
more than 1001	9	17.6
Total	51	100
Average	610.4	

Table Lean season minimum

Category (peso)	Unit: No., %	
	Households	%
0	24	47.1
1 ~ 100	13	25.5
101 ~ 200	7	13.7
201 ~ 300	4	7.8
301 ~ 400	3	5.9
401 ~ 500	0	0
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	51	100
Average	89.8	

Table Lean season maximum

Category (peso)	Unit: No., %	
	Households	%
0	20	39.2
1 ~ 100	15	29.4
101 ~ 200	4	7.8
201 ~ 300	6	11.8
301 ~ 400	1	2
401 ~ 500	2	3.9
501 ~ 600	2	3.9
601 ~ 700	0	0
701 ~ 800	1	2
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	51	100
Average	126.3	

Bularan

Table Peak season minimum

Category (peso)	Unit: No., %	
	Households	%
0	3	13.6
1 ~ 100	11	50
101 ~ 200	5	22.7
201 ~ 300	1	4.5
301 ~ 400	0	0
401 ~ 500	0	0
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	2	9.1
Total	22	100
Average	410.0	

Table Peak season maximum

Category (peso)	Unit: No., %	
	Households	%
0	4	18.2
1 ~ 100	0	0
101 ~ 200	2	9.1
201 ~ 300	6	27.3
301 ~ 400	4	18.2
401 ~ 500	2	9.1
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	1	4.5
901 ~ 1000	0	0
more than 1001	3	13.6
Total	22	100
Average	1199.6	

Table Lean season minimum

Category (peso)	Unit: No., %	
	Households	%
0	10	45.5
1 ~ 100	10	45.5
101 ~ 200	1	4.5
201 ~ 300	0	0
301 ~ 400	0	0
401 ~ 500	1	4.5
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	22	100
Average	48.0	

Table Lean season maximum

Category (peso)	Unit: No., %	
	Households	%
0	5	22.7
1 ~ 100	10	45.5
101 ~ 200	2	9.1
201 ~ 300	3	13.6
301 ~ 400	0	0
401 ~ 500	1	4.5
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	1	4.5
Total	22	100
Average	171.8	

San Francisco

Table Peak season minimum

Category (peso)	Unit: No., %	
	Households	%
0	2	12.5
1 ~ 100	4	25
101 ~ 200	2	12.5
201 ~ 300	3	18.8
301 ~ 400	0	0
401 ~ 500	1	6.3
501 ~ 600	1	6.3
601 ~ 700	1	6.3
701 ~ 800	0	0
801 ~ 900	1	6.3
901 ~ 1000	0	0
more than 1001	1	6.3
Total	16	100
Average	307.5	

Table Peak season maximum

Category (peso)	Unit: No., %	
	Households	%
0	2	12.5
1 ~ 100	0	0
101 ~ 200	2	12.5
201 ~ 300	0	0
301 ~ 400	0	0
401 ~ 500	2	12.5
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	2	12.5
801 ~ 900	2	12.5
901 ~ 1000	2	12.5
more than 1001	4	25
Total	16	100
Average	1588.9	

Table Lean season minimum

Category (peso)	Unit: No., %	
	Households	%
0	2	12.5
1 ~ 100	9	56.3
101 ~ 200	2	12.5
201 ~ 300	3	18.8
301 ~ 400	0	0
401 ~ 500	0	0
501 ~ 600	0	0
601 ~ 700	0	0
701 ~ 800	0	0
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	16	100
Average	100.8	

Table Lean season maximum

Category (peso)	Unit: No., %	
	Households	%
0	2	12.5
1 ~ 100	3	18.8
101 ~ 200	1	6.3
201 ~ 300	2	12.5
301 ~ 400	1	6.3
401 ~ 500	5	31.3
501 ~ 600	0	0
601 ~ 700	1	6.3
701 ~ 800	1	6.3
801 ~ 900	0	0
901 ~ 1000	0	0
more than 1001	0	0
Total	16	100
Average	330.0	

Relationship between max. and min. income on single gear use and multiple gear use

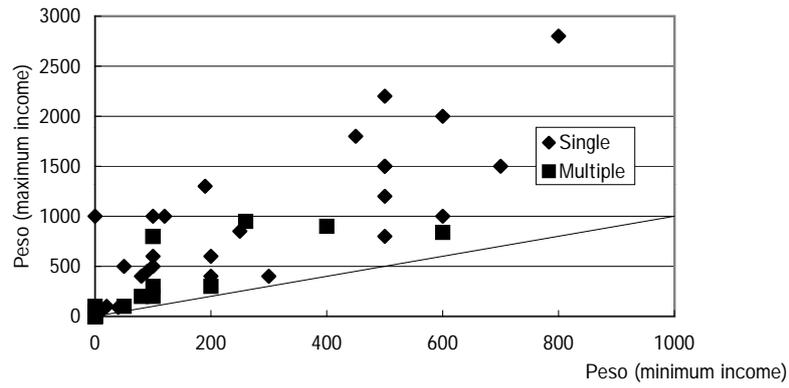


Figure Average income of fishing operation by single and multiple gears in Alacayq (Average income per a trip in peak season)

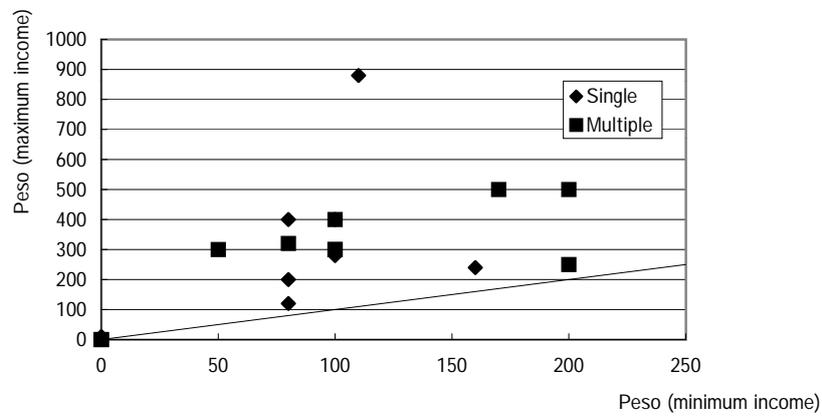


Figure Average income of fishing operation by single and multiple gears in Bularan (Average income per a trip in peak season)

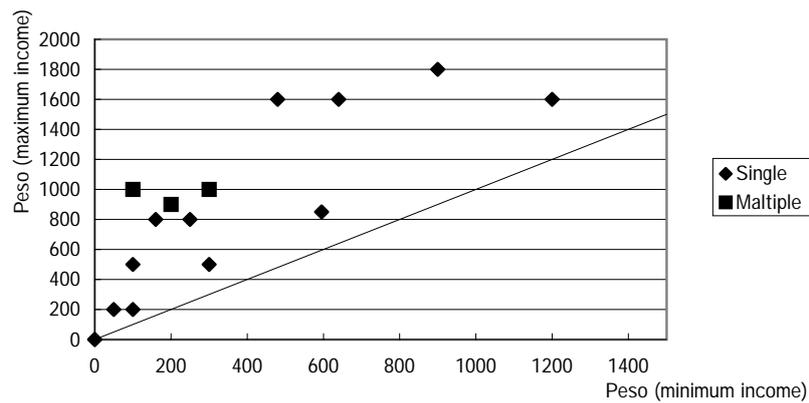


Figure Average income of fishing operation by single and multiple gears in San Fra (Average income per a trip in peak season)

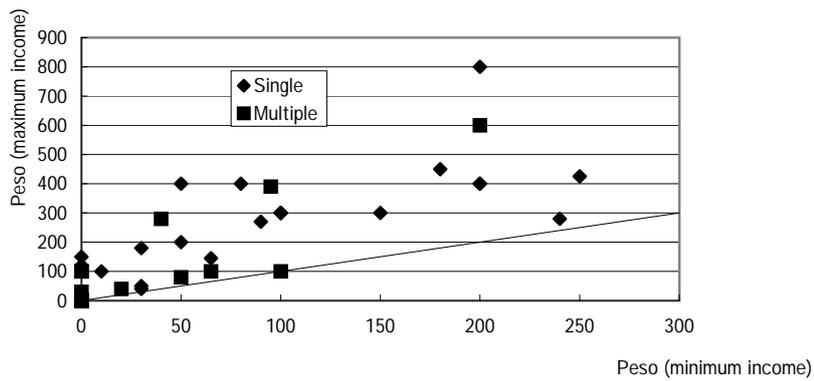


Figure Average income of fishing operation by single and multiple gears in Alacayg (Average income per a trip in lean season)

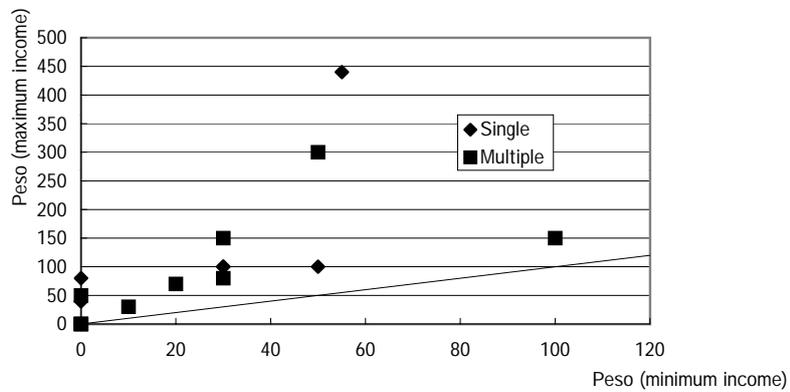


Figure Average income of fishing operation by single and multiple gears in Bularar (Average income per a trip in lean season)

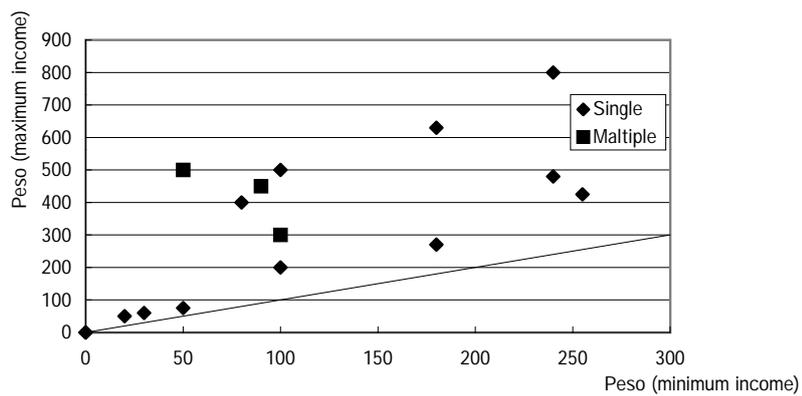


Figure Average income of fishing operation by single and multi gears in San Franc (Average income per a trip in lean season)

Expenditure

Table Percentage of expenditures in three barangays

	Oil and gas	Ice	Food	Labor	Bait	Lubricant	Other	Unit: %
Alacaygan	48.1	0.3	18.9	3.0	5.0	10.0	12.1	
Bularan	9.6	13.1	36.9	21.1	20.4	0	0.0	
San Francisco	43.9	6.5	8.2	3.0	35.2	2.4	12.0	

Table Details of expenditure per trip

Category	Alacaygan		Bularan		San Francisco	
	Households	% Households	Households	% Households	Households	%
Oil cost	0	28	17	77.3	0	0
1 ~ 20	3	5.9	0	0	0	0
21 ~ 40	2	3.9	1	4.5	2	12.5
41 ~ 60	10	19.6	3	13.6	1	6.3
61 ~ 80	1	2	0	0	2	12.5
81 ~ 100	2	3.9	1	4.5	1	6.3
101 ~ 120	1	2	0	0	8	50
121 ~ 140	0	0	0	0	1	6.3
141 ~ 160	3	5.9	0	0	0	0
more than 161	1	2	0	0	1	6.3
Ice cost	0	49	22	100	1	6.3
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	2	3.9	0	0	0	0
more than 6	0	0	0	0	15	93.8
Food cost	0	30	3	13.6	2	12.5
1 ~ 10	8	15.7	7	31.8	3	18.8
11 ~ 20	9	17.6	10	45.5	6	37.5
21 ~ 30	2	3.9	1	4.5	3	18.8
31 ~ 40	1	2	1	4.5	1	6.3
41 ~ 50	1	2	0	0	0	0
more than 51	0	0	0	0	1	6.3
Laborer cost	0	49	11	50	15	93.8
1 ~ 10	0	0	10	45.5	0	0
11 ~ 20	0	0	1	4.5	0	0
21 ~ 30	0	0	0	0	0	0
31 ~ 40	0	0	0	0	0	0
41 ~ 50	0	0	0	0	0	0
51 ~ 60	0	0	0	0	0	0
61 ~ 70	0	0	0	0	0	0
71 ~ 80	1	2	0	0	0	0
81 ~ 90	0	0	0	0	0	0
91 ~ 100	1	2	0	0	0	0
more than 101	0	0	0	0	1	6.3
Bait cost	0	46	14	63.6	3	18.8
1 ~ 10	2	3.9	1	4.5	0	0
11 ~ 20	0	0	3	13.6	1	6.3
21 ~ 30	2	3.9	0	0	0	0
31 ~ 40	0	0	0	0	1	6.3
41 ~ 50	1	2	0	0	1	6.3
more than 51	0	0	4	18.2	10	62.5
Lubricant cost	0	39	22	100	9	56.3
1 ~ 10	5	9.8	0	0	3	18.8
11 ~ 20	1	2	0	0	4	25
21 ~ 30	1	2	0	0	0	0
31 ~ 40	0	0	0	0	0	0
41 ~ 50	2	3.9	0	0	0	0
51 ~ 60	1	2	0	0	0	0
61 ~ 70	0	0	0	0	0	0
71 ~ 80	0	0	0	0	0	0
81 ~ 90	2	3.9	0	0	0	0
91 ~ 100	0	0	0	0	0	0
more than 101	0	0	0	0	0	0
Other cost	0	42	22	100	15	93.8
1 ~ 10	1	2	0	0	0	0
11 ~ 20	4	7.8	0	0	0	0
21 ~ 30	0	0	0	0	1	6.3
31 ~ 40	1	2	0	0	0	0
41 ~ 50	1	2	0	0	0	0
51 ~ 60	1	2	0	0	0	0
61 ~ 70	0	0	0	0	0	0
71 ~ 80	1	2	0	0	0	0
81 ~ 90	0	0	0	0	0	0
91 ~ 100	0	0	0	0	0	0
more than 101	0	0	0	0	0	0
Total cost	0	25	2	9.1	0	0
1 ~ 50	3	5.9	15	68.2	0	0
51 ~ 100	6	11.8	1	4.5	3	18.8
101 ~ 150	11	21.6	1	4.5	0	0
151 ~ 200	3	5.9	2	9.1	2	12.5
201 ~ 250	2	3.9	1	4.5	2	12.5
251 ~ 300	1	2	0	0	6	37.5
more than 301	0	0	0	0	3	18.8
Average	198.3		100.7		291.1	

Table Expenditure of major fishing gears in three barangays

Unit: peso

	Fuel oil	Ice	Food	Labor	Bait	Lubricant	Others	Total
Alacaygan								
Push net	8	0	3.6	0	0	12.1	0	23.7
Gill net	50.8	2	10.8	0	8	17.4	4.6	93.6
Bottom set gill	120.8	0	18.6	16	0	16.8	15.8	188
Shallow fish co	0	0	0	0	0	0	0	0
Crab pot	43	0	16	0	17.6	9.4	18	104
Bularan								
Hand line	0	5	12.2	5.6	7.8	0	0	30.6
San Francisco								
Long line	100.1	14.6	24.6	12.5	109.4	1.8	2.5	265.5
Gill net	56	0	5	0	0	1	0	62

Distribution channel

Table Ratio of households consumption and sale

Unit: %

	Alacaygan	Bularan	San Francisco
Household consumption	11.6	10.0	7.2
Catch for sale	88.4	90.0	92.8

Table Distribution channel of each fishing gear -single gear use- (%)

Alacaygan

Bottom set gill net

Unit: %

	Household consumption	Catch for sale
1	5	85
2	1	99
3	5	95
4	2	98
5	20	80
Total	33	457
Average	6.6	91.4

Gill net

Unit: %

	Household consumption	Catch for sale
1	15	85
2	10	90
3	10	90
4	10	90
5	0	100
Total	45	455
Average	9.0	91.0

Push net

Unit: %

	Household consumption	Catch for sale
1	10	90
2	2	98
3	5	95
4	5	95
5	0	100
6	10	90
7	0	100
Total	32	668
Average	4.6	95.4

Bularan

Handline

Unit: %

	Household consumption	Catch for sale(%)
1	20	80
2	5	95
3	20	80
5	4	96
6	30	70
7	1	99
9	20	80
Total	100	600
Average	14.3	85.7

. San Francisco

Long line

Unit: %

	Household consumption	Catch for sale(%)
1	2	98
2	0	100
3	10	90
4	30	70
5	5	95
6	5	95
7	5	95
8	10	90
9	5	95
10	10	90
11	10	90
12	1	99
Total	93	1107
Average	7.8	92.3

■ Mangrove resources

Table Use of mangrove resources

Unit: No. of households

	Use of mangrove resources		
	Yes	No	No answer
Alacaygan	26 (51.0%)	25 (49.0%)	0 (0%)
Bularan	6 (27.3%)	14 (63.6%)	2 (9.1%)
San Francisco	4 (25.0%)	12 (75.0%)	0 (0%)

Table Purpose of use of mangrove

Unit: No.

	Purpose	Households
	Alacaygan	Fuel
Others		6 (11.8%)
Building materials		3 (5.9%)
Bularan	Fuel	4 (18.2%)
	Building materials	2 (9.1%)
	Others	1 (4.5%)
San Francisco	Others	3 (18.8%)
	Fishing	2 (12.5%)
	Building materials	1 (6.3%)
	Medicine	1 (6.3%)

Note: San Francisco-others purpose were protection from

Table Experience of mangrove planting

Unit: No. of households, %

	Experience of mangrove planting				
	Yes	with help	without help	No	No answer
Alacaygan	31 (60.8%)	13 (25.5%)	18 (35.3%)	18 (35.3%)	2 (3.9%)
Bularan	6 (27.3%)	5 (22.7%)	1 (4.5%)	11 (50.0%)	5 (22.7%)
San Francisco	11 (68.8%)	8 (50.0%)	3 (18.8%)	4 (25.0%)	1 (6.3%)

Table Willing of mangrove planting

Unit: No. of households, %

	Yes	No	No answer
	Alacaygan	41 (80.4%)	5 (9.8%)
Bularan	17 (77.3%)	0 (0%)	5 (22.7%)
San Francisco	14 (87.5%)	1 (6.3%)	1 (6.3%)

Table Outcome expected by mangrove planting

Unit: No. of households,%

	main outcome	
	Alacaygan	Increase of marine resources
Others		23 (45.1%)
Increase of income		14 (27.5%)
Reduce the oil erosion		14 (27.5%)
Bularan	Increase of marine resources	9 (40.9%)
	Others	7 (31.8%)
	Reduce the oil erosion	6 (27.3%)
San Francisco	Increase of marine resources	10 (62.5%)
	Others	10 (62.5%)
	Increase of income	6 (37.5%)

Table Problem faced in planting mangrove

Unit: No. of households, %

	problem of planting mangrove	
	Alacaygan	No space
Conflict among users		7 (13.7%)
No problem		7 (13.7%)
Bularan	No space	10 (45.5%)
	Lack of techniques	5 (22.7%)
	Short funds	5 (22.7%)
San Francisco	Short funds	5 (31.3%)
	No space	3 (18.8%)
	Natural disasters	2 (12.5%)
	Others	2 (12.5%)
	No problem	2 (12.5%)

Table Problem listed up in three barangay

Unit: No., %

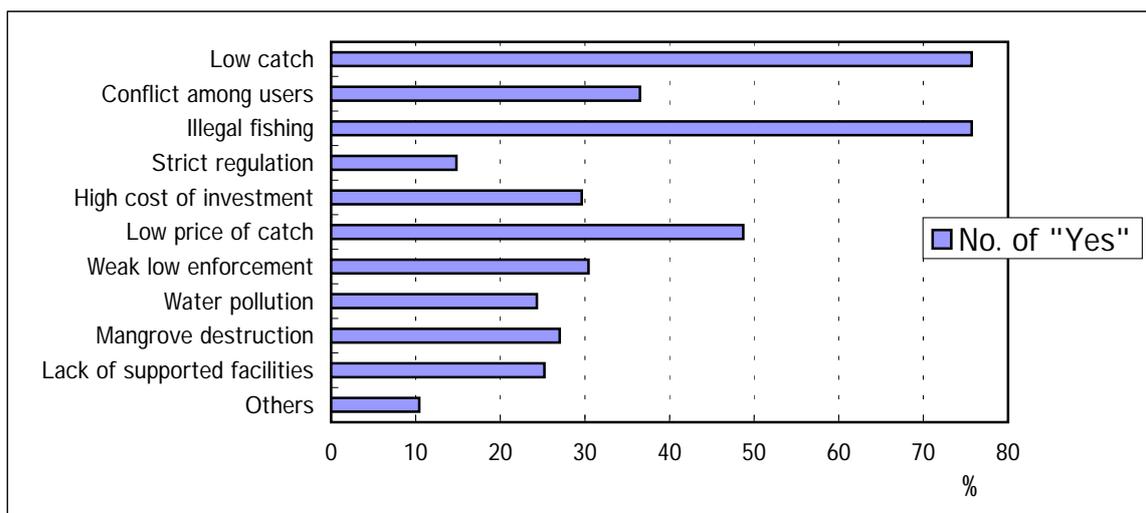
	Worst 3 problem	Households	%	Households on as rank 1	%
Alacaygan	Low catch	36	70.6	8	15.7
	Illegal fishing	36	70.6	20	39.2
	Low price of catch	22	43.1	4	7.8
Bularan	Low catch	20	90.9	4	18.2
	Illegal fishing	19	86.4	13	59.1
	Low price of catch	12	54.5	0	0
San Francisco	Illegal fishing	14	87.5	8	50.0
	Low catch	11	68.9	2	12.5
	High cost investment	9	56.3	1	6.3

Table People's participation in barangay-based organizations

Unit: No., %

	Fishers cooperative	Fishers association	BFARMC	Others
Alacaygan	3 (5.9%)	11 (21.6%)	13 (25.5%)	2 (3.9%)
Bularan	2 (9.1%)	9 (40.9%)	8 (36.4%)	0 (0%)
San Francisco	8 (50.0%)	13 (81.3%)	10 (62.5%)	3 (18.8%)

Figure Major problem in three barangays



BFARMC

Table Acknowledgement on BFARMC in three barangays

		Unit: No., %	
	Activity known	Households	%
Alacaygan	Acts as representative	35	68.6
	Enforces ordinances	31	60.8
	Undertakes conservation	30	58.8
Bularan	Acts as representative	14	63.6
	Enforces ordinances	14	63.6
	Undertakes conservation	13	59.1
San Francisco	Acts as representative	14	87.5
	Gains consensus	14	87.5
	Suggests direction	14	87.5
	Undertakes conservation	14	87.5
	Enforces ordinances	14	87.5
	Data gathering	14	87.5

Table Highly evaluated activities of BFARMC in three barangays

		Unit: No., %	
	High evaluated activity	Households	%
Alacaygan	Acts as representative	23	45.1
	Suggests direction	21	41.2
	Undertakes conservation	18	35.3
	Enforces ordinances	18	35.3
Bularan	Acts as representative	11	50.0
	Undertakes conservation	9	40.9
	Gains consensus	8	36.4
	Suggests direction	8	36.4
San Francisco	Acts as representative	14	87.5
	Undertakes conservation	13	81.3
	Enforces ordinances	13	81.3

Table Total evaluation of BFARMC's activities in three barangays

		Unit: No., %			
	Good	Fair	Poor	No answer	
Alacaygan	16 (31.4%)	13 (25.5%)	8 (15.7%)	14 (27.5%)	
Bularan	9 (40.9%)	6 (27.3%)	1(4.5%)	6 (27.3%)	
San Francisco	13 (81.3%)	1 (6.3%)	0 (0%)	2 (12.5%)	

■ **BFARMC**

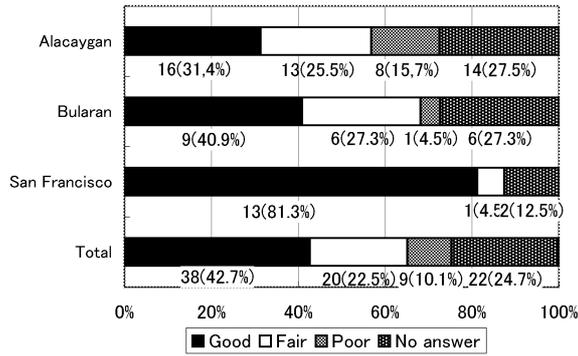


Figure Total evaluation of BFARMC's activities in three barangays

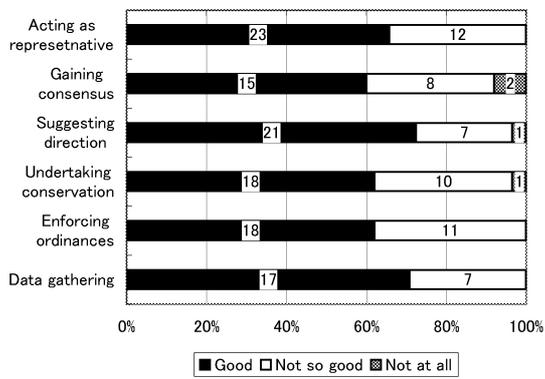


Figure Evaluated activities of BFARMC in Alacaygan

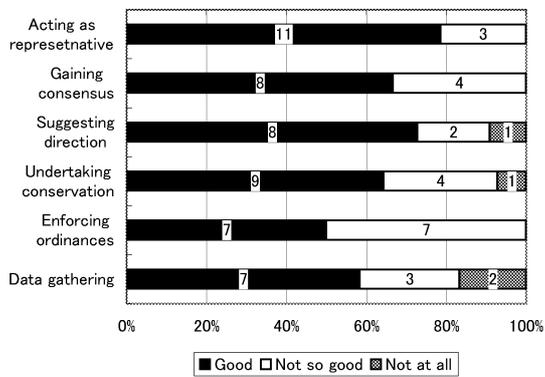


Figure Evaluated activities of BFARMC in Bularan

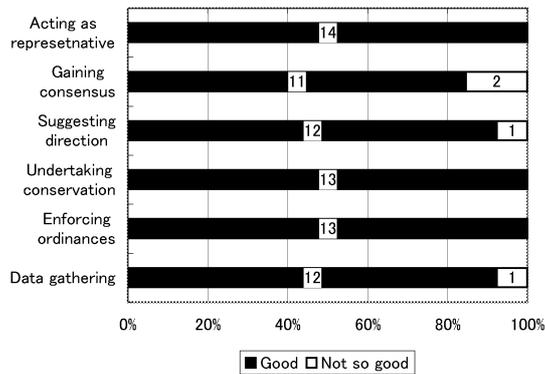


Figure Evaluated activities of BFARMC in San Francisco

BBRMCI

Table Acknowledgement of BBRMCI's activities in three

	Activity known more	Unit: No., %	
		Households	%
Alacaygan	Mangrove planing	43	84.3
	Registration	41	80.4
	Measures in controlling illegal fishing	40	78.4
Bularan	Measures in controlling illegal fishing	18	81.2
	Registration	16	72.7
	Planning of management measures	15	68.2
San Francisco	Informative meeting	16	100
	Planning of management measures	16	100
	Measures in controlling illegal fishing	16	100
	Survey and data gathering	16	100
	Registration	16	100
	Implementing alternative livelihood projects	16	100

Table Level of participation on BBRMCI

	Activity	Unit: No., %	
		Households	%
Alacaygan	Registration	25	49.0
	Planning of management measures	21	41.2
	Informative meeting	20	39.2
	Measures in controlling illegal fishing	20	39.2
Bularan	Informative meeting	11	50.0
	Planning of management measures	11	50.0
	Survey and data gathering	11	50.0
San Francisco	Registration	13	81.3
	Implementing alternative livelihood projects	10	62.5
	Informative meeting	9	56.3
	Survey and data gathering	9	56.3

Table Evaluation of BBRMCI's activities

	Unit: No., %			
	Good	Fair	Poor	No answer
Alacaygan	29 (56.9%)	13 (25.5%)	2 (3.9%)	7 (13.7%)
Bularan	12 (54.5%)	7 (31.8%)	2 (9.1%)	1 (4.5%)
San Francisco	13 (81.3%)	2 (12.5%)	0 (0%)	1 (6.3%)

BBRMCI

Table Knowledge of BBRMCI's activities in three barangays

Unit: No. of households , (%)

	Alacaygan	Bularan	San Francisco	Total
Informative meetings	35 (68.6)	15 (68.2)	16 (100)	66 (74.2)
Planning of management	36 (70.6)	15 (68.2)	16 (100)	67 (75.3)
Mangrove planting	43 (84.3)	13 (59.1)	11 (68.8)	67 (75.3)
Measures in controlling illegal fishing	40 (78.4)	18 (81.8)	16 (100)	74 (83.1)
Survey and data gathering	30 (58.8)	14 (63.6)	16 (100)	60 (67.4)
Registration	41 (80.4)	16 (72.7)	16 (100)	73 (82)
Implementing alternative livelihood projects	28 (54.9)	14 (63.6)	16 (100)	58 (65.2)
Skill development	22 (43.1)	12 (54.5)	14 (87.5)	48 (53.9)

Table Experience of participation in BBRMCI's activities in three barangays

Unit: No. of households , (%)

Activity	Alacaygan	Bularan	San Francisco	Total
Informative meetings	20 (39.2)	11 (50)	9 (56.3)	40 (44.9)
Planning of management	21 (41.2)	11 (50)	8 (50)	40 (44.9)
Mangrove planting	17 (33.3)	5 (22.7)	4 (25)	26 (29.2)
Measures in controlling illegal fishing	20 (39.2)	10 (45.5)	8 (50)	38 (42.7)
Survey and data gathering	16 (31.4)	11 (50)	9 (56.3)	36 (40.4)
Registration	25 (49)	10 (45.5)	13 (81.3)	48 (53.9)
Implementing alternative livelihood projects	10 (19.6)	3 (13.6)	10 (62.5)	23 (25.8)
Skill development	6 (11.8)	3 (13.6)	7 (43.8)	16 (18)

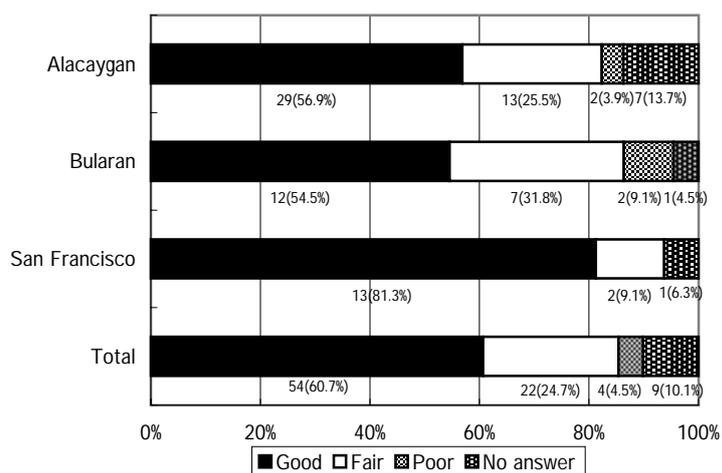


Figure Evaluation of BBRM

**2nd. Field Survey Project:
Multifunctionality of Fishing Villages
and Ecosystem-based Co-
Management**

*Place: Banate Bay, Iloilo city,
Philippines
July - August 2005*

1

**General observations in
Alacaygan**

July 27-29, 2005

2

Fishing gears



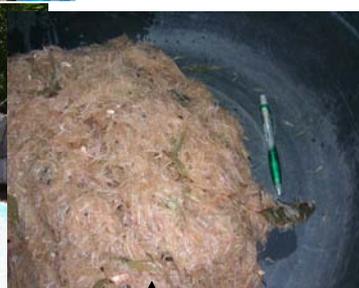
Crab pot

3

Products: Process of shrimp "acetes" in paste



Drying and salty of shrimp



Shrimp paste

4

Product: Shrimp “acetes” smoked



In this “handmade” structure the shrimp paste is smoked.

5

View of mangrove forest in Alacaygan



Seedling replanted by fishermen

Many fishers replants mangrove close to their houses for protection



Aquaculture



Oysters

Oyster aquaculture is made using sticks.

7

View of Alacaygan



Acetes fishery



Typical house of Alacaygan



Family of a fisher

8

General observations in San Francisco

July 30; August 1, 2005

9

San Francisco Cooperative



← Cooperative building

Building has in 1st. Floor a small shop called in Philippine as "Sari-sari". In 2nd. Floor there is hall for meeting.



Cooperative's manager



Accounting book



Daily products offered by the “Sari-sari” of the Cooperative



Gasoline provision

11

Fishers and community in San Francisco



Visit to San Jose

July 31, 2005

13

Map of the barangay: "Lipata"



14

Mangrove reforestation program in Lipata



5

Mangrove reforestation program in Lipata (ctd.,)



16

Fishing gears



← Long- Line →



Push- net



17

General view of San Jose



18

Marine Protected Area (MPA)



Announcement indicating MPA



Buoy demarcating MPA 19

General observation in Bularan

August 2-3, 2005

Fishing gears



Hand-line for Spanish mackerel



Hand-line for Tanghigi



Hand-line for Lagaw



Crab trap

21

Fishing gears (ctd.,)



Crab pot



Hand-line



Hand-line



Gill-net

Products: Dry fish of Bularan



23

Products: Blue swimming crab



Money lender's book



There are several money lenders in Bularan as well as in other barangays. One of them is RJ & A (Lending investors). Usually they provide to their "clients" an account book for recording payments. Usual interest rate is around 20%

Interview to Crews

August 4, 2005

Crew of “pakaroy” boat, repairing nets



Mostly of crew fishers were working in gill net (“pakaroy”) commercial boats

“Pakaroy” is a gill-net that goes from the bottom to the surface. Boats are composed by 6-7 crews

27

Visit to the market of San Jose

August 6, 2005

28

Different products of Ilo-ilo market



29

Different product of Ilo-ilo market (ctd.,)



30