MARINE ORNAMENTALS TRADE IN THE PHILIPPINES AND OPTIONS FOR ITS POOR STAKEHOLDERS

International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EC-PREP Project EP/R03/014)

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carried out directly with poor people involved with and affected by the trade in Indonesia and Vietnam.

1.2 Objectives

The Philippine study sets out the following:

Goal

Encourage consumer pressure similar to that of the environmental lobby related to the collection of marine ornamentals through European agencies that ensures reasonable livelihoods for poor people involved in or impacted by the trade.

Purpose

Promote the development of policy changes and other actions related to the trade in ornamental fish with Europe which support poor people's livelihoods.

Outputs

1. Map the trade in ornamentals in the Philippines and identify study areas for livelihoods analysis.
2. Identify poor people involved or impacted by the trade and develop an understanding of their livelihoods.
3. Recommend changes to ways of working so that poor people could benefit more.

2. METHODS

2.1 Design

The study was implemented using trained national livelihoods specialists to undertake livelihoods analysis to identify stakeholders in the marine ornamental fish trade in the context of this study. The members of the Philippines study team were selected from the participants of the capacity-building BFAR-FAO-NACA-STREAM Workshop on Livelihoods Approaches and Analysis held last November 24-29, 2003. Using participatory tools and the livelihoods checklists developed by STREAM, and some guidance from a UK anthropology team, the Philippine livelihoods team conducted livelihoods analyses of stakeholders **(Appendix 3A and 3B)** in selected sites and mapped out the market chain and important players in the trade including structures, institutions, and policies involved. The study specifically looked into livelihood outcomes from participation of poor people, underlying factors contributing to poverty reduction, and identifies examples of "better practice" for poverty reduction in the trade of marine ornamentals.

2.2 Process

2.2.1 Selection of Team Members and Action Planning

Four team members from the participants of the livelihoods workshop in November 2003 were selected on the basis of their experience in livelihoods analysis, their capacities and skills which they themselves rated, their area of operations and their facility in the local dialects of the potential sites being considered. The team includes Elizabeth M. Gonzales, Communications Hub Manager of STREAM Philippines, Josephine Savaris, Programme Coordinator for the Visayas of the Philippine Partnership for the Development of Human Resources in Rural Areas (PhilDHRRA), Monica Piquero, Community Coordinator of the Marine Aquarium Council (MAC)-Visayas, and Reuben Ranay, Training Officer of the Bureau of Fisheries and Aquatic Resources (BFAR).

The study began with a team planning meeting and orientation held in Cebu City last 23-24 March 2004. Action plans were drawn up, tasks were assigned and budget was allocated. The plan was divided into three phases, namely 1) secondary data gathering scheduled in April 2004, 2) livelihoods analyses which will be preceded by a team planning workshop in May - July 2004, and 3) the report writing in July-August 2004.

2.2.2 Secondary Data Collection

In April 2004, two team members were tasked to conduct a preliminary data collection through visits and interviews with relevant agencies and institutions, stakeholders in the trade such as exporters, airlines and shipping lines, NGO colleagues who were involved with projects in the potential sites being considered, and researching on published and web-based resource materials. Preliminary social visits and investigation were also conducted to shortlisted study sites in preparation for the pre-testing and actual livelihoods analysis. The data and information were then consolidated in preparation for the team planning workshop held in Cebu City on 24-27 May 2004.

2.2.3 Team Planning Workshop

The team planning workshop in May was facilitated to draw up a detailed plan for actual conduct of the livelihoods analysis which involved selection of sites for the study, detailing of activities, scheduling, tasking, deciding on participatory tools (checklist of questions for the key informant interviews (KI) and focus group discussions (FGD) and approaches to be adopted, and other logistical arrangements (**Appendix 4)**. The workshop provided also an opportunity for team members to refresh on the basic principles, approaches and techniques in engaging communities from the courtesy call phase up to the actual conduct of KIs and FGDs. The team conducted a pre-testing activity in Barangay Sta. Rosa, Olango Island, Lapulapu City to practice the tools and approaches that were prepared. A reflection session was facilitated after the field trial to assess the pre-testing activity with the aim of making some modifications on the tools and the plan, and also improving the manner the stakeholders are engaged into conversation. Areas reflected on include the process, content, profile of participants, pre-activity preparations such as secondary data collection and legworking with key persons in the community.

2.2.4 Participatory Methods and Tools

The basic methods used for the livelihoods analysis were secondary data collection, key informant interviews, focus group discussions, and attendance in meetings of community associations as well as actual observation of the processes involved under each chain of custody from fish collection to packing for export shipment. For the secondary data collection, a matrix on data sources and needs was drawn up (**Appendix 5**). For the KIs, a checklist of guide questions was prepared using the STREAM livelihoods checklist as a guide (**Appendix 6**). As for the FGD, objectives were defined for every focus area adopted from STREAM sustainable livelihoods framework which include economic and financial, natural and physical, human, social and political resources and capacities; and seasonality and trends (**Appendix 7**). FGD guide questions were then formulated for each focus area of concern (**Appendix 8**). Participatory tools used include:

- **Seasonal calendar** to establish peak and lean months of fish collection and availability of certain species of ornamental fish at certain months of the year
- **Venn diagram** to assess and establish the institutions who can impact on the lives of fish collectors
- **Communication Issues tool** to identify communications, language issues and power relations between and among stakeholders involved in the trade
- **Mobility map to establish** in-migration and out-migration patterns and the reasons for such migration in the community
- **Wealth ranking** to elicit criteria used by communities for categorizing social status and have an overview of the general well-being profile of the community
- **Historical timelines** to understand history of ornamental fish trade in the area which may shed light to current situations and practices

3. SITE SELECTION AND DESCRIPTION

3.1 Site Selection

A short list of potential sites for the study was identified after the secondary selection phase in April. The team developed a set of criteria to rationalize the choice of sites for the livelihoods study. The underlying aim is to select sites where diverse stakeholders involved with the trade could be found who could help enhance understanding of the dynamics of the trade chain of custody in a holistic manner. These criteria are:

- The site must have a significant number of ornamental fish collectors
- Ornamental fish collection is one of the main sources of livelihoods in the area
- Other stakeholders in the trade such as financiers or exporters or consignees are available in the area
- There is a considerable ornamental fish trading activity in the area
- A site where there are organized groups of collectors, a management plan and LGU support and a site where ornamental fish collection is the main source of livelihood but collectors are not organized.
- Some baseline data are available from secondary sources or previous studies
- Presence of support institutions or entities that could respond to the recommendations of the study
- Accessibility of the site
- Peace and order

3.2 Overview of the Sites Selected

3.2.1 Sabang, Olango Island, Lapulapu City

Demographics. Barangay Sabang is the second largest and has the highest population among the 11 barangays of Olango Island (Sotto, 2001). It has a total land area of 195.3 hectares. Total population in 2003 was 4,810 consisting of 675 households. Main source of livelihoods of the majority of residents is collection of marine ornamental fish. Marine ornamental fish collectors are not organized and the limited collection sites are not certified. There is no data available on the number of fish collectors in the area but there are about nine financiers for ornamental fish trade operating in the Island.

Health. A health center facility provides for the local health services such as family planning, immunization and treatment of minor and common illness. Incidence of malnutrition is moderate among children (**Table 2**).

Only 23 families as of May 2004 adopted the family planning methods introduced in the barangay.

Table 2. Incidence of malnutrition in Barangay Sabang, 2003

Degree of Malnutrition	Number of Children
First degree	20
Second degree	14
Third degree	4
Total	**38**

Source: Secondary data, Barangay Health Center

Education. A complete elementary school facility is also available in the barangay. In spite of this, many children cannot finish elementary education. Participation rate in school in relation to the total number of school age children in the barangay is very low as well as completion rate of those admitted from grade 1 (**Table 3**). In SY 2002-2003, enrollment was 630 pupils. Classroom teacher to pupil ratio is 1:42. Participation rate is 55%.

Table 3. Performance Rating of Sabang Elementary School, SY 2002-2003

Performance Indicator	Rating (%)
Participation rate	55
Drop-out rate	8
Graduation rate	99
Completion rate	55
Failure rate	13
Repetition rate	8

Source: KI, Anita Butalid, OIC Principal

Resources. The coastal and marine resources found in Sabang are mangroves, seagrasses and corals. It has 27% mangrove cover composed of mixed species of secondary growth, a 42% live seagrass cover in fair condition, and a poor 9% live coral cover, 7% of which are hard and 2 % soft corals (CRMP, 1998). The poor condition of the resources is attributed to the use of destructive fishing methods and weak law enforcement in the area.

At present there are only two remaining collection sites within the Lapu-Lapu area, namely the Caubian Dako and Caubian Gamay. The resources of Olango were depleted due to unregulated fishing activities and rampant use of sodium cyanide in the early years of the trade in the 70's and 80's.

History of the trade in the Island. Financiers like the Inoc family started with the trade since 1972 while others joined in the 80's and the new buyers in the 2002. It was Eugenio Inoc who introduced ornamental fish collection with the use of sodium cyanide to the local fishers of Olango. He acquired the technique from his "*kababayan*" (residing in the same municipality) who settled in Quezon Province who in turn learned the technique from some American guys who went diving in Quezon.

The Inoc Family has been in this business for more than 30 years now. They finance three or more boats with a minimum of 12-15 collectors who go fishing to other provinces. Like other local buyers or financiers, the Inoc family ships their fish to consignees in Manila who are incidentally their relatives, in-laws, sons or daughters. Aside from the Inoc family, there is Mr. Camilo Eyas who was the first local buyer of tropical fish for those who do not have direct access to the exporters and no consignees yet. His business expanded and developed into an export company named Trans Pacific.

The new existing financiers now are previous collectors of Braulio Inoc who learned the trade while working with him. They established their separate businesses when business slowed down after the death of his wife.

Issues and Problems. Some of the issues that surface during discussions with community groups include:

Collectors

- Limited Access to collection sites in other municipalities because of ordinances prohibiting non-residents to fish in their area of jurisdiction or sometimes reluctance of local authorities to issue permits to Olango fish collectors in particular. Olango collectors are still plagued with the stigma of being notorious users of sodium cyanide (locally known as *kuskus*) because of earlier practice in the island prior to introduction of the use of barrier nets in ornamental fish collection by Haribon Foundation and International Marine Alliance. (IMA). They claim that most of them have stopped using "*kuskus*" when they learned the use of barrier nets and that they are aware that the law prohibits its use because of the harm it does to corals and its long-range effect to the fishes caught. But they also confirm that there are still a few food fish and ornamental fish collectors who use it.
- Dwindling harvest from the Olango collection sites because Olango collectors are restricted to fish in other municipalities, hence fishing pressure is concentrated on these sites

'Financiers'

- Losses incurred from overhead cost (gasoline and cash advances) for unsuccessful diving ventures. The financiers lose money when stringent law enforcement drives are conducted by nearby municipalities and diving teams have to go home without being allowed to fish.
- Financiers have no control over collectors they finance. They incur bad debts when some of their regular collectors transfer to other financiers.
- Cost of operation (freight cost and fuel) keeps on increasing but selling price of fish fluctuates even with the continued increase of the value of the dollar. Occasionally, some are tempted to increase packing density of fish to save on freight cost at the risk of incurring mortalities by the time they arrive at the exporters.
- Financiers have no control over pricing of fish and over transactions of consignees with exporters. Losses due to inefficiency or mishandling of fish at the custody of consignees which may result to increase mortalities are still accountable to the financiers.
- Ornamental fish (OF) stock is getting scarce in the existing collection sites. In Olango Island, collectors fish in the same collection site daily hence fish collected are getting smaller and smaller in terms of size and number.
- Use of cyanide (*kuskos*) by fish food fishers in the area contributes to stock depletion.

3.2.2 Batasan Island, Tubigon, Bohol

Geophysical characteristics. Batasan Island is one of the six island barangays of the municipality of Tubigon. It is a long and narrow island bounded by scenic coastline and rich fishing waters. It is blessed with a rich and productive marine ecosystem that is home to a diverse marine flora and fauna.

Demographics. Batasan has a total land area of 1,059 hectares and a population of 1,080, 587 of which are females and 493 are males (Barangay Survey, 2003). Total household is 206 and 97% of which are Roman Catholics. Around 289 out of the total population of 1,080 are full-time fishers and aquarium fish collection is a major source of livelihood. Total number of marine ornamental fish collectors is estimated at 100. Forty-three (43) of these are

MAC certified collectors. Gathering of shells (gleaning) during low tide by women and children contributes to the household income. The island is reported to have a total of 67 motorized boats and 97 non-motorized *bancas* (outrigger canoes).

In 2004, the Bohol Electric Cooperative (BOHECO) 1 established a generating set in the Island that energized 165 households.

Health. The Batasan Health Center is staffed with a midwife and four Barangay Health Workers (BHW). Incidence of malnutrition was reported to be moderate with one case recorded in 2003 and two cases in 2004.

Only a total number of 100 households have toilets (Barangay Survey, 2002). Some households reportedly practice family planning, mostly using pills (17 households), IUD (13 households), and condom (7).

In 2003, thirty nine (39) children were immunized with BCG (Bacilli Calmarre Guerren), 38 with DPT1 (Diptheria Pertusis Tetanus), 38 with DPT2, 38 with DPT3, 29 with Measles, 26 with Hepatitis1, 26 with Hepatitis2, and 16 with Hepatitis3. Seven people died of heart failure, stroke and high blood. No death on compressor diving –related activities was reported since 1988 when the practice was introduced in Batasan.

FGD with the women's organization, Kapunungan sa Kababaehan sa Batasan (KAKBA) suggests that there is no record of reproductive health-related problems among the women participants. Some of the women practice family planning and the methods used are pills and IUD. Violence at home is not a problem among members but there are some cases noted in households of non-members.

Rain is the source of potable water in Batasan Island. It is sold at PhP 2.00-6.00/5-liter container (US$ 0.04 –US$ 0.11).

Education. Batasan Island has a complete elementary school facility. The school has five teachers. Classroom to pupil ratio is 1:32 with a total enrollment of 158 (**Table 4**). Participation rate is 96%.

Table 4. Performance Indicators of Batasan Elementary School

Performance Indicator	2002 – 2003 (in %)	2003 – 2004 (in %)
Drop-out rate	3.8	2.5
Graduation rate	93.55	100.00
Completion rate	86.22	88.61
Failure rate	9.58	8.89

Source: DECS, Tubigon

Forty-one percent (41%) of the population in Batasan Island are below school age. Majority (21%) of the population who has access to education are in the elementary level. About 10% are in high school and four percent (4%) are at college level (**Figure 1**).

Resources. Batasan Island is a narrow mile long strip of land about 75 feet wide. The entire island is surrounded by mangroves and a narrow strip of sandy shoreline where brittle stars

and seaweed abound is exposed at low tide. Surrounding the island are coral reef areas and six of these are MAC-certified collection sites (**Figure 2**).

Historical Timeline of Marine Ornamentals Trade in the Island. The important events relating to the history of ornamental fish trade in Batasan Island beginning with the introduction of the trade in the early 70s up to the present are detailed in **Table 5**.

Table 5. Historical Timeline of ornamental fish collection in Batasan

Year	Important event/s
Early 1970-1979	• People from Olango came to Batasan to engage in buying ornamental fish (OF); they brought along with them "kuskus" (sodium cyanide) and taught people of Batasan how to use it in OF collection • A lot of people engage in OFC (even children) • Boy Revucas started buying OF locally • All expenses for OF collection is provided by the financier
1980-81	• People feel that abundance of ornamental fish declined due to massive use of "*kuskus*" in OF collection. Other fishes are observed dead when trapped within the area sprayed with cyanide.
1982	• Batasan Fishermen Organization (BFO) was formed with 20 members. • Epifanio Saavedra, a native of Batasan started buying OF. The buying price for the clown fish was PhP 1.00 (US$ 0.02)
1984	• An NGO, Ilaw ng Buhay, based in Tagbilaran City came to the island. They coordinated with the barangay council and the MLGU to stop illegal fishing in the area. • The Americans that came to the island with the Ilaw ng Buhay taught the people skills in OF collection without the use of cyanide; these Americans were Steve Robinsons, James Greenwalt and Rick Ramsbottom. The training that lasted for more than 2 weeks was conducted in Dauis, Bohol. Four people coming from Batasan attended the training together with the other representatives coming from the municipalities within Bohol province. • People started to join organizations. • Four people from Batasan (Roberto Mijares, Reyboy Mijares, Custodio Torreon and Prudencio Sucano) started seaborne patrol operations in Batasan. • Illegal activities started to decrease
1985-86	• The Americans conducted the 2nd batch of skills training for OFC in Batasan. Many people participated in the training. • Intrusion of Olango-based collectors was minimized. • Collection of ornamental fish using net was practiced since a buyer (Reg and Rix) in Manila pays a higher price for sustainably-harvested OF.
1987-1993	• Haribon Foundation came to Batasan to conduct site survey for their project on Seahorse. • Increase in abundance of ornamental fish was felt. This is due to the reduction of illegal fishing activities in the barangay. • Closure of the Manila buyer forced the islanders to shift to other sources of livelihood. • Batasan OF collectors were left at the mercy of the Cebu-based buyers.
1995	• Haribon Foundation started its project in Batasan
1997-1998	• IMA came to the island. IMA conducted training on the use of net for fish collection but the lack of incentives for net-caught fish discouraged some collectors to continue using nets in collecting OF. • BFO was renamed BUFA. • KAGAMA was organized by IMA where Tusing Torreon became the first President. • IMA financed P17, 000.00 as initial capital for OF by KAGAMA however money was in the hands of the CO not in the organization. • Price of clown fish was PhP5-6 per piece (US$0.09-0.11).
1999	• Nagkahiusang Baryohanon alang sa Kalamboan (NABAKA**)** was organized. The project focused on micro lending.
2001	• LOGODEF was organized in Tubigon

Year	Important event(s)
2002	• BATFCA was organized in Batasan. Original members were 29 fishes who are ornamental fish collectors. • CAMP committee was organized on April 27, 2002. The plan prepared by the committee was submitted for presentation and approval on June 18, 2002 in a general assembly in Batasan. • MAC came to Batasan. MAC provided nets "pokot" and jars to the OFC. • Enhancement training was conducted regarding MAC standards. • MAC certified Batasan as collection site; 6 specific collection sites identified and included in the certification; consumer preference and demand for certified fish was practiced. • MAC certified the 27 OFC in Batasan (first batch) after the training.
2003	• Project Seahorse organized KAMADA, a federation of fishers from the 14 barangays in Danajon Reef area. • OFC in Batasan lobbied for additional 6 collection sites to be certified. • Membership of BATFCA increased to 43.
2004	• 11 additional OFC underwent training and were certified by MAC. • Price of clown fish is still PhP 5-6 per piece; OFC lobbied with MAC to intervene in the negotiation with the exporters to increase price of ornamental fish.

Issues and Problems. Issues and problems that surfaced during discussions with different stakeholder groups include:

CRM Officer

- Registration of municipal fishers reached 587 individuals from 2000-2004. Batasan certified collectors did not apply for nor had been issued a municipal license because of high licensing fee.
- There is a general perception that pricing is controlled by the coordinators and exporters. Although he believes that certification of collectors and sites is an advantage since it "makes monitoring of cyanide use in the area much easier".
- Lack of interest on the part of collectors to apply for a license. They negotiated for the reduction of the annual licensing fee from PhP731(US$ 3) to PhP 250 (US$ 4.50) because fish collection is not done on a daily basis but on a per order basis.

Collectors' Issues

- One of the problems identified is the shortage of nets and jars for OF collection. Some currently resort to borrowing barrier nets from fellow collectors in order to operate. The nets provided by MAC are already rotten and torn and need replacements. The microfilament nets which are purchased in bundles are imported and are only available through the facilitation of MAC and other exporters. They further recommended that the nets provided by MAC be made longer to increase area covered during collection.
- Although they believe that the MAC certification process is a definite advantage but they feel that "the order system in OF collection is not good". Income cannot sustain the needs of the family if collection is dependent on orders from the exporters. At times the collectors are ordered by the coordinator to stop collection of some species because the
  exporters have stopped buying. With such restriction income from OF collection is oftentimes short to cover their family needs.
- The collectors lobbied with MAC to look for alternative markets to ensure continuous demand and the need to for an increase in prices of fish.

KAKBA Women's Issues

- Most of the women in the barangay engage in illegal gambling activities which further deplete the already meager family income. They relate this to lack of livelihood options for women so they are tempted to indulge in gambling because they are idle.
- Oftentimes family budget is short and they have to resort to accessing cash credit from money lenders in the barangay at 10% interest.
- The fish and seafood vending livelihood activities the women usually engaged in are closely linked with capture fishing livelihood activities. Thus, lean months for fishing households are also lean months for these women as well as for the "*sari-sari*" store owners patronized by fishers' families for credit.
- Some families reportedly force their children to leave school. Children of school age are asked by the parents to glean for shells to earn money for the family. Children are discouraged to go back to school after many absences are made. They later go on fishing activities with the father and ultimately forget about going to school.

3.2.3 Exporter's Issues and Problems

- There are occasions when they cannot meet committed orders because local suppliers cannot deliver on prescribed shipment schedules
- Non-payment of loans by local suppliers
- Local suppliers selling oversize or undersize fishes to them
- Facilities for water filtration and treatment systems quite expensive to acquire and maintain but have to be invested in because quality of seawater pumped in is quite unreliable at times especially during bad weather conditions
- Occasional diseases like white spot affecting fish in the holding aquaria.
- Fishes delivered by some suppliers are sometimes improperly or densely-packed for transport, hence they become weak and are either dead on arrival (DOA) or died after arrival (DAA)
- Exports from Australia are given better prices than exports from the Philippines and Indonesia because of the perception that some of the fishes might be cyanide-caught fish
- Labeling of plastic and coding system is too laborious and takes time
- There is not enough MAC certified fish supply, hence MAC should expand more sites.

4. MARINE ORNAMENTALS CHAIN OF CUSTODY IN THE PHILIPPINES

In general, the marine ornamentals chain of custody begins with the collection of fish from the reef until it reaches the hobbyists home or public aquariums (**Figure 3**). Understanding this chain of custody in marine ornamental products is a critical aspect of the trade. It is closely linked to quality and sustainability as well as economic issues of the industry. The practices employed at each link of the chain determine the quality of the products that reach home or public aquariums. The longer the chain of custody in marine ornamentals trade, the smaller is the profit for the collectors. The higher the mortalities because of the long transport time, the more pressure to the resource because replacements would be demanded by the market and collectors would increase collection effort to meet the demand. Activities like collection practices[1] have far reaching consequences while others such as handling and water quality management are critical at all stages of the chain. Additionally, it is important also to look into responsibilities and accountabilities from the collector to exporter custody (**Figure 4**).

4.1 Collection

Wild live stock from the reefs is collected by means of barrier nets. Collection is undertaken either by free divers (*manu-manu)* who do not use any breathing apparatus (**Appendix 9**) or by *hookah* divers or *busero* who use compressors to dive deeper down to about 18 meters (**Photo 1)**.

In some certified sites like in Batasan Island, collection is done on a rotation basis and on an order system. Rotation basis means that a group of collectors (3-6 collectors) can collect fish from the same site only after all other collectors have taken their turns in collecting fish from that same site. The order system is derived from the Code of Good Conduct in keeping with MAC's standards of best practice, whereby collectors harvest and deliver only what is ordered by the exporters. It also provides that collectors only collect aquarium fishes within the quota set by their Associations.

Some collection sites are quite far and diving trips may take five to seven days per operation. Thus, provisions for the trip are prepared ahead by the diving group headed by the group leader (*arais*). These include checking of the boat's engine and fuel; fishing materials such as nets, ropes or sling, pails, zippers, decompression buckets, perforated collection jars, spear guns for catching mandarin; improvised diving gears and compressor unit; packing materials such as plastic bags, rubber bands and Styrofoam boxes; oxygen tanks; food; and fuel for the motor boat.

4.1.1 Process

- Barrier net (6x1 meter or 18x3 feet) is set up in half circle against the current. Floaters attached to the topside and sinkers to the lower side of the net, maintains the net in vertical position underwater.
- Fishes caught in the net are immediately scooped with use of scoop nets or bare hands and placed in the floating bucket (*buhianan*). The floating bucket is tied to the waist of the diver and to the side of the boat. In some cases like in a MAC certified site in

[1] Based on an IMA article, total mortality rate from reef to retailer could be reduced from the estimated 90% to about 10% by trading net-caught fish.

Batasan, fish caught are placed in perforated jars and placed in bag nets tied to the side of the boat.

- *Manu-manu* divers who collect only at a depth of about 7 meters do not decompress but *hookah* divers who reach up to 18 meters decompress for about 30 minutes when they reach seven-meter depth. Generally, fishes caught deeper than 7 meters are also held for 30 minutes at this depth to decompress, except for the purple queen (*Pseudanthias tuka*) which is held for about an hour of decompression. Antenna gobies are observed to be sturdier and can withstand surfacing without decompression.
- Temporary packing of caught fish in plastic bags with sea water and oxygen is done twice daily after each dive in the morning and in the afternoon or every six hours except for antenna gobies which could withstand a 24-hour re-oxygenation rate. Packed fishes are placed on the boat in an area not exposed to sunlight.
- Oxygen and water is replaced daily to maintain good condition of fish until the last day of diving. *At this stage, about 10% mortality and rejected fish is observed. Mortality usually happens when the plastic bags explode unnoticed by divers or packers on the boat.*
- In preparation for the return to base, fishes are placed in 20x20 inch plastic bags locally known as "handbags" at a density of 15 pieces per bag but fragile or aggressive species like angel fishes are individually packed. Domino, percula (*Amphiprion*) and pink skunk *(Amphiprion perideraion)* can be packed at 50 pieces per bag. In the case of certified collectors, fish in perforated jars are placed in a pail containing fresh sea water for conditioning. *An estimated damage or rejection rate of 4% is observed to be incurred during transport of fishes from collection site to financier's place.*
- Upon reaching the shore, the packed fishes are then transported to the financier's holding facility or *bodega*.

4.2 Handling, Holding, Packing and Transport at the Community Level

Fish usually stay for three to five days in community holding facilities before they are transported to exporters. Reportedly about 30% mortality is incurred in these holding facilities prior to shipment to exporters. This could be attributed to stress due to the accumulation of the ammonia in the bags, and from salinity and temperature fluctuations.

4.2.1 At the *Financiers*' Level[2]

Conditioning, Screening, and Holding (Photo 2)

- Upon arrival at the *financiers'* bodega, fishes in plastic bags are conditioned by making them float in a large plastic containers filled with fresh sea water for quite sometime.
- Fish are then placed in a large plastic basin for screening. Screening is done by hand by the financier or his trained screener. Fishes are assessed as to signs of stress, wounds, infection, damaged fins, scales and desirable sizes. Damaged and weak fishes are rejected and placed separately in big plastic containers and released to the sea.
- "Good fishes" are then counted and classified as to species.

[2] Based on actual observation at a financier's bodega in Sabang, Olango Island, Lapu-Lapu City

- The species and the number of pieces are recorded in a piece of paper. *This record becomes the basis for pricing and payment to collectors and accountability of collectors end at this point.*
- Screened fish are then placed in 20x20 plastic bags called "handbags" with fresh supply of sea water. Fragile and aggressive species are packed individually.
- The bags are oxygenated, tied with rubber bands at the open end and stocked in the *bodega*.
- Water and oxygen are replaced daily. Water replacement of fragile and expensive species is done twice a day. Weak and dead fishes are discarded also daily.

Packing and Shipment Operations at the *Financiers'* Level (Photo 3)

As soon as enough stocks are accumulated to meet the orders, *financiers* schedule the shipment to the exporters. Packers are hired to do the final screening and packing. Packing takes about four hours per shipment and usually done from midnight until four o'clock in the morning. Usually there are about thirteen packing crew hired per shipment. Two or three of which are assigned as final screeners, three assigned to place oxygen into plastic bags and tying them up, and the rest served as runners, plastic bag classifiers and in charge of placing fishes in plastic basins for screening. Below are the observed steps in packing at the financiers' level:

- Materials for packing are prepared. These include basins, clean sea water, oxygen tank, plastic of varied sizes (3x10, 5x10, 10x10), rubber bands, styrofoam boxes, cardboard boxes, packing tapes and pens for labeling.
- Fishes from the plastic bags are transferred into a basin. Screening is done while fishes are sorted as to size.
- Screened and sorted fish are then placed in "doubled" plastic bags filled with just enough clean sea water. Density in packing depends on the size, vulnerability of the fish. Some species of fish are packed individually such as tomato clown fish, orbie bat fish, chelmon butterfly fish and spotted grunt fish.
- Plastic bags are oxygenated and the open ends are tied with rubber bands.
- Plastic bags are then placed in Styrofoam boxes. The number of plastic bags per box would depend on the sizes used.
- Styrofoam boxes are placed in cardboard boxes for shipment to Manila. Those products delivered to local exporters in Lapu-Lapu City or the Japanese exporter in Olango Island are just transported in "doubled" 20x20 plastic bags and hand carried.

4.2.2 At the Coordinator's Level[3]

Conditioning, Screening, Holding (Photo 4)

- Fishes delivered are placed in a Styrofoam box filled with sea water for screening. Fishes are screened as to signs of stress, wounds, infection, damaged fins, scales and desirable sizes by the use of hands or scoop net and are counted.
- Screened fish are placed in perforated jars which are then placed in a storage net bag. The bag is submerged in seawater for conditioning. Gathered jars are then delivered to the purging area. The purging area consists of cages located offshore.

[3] Based on actual observation at a coordinator's holding facility in Batasan Island, Tubigon, Bohol

- Screened fish are kept for conditioning in the purging area for a maximum of four days.
- Second screening is done while packing fish for storage in the bodega. Some species like the green mandarin (*Synchiropus splendidus*) which could be stocked in volumes are packed in oxygenated 20x20 polyethylene bags while species like chelmon butterfly (*Chelmon rostraatus*) are stored individually after screening and counting.
- Water replacement of stored fish in the bodega is done daily.

Packing and Shipment Operations at the Coordinators' Level (Photo 5)

- Fishes are released to plastic basins for final screening
- Screened fish are placed individually in plastic bags with fresh sea water
- Plastic bags are oxygenated and open ends tied with rubber bands
- The plastic bags are labeled with the collector's code number using marking pens
- The species packed are recorded in the collector's packing list with the corresponding code number and quantity.
- Plastic bags are counted before placing them in Styrofoam boxes prior to shipment
- Styrofoam boxes are placed in cardboard boxes for shipment to Manila. Those products delivered to local exporters in Olango Island Lapu-Lapu City are just placed in "doubled" 20x20 plastic boxes and hand carried. Those that are delivered in Maribago, Lapu-Lapu City or Cebu are placed in plastic bags and transported in Styrofoam boxes.

4.2.3 At the Exporter's Level[4]

Conditioning, Screening, Holding

- Fishes delivered by suppliers are placed in acclimation tanks. Small invertebrates are acclimated in separate tanks from the fishes. Those sourced from far places like Zamboanga are acclimatized longer for about 24 hours.
- Fishes are then screened and placed in screening tanks. *Suppliers are paid based on the outcome of the screening.*
- Screened fishes are transferred to holding tanks if order is not completed yet. Fragile or aggressive species are placed in individual compartment holding tanks while the rest are placed in per species aquaria. Aquaria are provided with aerators.
- Sea water used for replenishment and water exchange in the holding aquaria is filtered and exposed to infrared. Seawater and oxygen supply pipelines facilitate water management and packing operations.

Packing

Packing is done per species. The sizes of plastic bags used for packing ranges from three to five inches by ten inches. Plastic bags are placed in layers inside a Styrofoam box and each layer is separated by a plywood divider. Ice wrapped in a newspaper is placed on the top layer prior to covering. The Styrofoam boxes are finally placed in a plastic-lined cardboard box in twos. With the use of a marking pen packing date, time and box number are written in slots provided in front of the box along with other printed instructions and information about the product. The content of a cardboard box which weighs around 17

[4] Based on actual observation and interview with a local exporter in Lapu-Lapu City

kilos vary depending on the size of plastic bags used **(Table 6).** Packers could finish packing 60-90 boxes in three to
four hours. Packing is only delayed when they have to look for certain rare species in the holding tanks.

Table 6 Packing standards at the exporter's level

Size of plastic bag	Number of bags/layer	Number of bags/Styrofoam	Number of bags per box
3x10"	45	90	180
4x10"	30-35	60-70	120-140
4.5x10"	32	64	128
5x10"	20-25	40-50	80-100

Transport

- Packed fish are transported to the international airport by use of delivery van
- Transport responsibilities are then turned over to freight agents from the loading of the product to the plane until it is turned over to the importers at destinations abroad.

A typical shipment from Mactan International Airport to Heathrow International Airport, London via Singapore would take about 28 hours including packing, loading, travel and stop in Singapore. (**Figure 5 from Nemo Internal Report 01).** It is reported that generally shipment to Los Angeles, USA takes about 20-25 hours and more than 40 hours for those shipped to New York. When packing, exporters generally allow for at least 40 hours transport time.

There is no published record of mortality rates of marine ornamental fishes at the UK retailers' level. In the US, an IMA telephone survey in 1997 showed mortality rates at an average of 60% on the east coast, 35% in the mid-west, and 30% on the west coast of the USA, during the first three days after their arrival at the stores.

5. STAKEHOLDERS PROFILE

5.1 Major Players in the Trade Chain

5.1.1 Marine Ornamental Fish Collectors

Marine ornamental fish collectors are fishers directly or personally and physically engaged in taking marine ornamental fish from the reefs. They maybe classified as:

- Free dive collectors, "breath-hold" or *manu-manu* divers who collect marine ornamentals in shallow waters usually to a depth of 6-10 meters for limited periods of time without use of any breathing apparatus. They use wooden crafted goggles and fins made of plywood, improvised wetsuits (jogging pants and sweatshirts) and gloves. They use barrier net, scoop net, closed nets and spear guns in catching ornamental fishes. They are paid by the piece and usually recruited from communities with access to the collection areas.
- Compressor or *hookah* divers or *busero* who collect marine ornamentals in deep waters to a maximum depth of 18 meters for longer periods of time. They use an engine-driven compressor unit (usually hydro-brake compressors from big trucks) with a metal barrel that serves as air reservoir (*hookah*). Air flows through a hose that is attached to the mouth of divers. The hose serves as a breathing apparatus to allow the diver to stay long underwater. Most of these collectors are permanent crew employed, trained and equipped by the financier or operator. They are also "piece rate" collectors.

Majority of the older collectors attained elementary level education only (Olango) while some reached high school level (Batasan). Collectors are either organized or unorganized or part-time or full-time in this activity. Their diving trips are either self-financed as in the case of Batasan collectors or funded by financiers as in Olango and such advanced expenses are deducted from the income of their catch after each diving operation.

5.1.2 'Financiers'

Financiers are middlemen usually found in communities where ornamental fish collectors are not organized and has limited resources and capacities to finance fishing trips and link with exporters. They fund diving trips of fish collectors, purchase the catch from the collectors, screens, pack and ship the fish to local exporters or to Manila exporters through consignees for sale. They hire screeners, packers and recorders to assist in their operations.

The *financier* funds the cost for a collection trip of about 8-12 divers and all paraphernalia and equipments needed as well as the repair and maintenance. These include the pump boat, compressor, goggles, flippers, nets, food, fuel, oxygen, and packaging materials. The financiers also pay the penalty fee in case the boat is caught by law enforcement teams. It is also a practice that the financiers give advances to families of collectors before they go on a trip and these are deducted from the collector's earnings on their return. Financiers play an important role in providing credit to collectors who have no access to formal credit institutions.

Some financiers get their capital from exporters in Manila through the facilitation of their consignees but some new financiers have their own capital. In Sabang, Olango Island, there

are at present three financiers who fund diving operations. They are Nelson Melancolico, Marcelo Ompad, and Mario Cadalla who started as a collector of the Inoc family.

5.1.3 Consignees

Consignees are people outside the community who serves as link between the *financiers* and the exporters and get a commission (usually about 10% of the sales) from financiers for such services and sometimes cash or in kind incentives from the exporters too. They stay mostly in Manila where the majority of exporters are based and coordinate order and sale transactions between the financiers and the exporters. They take orders from exporters, relay them to the financiers through phones or text messaging, take care of the handling of the shipment from the Manila end, getting payment of the sales from the exporters and transmitting them through banks to the financiers. They are not accountable for any mortality or losses even when the fish is still in their custody.

5.1.4 Coordinators

Coordinators are people operating in communities of certified[5] fish collectors whose main function is to coordinate all activities involved as soon as catch is delivered by collectors from the dive sites. These activities entail receiving orders from certified exporters, relaying orders to the fish collectors association, screening and accepting the daily catch, purging the fish, recording, bookkeeping, packing, shipping and follow-up payments from exporters. They act as representatives of collectors associations in negotiations with exporters. They get a 10% commission from the collectors' sales and some cash or in kind incentives from the exporters for services rendered (**Box 1**). Most of his communications with exporters are done through phones and payments are through the bank

Box 1 Incentives to coordinator from exporter

Marine Fauna gives 10% of total sales as coordinator's fee and refunds all his transportation expenses. PM Products gives a free sack of rice to coordinators who regularly patronize them. Other exporters like HD Marineworld refunds 25% of freight cost of suppliers.

Coordinators are assisted by screeners, recorders and packers in performing his functions. They are the caretakers of offshore holding pens which they call "Wall Street[6]" in MAC-certified areas.

5.1.5 Exporters

Exporters are entities operating mostly outside the communities who buy marine ornamental fish from suppliers and sell them to importers and wholesalers abroad. They are the main source of information on pricing of fish by people involved in the trade within the country. They have direct link with importers, hence have more control of the pricing. They usually have their own aquarium facilities. Fish purchased from suppliers are further screened and purged in the exporter's holding facilities before packing and shipping to importers. They hire screeners, aquarium cleaners, packers, and administrative staff for their operations. They

[5] Certified means having passed a procedure that gives assurance that a product, a process or service conforms to a specific standard and in this context issued by the Marine Aquarium Council. This particularly refers to a third-party certification which is based upon a compliance of a product or services to an internationally accepted standard created through international multi-stakeholder consultation and consensus.

[6] In Batasan, the "wall street" is a floating holding pen or platform made of bamboo and anchored about half a mile offshore where screened fish are kept while awaiting packing.

are the dominant players in the trade chain. **Appendix 2** shows a list of known exporters operating in the country some of which are MAC-certified.

5.2 Other Stakeholders

5.2.1 Packers and Monthly-Paid Utility Workers

Packers are men, women and children who comprise the temporary labor force hired by financiers or exporters during shipment. They are either paid on a per hour basis or per session or per shipment regardless of the volume. They usually work for about three to four hours and get paid by exporters for about PhP 150.00 (US$ 2.70) per session or PhP20 (US$0.36) per hour. In Sabang, financiers pay packers about PhP25.00 – (US$0.45) per shipment for minors below age15 and PhP50.00 (US$ 0.90) for adults. Packers are sometimes called *extradores* by exporters. Most of those working in Olango have elementary education only.

Nine out of the 13 packers were observed to be minors during a packing operation in a financier's facility in Olango Island.

In some situations, a financier hires a trained assistant who leads the packing-screening-recording-shipment (to the local pier or airport) operations. The assistant acts as the overseer of the holding facility (*bodega*) where the fish turned over by collectors are stocked prior to shipment. He takes care of the cleaning of the *bodega* and ensures that there is available clean sea water for replenishment/repacking. He gets a salary of about PhP1, 000 (US$18) a month and free food at the financier's house. He gets a day off occasionally during lean months usually in February.

5.2.2 Screeners

Screeners at the exporter's level are regular skilled and experienced men or women staffs who evaluate the fish for quality and acceptability. Only those fish that pass through their screening get paid. Based on an interview, they get a relatively higher pay of about PhP6, 000 per month (US$108) with free board and lodging, and other mandatory compensation benefits such as 13th month pay and bonuses, Social Security Services (SSS) insurance, Pag-ibig and Phil Health.

5.2.3 Aquarium Cleaners

Aquarium cleaners at the exporter's level are regular men staff whose main function is to clean the aquariums and holding facility as well as replenishment of clean seawater in the aquariums. They usually get a monthly pay of about PhP4, 500 (US$81) with free board and lodging, and other mandatory compensation benefits.

5.2.4 The Women Gleaning for Ornamental Fish

They are wives of the collectors glean for shells in shallow waters along with other marine ornamentals they could find such as banded shark, egg shark, maroon clown fish, octopus and seahorse before it was banned. Collection of marine ornamentals may not be their main source of livelihood but the daily earnings of about PhP30-50 (US$0.54-0.90) contribute to the family income. Other activities performed by these women in relation to ornamental fish collection include preparation of materials needed for the diving trip such as nets, paddle, masks, collecting jars, improvised flippers and food. Most wives take care of delivering the fish to the coordinator and collect the payment.

5.3 Ancillary Stakeholders

5.3.1 Freight Agents

Freight agents are entities acting on behalf of exporters in transporting the ornamental fish exported from the country of origin up to the importing country. They receive a fixed fee for their services. Trade agents like LIBCAP and Air Speed take care of all transport arrangements and documentary requirements and fees of goods exported from the country of origin to the importing country. Their responsibilities start upon delivery of the goods by exporters at the international airport up to the time they turn-over the goods to importer's custody. Some exporters pay about US$75 per shipment for their services.

5.3.2 Airline Companies

Services of airline companies are utilized by suppliers and exporters in transporting ornamental fishes to the exporters and importers, respectively. The services offered by both domestic and international airline companies are very critical with respect to fish mortality as well as freight cost. The cost of airfreight decreases with the increase in volume transported and the mileage. International airline companies plying more routes to export destinations could offer cheaper freight rates. Considering that about 30% of export expenses is freight cost (Ty pers. Comm.), lower freight cost would allow exporters to give competitive price to import markets. Additionally, considering the travel time which includes 4-5 hour packing time and 3-5 hours cargo admission, loading and transport to importer's facility during shipping (Baquero,1999), lesser transit routes would be of economic advantage in terms of fish mortality that maybe caused by the long travel. Local airlines like Cebu Pacific and Philippine Airlines are patronized by suppliers from Surigao and Zamboanga in Mindanao to transport their goods to exporters in Cebu or Manila where the major international airports are located. Some exporters from Cebu transport their goods via Singapore Airlines to Heathrow Airport and other destinations and others use Airlift Asia for their export to Germany. Other international key carriers are Cathay Pacific, Lufthansa and British Airways.

5.3.3 Shipping Lines

Along with the airline companies, services offered by shipping lines and small *banca* operators has an implication on fish mortality during shipment from suppliers to exporters. Shortened travel time suggests lesser mortalities incurred and better profit to suppliers.

Ornamental fish from Surigao are transported to exporters in Cebu through TransAsia or Cokaliong Shipping Lines. Nearby suppliers from Bohol use motor *bancas* owned by the Coordinator while those from Camotes Island in Cebu and Olango Island, Lapu-Lapu City patronize local shipping lines such as "Melveric" of Aznar Shipping Lines. Some local exporters like Marine Fauna, Inc use their own boat for transporting fish from the supplier to their facility.

5.4 Trade Relevant Associations and Committees

5.4.1 Ornamental Fish Collectors Associations

Ornamental fish collectors associations are important community-level organizations in the trade of marine ornamentals. If organized properly, fishers associations are effective community structures that could be utilized in the management and sustainability of the resource and ensuring priority access to such resource. Their formation is usually facilitated by NGOs operating in the area and in some cases by the LGUs. Examples are the tropical fish collectors association assisted by Marine Aquarium Council (MAC) in Batasan Island and Municipality of Tangaran in Bohol and in San Francisco, Camotes Island in Cebu. One of their first activities was to come up with a Collection Area Management Plan (CAMP) which is a requirement for certification with MAC. They undergo capacity-building trainings to equip them in the performance of their functions and tasks. They conduct regular meetings and engage with exporters and government officers to raise issues concerning their livelihoods.

5.4.2 Tropical Fish Exporters Association

Exporters associations are important and dominant groups in the marine ornamentals trade. Forming such associations facilitates initiation and maintenance of programs and initiatives that would strengthen the industry. These groups have the resources and the influence to ensure high quality standards of product exported from collection up to shipment to importers. They also have access to relevant stakeholders and institutions and therefore could have significant influence in instituting reforms that would bring about sustainability of the industry and livelihoods of those stakeholders at the bottom of the chain. One such concerned association is the Philippine Tropical Fish Exporter's Association (PTFEA) with its 22 members (**Appendix 2).** PTFEA accounts for about 80% of export of marine ornamental fish (**Lolita Ty, pers. comm.).** They initiate and maintain programs for training and educating of fishers about sustainable methods of collection and provide nets to their suppliers. The association also commits to uplift the living standard of fishers by giving financial support to fish suppliers, not only for fishing operations, but also for emergency situations, medical expenses and donations to local community assistance project for victims of calamities. One of its future plans is to create a scholarship fund for deserving children and grandchildren of its suppliers and fishers (**www.ptfea.org)**

5.4.3 Collection Area Management Plan Committee

A collection area management plan (CAMP) Committee is a multi-stakeholder group mandated to develop a CAMP which is a basic requirement for MAC third party certification. The plan serves as a guide for the utilization, management, protection and conservation of the collection area. The committee may compose of the Municipal Planning Development Officer (MPDO), the Agricultural Technician for Fisheries of the MAO, officers, business

coordinator and adviser of the fish collectors association, MFARMC Chairman, fishers, municipal fish warden, a barangay kagawad, sangguniang bayan member, and an NGO or PO representative (BICAMP, 2003)

5.5 Trade Relevant Support Institutions

5.5.1 Marine Aquarium Council (MAC)

The Marine Aquarium Council (MAC) is a non-profit international multi-stakeholder trade council composed of representatives of the aquarium industry, i.e. hobbyists, conservation organizations, government agencies, and public aquaria. MAC is developing certification to ensure collection, culture and commerce in marine ornamentals is sustainable and environmentally sound – from reef to retail. MAC conducts net-training to fish collectors and provides inputs like nets and collection jars. It also assists CAMPC in the planning of the CAMP and other preparations for the certification process. It is currently collaborating with several municipal/city governments in the Philippines including Batasan Island, Tubigon and Tangaran, Clarin in Bohol and in Cebu (Camotes Island). They are also expanding towards the southern part of the country in Tawi-Tawi, Mindanao and in Palawan.

5.5.2 Haribon Foundation

Haribon is a Manila-based NGO involved mainly in conservation work. Its earlier trade-related works could be traced back with the Netsman Project which in collaboration with the Ocean Voice International enabled at least over 1,200 fish collectors (out of the 3,500 to 4,000 collectors) to be trained to use nets in the 80s (**Baquero, 1999**). The other projects were Environmental Education and Sustainable Livelihood in the Philippines which made possible the creation of a Federation of Fish Collectors in the Philippines (PMP), and the Eco-marketing and Fair Trade for the Aquarium Fish Collectors in the Philippines which attempted to provide a venue wherein collectors could go into direct exporting venture but was not picked up by the industry.

In 1995, Haribon Foundation conducted a research known as the Project Sea Horse which facilitated the establishment of a marine sanctuary in Tubigon.

5.5.3 International Marine Alliance (IMA)

IMA is a non-profit; non-government marine conservation international organization which was founded in 1985 whose focus of work in relation to the trade was to reform cyanide users by introducing them to non-destructive methods such as the use of barrier nets and alternative livelihood programs. It was working with at least four municipalities in Tubigon including Batasan. Unfortunately, the lack of market incentives in terms of better prices for net-caught fish provided little incentives for Tubigon collectors to stick to net use. In line with the project, IMA initiated the establishment of a cyanide laboratory in 1997 which was turned over to Bureau of Fisheries and Aquatic Resources (BFAR) in Region 7 in 2001.

5.5.4 Bureau of Fisheries and Aquatic Resources

The Bureau of Fisheries and Aquatic Resources (BFAR) is a national agency mandated by the Philippine Fisheries Code of 1998 (R.A. 8550) to ensure that the needs of the fisheries industry are attended which covers the marine ornamentals trade sector. In relation to the

trade the relevant offices under it are the Fisheries Inspection and Quarantine Section (FIQS) and the Regional Fisheries Laboratory (RFL).

BFAR deploys FIQS personnel to international airports of big cities like Manila, Cebu, Davao, and Cagayan de Oro where there is significant export traffic as well as piers. BFAR issues export license for a fee of PhP205 (US$3.70) per shipment for exports of more than 50 kilograms. It also issues two types of clearances. The Clearance for the Domestic Movement of Fish and Fishery Products which covers related shipment within the country by ship or by plane and the Commodity Clearance required for export shipments. A laboratory examination report for cyanide is one of the requirements in the issuance of the commodity clearance for ornamental fish exports. The Commodity Clearance is one of the requirements checked by the Bureau of Customs (BOC) in the issuance of the Export Declaration document.

BFAR Region 7 in particular, conducts orientation and provides copies of policies and regulations to exporters, brokers, forwarders and even airline companies. FIQS issues commodity clearances at least three times a week. Five staffs are stationed at the office to take care of the clearance processing while another three are deployed to the airport. One of these airport inspectors is tasked to monitor packing operations at the exporter's area and to escort the shipment to the airport until product is loaded to the plane. FIQS Inspectors are allowed overtime pay and allowances during monitoring operations (**Box 2**)

Box 2 Incentive of BFAR FIQS inspectors

BFAR Administrative Order 22 series of 1983 allows for the following:

- Overtime fee of BFAR personnel at P30.00/hour (applicable only before 8am and after 5pm)
- Transportation allowance of P70.00/trip for taxi fare going to and fro the exporters site
- a meal allowance of P50.00/person/meal.

All of these expenses are shouldered by the exporter and are claimed by the BFAR staff by reimbursement basis.

BFAR 7 also maintains four laboratories with an annual budget of PhP200, 000 - 250,000 (US$3,600-4,500). These laboratories are the microbiology, fish health, and red tide and chemistry laboratories. In support of the ornamental fish trade, cyanide testing under the chemistry laboratory is being maintained. The International Marine Alliance (IMA) set up the laboratory in 1997 and the management was turned over to BFAR 7 in 2001.

Box 3 Cyanide testing at BFAR 7

Total time for one complete analysis is 2.5 hours. This covers the 1.5 hours for digestion and distillation, 15-20 minutes for sample preparation and the remaining minutes for reading of the sample. The laboratory has only one set of glasswares limiting the number of samples that could be accommodated per day. A set of glasswares costs PhP18, 000 to 20,000 (US$324-360).

Presently, the cyanide testing laboratory can analyze only three to four samples a day because of limited budget for the purchase of additional sets of glasswares, chemicals and other media (**Box 3**). Due to budget constraints, testing of fish samples which used to be conducted on a weekly basis is presently done every other week or on a spot-checking basis. The BFAR inspector/quarantine officer brings the sample (at least 5 grams) from the exporter to the laboratory. The charge per sample is PhP250.00 (US$4.50). **Figure 6** shows the BFAR7 laboratory services flow chart. Other relevant support institutions whose mandated services could have an effect on the marine ornamentals trade such as the local government units, local resource management councils, and NGOs are discussed in **Appendix 10.**

6. LIVELIHOODS ANALYSIS OF STAKEHOLDERS

6.1 Economic and Financial

6.1.1 Livelihood activities. The main source of livelihood in the study sites is marine ornamental fish collection. However because of the seasonality of this type of livelihood, ornamental fish collectors also engage in other supplementary livelihoods such as fishing for food fish and octopus in Palawan; gleaning for shells; gathering of sea cucumber, abalone, crabs and seahorses; do contractual carpentry work and drive "tricycles". Other residents get temporary piece-work as packers and utility workers from the financiers in the area). Others do commission-work as coordinators in certified sites like Batasan Island.

Wives of ornamental fish collectors in particular glean for shells in shallow waters daily and sometimes find ornamental fish along the way. Other community women engage in supplementary livelihoods to augment their husband's income. These livelihood activities include fish vending, operating a small "*sari-sari*" store, and cooking and selling viands, and snacks like dough nuts; working at Day Care Centers; dressmaking; Some go into buying and selling of seafood products such as crabs, sea cucumbers, and shells; and wholesale buying and selling of food fish.

6.1.1.1 Diving operations. In Olango, fish collectors dive five to six days a week. Diving operation is done twice daily, one in the morning and another in the afternoon. For free divers, diving operation lasts about five (5) hours from 7:00 to 11:00 in the morning and three (3) hours in the afternoon from 1:00 to 4:00 pm. If the collection site is far from Olango, collectors oxygenate the fish in plastic bags and deposit them in a shaded portion of their motorized banca. Upon their return, fish are delivered to the financier or local buyer, screened, counted and priced. Advances are deducted and the remaining amount is immediately paid. As for the compressor or hookah divers, diving operation lasts for three (3) hours underwater in the morning and another three (3) hours in the afternoon for a total of six hours per day. There are exceptions however like two of the older FGD participants who specialize in damselfish collection; they only spend two hours of diving per day.

In the case of Batasan, *manu-manu* divers spend a maximum of four days in collection. In a day one dive is done, from 6:00-7:00 until 11:00 in the morning only. All species can be collected at this time of the day except for the Green Mandarin (*Synchiropus splendidus)*. In collecting Green Mandarin, two dives per day are done, at 6:00-8:00 in the morning and 4:00-6:00 in the afternoon. Green Mandarin fishes are observed to go out before sunset and after sundown, the best time to catch them.

Compressor divers dive to a maximum of five days a week. In a day they dive two to three times depending on how much fish are collected. When catch is scarce they continue diving until the afternoon. Diving schedules are 6:00-8:00 AM, 9:00-11:00 AM and 4:00-6:00 PM.

Payment of collected fish is in cash immediately after delivery and screening. If the compressor diver collects more than 50 pieces of ornamental fish, he is given by the financier 2 liters of gasoline free. However if the catch is less than 50 pieces, then only a liter of free gasoline is given.

6.1.1.2 Marine Ornamentals Trading Activity

There is insufficient data available as to the volume and species of ornamental fishes traded. However, to give a picture of the trading activities in the area, a summary of volume and frequency of shipment is shown in **Table 7.**

Table 7 Volume and frequency of shipment from supplier to exporter

Supplier	Volume	Frequency of delivery	Exporter
Olango Financier	3-4 handbags	Twice weekly	Pure Marine, Inc. (Cebu)
	Per order basis	Once weekly	H & M Trading (Cebu)
	3-6 boxes	Five times weekly	Trans-Pacific (MNL)
Olango	7 boxes pr per order	Weekly	Marine Fauna Inc.
	>100 pieces or per order	Weekly	Pure Marine, Inc.
San Francisco, Camotes Is	2-3 boxes minimum or per order	Once or twice a week Usually Monday	Marine Fauna Inc.
	3-4 boxes	Monthly	Pure Marine, Inc
Bogo, Cebu	1 box or per order	Weekly	Marine Fauna Inc.
Batasan Island	2 boxes or on a per order basis	Weekly	Marine Fauna Inc.
	>200 pieces or per order	Weekly	Pure Marine, Inc
Manila	3 boxes	Weekly	Marine Fauna Inc.
Zamboanga	4 boxes min / order	Weekly	Marine Fauna Inc.
	1-2 boxes or on a per order basis	Weekly	Pure Marine, Inc.
Surigao	15-20 boxes or on a per order basis	Twice a month	Pure Marine, Inc.

Source: Key Informant Interviews with financiers and exporters

Data on export volume are quite difficult to collect but here are some average volume of export shared by exporters interviewed (**Table 8**).

Table 8 Average volume of export from three local exporters

Exporter	Volume	Frequency	Destination
Marine Fauna, Inc	40 boxes	weekly	US and Germany
Trans-Pacific Corp	1,000 boxes (180-220 fishes/box)	monthly	90% to Los Angeles and New York; 10% Europe
CMQMAF (shipment days: Sat. to Wed.)	50-60 boxes	weekly	US
	Max. of 10 boxes	weekly	UK (TMC)

Source: Key Informant Interviews with exporters

6.1.2 Income from livelihood activities. The income from ornamental fish collection of the *manu-manu* divers ranges from PhP 500.00 (US$9) to PhP1, 000 (US$18). Daily earnings of compressor divers range from PhP300 (US$ 5.40) to PhP1, 000 (US$18). A compressor diver usually spends 15 to 20 days diving in a month. If he spends 20 days in diving, gross income would range from PhP6, 000 (US$108) to PhP20, 000 (US$360). The total daily expense budget for OF collection is estimated at PhP100 (US$ 1.80). A boat crew is sometimes hired to serve as watcher on board the boat and gets a 30% share out of the net sale of fish.

Ornamental fish collectors (OFC) say their body cannot withstand the rigors of diving straight for long periods of time. They have to alternate this with fishing for food fish and other forms of livelihood. Income from food fish fishing ranges from PhP 100 (US$1.80) to

PhP 400 (US$7.20) per day during calm weather. Minimum number of days spent on fishing is 20 days. Food fish fishers do not go on fishing trips during bad weather and on Sundays.

In Olango, monthly income of financiers varies depending on the volume and species of fish sold. Before the 90's when they still have access to fishing grounds in other municipalities (no ordinance prohibiting collection of ornamental fish or intrusion of other fishers from other municipalities), they can get as much as P18,000 to 20,000 (US$327- 364) for 15-30 boxes per shipment. Financiers really made good money during those years. However, in the early 90's when municipalities started passing ordinances to conserve and manage their aquatic resources, income of financiers declined to as low as P 3,000 (US$55) to 6,000 (US$109) per shipment and they could not comply with the requirements of the Manila exporters. An interview with a financier in Olango revealed that he regularly supplies three to four "*handbags"* twice a week to a Cebu-based exporters and three to six boxes five times a week to a Manila exporter. A summary of estimated income per livelihood activity is shown in **Table 9.**

Table 9 Summary of estimated income per livelihood activity

Livelihood	Estimated Income	
	Olango Island	**Batasan Island**
Financiers	PhP11,400 per month (US$205)	
Coordinators		PhP8,300 per month (US$ 150)
Ornamental fish collectors Manu-manu divers Olango Island (uncertified site) Compressor Divers (15-20 days in a month fishing)	PhP 500-1500 (US$9-27) monthly	PhP3,000 monthly (US$54) PhP2,100-12,950 monthly (US$38-233)
Monthly-paid utility workers	PhP 1,000 monthly (US$18)	
Packers (twice a week)	PhP 400 monthly (US$ 7.20)	
Minor packers (ages below 15)	PhP200 monthly (US$3.60)	
Food fish fishers/ octopus fishing in Palawan (20 days in a month)	PhP2,000-8,000 monthly (US$36-144)	
Shell gleaners		PhP150-250 monthly (US$2.70-4.50)
Vending seafood products		PhP2,400-2,800 monthly (US$43-50)
Sari-sari store (Batasan Island)		PhP8,000 monthly (US$144)
Cooking / selling viand and donuts		PhP2,000-3,000 monthly (US$36-54)
Day Care Worker honorarium		PhP1,500 monthly (US$27)
Carpentry work (occasional work)	PhP150 daily wage (US$2.70)	

N.B.: 1) Current exchange rate is PhP55.50 to US$1
2) Estimates based from information shared during FGDs and KIs

6.1.3 Household Expenditure

In communities where collectors are not organized like in Olango Island, the meager income that they get from fish collection is spent on basic necessities (**Box 4**). The income from OF collection is augmented with the income of the wives from gleaning shells. Household income is strictly budgeted to cover

Box 4 Daily Expenses of Manong Simo's household of six in Sta. Rosa, Olango Island

"My family spends PhP 60 (US$ 1.2) for 3 kilos of rice and PhP 30.00 (US$0.60) for viand (fish) per day. At night we buy kerosene (PhP 3.00 or US$ 0.05) for our lamps because we don't have money to have electricity installed in our home. Generally everyday our budget would consist of this kind of expense."

the three major expenses, i.e. 1) purchase of rice, 2) daily miscellaneous household necessities and allowance of school children, and 3) minimal reserve money for health emergencies, if any. Some collectors interviewed said that they get from the budget for miscellaneous expenses, certain amount (PhP35/month or US$0.63) for vices like gambling and drinking. The income of the wives is reserved for miscellaneous expenses of the children who ask for a peso or two to buy junk food (*chichiria*). Extra money, if any, earned from ornamental fish collection, is used to purchase things needed for the household such as plates and others. For unmarried collectors, about two thirds of their incomes are given to parents. The rest is spent on personal necessities and vices like cigarettes and drinking sessions with friends in video bars and disco pubs.

In Batasan Island, the total monthly income of manu-manu divers is estimated at PhP3, 000 (US$54). The PhP1, 000 (US$ 18) comes from OF collection and the PhP2, 000 (US$36) from other sources. Generally monthly expenditure consists of rice, firewood, water, expenses for the schooling of the children, kerosene, electricity and miscellaneous expenses (**Box 5).** Firewood is bought from the mainland and sometimes water too if supply is not available in the island. Kerosene is bought for lamps since electricity in the island is available only from 5:30 - 10:30 PM daily.

Box 5 Sample expenditure breakdown of a manu-manu diver household in Batasan Island

Breakdown of expenses in a month:

		PhP	%
Rice	3kilos/day x 30 days x 20.00/kilo	1,800.00	60.00
Firewood	2.50/bundle x 3 bundles/day x 30 days	225.00	7.50
Water	1.00/container x 5 con/day x 30 days	150.00	5.00
Schooling	4.00/day x 22 days	88.00	2.93
Kerosene	4.00/day x 30 days	120.00	4.00
Electricity	100/month	100.00	3.33
Miscellaneous	517.00/month	517.00	17.23
		3,000.00	**100.00**

6.1.4 Savings and extra income. Typically poor families barely have any savings. Any extra money they have during peak season is used to buy "new" clothes from "*ukay- ukay*" (slightly used clothes imported from other countries); and kitchen utensils and some appliances on installment basis. Some are also spent on 'entertainment' such as drinking coconut wine (*tubâ*) and gambling (cock fighting or "sabong" and a local version of the card game called "tong-its"). Those who have plenty of children, sometimes keep money in piggy banks at home for emergency purposes and for days when they cannot go on diving trips due to illness or during lean months. Chickens (some are fighting cocks), pigs and goats are raised by some households for selling to tide them over during lean months. Children who are already working also contribute to household income and buy appliances as gifts for their family.

6.1.5 Credit. In an FGD, the collectors in Olango Island said that when budget is strictly followed household income can be stretched to make both ends meet. But in cases when household income is not enough to support the family's needs they seek credit from financiers rather than relatives. Money is cash advanced and is being paid after each diving trip. The cash advance is deducted from the sale they get from their catch. If the amount of sales cannot cover the cash advance, it is carried over for deduction to the next trip. For a 15-day trip, they are given about PhP300 (US$5.40) for their families' needs until their return. . A similar system holds true for octopus fishers who go for 3-6 months fishing operation to

Palawan. Cash advances given are a bit higher at around PhP5000 (US$90). The financiers entrust the operation to their boat captains (*arias*) and shoulders all expenses for the trip.

The collectors are tied up with the "*utang-bayad utang-bayad*" scheme (never ending loan-pay, loan-pay debt cycle) with the financiers. At times when income is not sufficient to pay for the money advanced, a scheme is established where the amount is paid little by little (*data-data*) until fully paid. The financier does not charge any interest from the money loaned to the fish collector. He cannot ask for the payment of the loan when the collector is not capable of paying due to weather conditions, lean months, etc. At times financiers do not get paid for the loan when the borrowing collectors die or migrate to other areas. In this context of the trade the risk rests largely on the financier. However, his incentive is that he gets to buy all the catch from these collectors at a price he sets based on the exporters' price forwarded by his consignee in Manila.

Collectors working under a financier also resort to credit for non-cash items such as goods needed for daily consumption from the *"suki" sari-sari* store (frequently patronized variety store). In Sabang, the stores do not allow credit to collectors not working regularly with a financier. It is the practice of storeowners to request financiers to hold the share of the collectors indebted to them to ensure payment. Payment is done on a weekly basis to a maximum of two weeks. Sometimes hogs raised by the collectors serve as collateral for credit from the stores. Others borrow cash from moneylenders in the island who charge 20% interest (locally termed "*five six*") or from a DOLE-registered organization through a "*paluwagan*"[7] system.

6.1.6 Shipment Income and Expenditure

Shipment Cost. For shipment from supplier to exporter, the biggest percentage of expenditure is the cost of fish (50-75% of the total cost), followed by the freight cost (10-32%) and the packaging materials (7-11%). Suppliers from the two study sites ship their catch to Cebu or Manila exporters. In the case of Batasan suppliers, shipment cost to Manila is about 51.62% higher than Cebu mainly because of the freight, packing labor and the cost of packaging materials because fishes shipped to Manila exporters have to be packed individually (**Table 10**). Thus to cover the freight cost, minimum shipment to Manila is usually 3-4 boxes.

For shipment from exporters to importers however, the air freight cost represents the largest portion of the expense because of the distance of destinations outside the country.

Shipment Income and Expenditure. Income from shipment of marine ornamentals is quite difficult to determine because it varies with the species shipped out, pricing, and the destination. Certified fish coming in from Batasan are given higher price from those coming from other suppliers. Payment of fish from Batasan suppliers is done right after screening while those from other sources like Olango are paid after the 24-hour conditioning period. **Boxes 6 and 7** show the income and expenditure statements of shipment to Manila of a financier from Olango and a coordinator from Batasan, respectively.

[7] A system wherein members contribute the same amount of cash regularly and each member gets equal chance to borrow the pooled money on a rotation basis.

Table 10 Comparison of shipment cost between Cebu and Manila

Particulars	Cebu		Manila		% Difference
	Minimum of 4 boxes	% over total	Minimum of 4 boxes	% over total	
1. Cost of Fish	PhP 4,000	75.12	PhP 4,000	49.54	
2. Transportation		9.39		32.19	
Boat Hired/Gasoline/Tricycle	500		700		
Freight	0		1,899		
3. Packing Materials		7.04		10.84	
Oxygen	175		175		
Plastics, rubber band, packaging tape	200		700		
4..Services/Labor		7.51		6.81	
Packer	150		300		
Shipper	250		250		
5. Food	50	0.94	50	0.62	
Total	**PhP 5,325**	**100.00**	**PhP 8,074**	**100.00**	**51.62**

Source: KI with Batasan Coordinator

Box 6 Income and Expenditure Statement of Shipment from Olango Island

Name of Supplier: Nelson Melancolico
Name of exporter: Trans Pacific c/o consignee
Location of exporter: Olango

Date delivered: June 2, 2004
Volume: 6.5 boxes
Date delivered: June 2, 2004

Estimated Gross Sales: **Php 20,000**

Expenses:

Cost of Fish		10,000
Transportation		350
Freight cost		2,900
Packers fee		400
Screeners fee		200
Shipper's fee		100
Consignee (10%)		2,000
Document/auxiliary invoice		50
Packing materials		1,230
Plastics	(700)	
Rubber band	(120)	
Carton boxes	(350)	
Packaging tapes	(60)	
Food		50
Total Expenses		**17,280**
Net Income		**PhP 2,280**

Species of ornamental fish delivered:

African clown fish
Coral beauty
Scooter blenny
Finger tube
Orbie batfish
Banded shrimp
Rainbow wrasse
Domino damsel fish
Banded pipe fish
False Percula clown fish
Tomato clown fish
Sweet lips
File fish
Velver
Green eel
Banded shark
Egg shark
Stone fish
Dwarf lion

Box 7 Income and Expenditure Statement of Shipment from Batasan Island

Date Delivered: June 15, 2004
Exporter: HD Marineworld
Number of boxes: 3
Supplier: Mr. Epifanio Saavedra
Total number of species supplied: 450 pcs.

Code number of Suppliers/Collectors:

0123	0141	0120
0125	0131	0111
0114	0152	0122

Projected sales: **PhP 7, 418**

Transportation:	PhP 700
Packing Materials:	
Rubber Bands	60.00
Plastics	360.00
Carton	100.00
Styrofoam	375.00
Services/labor:	
Packer	100.00
Freight cost:	1,499.00
Cost of fish:	2,536.40

Species of OF delivered

Mandarin Fish	One Spot
Egg Shark	Chelmon Butterfly
Maroon Clownfish	Percula Clownfish
Spotted Grunt	Banded Shark
Banded Pipe Fish	
Vagabundus Butterfly	
Pinnatus Bat Fish	

Total Expenses: **PhP 5,730.00**
Income from sales: **PhP 1, 688.00**
Add: 700.00 (10% of total sales coordinators fee)
374.75 (25% of the freight cost shouldered by the exporter)
Total Income: **PhP 2,762.75**

On a per shipment basis, the coordinator from Batasan who shipped out three boxes (450 pieces) earned a relatively higher income (PhP2762.75 or US$50) than a financier from Olango who shipped out 6.5 boxes (PhP2280 or US$41). This could partly be attributed to the relatively better price given to certified Batasan suppliers.

6.2 Natural and Physical

6.2.1 Collection Sites and Access to Resources

With the active campaign on coastal resource management (CRM) in the 90's, majority of municipalities passed ordinances to regulate fishing activities within their municipal waters. Thus, presently most ornamental collectors of Olango Island confined their collection activities within their municipal waters. The two collection sites in the area are Gilutungan and Caubian Dako and Gamay (**Figure7**). However, because of the need to look for site specific species to serve orders from exporters, they risk to venture (*dayo*) to other collection sites in nearby municipalities. These collection sites identified are in Bohol (Buenavista, Tagbilaran City, Panglao), Leyte (Dawahon, Bato), and Bantayan Island and Camotes Island in Cebu **(Figure 7)**. In these collection sites, they compete with other resident collectors in the area or others from nearby *barangays* or municipalities whom they could also identify by name.

Ornamental fish collectors from Olango Island are pioneers in the trade and have been collecting marine ornamentals from these sites for years. They know what species of fish are found in specific collection sites **(Appendix 11).**

In Batasan Island where the collectors are organized, there was a Committee formed that came up with a Collection Area Management Plan (CAMP). Through the CAMP, they were able to identify collection sites within the areas surrounding Batasan Island which were approved for certification by MAC. These six (6) collection sites are Awo Loyo I Reef, Awo

Loyo II Reef, Ubayon-ubay Reef (A), Ubayon-ubay Reef (B), Kanjaro Reef and Lawis-lawis Reef (**CAMP, 2003**). Six additional sites surrounding Batasan Island are lobbied at present for approval by the CAMP Committee. However, even without approval, other collectors visit other sites within the waters of Tubigon, Clarin and Inabanga. These include Bugatusan in Inabanga; Ubay, Tambulian Kanlangi, Claureño, Balikog big and small, Estakahan, Domog, Katangtangan, Inanurahan and Hayaan for Tubigon and Limampuan in Clarin.

There are more or less 30 species of ornamental fish collected within these collection sites in Batasan. Some of these are caught in abundance in the area and are of high market value (**Appendix 12**).

As shared by collectors, some species of ornamental fish are site specific. Some species favour certain types of corals and certain types of soil quality. Information sourced from exporters **(Table 11)** confirms this observation by collectors. Supplies of tang species come from Manila and Zamboanga while angels come from the Visayas.

Table 11 Suppliers and species supplied

Supplier	Mode of transport	Species supplied
Manila	Cebu Pacific plane	Clown trigger, cometa, oval spot, aurega, lipstick tang, black and red peacock, dragon wrasse, camel back, brown tang, falcula
Zamboanga	Cebu Pacific plane	Frondoza, orange skunk, imperator, red shrimp, puffer fish, blue tang, yellow tang, orange shrimp, sailfin tang, red percula
Bogo, Cebu	bus	Red eye cardinal, black band cardinal, red goby, pardis, pink spot, B ampheris, lineatus, green goby, maroon goby, black line goby, saddle back clown, pularis
Olango Island, Lapulapu City	Pick-up by "Red Bull" boat of exporter	Black peacock, banded eel, majestic angel, tierra batfish, bicolor, percula, luctosi, foxface, saddle back, maroon, salarias goby, lapas, labroides, banded pipe fish, scooter blenny, hawkfish, yellow rose goby, velvet slug, chromis, orbie purple queen, cleaner wrasse
San Francisco, Camotes Island, Cebu	By banca or sometimes picked by exporter's boat	Percula, African clown tomato, longnose hawkfish, purple queen, regal angel, majestic angel, maroon, queen angel, stone fish, box face, lamark angel
Batasan Island, Bohol	By banca of coordinator to Marigondon, Cebu	Mandarin, blue face angel, egg shark, banded shark, maroon, percula, tomato, chelmon, banded pipe fish, banded eel

Source: Key Informant Interviews with exporters

Financiers and the coordinator were requested to enumerate the top 10 fishes harvested in their specific area and to classify them as to value and demand (**Table 12).** They came up with a list of more than 10 species. Banded and egg sharks are considered in both sites as high value and in demand while percula (*Amphiprion*) and maroon (*Premnas*) clown fishes are in demand. Some angelfishes species enumerated as high value in Batasan are not found in the list of Olango species. These could be because angel fish abound in Bohol rather than Olango collection sites.

Table 12 Classification of species as to demand and value

Ornamental fish	Olango			Batasan		
	High-Value	In-demand	High Value & In-demand	High-Value	In-demand	High Value & In-demand
Banded shark						
Egg shark						
False Percula clown fish						
Maroon clown fish						
Tomato clown fish						
Domino damselfish						
African clown fish						
Banded shrimp						
Scooter blenny						
Ordinary angler fish						
Clown shrimp						
Pinnatus batfish						
Green mandarin						
Chelmon butterfly fish						
Warthy						
Colored angler fish						
Blue face angel fish						
Majestic angel fish						
Falcula butterfly fish						
High fin snapper						
Naculatus						
Cometa grouper						
Panther grouper						

Source: Key Informant Interviews with financier and coordinator in Olango and Batasan Islands

6.2.2 Permits and Licenses

Three of the main problems related to issuance of permits and licenses are cyanide fishing, intrusion to collection sites, and non-issuance of permits to non-resident collectors.

The non-issuance of permits or licenses to gather ornamental fish in other areas is a concern of collectors from Olango Island and other sites whose reef resources have been depleted by years of destructive fishing such as cyanide and dynamite fishing. They mentioned that they are much willing to pay and get permits so they could fish legally in other collection sites but local government units (LGUs) of those sites are not issuing permits to non-residents. Most of these LGUs have passed ordinances prohibiting fishers from other areas to fish within their municipal waters to secure fishing priority rights to their own municipal fishers. However, some municipalities like Guiuan, Samar are totally banning ornamental fish collection in their municipal waters to conserve and protect their resources.

Even without permits, some collectors (*dayo*) still intrude in these banned areas and are prepared to pay the fine when caught. The highest fine paid was PhP 2,000.00 (US$36) and the least was PhP 1,000.00 (US$18) or lower depending on the negotiation with the apprehending officers. Law enforcement teams (*Bantay Dagat*) composed of a fishery officer, the police, fisher volunteers and barangay officials conduct the patrolling and apprehension operations. Most often, no receipts

Box 8 Practiced ways to settle fishing violations

A participant shared that he was jailed for a year for illegal fishing in Tagbilaran City when he was still a minor. He said that he became wiser now and settles fines "under the table" at sea rather than be brought to shore for formal charges.

are issued for the payment of fines since negotiations are done illegally at sea (**Box 8**). This method of bargaining is preferred rather than be brought to shore at the municipal hall where a higher penalty is imposed or in some instances even imprisonment for those who cannot afford to pay the fine. The financiers pay the fines imposed on their fish collectors. The financiers likewise assume responsibility for providing support to the family in case when collectors are imprisoned. The fish collected when caught are released back to the sea.

In Dawahon, Bato, Leyte permit to fish amounting to PhP 200.00 (US$3.60) per fishing operation is secured from either the barangay captain or the councilor (*kagawad*). An official receipt signed by the councilors (*kagawad*) is issued to the collectors. Issuance of permits is one of the law enforcement measures implemented to address the rampant use of dynamite observed in the area.

In Bohol permits are not issued to non-residents but a landing fee is required to land fish in the area. There is no fixed rate for the fee; it depends on the assessment of the barangay captain based on the volume delivered. Though a bit risky, collectors request relatives residing in the area to secure permits for them.

Permits and licenses of any kind do not apply in collection sites and even in Tubigon. Instead, once certified, collectors are issued identification cards. Collectors in the Batasan area revealed that some illegally go on dive operations in non-certified areas within and outside Tubigon.

6.3 Human

6.3.1 Household Labor

Members engaged in livelihood activities. Ornamental fish collection is a "family livelihood" dominated by men members (**Box 9**). Offshore collection is mainly done by men while women members engage mainly in gleaning for shells in shallow waters or gather ornamental fish such as Spanish dancers, banded shrimps (Olango and Batasan), egg shark, banded shark, octopus, false percula clown fish, maroon clown fish, panther and orbie bat fish (Batasan) they may stumble upon. They use scoop nets or their bare hands in collecting these fishes. Women also augment income through shell craft industry (*tuhog sigay*), doing laundry and shell lantern (*parol*) making (Olango). The shell craft are sold to exporters in Lapulapu City. Most of the housewives stay at home and tend to the household chores.

Box 9 Fish collection, a "family occupation" in Olango Island

FGD participants shared that:

- Bert and his four brothers are all collectors
- Two of his sons, ages 17 and 19 have started to help him collect ornamental fish
- Crizaldo's 15-year old son stopped schooling while in 3rd year high school and joined him in fish collection.
- He has stopped collecting because of his age but three of his four sons are into fish collection.
- Two of the 4-men members of a family are into collection even when they have one member already paralyzed after long engagement in compressor-diving.

6.3.2 Health

Health Insurance. In Olango, collectors do not have health or life insurance. The collectors do not have access to information on availability of any government or private insurance

company. PhilHealth is not even known in the area. The collectors feel however that they need health insurance in case of sickness. In cases of accidents the financier are not obligated to support them and whatever assistance given by the financier is voluntary in nature.

In Batasan, 11 of the 14 FGD participants have availed of the PhilHealth. The insurance covers immediate family members such as minor children (below 21 years of age) and parents. The insurance was given prior to the election by the Department of Social Welfare and Development (DSWD) and collectors maintained payment of the premium.

Health Problems Associated With Fish Collection.

Box 10 Health cases associated with diving shared by collectors

- A participant has a brother who was paralyzed after five years of engaging in compressor-diving. He attributed this to the depth his brother dives and improper decompression
- Five cases and even one death caused by "air pocket" were reported. They explained that this happens because one's body seems to get smaller underwater and cause the veins to bulge." The person affected by bends loses strength, has an unbalanced body and cannot walk without crutches. They recommend that decompression should be done at half the depth of the water dived e.g. if the total depth dived is 30 meters at 15 meters one should decompress for a few minutes and slowly ascend afterwards to the surface.

In Olango, some of the health problems mentioned were "*panuhot*" (type of muscle pain believed to be caused by blockage of air in the blood vessel), *palanakit sang kabukugan*" (pain in the bones) due to the unfiltered air being breathed through the compressor (**Box 10**). Bends or commonly called in Sabang as "*air pocket*" was also mentioned. The latter illness is believed to be due to improper decompression procedure. For a *hookah* diver surfacing from a depth of 18 meters, decompression procedure is done at seven (7) meters deep before surfacing. Decompression time takes about 30 minutes. The free divers reported no illness but they complain of over-fatigue due to the distance they cover in swimming (as far as 1,000 meters) while looking for ornamental fishes. The deepest that they reach is only about seven (7) meters.

The "*manu-manu*" divers feel over-fatigued after the daily dive operation because of effort exerted in swimming against the current. Oftentimes, collectors go hungry and suffer temporary deafness because they have to cover long distances in search for areas where ornamental fish abound before they can eat their meals. They said they exert so much effort in trying to find fishes because they cannot afford to go home without any catch at all. At times food brought (*baon*) is not enough because they only prepared for one meal. Diving in very deep waters without using proper diving gear can also cause deafness on the "*manu-manu*" divers.

In Batasan, some of the common health problems mentioned by the collectors were "*panuhot*" (air in the veins/muscles of the body) and deafness. They said there are a lot of divers who went deaf because of being subjected to underwater pressure both in *manu-manu* and compressor diving. They also use ginger and herbal medicine as treatment.

Health services available in the locality. In Olango, collectors stated that health service provided by the health center is inadequate. Stocks available are vitamins for pregnant women and medicines for common sickness of children only. Oftentimes, the center runs out of supply of ordinary paracetamol. Particularly in Sabang, "politics is terrible in the barangay that those families identified with the opposition party are not given any services at all. The medicines are kept and reserved for people whom the health providers know. As a result, medicines expire and just thrown away. "

The center does not provide for diving-related illnesses and it is usually the wives, neighbors and fellow collectors who render health assistance in such cases. They resort to local knowledge in treating these diving-associated illnesses (**Box 11**). Like for instance in the case of "*air pockets*", since they cannot afford to go to Lahug, Cebu and pay for the use of the decompression chamber, the alternative first aid measure was to bury the body in the sand with only the head surfacing for about three to four hours enough for the body to heat up. A caretaker is assigned to watch and awaken the victim in case he falls asleep.

Like in Olango, the Batasan Island health center does not have any medicine for diving-associated illness. It only gives out medicines for cough and fever. "*Panuhot*" is usually treated with *Efficascent* oil (soothing mentholated oil) and *Omega* painkiller. Sometimes they resort to what they call "*gas anuos*" wherein they heat their hands on top of a kerosene lamp and rub the hands immediately on the body while still hot along with the soot that stick on their hands. They said the body would also heat because the hands are still hot while rubbed all over the body. They also drink a little rum in the evening to heat the body and keep off "*panuhot*" attack.

Box 11 Causes and local remedies for diving-associated illnesses

"Illness such as "*panuhot*" is cured using Efficascent oil bought from the local drug stores. Medicinal herbs and other plants are also used. Hard massage *(hilot*) is also resorted to as a form of treatment.

As for bends, the recommended treatment is for the diver to go back to sea and decompress. However if the diver is out of the water he is made to lie flat on his back on the boat and breathe oxygen for about 30 minutes. This accident usually happens when the diver panics underwater and swims towards the surface immediately in cases when the compressor engine stops running cutting the supply of oxygen. Sometimes strong underwater current causes bends because the diver has to swim against it to reach the boat. This likewise prevents the divers from decompressing properly. A lot of these cases were reported years before when compressor diving is at its peak. This carelessness also happens when divers drink a lot of alcoholic beverages the night prior to the dive operation. Reported cases of bends decreased after the training with International Marine Alliance (IMA)."

6.3.3 Education

Educational attainment. Based on the FGD conducted, 79% of fish collectors in Olango Island have acquired elementary education, 13% have reached high school, and eight percent (8%) have no formal education at all. In Batasan Island, collectors have relatively better educational attainment than in Olango with 29% attaining elementary level, 57% high school level, and 14% college graduate.

In Olango, the reasons given for such low level of education were poverty and lack of interest. Before, parents encourage or even force their children to engage in fish collection at an early age after graduating from elementary to earn additional income for the family and be spared of the education expense. High school education was not available in Olango years ago and people then became contented with just having an elementary education because they cannot afford to pursue high school education in Lapu-Lapu City proper.

At present, the barangay is now equipped with a day care and kindergarten facility, and an elementary school. A high school facility is also available in the adjacent barangay. The new generation of parents wants their children to have an education. As parents they feel that education is the only inheritance they could give their children because they do not have any property to leave behind. However, they still can hardly afford a college education. A participant mentioned that one of his children got a free-tuition scholarship in a Cebu City

college but was not able to avail of it because he cannot raise money to pay for the rent and the weekly allowance.

Long time ago people in Batasan were contented with elementary education and felt its better to stop schooling then and earn income through collection. Those reaching high school usually dropped out due to lack of money to support their expenses. Hence, they join their fathers in fish collection or migrate to other places to look for jobs.

Presently, an elementary school facility is available in the island. However for high school and college education, they go to nearby municipalities of Clarin and Tubigon or to cities like Tagbilaran and Cebu City.

Sources of information. In Olango, collectors get news and information from television, radio, neighbors and other residents arriving from other places bringing news and stories. Newspapers are occasionally available but collectors are not that interested to read. They prefer reading comic books with life stories than current events. Communications addressed to collectors are coursed through the barangay officials. Information or announcement for the general public such as the passage of an ordinance related to fishing is disseminated by the *barangay tanod* (peace officers) through the financiers.

In Batasan, common sources of information are the television, radio and occasionally newspapers like the *Super Balita* which is available only in Tubigon However, electricity is available only at night so they feel that information reaching them is quite insufficient and they said that they do not always have the time to watch television at night time. The cellular phone was also mentioned as one of the means to get information faster.

Knowledge and awareness of fisheries laws. The lack of knowledge on fisheries laws especially the fisheries code among Olango collectors was quite apparent. Only one out of the 13 participants knew that big fishing boats are prohibited to fish within municipal waters and that collection of seahorses are now banned. They said that barangay ordinances are not properly disseminated, hence their ignorance of the provisions. They are aware of the presence of fish sanctuaries in Talima, San Vicente, Gilutungan Channel, Baring, Caw-oy which are off limits for fishing. There was no proper consultation and awareness-raising regarding the rationale of establishing sanctuaries, hence collectors are not really appreciative of this resource enhancement effort but rather see this as a restriction of their livelihood activities.

Fish collectors in Batasan are more aware of existing laws and ordinances affecting their livelihood because of the close interaction among the collectors, the barangay council and the organizations present in the area. They are aware that use of cyanide and other illegal fishing methods are prohibited and that there is an existing ordinance prohibiting non-resident to collect within their collection sites. They also heard about the total banning of the collection of seahorses and giant clams but they still do collect occasionally giant clams for consumption. They say however that the total ban on seahorses is a big loss to them because they earn from it. They want collection of seahorses regulated but not banned. Through the KAMADA, a petition was submitted to Congress regulating the collection of the young and gravid seahorses but action is still pending.

6.3.4 Skills and Technology

Trainings. The collectors in Olango claim they are born divers. IMA came to Olango and taught them on how to use the barrier net in catching ornamental fishes. About 73% of the old generation collectors (some of whom have stopped collecting) were trained by IMA on the use of barrier nets but only about 8% of the younger ones benefited from the training. The IMA conducted week-long training on the use of barrier nets. The new breed of collectors learned the craft from other collectors and from other members of the family. Both the young and the old feel that they do not need further training. The "*manu-manu*" divers expressed their unwillingness to go into compressor diving because of the danger of such a method.

In Batasan the first to arrive was the Ilaw ng Buhay, an NGO that brought along with it some foreigners in 1984 who trained collectors on the use of scoop nets and barrier nets. The training lasted for more than two weeks. Two more groups came, the IMA in 1997 and the MAC in 2002 to train fishers on ornamental fish collection with the use of barrier nets. Although collectors were organized by these groups, trainings were more inclined towards technical aspects rather than organizational management and strengthening.

Seventy-nine percent of the FGD participants were trained by IMA. The training done by MAC was mainly to enhance the knowledge and the skills learned by collectors from the earlier trainings they had with Ilaw ng Buhay and IMA. The training of MAC focused on proper handling of fish during collection, holding and transport to minimize mortality and maintain quality of the product.

Local knowledge and practices in fish collection. Olango collectors who are considered pioneers in ornamental fish collection are rich resources of local knowledge and practices in this trade. They are aware that some rare ornamental species are site specific and thrive only in sites where the type of corals and sand quality are conducive to their growth and reproduction. Like for instance the collection sites in Bohol have the kind or corals and soil quality not found in most sites, hence specific species of fish that abound there might not be seen in collection sites in other provinces.

Collectors also have this local knowledge of how to collect certain species of fish based on their habits. They said that there are special methods to collect certain species of fish like the Mandarin (maroon) or Spine cheek Clown (*Premnas biaculatus)*. Scoop net with fine mesh and spear gun is used to catch this species because they hide in the corals (**Photo 6**). The targeted part of the body is the rear-end belly side so the wound would not be noticeable, otherwise the fish will be rejected or the price will be lowered.

Batasan collectors also shared the steps on the use of push net in collecting gobies and dotty backs (**Photo 7**).

6.4 Social

6.4.1 Social Relations and Networking

In Olango Island, ornamental fish collectors interact closely with the financiers and barangay council who are all based in the barangay. The financiers serve as an important informal credit structure to collectors. They provide funds for all expenses incurred in diving

operations including payment of penalties in case they are apprehended for violating fishing ordinances and laws. They also provide advances to collectors for the needs of their families when they go fishing for days and provide credit for emergency needs such as hospitalization, death, etc. The barangay council being the legislative unit in the barangay is responsible for the formulation and passage of ordinances and related services that affect the barangay. They sometimes intercede in settling matters related to apprehension of collectors. The City Fisheries and Aquatic Resource Management Council (CFARMC), *Bantay Dagat*[8] and BFAR are perceived by the collectors as distant from them (**Figure 8 and 9**).

Unlike in Olango, collectors in Batasan Island closely relate with several other sectoral groups in the area. They have close engagement with MAC, the CAMP Committee, BATFCA, the coordinator, the UBFA and the barangay LGU (**Figure 10**).

The Marine Aquarium Council (MAC) facilitated the formation of the Batasan Fish Collectors Association (BATFCA) and the certification of its members as well as their collection sites in the area. MAC also assisted in the formation of a Committee that formulated their Collection Area Management Plan (CAMP). MAC also provides inputs like materials for the nets, collection jars and other materials used in collecting fishes. The coordinator who serves as the middleman linking the collectors to the exporters deals directly with the collectors through buying their catch and giving some incentives in kind like reimbursement of gasoline expense to those who reach their quota; managing record of catch and payment, coordinating with exporters regarding orders, pricing and bank transfer payments. The United Batasan Fishermen's Association (UBFA) though not confined to collectors only, have members who are ornamental fish collectors. The aim of UBFA is to source out funds from other agencies or institutions to support alternative livelihoods such as pig dispersal, micro-lending, crab fattening, and the current project on lobster and grouper culture with LOGODEF. The barangay local government unit (BLGU) is very supportive with the activities of the collectors. They passed an ordinance supporting the enactment of the Municipal Ordinance for the CAMP. The activities of the International Marine Alliance (IMA) and recently of MAC are closely coordinated with the BLGU. The BLGU also supports the trainings conducted by MAC, national government agencies (NGA's) and other NGOs.

The BLGU strictly implements the policy on the collection of non-member and non-resident collectors in the MAC areas. The BLGU monitors regularly the activities within the collection sites. It supports three *Barangay Dagat* (fish wardens) members to closely monitor fishing activities in the area. *Barangay Tanod* or Barangay Peace Officers are also utilized by the BLGU to augment services of the three fish wardens. The BLGU extends no financial support to the collectors but indirectly supports the latter through facilitating activities with benefit packages from MAC, NGOs that established the fish sanctuary, the LOGODEF mariculture projects and other CRM activities spearheaded by the LGU.

6.4.2 Migration Pattern

In Sabang, Olango Island, no in-migration was observed in the last three years in the barangay. Eight families however moved out of Olango and migrated to Zambales and Manila for reasons that employment is difficult in Olango, and there are more job opportunities in Manila and they have already purchased a house in those areas.

[8] Barangay or municipal based law enforcement team.

One family coming from Iloilo settled in Sabang, Olango for 3 years however when the earnings from ornamental fish collection was not that encouraging anymore they moved out of the area again. The residents have no idea of their destination since they were considered seasonal migrants.

In Batasan, cases of in-migration are higher than in-migration. The Island attracts more families because of better livelihood opportunities and others who migrated to other places returned to settle back in the Island.

Some of the reasons for out-migration are because of marriage (the partner wanted them to settle in their area rather than Batasan), and because work in other areas is more profitable or the family has purchased a house in those areas (**Figure 11**).

6.4.3 Wealth Distribution

A wealth ranking exercise in Sabang, Olango Island revealed that of the 183 households in the barangay, about 53% (97 households) are perceived to be poor or *kubos*, 42% (76 households) middleclass or *arang-arang*, and 5% rich or *datu*. These categories were given and described by the collectors themselves(**Appendix 13**). Based on this perception, most of the collectors' households belong to the poor while financiers' belong to the middleclass or rich status.

In Batasan, an FGD with the women revealed that 19% of the total household is poor, 78% middleclass and 3% rich. The classification was based on the criteria set by the women themselves (**Appendix 13).**

FGD results reveal that wealth distribution is better off in the Batasan community compared with the Olango community in the sense that majority of the households belong to the middleclass group and percentage of people considered as poor comprise only about 19% of the population. These results somehow agree with the high level of in-migration happening in Batasan within the period 1999-2004.

6.5 Political and Institutional

In 1991 the Philippines moved toward greater empowerment of people through decentralization efforts. With the passage of the Local Government Code of 1991 (RA 7160), political power, responsibility, functions and provision of services were devolved to local government units (LGU), i.e., barangays, municipalities, cities and provinces (**CSP 2004**). Hence, the more relevant laws impacting on the livelihoods of fish collectors and the trade as a whole are the municipal/city and barangay ordinances enacted at the local levels of government.

At the national level, the Philippines has scores of laws on the protection of the environment and fisheries resources although implementation may sometimes be wanting in some areas. The more important law affecting the trade is the Philippine Fisheries Code of the Philippines (R.A. 8550) which became effective on June 23, 1998. To strengthen implementation of its provisions, Fisheries Administrative Orders (F.A.O.s) are issued which contain more defined implementing rules and guidelines. Specifically, for the marine ornamentals trade the more relevant F.A.O.s are F.A.O. 192, 202 and 208. F.A.O. 192 provides for the strengthening of the Fisheries Quarantine Service (FQS) in the BFAR and in the DA Regional Field Units. The F.A.O. 202 is about the ban on the coral exploitation and exportation while F.A.O. 208 is on the conservation of rare, threatened and endangered fishery species. Specifically for the

province of Palawan, there are administrative orders issued by PCSD[9] that supports the trade **(Box 12**).

Box 12 Palawan Council for Sustainable Development Administrative Orders

- **PCSD Resolution No. 98-118; 98-124; 99-142**. Requiring all live fish catchers, fish cage operators, traders and carriers in Palawan to obtain permit or accreditation from PCSD.
- **PCSD AO #4 No. 99-03.** Revised Guidelines on the Imposition of Processing Fees Covering Applications for SEP Clearance of Projects and Undertakings in Palawan.
- **PCSD AO #5 s.2000.** Revised Guidelines for the Accreditation, Regulation and Monitoring of Live Fish Catching, Culture Transport and Trading in Palawan.

In Region 7 in particular, through the collaborative efforts of the BFAR, the IMA, Haribon and MAC, use of cyanide has been significantly reduced. In 1997 IMA pioneered the education and programs to inform fishers of the benefits of using barrier nets in ornamental fish collection and the environmental harm caused by cyanide. It also established a cyanide testing laboratory which was turned over to BFAR 7 when the project was terminated in 2001. By that time cyanide fishing has been reduced by about 70% according to IMA reports. However, with no market incentives in terms of better prices for net-caught fish, it was difficult to motivate collectors to stick to net use. With the entry of MAC in the area in 2002, collectors' interest in supplying the market with sustainably caught and handled fish was revived. With MAC's facilitation to have the sites and the collectors certified, collectors have now the leverage to demand better prices for their catch from exporters that MAC has successfully linked with them. Such exporters were among the first to respond to the market's demand for "sustainably-harvested and well-cared for marine organisms".

Presently the BFAR 7 cyanide testing laboratory continuous to monitor export shipments in the area but because of budget constraints frequency of monitoring is reduced from its weekly schedule to twice a month or on a spot check basis. BFAR laboratory records on cyanide occurrence show a 99% negative result.

Box 13 Barangay Resolutions/Ordinances enacted by the Batasan Council

- **Brgy. Resolution No. 6 s. 2003**. A resolution supporting an ordinance prohibiting fishermen using "*tikbong*" to fish in certain areas covering Lawislawis, Tunghaon, Tulo ka Awo, Kaongan Awo sa may banak ug Awo Daku where certified ornamental fish collectors operate.
- **Brgy. Ordinance No.1 s.1999**. An ordinance declaring portion of the coastal area west of Batasan Island as MPA (known also as Marine Sanctuary) was adopted by the SB through Resolution No. 99-27 s.1999.
- **Brgy. Ordinance No. 2 s.1999.** Adopting a policy how to accept a foreigner, Filipinos or anybody to dive, observe and see the beauty of our sanctuary located at Batasan Island, Tubigon, Bohol.

At the local level, there are ordinances which govern the management, utilization, protection and conservation of resources within the jurisdiction of each political unit such as a municipality or barangay. In the case of Olango, issues surfacing in FGDs **(Appendix 14)** suggest that support from the city and barangay government units are wanting. The structures for extension of services are there such as the city LGU, FARMC, barangay council, *Bantay Dagat* are in place but not functional due to lack of support in terms of fund allocation (partisan politics) or simply due to lack of awareness and understanding of the needs of poor people in the community. Such poor interaction between collectors and these

[9] In line with the RIO agreements (Earth Summit 1992), the Philippine Council for Sustainable Development was created on September 1, 1992 through Executive Order No. 15 in order to chart environment and sustainable development in the country. To further strengthen the Council, local councils and committees were organized and created at various regions of the country and the Palawan Council for Sustainable Development (PCSD) is one of these.

support institutions and organizations can also be gleaned in the Venn diagram prepared by the Olango collectors during FGDs (**Figures 8 and 9**).

The situation in Batasan Island presents a different picture. The support provided by both the municipal and barangay governments are quite evident and felt by the island people, although the delivery of services may not at times that efficient due to shortage of funds. The Municipal and barangay governments pass ordinances that promote coastal resources management for sustainable livelihoods of fishers (**Box 13**). An example is the Tubigon Coastal Resource Management Code of CY 2000 passed by the municipal council on July 11, 2000. The Code provided the policy framework that guides coastal resources management in Tubigon. Furthermore, on top of the government projects initiated such as the Local Government Development Fund (LOGODEF), the LGU is supportive of the initiatives and projects introduced by other development agencies and organizations in the area such as the MAC, Haribon Foundation and IMA.

Through the facilitation of these different support institutions, several sectoral organizations were formed. Presently, there are five existing organizations in Batasan Island. These are the Batasan Tropical Fish Collectors Association (BATFCA) with 41 members, the United Batasan Fisher's Association (UBFA) with 60 members, the Kapunungan sa mga Kababaehan sa Batasan (KAKBA) with 30 members, *Nagkahiusang Baryohanon alang sa Kalamboan* (NABAKA) with 50 members, and the *Kahugpungan sa Manugaay sa Danajon Reef* (KAMADA) with 23 members. Some of these fishers have dual membership in these organizations. **Appendix 15** shows some information on the activities of these support institutions based on key informant interviews.

6.6 Seasonality and Trends

6.6.1 Seasonality of Ornamental Fish Collection

Income from ornamental fish (OF) collection is erratic depending on the seasonality and the volume of the OF collected. Seasonality is affected by changes in weather conditions, water temperature, spawning habits as well as competition on the use of the resource. For Olango Island *manu-manu* divers, peak season is July to August because of favorable weather and water temperature while lean months are from December to March (**Figure 12A**). However for Batasan *manu manu* divers, they prioritize collection of sea cucumbers because of the high market price during the months of February to August which is the peak season for Olango *manu-manu* divers (**Figure 12A**).

For compressor divers in Olango Island, December to March is peak season for them because there is no competition from free divers who cannot tolerate diving in cold waters because of inadequate diving suit. Likewise they consider the peak collection time from July to August as lean months for them because of the competition from *manu-manu* divers. Peak months for compressor divers in Batasan Island are also within March to September when manu-manu divers opt to collect sea cucumbers **(Figure 12B).**

6.6.2 Trends in Buying and Selling of Ornamental Fish

In Olango Island, financiers complain that cost of operation has increased and the value of the dollar has increased several folds but the buying price of their fish remain low and even fluctuates as the supply increases at certain months of the year. Through their consignees in Manila, they try to negotiate for a price increase but until now nothing came up with these negotiations. It is interesting to note that pricing of fish was not one of the highlighted issues

during FGDs with collectors. They were more concerned with limited access to collection sites in nearby provinces like Bohol and Samar which through their municipal ordinances do not allow permits to collectors from other municipalities

The trend in the buying and selling prices of ornamental fish in Batasan for a period of twenty years was slow to moderate. Species that are common such as the clown species, some butterfly and batfishes, eels and pipefish are priced very low **(Table 13)**. The increase came after the lobbying done by the OFC to their coordinator. This was the first activity done by Batasan Fish Collectors Association (BATFCA) after their certification in January 2003. At present, the collectors are asking for another price increase from the coordinator. Negotiations are underway on this matter with the exporters in Manila.

Table 13 Comparison of buying and selling prices in Batasan, 1982-2001 and 2002-2004

Species	1982-2001		2002-2004	
	Buying price	**Selling price**	**Buying price**	**Selling price**
All clowns except False percula clown fish	PhP1.00	PhP3.00	PhP5.00	PhP10-12.00
Chelmon butterfly fish	1.00	3.00	5.00	15.00-18.00
Eggshark	5.00	20.00	15.00	40.00
Banded shark	10.00	15.00-20.00	20.00	40.00
Sea Horse	5.00	10.00	8.00	15.00
Panther grouper fish	25.00	35.00	35.00	50-60.00
Pilot fish	5.00	12.00	15.00	25 to 30.00
Pinnatus bat fish	20-30.00	50-60.00	40.00	120.00
Banded Pipe Fish	.50	1.00	1.00	4.00
Orbie bat fish	1.00	2.00	2.00	8.00
Majestic Angel fish	100.00	200.00	350.00	900.00
Blue Face Angel fish	100.00	200.00	350.00	600.00
Green Eel	2.00	5.00	5.00	10-12.00
Tierra longfin fish	2.00	2.00	3.00	8.00-10.00
Green Mandarin	3.00	5.00-6.00	7.00	18.00-20.00

Source: Key Informant Interview with the Coordinator, BATFCA

6.6.3 Trend in gross sales, 1982-2004

An increasing trend in gross sales of the coordinator in Batasan was observed from the time he started buying ornamental fish (OF) until 1990. In 1990 until 2001 the IMA organized a group of fishers locally to engage in buying OF. The group became a competitor of Epi hence the reason for the decrease in gross sales at that time. During this same period the person supplied by Epi in Olango slowed down buying. This is also the time when fishers are restricted by the local government to collect in other areas. The certification process introduced by MAC in Batasan in 2002 brought a lot of advantages on the marine ornamentals trade in the area. There was in increase in local buying price, increase in the number of exporters supplied and increase in the number of species accepted by the exporters. In 2004 gross sales made a drastic decrease mainly due to the "order" system and high freight cost as claimed by the coordinator **(Figure 13**).

7. STAKEHOLDERS' INCOME AND NATIONAL POVERTY THRESHOLD

There is no disaggregated estimate to the extent of poverty in the aquatic resources sector in the Philippines. For purposes of comparison, the annual per capita poverty threshold[10] for 2000 of PhP 13,916.85 (US$ 251) will be used in this discussion. Based on the income estimates of different stakeholders above, seven of the stakeholders identified above are living below the poverty threshold. They are the minor packers (out-of-school youth with ages below 15), women gleaners, packers hired by financiers, boat crew hired by compressor divers, packers hired by exporters and breath-hold divers. Compressor divers are maybe living above the poverty threshold but they are vulnerable stakeholders not only because of the seasonality of their livelihood but the health hazards involved in breathing contaminated air from compressors. Most of them are forced to retire young in their late 40's or early 50's for health reasons. The monthly-paid aquarium cleaners are relatively better off because they receive regular pay and mandated compensation benefits. The screeners are the most skilled among the hired workers in the trade, hence they get better benefits in terms of salary and social services. They are not considered as poor stakeholders. **Table 14** and **Figure 14** shows the comparison of incomes against the national per capita poverty threshold.

Table 14 Stakeholder's adjusted monthly income against per capita poverty threshold

Stakeholders	Monthly Income (PhP)	Adjusted Monthly Income (PhP)
Minor Packers*(ages <15)	200	133
Women gleaners*	250	250
Packers at financier's*	400	267
Boat crew*	1000	667
Packers at exporter's	1200	800
Monthly- paid utility workers	1000	1000
Breath-hold divers*	1500	1000
Compressor divers*	3000	2000
Aquarium cleaners	4500	4500
Screeners at the exporter's	6000	6000
Adjusted monthly per capita poverty threshold		1160

*Effective number of months spent on the activity is 8 months

[10] Poverty threshold is defined as the food threshold and non-food requirements of a family.

8. INFLUENCE OF THE TRADE ON THE LIVELIHOODS OF POOR STAKEHOLDER AND OPTIONS FOR POVERTY REDUCTION

8.1 Positive Influence

8.1.1 Potential source of foreign exchange for the national economy

Marine ornamentals command higher value in the export market per individuals compared with other commodities. The expanding export market of marine ornamentals is a potential source of foreign exchange for the Philippine economy. The challenge is for the government and other stakeholders involved in the trade to establish a national framework and institutional mechanisms to make the trade a sustainable one.

8.1.2 Income

The marine ornamentals trade in the Philippines creates jobs and provides income for rural poor coastal communities that have limited resources and economic options. During peak season, fish collectors earn more from ornamental fish collection than any other sources of livelihood despite the low fish pricing structure at the community level. The challenge is for the government and concerned organisations to ensure equitable pricing to all stakeholders involved in the trade especially the collectors.

8.1.3 Trade-related trainings and initiatives

Earlier initiatives of non-governmental organisations worked with collectors associations rather than individuals in the implementation of their programmes. Such arrangements raised awareness among LGUs and communities on the value of a well-organised and empowered group of community stakeholders 1) to act as stewards of their resources where most of their livelihoods are dependent on; 2) to improve participation in governance; and 3) to improve access to sustainable livelihood opportunities.

The net training programmes associated with the trade and the corresponding trainings on proper collection, handling, packing and holding practices have significantly reduced incidence of cyanide fishing and mortality rates of marine ornamentals. Such better practices had somehow improved income of collectors, and eased off fishing pressure in areas whose local governments are actively adhering to these better practices.

To sustain these initial efforts, collaboration among different stakeholders involved is critical. Here are some recommended options:

- LGUs should actively support formation or strengthening of properly organised groups of collectors through legislation and budget allocation. They should build partnerships with organisations that have the expertise and experience in organizing fishers' groups and in participatory livelihoods development.
- BFAR and LGU to 1) facilitate better access of inputs like monofilament nets, collection jars, etc. to collectors to minimize their dependence on exporters, middlemen and MAC and 2) to collaborate with stakeholders in the trade in developing incentive schemes for net-caught fish.

- LGUs or cluster of adjacent LGUs to initiate collaboration with BFAR in establishing localized cyanide testing network whenever possible to ensure effective implementation on the ban for cyanide possession and use. Institutionalise support through legislation and fund allocation
- BFAR, LGUs and Collectors' Groups to 1) institutionalise periodic conduct of training on better practice guidelines on methods of collection, handling, and packing of ornamental fish; and periodic trainings on proper diving and proper collection techniques as well as basic CRM; 2) improve access to reasonably priced materials and regulated freight cost; and 3) shorten the trade chain through developing self-help groups or collectors' association who could be capacitated to deal direct with exporters and importers through support mechanisms that could be developed by collaborative efforts of stakeholders concerned.

8.1.4 Certification Process

At present the only agency initiating certification standards is the Marine Aquarium Council (MAC). However, their area of operation is limited to several municipalities only such as the Batasan Island in Tubigon and Tangaran in the province of Bohol; and San Francisco, Camotes Island in Cebu. Other expansion areas include Tawi-Tawi and Palawan. The certification process initiated in the study site in Batasan Island showed positive outcomes in terms of 1) better pricing; 2) better income for collectors due to reduced mortality rates and shortening of the chain of custody (by doing away of the consignees who get 10% cut from the potential profit in non-certified sites like Olango); 3) improved collection, handling, holding, packing practices; significant reduction of incidence of cyanide fishing ; 4) more regulated use of the resources in the area; 5) generating valuable data and information that could be used for management planning of the resource through installation of resource assessment, monitoring and recording systems; and 6) providing incentive to subsistence fishers to foster marine conservation. However, it should be noted that during this initial process, MAC shouldered the cost of the certification process including the assessment of the resource which is a basic requirement for certification. Hence, LGU and concerned fishers' organisation should review the viability of the process considering the cost it would entail. Likewise, alternative certification mechanisms which could be initiated nationally should be looked into by concerned government agencies. With strong support from government, collectors could form self-help groups and be capacitated in all aspects of the trade including trading and exporting so as to shorten the trade chain and to make the entrepreneurial venture more profitable to the collectors themselves. Initial efforts along these lines have been started by some international NGOs like the Ocean Voice International but were not sustained because of lack of support from other important stakeholders like the exporters and the government itself.

BFAR in collaboration with LGUs and collectors' groups should develop specific plans/ schemes for the sustainable development of this trade along with its CRM programs and institutionalise such plans through legislation with appropriate fund allocations.

The national certification process once developed should be formalized and publicised both domestically and internationally to command better prices for sustainably-caught fish. Consumers should also be reached out to gain their appreciation of the process involved in obtaining the fish so they would not hesitate patronising and paying premium prices for these marine ornamentals.

8.1.5 Provide strong incentive to communities to foster marine conservation

In sites which enjoy sustainable use of their resources like Batasan, collectors of marine ornamentals and the communities, become active reef stewards guarding their valuable resources against destructive uses and often creating conservation areas such as marine sanctuaries.

Outcomes brought about by technical trainings on better practices alone would not be sustained for years if collectors could not get any economic incentive for their efforts. Hence, local governments should actively support formation of collectors' organisations or SHG and establishment of institutional mechanisms through legislation and budget allocation that would ensure improved economic and social incentives to collectors.

8.2 Negative Influence

8.2.1 Use of sodium cyanide in ornamental fish collection

Cyanide is known to impair physiological functions due to damage it does to the vital organs of fish and invertebrates thus causing delayed mortality (sudden death syndrome) of exported marine ornamentals. Most marine ornamentals collectors in the Philippines use one or three 20 g sodium cyanide (NaCN) tablets in a one-litre squirt bottle, locally known as "*beberon*". A conservative analysis estimated that 150,000 kg of cyanide is spread on Philippine coral reefs each year (McAllister, 1988). Since not all of the cyanide initially dissolves, both dissolved hydrogen cyanide (HCN) and particulate NaCN is squirted on the coral heads as a whitish plume.

The use of cyanide in marine ornamentals collection in the Philippines started in the early 60's in Batangas in southern Luzon and found its way to Central Visayas and other parts of the country. Years of destructive collection techniques like cyanide fishing took its toll on the reef resources such as the ones found in Olango Island. Olango collectors have to migrate to other collection sites in other municipalities to collect marine ornamentals. With several municipalities passing ordinances prohibiting non-resident to fish in their municipal waters, collectors find it difficult to look for fishing grounds where they can be issued permits to collect. Thus, what was then a viable main source of livelihood became an unsustainable one for the Olango collectors. On the other hand, Batasan Island where early interventions to combat cyanide and other destructive fishing were implemented is benefited by the expanding trade on marine ornamentals.

Mortality rates from reef to retailer have a significant impact on both the economic viability of the trade. Thus, law enforcement against cyanide fishing along with establishment of institutional mechanisms to ensure equitable pricing of ornamental fish should be strengthened.

Early programmes with international funding such as the net programmes and third party certification has reduced significantly incidence of cyanide fishing in ornamental fish collection but still the practice persist because of lack on economic incentives to cyanide-free fish traded. This underscores the socio-economic dimension of the issue on cyanide use. The issue could not be addressed just by technical training alone but by rather looking into potential areas wherein collectors and other poor stakeholders down the chain could be benefited by the trade. Collectors verbalized that the value of the dollar has increased several

times as well as the operating cost of fish collection and yet the selling prices offered by exporters still stagnate. So collector's options are either to increase fishing effort or risk using cyanide in order to collect more fish and thus increase income to sustain their families' needs.
The PTFEA and other exporters should actively support collectors not just by providing technical training and nets or other dole-outs but rather by initiating sustainable programmes that would enhance livelihoods of the collectors. Equitable pricing could be the more immediate incentive and the scholarship programme for deserving children and grandchildren of collectors being conceived by PTFEA could be one of the better incentives to motivate collectors to stick to the net method.

8.2.2 Overfishing of individual species and some key indicator species popular in the market

There is no scientific study to support this perception of overfishing of individual species and some key species of marine ornamentals. However, collectors observed that sizes of certain popular species they collect have gone smaller and some have become scarce which suggest a form of overfishing.

Some collectors in certified sites revealed that they operate in non-certified sites because the current certified sites available are not enough to accommodate the resource users in the area. More collection sites should be identified for expansion so as not to deplete the resources available in the existing collection sites. This will also allow the reef areas to rest and rehabilitate from resource exploitation. However, before these things can proceed, there should be resource assessments that should be conducted to include stock assessment of suspected threatened species and other key indicator species. Efforts should also be made to institutionalise these better management practices through legislation and budget allocation.

Another option to address this issue is to initiate development of programs geared towards aquaculture of some important marine ornamentals species.

8.2.3 Human health risks associated with diving

Ornamental fish collection is a livelihood rife with health hazards associated with bends and risks due to unfiltered air inhaled in the case of compressor or hookah divers. *Manu-manu* divers for instance walk and swim for long distances before they get enough catch. Compressor divers use crude gadgets where carbon dioxide and not oxygen goes into a person's blood stream. In both instances collectors complain of overfatigue and body cramps during dive operations. The health centers in the areas have no available medicines or treatment facility for diving-associated illness. Local health providers should be equipped with the knowledge and skill for "emergency on site treatments" for such cases. Medicines for diving-associated illness should also be made available at the local health stations. In Batasan, collectors are provided with health insurance through the LGU. Similar initiatives should be promoted in other sites.

BFAR in collaboration with the Department of Health (DOH) should develop specific training programs to educate and capacitate rural health units (RHU) and fishers' associations to respond to diving-related emergencies and ailments. Such training should be made part of the requirements in the issuance of permits and licenses. LGUs and Rural Health Units to raise awareness of communities involved in the avoidance and causes of bends and other

diving hazards through periodic seminars. DOH, LGUs and RHUs should understand health needs of their communities to improve provision of more appropriate health services such as skilled staff and appropriate equipment for such emergencies.

8.2.4 Long absences of collectors from their families due to migratory nature of their livelihood.

Most collectors have to leave their families for days to go to distant collection sites to collect site specific species to complete orders from exporters. Such sacrifices cannot be quantified in monetary terms. Thus, the least that government and concerned agencies could do is to promote mechanisms to improve existing pricing structure for ornamental fish to make this livelihood economically viable to collectors.

8.2.5 Certification process has somehow created conflict between certified and non-certified collectors

Some uncertified fishers felt alienated by the attention given to certified fishers in Batasan. They felt that certified or not they have equal right to collect in certified sites within their municipal waters.

LGUs should improve communication channels among communities to ensure effective information dissemination to stakeholders concerned. Through their legislative councils and in consultation with all stakeholders concerned, LGUs should enact appropriate ordinances to clarify and strengthen priority use rights. At the community level, certified collectors' associations should encourage other fishers to join their associations to unify efforts for sustainability of their livelihood.

8.2.6 Emergence of informal, mostly opportunistic credit sources

There are no formal credit sources for marine ornamentals collectors and if ever there are, they are not accessible to collectors. Collectors tend to rely to middlemen such as financiers and other private money lenders or exporters for their needs.

Collectors in traditional sites like Olango tend to become economic slaves to financiers who finance their diving trips. Financiers provide the boat, food, fuel and other commodities (which include cyanide in the early years of the trade) as well as cash advances for their families in exchange for their catch, the prices of which are determined by the financiers. With this practice, it is estimated that 85% of the price paid by exporters goes to the financiers, consignees and other middlemen while only about 15% goes to the collectors.

Concerned national government agencies like BFAR, DTI and government banks should develop more accessible and appropriate credit systems specific for collectors considering the seasonal nature of their livelihood. National and local governments should promote and support the formation of self-help groups (SHG) and build their capacities to network with donors from importing countries and consumers for establishing credit systems appropriate for them.

8.2.7 Hiring of minors (ages below 15) for packing operations at the community level

Financiers at the community level hire minor boys to run errands during packing operations. Most of these boys are out of school youth and were lured to leave school because of the pittance they get as packers. Parents give their consent to this practice because they need the additional income these kids earn from packing.

LGUs in collaboration with the Department of Social Welfare and Development (DSWD) and the Department of Education and Culture (Dep Ed) should conduct periodic monitoring activities in their specific areas of concern to avoid proliferation of such practice. Local schools with the support of Dept Ed should actively collaborate with DSWD in developing programs to address this issue.

A matrix of these influences of the trade on the livelihoods of poor stakeholders with corresponding options for poverty reduction is shown in **Appendix 16.**

9. CONCLUSION AND RECOMMENDATION

In the Philippines, the major skepticism on promoting the marine ornamentals trade lies on some environmental concerns associated with the trade such as the use of destructive collecting practices (cyanide fishing) causing reef degradation, poor handling and shipping practices along the supply chain resulting to mortalities and increase in fishing pressure on popular species being traded. The lack of reliable quantitative data and information about the status of the collection sites; species and volume harvested; and distribution, volume and value of traded species further increase negative speculations about the trade.

On the other hand, the marine ornamentals trade is of economic interest to the country because of its high market value per individual species harvested. If the costs of transport and pricing can be regulated and institutional support mechanisms to avoid compounding the environmental problems and human health hazards associated with the trade are installed, the trade could be a potential livelihood option for poor fishing communities and could generate employment for secondary stakeholders. It could also be a potential source of foreign exchange for the national economy.

Some legislative, regulatory, enforcement and better practices initiatives have been established but more are called for. Here are some recommended measures for implementation to avoid the environmental and human health hazards of the trade and to make this livelihood option a sustainable and viable one for poor stakeholders.

- Increase awareness about the environmental problems and human hazards of the trade among stakeholders from collectors, government officials to hobbyists and the general public to improve implementation of measures to address them.
    - a national advocacy or Information, Education and Communication (IEC) Plan should be developed and implemented. Appropriate local IEC media should likewise be developed in support of the national initiative.
- Establish legal framework for detection and prosecution of illegal fishing and trading in ornamental fish. Institutionalise through inclusion of such provisions in R.A. 8550 and issuance of corresponding Fisheries Administrative Orders that will:
    - require mandatory testing for hazardous substances (esp. cyanide) and certification of all marine ornamental exports to regulate the trade
        - establish standard or better practice guidelines on collection, handling, holding, packing and shipping operations as part of the certification process
        - establish support facilities (e.g. cyanide testing centres and rural health units for diving-related emergencies) in strategic places at the municipal level if feasible.
        - ensure better access to inputs related to the trade such as nets, collection jars or containers.
    - regulate the importation, distribution and use of cyanide
    - regulate catches of the most vulnerable species according to the precautionary approach, by setting quotas.
    - require monitoring of the quantities exported, together with visits to the fishing grounds, should make it possible to adjust the quotas
        - if the activity increases significantly (say more than 250,000 fish annually), monitoring of the densities of exploited populations would

be needed at the fishing grounds in order to ensure sustainable development of this activity.
    - regulate export and import price of fish
    - ensure provision of appropriate and accessible credit schemes for collectors
    - address corruption within BFAR, Bureau of Customs, PNP, Fishery Law Enforcement Teams.

  Periodic inspections must be carried out during fishing or after if necessary and dissuasive penalties must be applied.
- Strengthen regulatory activities and implementation of relevant national laws through passage of local ordinances.
    - require issuance of permits or licenses at the municipal level to enhance regulatory and law enforcement activities
- Formalise and publicise certification process domestically and internationally.
- Establish a national system of data gathering and monitoring to generate useful data for regulating the trade.
- Enhance collectors' income from the trade and other supplementary sources by:
    - capacitating associations or SHG of collectors to make direct contacts with exporters/ importers
    - providing technical, logistical and financial assistance to collectors in marketing their product.
- Tax incentives should be devised
- To collaborate with importing countries on:
    - monitoring importation of ornamental fish and provide data to the Philippines
    - providing development assistance to the Philippines to make the trade economically and ecologically viable to collectors and other stakeholders in the trade.
    - legally requiring certification of ornamental fish imports as cyanide-free.
    - raising consumer awareness and understanding about the impacts of the trade to increase their appreciation on the value of sustainably caught fish through patronising and paying premium for such goods.

10. REFERENCES

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www.ptfea.org

APPENDIX 1 LIST OF COLLECTION SITES

Collection Sites	Number and Type of Collectors	Contact Person
LUZON		
1. Albay		
2. Bataan (*Bagac*)		
3. Batangas		
Isla Verde	200 full time collectors; *dayo*	Peter Roxas
Calatagan	*dayo*	Cesar Baon
Nasugbo		
4. Bicol	*dayo*	
Rapu-rapu		
Daraga		
5. Cavite		
6. Mindoro Occidental		
Lubang Island		
Looc Island		
7. Mindoro Oriental		
8. Palawan		
Cagayancillo		
Marcella		
Coron		
Busuanga		
9. Pangasinan		
10. Zambales		
Sta. Cruz		
Masinloc		
Palauig		
11. Quezon		
Lucena	*dayo*	
Rizal		
Atimonan		
Pagbilao		
Polilio Group of Islands		
Patnanungan		
12. Romblon		
Sibuyan Islands		
San Fernando		
Cajidican		
VISAYAS		
13. Bohol		
Buenavista		
Tagbilaran City		
Panglao		
Calituban Island, Talibon		
Danajon Reef		
Gindakpan Island, Talbon	Part time collectors	
Mantatao, Calape	Part time collectors	
Handumon, Jetafe		
Hambungan Island, Clarin		

APPENDIX 1 LIST OF COLLECTION SITES (Cont'd)

Collection Sites	Number and Type of Collectors	Contact Person
VISAYAS		
Bohol (cont'd)		
Bugatusan, Hambungan Island, Inabanga	LGU not in favor of collections because of suspected use of cyanide.	Brgy.Capt. Mac, Eddie Larioisa
Batasan Island, Marine Ornamental Collection Area (BIMOCA), Tubigon (*certified sites: Awoyo Loyo I Reef, Awoyo Loyo II Reef, Ubayon-ubay Reef (A), Ubayon-ubay Reef (B), Kanjaro Reef and Lawis-lawis Reef) (uncertified sites: Ubay, Tabulian, Kanlangi, Claureno, Balikog big and small, Estakahan, Domog, Katangtangan, Inanurahan,Hayaan)*	*First MAC-certified collection site *62 collectors (31 certified part-time full time, 11 second batch, 20 part-time;	
Tangaran Marine Ornamental Collection Area (TMOCA), Clarin *(Limampuan)*	32 collectors- certified full part-time	Pablo Escabas, Jr.
14. Cebu		
Bantayan Island		
Bogo		
San Francisco, Camotes Is.	26 collectors, with CAMP	
Catmon	Part-time	
Marigondon, Lapu-Lapu City	Part-time	
Caubian Is., Lapu-Lapu City		
Gilutungan Island		
Mactan Island		
Sta. Rosa, Olango Island		Odong, Bonging, Marissa, Pelicio
Sabang, Olango Island	No permanent collection sites	Ruben, Joven, Felipe
Causwagan, Olango Island		Boy Ompad, Roming Ompad
Caw-oy, Olango Island,		Aling, Luming, Selving, Pedro
Suba, , Olango Island		Ogie, Archel, Junior
Tuburan, Olango Island		Butchoy & Mario Inoc, Ludot,Nestor
Sumilon Island		
15. Leyte		
Dawahon		
Bato		
Tacloban		
Matalum, Southern Leyte		Toto Mejaris
16. Negros Occidental		
Refugio Island		
17. Negros Oriental		
Apo Island		
Manjuyod		

APPENDIX 1 LIST OF COLLECTION SITES (Cont'd)

Collection Sites	Number and Type of Collectors	Contact Person
MINDANAO		
18. Samar		
Victory Island, Guiuan		
Sulangan, Guiuan		
Borongan		
Catarman		
19. Zamboanga del Norte	*dayo*	
Aliquay Island		
Selinog Island		
20. Surigao		
Surigao del Norte		
Hanigad Islands		
Dinago Island		
Dinagat	*dayo*	
21. Davao del Sur		
Digos	*dayo*	
22. Sarangani		
Balut Island	*dayo*	
23. Tawi-Tawi		

Source: Interviews with financiers, traders, coordinators and collectors.

APPENDIX 2 LIST OF PHILIPPINE MARINE ORNAMENTALS EXPORTERS

Philippine Tropical Fish Exporters' Association (PTFEA) Members (P.O. Box 8039, Parañaque Central Post Office, Parañaque, Metro Manila, Philippines 1700 Tel. (63-2) 7151036; Fax. (63-2) 7151034; e-mail: info@ptfea.org)	
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Ms. Lolita Ty **Aquascapes Philippines** 7346 A. Bonifacio Extension, San Dionisio 1700 Paranaque City, Manila, Philippines Tel.: 63-2-7151036 Fax : 63-2-7151034 e-mail: sales@aquascapes.net; : aquascapes@attglobal.net	Mr. William Litam **Oriental Marine Products** Tel.: 8330694 Fax: 8315480 e-mail: ormarpro@ibahn.net
Ms. Mary Tsai **Blue Ocean Tropical Fisheries Enterprises** Tel.: 8519712 Fax: 8515523 e-mail: winrie@ibahn.net	Mr. Ray Chua **Paqualife Corp.** Tel.: 8511531 Fax: 8524601 e-mail: pq1168@hotmail.com
Ms. Jo Bravo **Brem Marine** Tel.: 8524192 Fax: 8338807 e-mail: brem@info.com.ph	Ms. Rose Francisco **Seaview** Tel.: 8293216 Fax: 8293216
Mr. Wilson Wan **CYY Marine Exporter Co.** Tel.: 5410430 Fax: 5414095 e-mail: cyymarine@hotmail.com	Ms. Jason Bautista **Seaworld Commercial Trading** Tel.: 8533567 Fax: 8533568 e-mail: seaworld@skyinet.net
Mr. Joanne Lim **Eastern Sea** Tel.: 8322214 Fax: 8319521	Ms. Joan Siroy **SEIE International Seafood Enterprise** Tel.: 8276018 Fax: 8276018 e-mail: seiei 1992@yahoo.com
Mr. Eddie Paras **ED-Aqua Marine Export** Tel.: 8744247 Fax: 8730169	Ms. Teresita Ruiz **Seri International Enterprise** Tel.: 8269687 Fax: 8209535 e-mail: ruiz1@skyinet.net
Ms. Guia Dimayuga **HD Marine World** 12 Munich Street, Merville Park 1700 Paranaque City, Manila Tel: 63-2-8247568 Fax: 8247566 e-mail: marineworld@mydestiny.net	Mr. Sergio Rodriguez **SR Flying Fish** Tel.: 8258834 Fax: 8258834 e-mail: selinr@rpl.net

APPENDIX 2 LIST OF PHILIPPINE MARINE ORNAMENTALS EXPORTERS (cont'd)

Philippine Tropical Fish Exporters' Association (PTFEA) Members (cont'd)	
Mr. Peter Chen **International Southern Pacific** Tel.: 8216002 Fax: 8221468 e-mail: isptc@pacific.net.ph	**Ms. Sandra Lin** **Tai-Lin Marine Product Exporter** Tel.: 8293644 Fax: 8293642 e-mail: tailinmp@info.com.ph
Mr. Kelly Yuen **Land Bank Trading Corporation** Tel.: 8527501 Fax: 8512337 e-mail: landmark@info.com.ph	Mr. Ronaldo Mariblanca **Trans-Pacific Fisheries, Inc.** Tel.: 8253644 Fax: 8293642 e-mail: tpfi1992@aol.com
Ms. Analiza Andales **Minireef Development Enterprises** Tel.: 8795640 Fax: 8795640 minireef@pworld.net.ph	Ms. Anabel Ferrer **V.N. Tropical Marine Product** Tel.: 8207393 Fax: 8261205 vntropical@yahoo.vom
Other Exporters	
Aquarium Habitat 812 S. Laurel Street, Mandaluyong City 1501 Manila, Philippines Tel.: 63-2-7238174 E-mail: aquahab@axi.com	**Marine Fauna, Inc (formerly Aqua Ex)** Buyo Binonkalan, Catmon, 6006 Cebu, Philippines Tel.: 63-32 4290009; 63-917 6260023 E-mail: happy_fishes_inverts@yahoo.com
Ms. Sheila Boserio **Cebu Mactan Quality Marine Aquarium Fish** Daing, Maribago, Lapu-lapu City Tel. No.: 032-4952290; Tel/fax No.: 032-4952577 Mobile Phone: 0917-6257205	Heide Franco **Nautilus Tropical Fish Export** 6015 Gun-ob, Lapu-lapu City Mobile phone: 09273061264
Butchoy **Cebu Pinnatus Export Import** 6015 Tuburan, Sabang, Olango Island, Lapu-Lapu City Mobile phone: 09167603870	Edwin Abarri **Pure Marine Products** 6015 Boyong, Maribago, Lapu-lapu City Mobile phone: 09164781300
H & M Trading 6015 Punta Engaño, Lapu-Lapu City	Victoria Patigdas **Seri International** Boyong, Maribago, Lapu-lapu City Tel. No.: 032-4958125 Fax No.: 032- 4957798
MAC-Certified	

Source: www.ptfea.org; BFAR 7

APPENDIX 3A KEY INFORMANTS

Name of KI	Organization	Date KII conducted
Lolita Ty	President, PTFEA, Manila	November 29, 2003
Dir. Corazon Corrales	Director, BFAR 7, Cebu	March 23, 2004
Sheila Boserio	Exporter, Cebu Mactan Quality Marine Aqurarium Fish (CMQMAF)	March 25, 2004
Jeffrey Cortez	BFAR 7 Quarantine Services Division Chief	April 15, 2004
Teresita Lazarte	BFAR 7 Fisheries Laboratory Chief	April 15, 2004
Jessie Llanos	Bureau of Customs	April 20, 2004
Stuart Green	CRMP	April 16, 2004
Braulio Inoc	Financier, Tam-isan, Sta Rosa	May 26, 2004
Eugenio Inoc	Financier, Tam-isan, Sta Rosa	May 26, 2004
Nelson Melancolio	Financier, Tuburan, Sabang	May 26 & June 1, 2004
Mario Cadalla	Financier, Suba, Sabang	May 26, 2004
Pablo Ompad	Financier, Tam-isan, Sta Rosa	May 26, 2004
William Aniñon	Financier, Tam-isan, Sta Rosa	May 26, 2004
Marcelo Ompad	Financier, Proper, Sabang	May 26, 2004
Inocencio Inoc	Financier, Tam-isan, Sta. Rosa	May 26, 2004
Loreto Ompad	Financier, Tam-isan, Sta Rosa	May 26, 2004
Anita Butalid	OIC Principal, Sabang Elem. Sch.	June 2, 2004
Rogelio Aparice	Barangay Captain, Sabang	June 2, 2004
Eugenio Abaño	Bantay Dagat, Sabang	June 2, 2004
Gilbert Tisoy	Packer, Sabang, Olango, Island	June 2, 2004
Leonard Labalan	Packer, Packer, Sabang, Olango, Is.	June 2, 2004
Jessie Melancolico	Packer, Sabang, Olango, Is.	June 2, 2004
Edgardo Tatoy	Screener, Sabang, Olango, Is.	June 2, 2004
Erwin Pagobo	Screener, Sabang, Olango, Is.	June 1, 2004
Victor Boligao	CRM Officer, Tubigon, Bohol	June 8, 2004
Rudy Cosicol	Barangay Captain, Batasan Island	June 8-9, 2004
Epitacio Mumar	MAO/MFARMC Chairperson, Tubigon	June 10, 2004
Noel Mendaña	MPDC, Tubigon, Bohol	June 10, 2004
Martin Obguia	Bantay Dagat Team Leader, Tubigon	June 10, 2004
PO3 Eduardo Delgado	Bantay Dagat Task Force Team Leader, PNP Tubigon, Bohol	June 10, 2004
Epifanio Saavedra	Coordinator, Batasan Island	June 15, 2004
Tomas Heeger	Exporter, Marine Fauna, Inc	April 28, 2004
Ruelo Mariginia	Marine Fauna, Inc	April 28, 2004
Edwin Abarri	Exporter, Pure Marine, Inc	July 15, 2004
Custodio Torreon	KAMADA BOD	June 16, 2004
Antonio Salomon	LOGODEF grouper culture caretaker	June 15, 2004
Roberto Mijares	NABAKA Chairperson	June 17, 2004
Rufina Guttierez	Barangay Secretary	June 16, 2004
Floreto Rebucas	UBFA Vice chairperson	
Lito Talagon	BFAR 7 Quarantine Officer Chief, Mactan	July 15, 2004

APPENDIX 3B FGD PARTICIPANTS

Name of participant	Organization	Date conducted
Eustaquio Gilig	Representative, Office of the Mayor, Sta. Rosa, Olango Is.	May 26, 2004
Inocencio Inoc	Barangay Captain, Sta. Rosa	May 26, 2004
Nicasio Cañete	Barangay Kagawad, Sta. Rosa	May 26, 2004
Braulio Inoc	Barangay Kagawad, Sta. Rosa	May 26, 2004
Felix Patigdas	Barangay Kagawad, Sta. Rosa	May 26, 2004
Eugenio Inoc	Barangay Kagawad, Sta. Rosa	May 26, 2004
Basilidey Ybanez	Barangay Kagawad, Sta. Rosa	May 26, 2004
Pablo Ompad	Barangay Kagawad, Sta. Rosa	May 26, 2004
Recto Evangelista	Barangay Kagawad, Sta. Rosa	May 26, 2004
Mario Caballa	Barangay Kagawad, Sta. Rosa	May 26, 2004
Raymond Jumao-as	SK Chairman, Sta. Rosa	May 26, 2004
Celestino Ompad	Barangay Secretary, Sta. Rosa	May 26, 2004
Zosimo Jumao-as	Barangay Treasurer, Sta. Rosa	May 26, 2004
Lauro Jumao-as	Fish Collector, Sta. Rosa	May 26, 2004
Eusebio Eyas	Fish Collector, Sta. Rosa	May 26, 2004
Vicente Tatoy	Fish Collector, Sta. Rosa	May 26, 2004
Ricardo O. Tisoy	Fish Collector, Sta. Rosa	May 26, 2004
Zosimo Ochea, Sr.	Fish Collector, Sta. Rosa	May 26, 2004
Zosimo Ochea, Jr.	Fish Collector, Sta. Rosa	May 26, 2004
Roger Lansan	Fish Collector, Sta. Rosa	May 26, 2004
Alberto Berong	Fish Collector, Sta. Rosa	May 26, 2004
Crisoldo Tatoy	Fish Collector, Sta. Rosa	May 26, 2004
William Aninon	Fish Collector, Sta. Rosa	May 26, 2004
Leonardo Ompad	Fish Collector, Sta. Rosa	May 26, 2004
Ranolfo Daño	Fish Collector, Sta. Rosa	May 26, 2004
Godofredo Butalid	OFC, Sabang, Olango Island	June 2, 2004
Jose Butalid	OFC, Sabang, Olango Island	June 2, 2004
Taleo Ponso	OFC, Sabang, Olango Island	June 2, 2004
Tata Paquibot	OFC, Sabang, Olango Island	June 2, 2004
Kating Tisoy	OFC, Sabang, Olango Island	June 2, 2004
Dondon Butalid	OFC, Sabang, Olango Island	June 2, 2004
Eduardo Egot	OFC, Sabang, Olango Island	June 2, 2004
Eulalio Pugoy	OFC, Sabang, Olango Island	June 2, 2004
Santiago Tatoy	OFC, Sabang, Olango Island	June 2, 2004
Pepito Tradio	OFC, Sabang, Olango Island	June 2, 2004
Rogelio Tatoy	OFC, Sabang, Olango Island	June 2, 2004
Dodo Milancolico	OFC, Sabang, Olango Island	June 2, 2004
Sergio Arong	OFC, Sabang, Olango Island	June 2, 2004
Custodio Torreon	BATFCA, Batasan Island	June 15, 2004
Marciano Fernandez	BATFCA, Batasan Island	June 15, 2004
Rito Dolera	BATFCA, Batasan Island	June 15, 2004
Mario Premacio	BATFCA, Batasan Island	June 15, 2004
Joselito Fernandez	BATFCA, Batasan Island	June 15, 2004
Eugene Mijares	BATFCA, Batasan Island	June 15, 2004

APPENDIX 3B FGD PARTICIPANTS (cont'd)

Name of participant	Organization	Date conducted
Loloy Solomon	BATFCA, Batasan Island	June 15, 2004
Christopher Sigurigan	BATFCA, Batasan Island	June 15, 2004
Tito Sitoy	BATFCA, Batasan Island	June 15, 2004
Loloy Reyes	BATFCA, Batasan Island	June 15, 2004
Roland Nacua	BATFCA, Batasan Island	June 15, 2004
Gilbert Caburubias	BATFCA, Batasan Island	June 15, 2004
Sergio Bañanola	BATFCA, Batasan Island	June 15, 2004
Joey Premacio	BATFCA, Batasan Island	June 15, 2004
Servillana S. Mijares	KAKBA, Batasan Island (women's group)	June 16, 2004
Benjie Fernandez	KAKBA, Batasan Island (women's group)	June 16, 2004
Celsa Guttierez	KAKBA, Batasan Island (women's group)	June 16, 2004
Rufina Guttierez	KAKBA, Batasan Island (women's group)	June 16, 2004
Servillana F. Mijares	KAKBA, Batasan Island (women's group)	June 16, 2004
Melisa Sucano	KAKBA, Batasan Island (women's group)	June 16, 2004
Elvira Elle	KAKBA, Batasan Island (women's group)	June 16, 2004
Nena Salomon	KAKBA, Batasan Island (women's group)	June 16, 2004
Angel Mijares	KAKBA, Batasan Island (women's group)	June 16, 2004
Xeselia Cosicol	KAKBA, Batasan Island (women's group)	June 16, 2004
Conrada Cosicol	KAKBA, Batasan Island (women's group)	June 16, 2004
Maria Uldinaria	KAKBA, Batasan Island (women's group)	June 16, 2004
Cely Mijares	KAKBA, Batasan Island (women's group)	June 16, 2004
Erlinda Salomon	KAKBA, Batasan Island (women's group)	June 16, 2004
Fe Belarmia	KAKBA, Batasan Island (women's group)	June 16, 2004
Marianne Abecia	KAKBA, Batasan Island (women's group)	June 16, 2004
Marcelina Fernandez	KAKBA, Batasan Island (women's group)	June 16, 2004
Yolanda Mijares	KAKBA, Batasan Island (women's group)	June 16, 2004
Leonisa Jayma	KAKBA, Batasan Island (women's group)	June 16, 2004
Ana Liezl Fernandez	KAKBA, Batasan Island (women's group)	June 16, 2004

APPENDIX 4 DETAILED PLAN FOR THE LIVELIHOODS STUDY

Activity	Stakeholder	Tools	Time Frame	Assignment
Preparatory Activities				
Coordinate request to conduct pre-testing			May 24	Monique
Courtesy call (Sta. Rosa)			May 26	All
Pre-testing			May 26	All
Secondary data collection	Health Center		May 26	Bebet
Discussion with the brgy council	Barangay Council	Conversation	May 26	Pinpin
	OF Collectors	FGD	May 26	Pinpin/All
	Financiers	KI	May 26	Monique/ Meddy
	Bantay Dagat, FARMC	KI	May 26	Reuben
Documentation			May24-27	Bebet
Reflections session			May 27	All
Report Writing			May 30	Bebet
ID of participants & scheduling of Livelihoods Analysis (LHA)			May 27	All
Legworking and coordinating with financier re final schedule of LHA (Sabang)			May 31	Monique
Sabang, Olango Island				
Courtesy call (Sabang)			June 1	All
Actual observation of packing operation /			June 1	All
Actual observation of packing operation / KI	Packers	KI	June 2	Pinpin
	Fish Collectors	FGD	June 2	Pinpin/All
	Fisherfolk	Informal Conversation	June 3	Pinpin
	Financier	KI	June 4	Pinpin
	Barangay Captain	KI	June 4	Monique
	School Principal	KI	June 2	Reuben
Secondary data collection	BHW, Health Center	Conversation	June 3	Reuben
Secondary data collection	City Agri. Office	Conversation	June 3	Reuben
Secondary data collection	City Health Office	Conversation	June 4	Reuben
Secondary data collection	Air Port	Conversation	June 4	Reuben
	CFARMC	KI	June 4	Reuben
	Bantay Dagat	KI	June 4	Reuben
Meeting on site/Reflection			June 4	All
Identification and filling in of information gaps			June 4	All
Report Writing			June 5-6	All
	BLGU , BFARMC	KI	June 9	Reuben
	BHW, Midwife	KI	June 9	Reuben
	MAO, MPDC, CRM Officer	KI	June 10	Reuben
	Bantay-Dagat/PNP	KI	June 10	Reuben
Identification of participants for the FGD & setting of schedule			June 10	All

APPENDIX 4 DETAILED PLAN FOR THE LIVELIHOODS STUDY (cont'd)

Activity	Stakeholder	Tools	Time Frame	Assignment
Batasan Island, Tubigon, Bohol				
Legworking and Coordination			June11-12	Monique
Courtesy call			June 14	All
Attendance in BATFCA meeting			June 14	
	LOGODEF/	KI	June 14	Pinpin
History of OFC in Batasan	C. Torreon (OFC)	KI	June 14	Pinpin
Secondary data collection	Brgy Secretary/ Bulletin Records		June 14	Pinpin
Observation of packing operation			June 14	All
	CAMPC, Coord	KI	June 15	Pinpin
	Fish Collector	FGD	June 15	Pinpin/All
Observation of meeting	NABAKA		June16	
Actual observation of manu-manu diving operation			June 16	All
	KAMADA	KI	June 16	
	KAKBA (Women)	FGD	June 16	Pinpin
Actual observation of hookah collection			June 17	All
Informal discussion on issues	resident	One on one conversation	June 17	Pinpin
Meeting/ Reflection session			June 17	All
Report Writing			June 18	All
Consolidation			June 20	Pinpin/Bebet
Supplementary Data Collection				
	BFAR 7 Quarantine Freight handlers	KI	June 21	Reuben
	Export Permit	KI	June 24	Reuben
Secondary data on profile	MPDC, Batasan		July 1	Reuben
	Marine Fauna, Inc	KI	July 3	Monique
	BATFCA, Batasan	KI	July 5	Monique
	UBFA, Batasan	KI	July 6	Monique

APPENDIX 5 SECONDARY DATA SOURCES AND NEEDS

Data	Source	
	Barangay LGU	**Municipal LGU**
1) # of registered fishers		MAO
2) # of fishers association (unregistered/registered/accredited)		MAO
3) # of ornamental fish collectors	Barangay Captain, PO, BFARMC	MAO, MFARMC
3) fees collected (rate/amount collected)		Municipal Treasurer's Office
4) barangay profile		
demographics / health and sanitation	Barangay health center (midwife, barangay nutrition scholar, volunteer health worker)	Rural health unit , DSWD
population: M/F (HH pop and size, pop density)		
dwelling: type & ownership		
home lot ownership		
religion		N.A.
educational attainment		
electricity		
business establishments (type)		
mode of labor		
death: # /causes		
malnutrition		
family planning		
resources for health (no. of VHW, BSP, BNS)		
Immunization,		
Types & access to potable water		
HH with/ without toilets		
Biophysical (land area, spot map- # sitios; mangrove rehab project, fish sanctuary- management, area, year established, impacts, issues)	Barangay captain, BFARMC, management committee, PO chair	MAO, MPDC, Engineers' Office, MFARMC
Socio-economic (existing org-status, LGUs projects & programs		
5) history of ornamental fish collection	PO, Barangay Captain	MAO
6) RSA (REA –reef check, SEA,PRA/PCRA)		MAO

APPENDIX 6 KI GUIDE QUESTIONS/ CHECKLIST

Stakeholder	Checklist/ Guide Questions
Financier Middlemen Coordinator	1) # of years in the business 2) Reasons for engaging in the trade 4) nature of involvement in ornamental fish trade (OFT) 5) scope of operation 6) For financier : # of collectors financed For coordinators: # of financiers and collectors involved with 7) Investment (cash/equipments) 8) Payment / sharing system 9) basis for pricing 10) monthly income from the business 11) frequency/volume of buying & selling per month 12) First 10most species / source in demand 13) First 10 most high valued species 14) Any holding facilities / packing etc. (describe if any) 14) Problems encountered/actions taken 15) Attitude towards certification
BFARMC MFARMC	1) Nature of involvement in OFT 2) Roles of FARMC 3) What are the policies, laws & regulations/ordinances passed related to OFT(year passed, objective) 4) Status of implementation (implemented, not implemented, why?, issues/problems) 5) Attitude towards certification
BLGU MLGU	1) Nature of involvement in OFT 2) Support extended to fish collectors (environmental mgt, policy, financial organizing, law enforcement/regulations, monitoring of fish collectors activity) 3) Fees and payment (licenses/permit) (form & amount of payment) 4) Issues / problems 5) Attitude towards certification

APPENDIX 6 KI GUIDE QUESTIONS/ CHECKLIST (cont'd)

Stakeholder	Checklist/ Guide Questions
PNP/Bantay Dagat	1) Nature of involvement in OFT 2) support extended to fish collectors (environmental mgt, policy, financial organizing, law enforcement/regulations, monitoring of fish collectors activity) 3) # of cases/apprehensions related to OFT 4) # of cases filed 5) attitude towards certification 5) #. of bantay dagat (sex segregated) 6) # deputized or not deputized 7) with support extended from LGU? 8) seaborne operations schedule
NGO	1) Nature of involvement (organizing, area management/development, lobbying for policy, IEC campaign, projects/ programs 2) assessment towards ornamental fish trade and certification 3) key issues/ concerns / recommendations & solutions
Other POs	1) When organized? 2) No. of members (sex segregated) 3) With functional structure (with CBL, set of officers, policies & guidelines, financial systems established) 4) Projects and program implemented 5) Economic activities 6) Where are the funds coming from 7) Benefits of members 8) If they have schemes for sharing of benefits

APPENDIX 7 FGD MATRIX

FGD	Focus	Participant	Methods/ Tools	Objectives
1. Economic and Financial	a) Economic and Financial	1.Fish Collectors	FGD: Guide Questions; seasonal calendar	1. To establish income and expenditures pattern 2. To identify formal and informal credit and payment schemes. 3. To determine mechanisms for savings and insurance
2. Available resources and access	a) Available resources and access	1. Fish Collectors	FGD: Guide Questions	1. To identify issues/conflicts on access to resources. 2. To determine actions/initiatives undertaken to resolve issues and conflicts. 3. To identify resources available 4. To determine awareness on certification (sites & collectors)
3. Human Capital	a) Household Labor	1. Fish Collectors	FGD: Guide Questions	1. To identify the family members who are engaged in ornamental fish collection (gender/age segregated). 2. To determine number of hours spent on collection (per person per day per trip)
	b) Health	1. Fish Collectors	FGD: Guide Questions	1. To determine common health problems of collectors and causes 2. To determine health practices. 3. To identify health services/insurances in the area
	c) Education	1. Fish Collectors	FGD: Guide Questions	1. To determine level of the FCs 2. To determine availability and access to information

APPENDIX 7 FGD MATRIX (cont'd)

FGD	Focus	Participants	Tool	Objectives
	c) Education (cont'd)			3. To determine level of awareness of health hazards of their livelihoods. 4. To determine level of awareness regarding policies/ ordinances that affects their livelihoods?
	d) Skills and Technology	1. Fish Collectors	FGD: Guide Questions	1. To determine the existing and collecting skills of FC 2. To determine FC methods and techniques. 3. To determine existing handling & packaging practices
4. Social capital	a) Social relations / networks	1. Mixed group	FGD: Guide Questions, Venn Diagram; Communication Issues	1. To know how fish collectors perceived their relationship with different stakeholders involved in the trade. 2. To understand communications issues between and among stakeholders engaged in the ornamental fish trade
	b) Migration / pattern	1. Mixed group	FGD: Guide Questions, Mobility map	1. To determine migration pattern(origin & destination) number, reasons)
	c) Perception of wealth/poverty	1. Mixed group	FGD: Guide Questions, wealth ranking	1. To establish poverty situation based on community's perception

APPENDIX 8 FGD GUIDE QUESTIONS

1) Economic and financial

- What is you main source of income?
- How much is your gross monthly income?
- Do you have other sources of income? If, yes, pls. specify.
- How much is your monthly income from ornamental fish collection?
- Number of months of ornamental fish collection (Seasonal Calendar)

Seasonal Calendar

	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sept	Oct	Nov	Dec
Peak season												
Lean months												
Weather conditions												
Other reasons (market trends, closed season, fiestas, etc.)												

- How do you spend your income? Itemize.
- Itemize expenditures per month per item
- Is your income enough to cover your expenditures?
- If no, what are your other options to support other expenses?
- If credit, where do you borrow money?
- What is the credit and payment scheme?
- In case you have extra money, what do you with it?
- What is your mechanism for savings?
- Do you have any insurance? What type or form and coverage?

2. Access to resources and property

- What are the marine and coastal resources? (Mapping of resources and identifying of location and status)
- Where are the collection sites from the map?
- Who are collecting from those sites? How many collectors?
- What are the ornamental fish species collected in the area? List according to abundance.
- Are there any species in the area which cannot be found in others? Why?
- What is the most species in demand in the market?
- Do you apply for permits or license to access these sites?
- What type or permits and licenses? Fees?
- Are you aware of any resolutions/ordinances related to fisheries?
- If so, what are those?
- What are the issues and problems encountered on the use of a common resource in collecting ornamentals? What are the actions taken?

3. Human

a) Household labor

1. How many family members are engaged in ornamental fish collection? By gender/ age?
2. Why men/ women only?
3. How many dives in a day? In a week?
4. How many hours per dive?
5. How are you paid?
6. How much do you get?

APPENDIX 8 FGD GUIDE QUESTIONS (cont'd)

4. Human (cont'd)

b) Health
1. What are the common health problems?
2. What do you think are the causes?
3. Where do you go for treatment? Why?
4. What are other health services available in the barangay?
5. Are you covered with health/accident insurance?

c) Education
1. What is your educational attainment? Why?
2. Are there educational facilities in your barangay? Up to what level?
3. Where do you go for secondary and tertiary education?
4. What are your sources of information / knowledge?
5. Do you feel that you receive enough/appropriate info from these sources? If not, what do you suggest?
6. Are there existing ordinances, policies, or regulation related to OFC that you are aware of?
7. What are those? Enumerate
8. How those ordinances are affecting your livelihoods?

d) Skills and Technology
1. Where and when did you learn your diving skills?
2. Have you undergone formal training? Number of training days?
3. Do you feel equipped with the necessary knowledge and skills in OFC?
4. If no, what do you suggest?
5. If yes, where and from whom?
6. What methods do you use in OFC? Why?
7. How do you handle your collected fish? Describe process flow?
8. At which point, the accountability of the FC ends?
9. How high is the mortality rate? Which point of the process?

4. Social

a) Social relations/ networking
1. Identify organizations closely engaging with FC (Venn diagram)
2. Relationship
3. Issues (Communication Issues)

b) Migration: (use mobility map) – see matrix

<u>In –migration (permanent):</u>
1) How many have immigrated during the last 5 years? Male/Female? Place of Origin
2) Reasons for in-migration?

<u>Out-migration (permanent):</u>
1) How many have out-migrated during the last 5 years? Male/Female? Place of Origin
2) Reasons for out-migration?

APPENDIX 8 FGD GUIDE QUESTIONS (cont'd)

5. Social Capital (cont'd)

In –migration (seasonal):
1) How many are seasonal in-migrants? Male/Female? Place of Origin
2) Reasons for seasonal in-migration?

Out –migration (seasonal):
1) How many are seasonal out-migrants? Male/Female? Place of Origin
2) Reasons for seasonal out-migration?

Out-Migration

Destination			**Age**	**Reason**
	Male	**Female**		

In-migration: same as matrix of out migration except that instead of destination, it should be Place of Origin

c) Wealth Distribution (use wealth-ranking)
   1) Prepare list of household (HH).
   2) Write each name of household head in individual colored cards (1 card , 1 HH name)
   3) Criteria on wealth : poor, middle-income (kasarangan), rich (Blank Matrix)
   4) Let the participants define or set indicators for each criteria
   5) Let the group classify each card containing HH name as to category, i.e, poor, middle class, rich
   6) Count number of HH per category

Indicators of wealth situation based on their perception

Poor (Imol)	Middle Class (Kasarangan)	Rich (Manggaron)

APPENDIX 9 *MANU MANU* METHOD OF COLLECTION AT BATASAN ISLAND

1. Preparation of fishing paraphernalia

    - Barrier nets
    - Snorkel
    - Spear gun
    - Scoop nets
    - Push nets
    - Perforated plastic jars
    - Pails
    - Improvised wet suits
    - Improvised flippers

    Most of the manu-manu divers use barrier nets in catching ornamental fish (OF).
2. Check strength and surface current and gradually go down deep into the water.
3. Know the direction of underwater current and its strength.
4. Check surrounding and look for targeted species available.
5. Spread the barrier net following the direction of the water current forming a letter "C" or "V," almost trapping the entire coral reef where the fishes are hiding.
6. See to it that the sides of the net with lead sinkers have reached the seabed at least 1 to 1½ meter away from big coral heads that will hinder your vision when targeted species hit the nets.
7. Herd the fish towards the net with the use of tickler rod. If the fish goes into a coral hole or burrow, insert the tickler rod and wag it gently but be sure to position yourself on the side and not in front of burrow. This gives the fish a chance to flee from the hole. If the fish sees you in front of the hole, no matter what you do, it will not come out.
8. Scoop out the trapped fish using the scoop net. Be careful not to strain the fish (even its scales) in order to maintain good quality and condition of the fish.
9. Slowly transfer the caught fish into the decompression bucket from the scoop net.
10. Free dive collectors use different kind of jars and bucket or improvised bucket "*buhianan*" and bag net as temporary conditioning area where the jars placed before bringing it to the station of the coordinator.
11. When all jars are filled collectors bring the fish to the station for screening or directly sell the catch to the Coordinator.
12. Fish are accepted and recorded by the wife of the coordinator in a logbook.

APPENDIX 10 OTHER SUPPORT INSTITUTIONS WHOSE MANDATED SERVICES CAN INFLUENCE CHANGES ON THE MARINE ORNAMENTALS TRADE

1. Local Government Units

1.1 Municipal Mayor and Sangguniang Bayan

With the decentralization efforts by virtue of the Local Government Code in 1991, political powers, responsibility, function and provision of services (including management of fisheries and coastal resources) have shifted to the local government units (LGUs) i.e., the provinces, municipalities or towns[11], cities and *barangays*. Among the three units, the municipalities play the more critical role in relation to management of fisheries and aquatic resources in rural areas. The elective officials are the municipal mayor, vice mayor, and councilors or Sangguniang Bayan (SB). They are elected by for a term of three years. They cannot serve for more than three consecutive terms. The municipal mayor is the chief executive officer of the town and his main functions among others are to execute all laws and municipal ordinances, and to recommend measures to the municipal council aimed at the improvement of the social and economic conditions of the people. Mayors prepare executive agendas at the start of their term and these agenda spell the priority thrusts of their administration and those programs included in the agenda would definitely be given priority in budget allocations. Thus, in the Philippines, it is crucial for development organizations to build strong partnership with the chief executive and his councils.

The Sangguniang Bayan (SB) or the municipal council is the lawmaking body in a municipality. It is composed of the vice-mayor who is the chairman of the council and minimum of eight councilors. The SB enacts all laws and ordinances that would affect governance and fiscal administration of the municipality. The SB approves appropriations for mandated as well as other priority projects or initiatives.

1.2 Office of Municipal Agriculturist

The Office of Municipal Agriculturist (OMA) is a devolved office under the municipal mayor which is responsible for planning, and implementing agricultural and fisheries programmes in the municipality. Ideally it is the OMA that works closely with the Bureau of Fisheries and Aquatic Resources (BFAR) in implementing nationally or regionally-funded projects agreed upon by the municipal government.

[11] A municipality or a town is an autonomous political unit of government smaller than a province and composed of barangays.

APPENDIX 10 OTHER SUPPORT INSTITUTIONS WHOSE MANDATED SERVICES CAN INFLUENCE CHANGES ON THE MARINE ORNAMENTALS TRADE (cont'd)

1.3 Municipal Fisheries and Aquatic Resource Management Council (MFARMC)

The Philippine Fisheries Code of 1998 encourages participation of local communities in aquatic resources management through FARMCs. The creation of FARMC by virtue of F.A.O. 196 institutionalizes the major role of fisheries and other resource users in the planning and formulation of sustainable development of fisheries resources. It was conceived as a forum which would link BFAR and the LGUs (STREAM Phil CSP, 2004). Each municipality is mandated to create their own MFARMC which act as a lawmaking council of matters relating to aquatic and fisheries resources. Ideally, MFARMCs should work closely with BFARMCs and fisherfolk organizations in formulating and passing barangay ordinances or coastal resources management (CRM) plans that could be endorsed to the municipal development council (MDC) and eventually to the Sangguniang Bayan for inclusion in the Municipal Development Plan for budget allocation. If properly formed and strengthened, the MFARMC could be an effective sustainable mechanism to streamline initiatives aimed at trade promotion and poverty reduction.

1.4 Fisheries Law Enforcement Team (FLET) and *Bantay Dagat* or Coastwatch

In a municipality, the FLET is composed of representatives from the Philippine National Police (PNP), the OMA, and volunteer members from BFARMC or fisherfolk organizations. Technically, FLET is the term used for the teams formed under the BFAR Fisheries Resources Management Project (FRMP) who have to undergo and pass a comprehensive training course while the *Bantay Dagat* were the first law enforcement groups formed by LGUs. Their main functions are to monitor coastal activities and enforce municipal laws and ordinances. Ideally, they are authorized by the mayor to execute such functions and therefore empowered to apprehend illegal fishers.

1.5 Punong Barangay and Barangay Kagawad

The next important governing unit in relation to managing and developing coastal resources is the *barangay* or village. Each municipality or city is composed of a number of *barangays.* The barangays are the smallest units of local government in the Philippines. The elective officials of the *barangays* are the Barangay Captain or *Punong Barangay* and the Barangay Councilors or *Barangay Kagawad.* The *Punong Barangay* as the chief executive of the barangay is the recognized leader in the village. He enforces all the laws and ordinances applicable to his constituency. He presides in meetings of the barangay council and assembly and may organize groups of citizens for priority activities or initiatives and approve all payments from barangay funds. Basically, initial engagements with communities should be coursed through first with the barangay captain and his council.

The *barangay kagawad* or council is the lawmaking body in the barangay. They enact laws and ordinances that would govern their villages and deliberate on allocation of funds.

APPENDIX 11 SPECIES OF ORNAMENTAL FISH COLLECTED PER SITE

Area/Site	Species of Ornamental Fish
Caubian	Antenna Goby (*Stonogobiops sp.)*, orange shrimp (*Lusmata amboinensis)*, tiger shrimp
Buenavista Bohol Bantayan, Cebu	Mandarin goby (*Synchiropus splendidus)* and maroon or spinecheek clown ((*Premnas biaculatus*) – more abundant in Buenavista Mandarin green (*Synchiropus* splendidus), Tomato clown (*Amphiprion frenatus)*, Percula clown (*Amphiprion ocellaris)*, African clown (*Amphiprion clarkii*), Pink (molah), Antenna goby (*Stonogobiops sp.)*, Orange skunk shrimp (*Lusmata amboinensis)*, Tiger shrimp
Tagbilaran(Parola or Panglao), Bohol Balicasag	Majestic Angel (*Euxiphipops navarchus)*, Regal Flagfin clown (*Apolemichthys trimaculatus)*, Tomato clown (*Amphiprion frenatus)*, Oreole
Pamilacan	Majestic Angel (*Euxiphipops navarchus)*, regal flag fin clown ((*Apolemichthys trimaculatus)*, oreole
Gilutungan	3-striped damselfish (*Dascyllus sp.)*
Gindakpan	Seahorse (*Hippocampus sp.)*,
Camotes Island, Cebu Dinahon, Leyte	Domino Damsel (*Dascyllus trimaculatus)* , Tomato clown (*Amphiprion frenatus)*, Percula clown (*Amphiprion ocellaris)*, Molah (pink), Butterfly fishes (Chaetodon spp.) , African clown (*Amphiprion clarkii*)

Source: FGD with Fish Collectors, Olango Island

APPENDIX 12 SPECIES OF ORNAMENTAL FISH CAUGHT IN BATASAN AREA

Species	In Abundance	High Priced	Local Price	
			PhP	US$
Panther		√	30	0.54
Green Mandarin	√			
Chelmon butterfly fish	√			
Maroon clown fish	√			
False Percula clown fish	√			
Spotted grunt	√			
Banded shark	√	√	15	0.27
Queen angel	√			
Pinnatus batfish		√	40	0.72
Banded pipe fish	√			
Black peacock				
Orbie batfish	√			
Tierra longfin fish	√			
Tomato clown fish	√			
Cleaner wrasse	√			
African clown fish		√	100	1.80
High fin snapper		√	100	1.80
Pink skunk				
Eight banded angel fish	√			
Oval spot butterfly fish				
Falcula butterfly fish		√	20	0.36
Blue face angel fish		√	200	3.60
Six bar angel fish		√	20	0.36
Blue Koran angel fish		√	20	0.36
Egg shark	√	√	10	0.18
Octopus				
Dwarf lion fish	√			
Pilot fish				
Blue damsel fish	√			
Yellow gromies				

Source: FGD, OFC, Batasan Island, 2004

APPENDIX 13 COMMUNITY CRITERIA IN CLASSIFYING HOUSEHOLDS

Criteria set by collectors in classifying households in Sabang, Olango Island

Poor (*Kubos*)	Middleclass (*Arang-arang*)	Rich (*Datu*)
▪ Unable to eat thrice a day ▪ No stable source of income ▪ Has no money ▪ Most of the time irritable because they do not have food to eat ▪ Do not change clothes often ▪ Cannot afford to buy new clothes ▪ Does not have "smoke" in the kitchen. "Smoke" connotes that there is cooking activity going on ▪ Materials used for the house is mangrove, nipa and bamboo ▪ Has not gone to school ▪ Does not own any household appliance	▪ Owns household appliances that are not so expensive like second hand television ▪ House is made of cement (wall), roof made of galvanized iron but house is not painted ▪ Able to go to high school or able to go to college but cannot finish	▪ Has maids/helpers in the house ▪ Owns many cars ▪ Has very expensive household appliances ▪ Eats very nice food of various kind and eats meat very often ▪ Tiled floors, house painted ▪ Able to finish college education and earn a degree

Criteria set by the Batasan women in classifying households

Poor (*Kubos*)	Middleclass (*Arang-arang*)	Rich (*Datu*)
▪ No clear and stable source of income ▪ House is temporary ▪ Not enough clothes to wear ▪ Cannot afford to send their children to school ▪ Has plenty of children, cannot afford to raise them properly ▪ Malnourished; lacks food ▪ Cannot be trusted for credit	▪ Well-built body ▪ Fat ▪ Able to send their children to school ▪ Eat nice food ▪ Can buy things/food in small quantities ▪ Can wear good clothes ▪ House is not so good and not so poorly built	▪ Owns a lot of jewelries ▪ Able to send children to school ▪ Houses are beautiful with tiled floors ▪ Eat good food ▪ Has manicure and pedicure ▪ Owns plenty of cars ▪ Runs his own business

APPENDIX 14 COMUNICATIONS ISSUES IN OLANGO ISLAND

Communication Issues	Fish Collectors	Financiers	Consignee	City/Brgy. LGU	City/brgy FARMC	Bantay Dagat
Fish Collectors	Inter-barangay conflict of the use of collection sites	Ok		No ordinance in support of collectors livelihood; no health support for illness associated with fish collection/diving	Existence of the CFARMC not known	Not functional Bantay Dagat
Financiers	>Overdrawn and do not intend to payback >Transfer from I financier to the other >Not stable because of their income >Pays for the OFCs fines and penalties for violations committed	Ok	>Payment upon sale of fish >Mortality charged to financier when fish is not yet sold >Trade affected by law of supply and demand	Ok	Existence of the CFARMC not known	Ok
Consignee		Cannot meet demand for OF				
City/Bgy.LGU		Does not apply for business permits		Inter-barangay conflict on the use of common fishing grounds for ornamental fish collectors >BLGU vs CLGU *disagreement over proposed fish sanctuary *no action taken by the City Engr. on the proposed FAD submitted by the BLGU	BLGU says that CFARMC does not coordinate with the BLGU re their activities (installed 2 units FAD without informing the BLGU)	
Bantay Dagat (BD)	No interaction, BD non functional			>Not supportive in terms of financial/other needs. The BLGU perceives that it is the CLGUs responsibility to provide funds >non-issuance of appointment to trained BD by the LCE through the CAO;1 BD was not issued due to political affiliation	Feels that the fund support given to the CFARMC should be allocated to them so they could function	

Political and institutional

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY

MLGU

The Office of the Municipal Agriculture Officer (MAO). The office of the MAO implements the licensing of municipal fishers. This is included in the CRM Code of 2000 of Tubigon. The licensing of ornamental fish collection (OFC) however was not implemented. The OFC stated that the annual license fee is too high while the daily collection of OF is getting less.

For the past 2 years starting 2003, funds from the General Fund and the 20% Development funds were allocated by the MAO to finance various CRM-related activities such as: 1) repair and maintenance of the three units patrol boats; 2) fuel, supplies and materials and salary for the sea-borne patrol operation; and 3) income generating projects.

CRM Officer. A fishery technician lodged at the office of the MAO is designated as the CRM Officer who takes charge of the CRM activities specifically in the monitoring and implementation of fish sanctuaries, Bantay Dagat operations, mariculture projects, fisherfolk registration and licensing. The CRM Officer is a member of the CAMP committee. The CRM Officer is likewise in-charge of inspecting fishing gears used by the municipal fishers including those of the OFC.

In conducting patrol operations, monitoring of OFC's collection activities and the area of collection is observed. On licensing, the licensees are mostly owners/operators of gill nets *(pangsasa* & double or multiple nets), fish corral and sound haul seine (*lawag*). In 2003 they were able to license 30 gears which amounted to PhP 45,871 (US$ 827) while in June 2004, 21 gears which amounted to PhP 21,971.20 (US$ 399) were licensed.

LOGODEF

In 2001 the Local Government Development Fund (LOGODEF) was formed by a group of LGU officials in order to access funds for alternative livelihood projects. Here are two of its recent projects implemented in Batasan.

Grouper culture project. Fortunato Salomon, a member of the United Batasan Fishermen's Association (UBFA) manages the Grouper culture project which was started in 2002. Nineteen other members of UBFA are with him in this project. The project has built one cage with 10 compartments. The 20 members of UBFA were paired and each pair was assigned to manage one compartment. Capitalization such as fry/fingerlings, construction of the cages and the trash fish are provided by LOGODEF. At harvest the caretakers get 10% share from the net income while the 90% goes to the MLGU. All the expenses are deducted from the gross income. The members are tasked to do the feeding and maintenance of the cages. Culture period is approximately 7-9 months for grouper fattening. LOGODEF turned over the funds and project management to the MLGU in 2003. Engr. Medana, the Municipal Planning Development Coordinator (MPDC) is the lead person for the Municipal Local Government Unit (MLGU).

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY (cont'd)

Mass mortality of cultures species was one of the recent problems experienced by the group sometime in April to May this year.

Lobster culture project. Twenty people commonly manage the lobster cage culture project. One cage with 3 compartments was built for lobster fattening. The targeted culture period is one year. A problem on stunted growth was encountered and the lobster did not reach marketable size that year. Only 20 out of 62 members of UBFA benefited from the project. The non-coverage of other members was not a problem because it was clear from the start that not all can be accommodated. The association had a meeting prior to getting involved with the project and the assembly decided to go on with it despite the limitations.

Two LGU officials provided the one-day technical training to the members of UBFA. Marketing of live grouper is not a problem because a buyer who is also into grouper culture in the island buys live grouper for export. However, despite the good export market, there are production cycles wherein the members do not have any share due to operational losses.

CAMPC

The Municipal Planning and Development Coordinator (MPDC) is the CRM coordinator and CAMP Committee (CAMPC) Chairperson. In occupying these two positions his responsibilities included networking with other agencies/offices on CRM, CAMP and LOGODEF activities. He likewise chaired the Municipal Technical Working Group (TWG) that assisted the LGU in the formulation of the CRM Code of 2000.

The MPDC closely coordinates with the Barangay Council of Batasan in monitoring the activities of the collectors. At times networking with ornamental fish dealers and technical assistance is provided.

The MPDC expressed that he is very much in favor of the certification process since this has enhanced the sustainability of the resources, ensured environmental protection and promoted the bargaining power of the OFC for better prices.

One of the problems raised was the intrusion of other OFC coming from other barangays to Batasan and illegal operation of small-scale commercial fishing vessels within Tubigon waters.

PNP/Bantay Dagat.

The Municipal Bantay Dagat of Tubigon was organized in 1991 when the LGU requested for a deputation training from the office of the Provincial Agriculturist. The BFAR in Region 7 conducted a series of trainings from 2000 to 2003 in partnership with the NGOs operating in Tubigon (Haribon Foundation and Feed the Children Philippines).

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY (cont'd)

From that training the LGU has created a Bantay Dagat Task Force that is headed by PO3 Eduardo Delgado of Philippine National Police (PNP) Tubigon Station. Six other people, three of which came from Batasan were hired as fish wardens but were paid by the LGU as casual employees. The hired fish wardens receive a daily compensation of PhP 180 (US$ 3). Seaborne patrol operation is conducted twice daily. . The PNP usually go with the team at night when they are patrolling the Batasan Island Fish Sanctuary. Dive operations of the OFC in the collection sites are observed and monitored during patrol visits.

There were three apprehensions made in 2003 (April, July and September). Fishermen coming from Cuaming Island, Inabanga, Bohol were apprehended for collecting ornamental fishes, abalone and assorted seashells in Batasan. Fines imposed ranged from PhP 1,000 (US$18) to PhP 8,000 (US$ 144). On April 6, 2004, six fishermen were apprehended from Cuaming Island on the same violation. Fine imposed was PhP 5,000 (US$ 90).

The patrolling of the territorial waters of the municipality of Tubigon is also supported by the Barangay Tanod (peace officers) in the six island barangays. These peace officers are also deputized as fish wardens. The LGU provides 40 liters of gasoline weekly for the conduct of the patrol operation. Political intervention seldom happens in the litigation of cases against the violators.

Connivance with some residents with the baby trawl operators is seen as a pressing concern since there are some trawlers that have been operating in the municipal waters of Tubigon that were not apprehended. These trawlers are observed to have evaded arrest a lot of times. Ropes and nets are often cut to evade arrest of the PNP and the Bantay Dagat.

M/BFARMC

The Barangay FARMC was organized in Batasan in the year 2000. The Barangay Captain was elected as the Chairperson. From the date it was organized however no monthly meeting was conducted. No activities were likewise done in support of the OFC. The BFARMC has been inactive and a re-organization and re-orientation was seen as a need for it to function.

The OMA of the Municipality of Tubigon acts as the Chairperson of the Municipal FARMC. He is also a member of the CAMP committee and is active in activities related to fisheries such as policy formulation (CRM Code of 2000 and various municipal ordinances) and implementation. One of the major achievements that can be highlighted was the mobilization that resulted to the revocation of the permit and licenses issued by the Local Chief Executive allowing small scale and medium scale commercial fishing boats to operate within 10.1 to 15 kilometers of the municipal waters of Tubigon.

The MFARMC holds meeting as the need arises due to lack of operational funds. The LGU however still consults the council on matters concerning fisheries policies and activities.

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY (cont'd)

BLGU

Support extended to the OFC. The Barangay Local Government Unit (BLGU) of Batasan Island through the Council is very supportive of the OFCs. They take an active role in the conduct and implementation of nearly all the activities that relate to OF collection. The council took part in the selection of the collection areas that were certified by MAC. They also took part in the various activities done by the CAMP committee. The council likewise passed a Barangay Ordinance that supports the enactment of the Municipal Ordinance for the CAMP. The activities of the IMA and MAC done in the barangay are closely coordinated with the BLGU. Support of the BLGU is also seen during trainings and seminars conducted by MAC, NGAs and other NGOs.

The BLGU strictly implement the policy on the collection of non-member and non-resident collectors in MAC areas. They monitor the activities done in the five collection sites regularly. Because of the LGUs interest to combat illegal fishing and to protect also the projects in Batasan, three Bantay Dagat staffs were hired to closely monitor fishing activities in the area. *Barangay Tanod* members in the island were also utilized to augment the services provided by the fish wardens. Motorized boats owned by fishers are used in case the municipal patrol boat fails to operate. Four fishers were apprehended for the use of multiple nets while fishing in Batasan municipal waters. The violators were fined and an affidavit was executed to stop them from fishing in Batasan waters.

The Barangay LGU does not extend financial support to OFCs but indirectly support them through facilitation of activities conducted by development agencies operating in the Island such as the MAC, Haribon, the LOGODEF mariculture projects and other CRM activities of the LGU. They do not impose barangay fee on OFCs and other fishers in the Island.

The encroachment of other fishers who are multiple net users and gatherers of abalone, baby trawl fishing during nighttime and ongoing blast fishing from the adjacent barangays were some of the problems raised.

PEOPLE'S ORGANIZATIONS

There are five existing organizations in the barangay. These organizations are the BATFCA, UBFA, NABAKA, KAMADA, and KAKBA.

BATFCA. The Batasan Tropical Fish Collectors Association (BATFCA) was organized on April 27, 2002. The group has a set of officers elected in May of the same year. At present, BATFCA has 43 male members engaging in OF collection. One of the first activities done by the organization was to come up with Collection Area Management Plan (CAMP) that is a requirement for certification with MAC.

A monthly organizational meeting is conducted to identify problems, raise concerns and make resolutions concerning the OFC livelihood.

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY (cont'd)

The members of BATFCA were able to avail from MAC the following: 1) trainings; 2) identification cards as proof of their being a certified collector; 3) materials used in collecting ornamental fish (barrier nets, scoop nets, jars, sinkers, etc.); and 4) better prices wherein MAC serves as the link between the exporter and the coordinator.

UBFA. The United Batasan Fishermen's Association (UBFA) was the first fisherfolk organization formed in the barangay. UBFA has 70 members at the time it was organized. Ten percent (10%) of these are ornamental fish collectors. Some of the members of UBFA are also members of other organizations such as the BATFCA, KAMADA or KAGAMA. The organization holds a monthly meeting every last Sunday of the month.

The main objective of the organization is to be able to source out funds from other agencies or institutions to support alternative livelihood projects. Some of the economic activities that were undertaken include pig dispersal, money lending, crab fattening and the current project on lobster and grouper culture with LOGODEF.

UBFA perceives that the certification process done by MAC in the island has greatly reduced the use of cyanide in ornamental fish collection. The LFU has been very supportive in putting a stop to the illegal methods of catching OF and food fish. Some of the negative impacts are jealousy of other fisherfolk to the certified collectors for having the opportunity of becoming contractual workers of MAC. By working for MAC the certified OFC will train other OFC in the MAC expansion areas and will receive some benefits such as salaries and allowances. The certified collectors also receive nets, jars and other materials in support to their collection activity. The OFC in Batasan are now enjoying higher prices for the OF caught. The LGU recognizes and are more supportive of the certified collectors and their activities over those fisherfolk who are not.

NABAKA. The Nagkahiusang Baryohanon alang sa Kalamboan (NABAKA) was organized in 1996 and was registered with the Department of Labor and Employment (DOLE) in the same year. It was originally called KABAWAY. The organization has grown from 30 members to 50 at present. Majority of the members are family members of ornamental fish collectors.

The organization started with helping the members financially during fiesta. The organisation buys a carabao (buffalo) to be butchered during the fiesta. The cost of the carabao will be equally divided among those who wanted to have share of the meat. When it started its micro-lending activity it changed its name to NABAKA.

The organization operates a micro-lending activity without support (monetary or otherwise) from both the government and non-government organizations in the area. Its initial capital was taken from the PhP 5,000 (US$ 90) members' contribution. Presently, a member can loan the same amount without collateral and up to PhP 20,000 (US$ 360) for those with collateral. Non-members are also accommodated upon endorsement of members of the organisation. A 6% monthly interest is charged for the loan amount. Ordinary members receive equal share from the net profit of the income annually. As honorarium for management services, officers receive 20% from the gross profit annually. Delay in payment

APPENDIX 15 RESULTS OF KI OF DIFFERENT INSTITUTIONS/ORGANIZATIONS SUPPORTING THE BATASAN COMMUNITY (cont'd)

of dues is a plaguing problem of the organisation which also affects releasing of loan requests.

NABAKA conducts monthly meeting every 16th day of the month. Monthly loan payments and other dues are collected during these meetings. Annual meeting is conducted in May wherein shared profits and honoraria are given.

On the MAC Certification Program, the President of NABAKA observed that certification process has increased the awareness of the local people on the effect of cyanide in fishing. He likewise observed that the fish wardens actively report the fishermen who are still using cyanide.

KAMADA. The Kahugpungan sa Manugaay sa Danahon Reef (KAMADA) was organized in 2003 by the Project Seahorse. KAMADA is a federation of seahorse and ornamental fish collectors from the 14 barangays within the Danajon reef area. It has 23 members in Batasan. KAMADA has a functional structure complete with Constitution and By-laws, policies and officers. KAMADA was registered with DOLE in 2003

No economic activity was implemented to date. However there were plans to engage in buy and sell of seahorse. Seahorse collection was banned in May 2004.

A member of KAMADA who is an ornamental fish collector stated that he stopped attending meetings starting January 2004 since no support for transportation expenses was provided to members who attend the monthly meeting conducted in the neighboring municipality of Talibon every end of the month. He further stated that he does not have any knowledge of KAMADA's activities anymore.

KAKBA. The Kapunungan sa Kababayenhan sa Batasan (KAKBA) is a women's organisation organized in 1992. The original membership was 26 and has increased to 80 at present. The organization has a set of officers but has not formulated their constitution and by-laws. Some said they have organizational policies but it seems others are not aware of them.

Presently the available funds come from membership dues. Membership fee is PhP 20 (US$0.36) but no annual due is collected. Other funds come from the catering service provided by the organization to people who visit the island. However, opportunities for catering are scarce and the profit is minimal. Only the catering member-helpers are paid and a donation is given to the organization.

An NGO gave the organization an initial capital of PhP 5,000 (US$ 90) for micro-lending to members with a considerable interest. Not all loan payments were collected but the organisation was able to profit a little from that activity but not enough to enable the organisation to give patronage refund. The MAC gave KAKBA four units of sewing machines which are presently being used by KAKBA and non-KAKBA members as well.

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS AND OPTIONS FOR POVERTY REDUCTION

Influences		Options for Poverty Reduction
Positive	**Negative**	
Provides an important potential source of foreign exchange for the national economy		**National government agencies (NGAs)** ▪ BFAR to formulate strategic plans specific for the trade aimed towards its sustainable development. ▪ Institutionalise initiatives through enactment or strengthening of national laws (RA 8550) and passage of FAO[12]s or DAOs[13] specific for the trade. ▪ Establish a network whose members maybe composed of representatives from LGU, BFAR, DTI, NGOs, and POs that would be responsible for: o developing/ maintaining standardized local/ national capacities for quality assurance; o monitoring and evaluation mechanisms; o developing marketing schemes; o developing a database of trade and market information for easy accessibility and appropriate media to disseminate these information to collectors' associations. ▪ BFAR and DTI to develop national information, education and communication plan to promote awareness about the trade at the international and domestic level. ▪ DTI in coordination with LGUs should take a lead role in enjoining the cooperation of fair trade associations/networks (e.g., Philippine Fair Trade Forum, MAC) in developing strategies directed towards trade fair both at the domestic and international levels. **LGUs** ▪ Pass related local ordinances to strengthen national laws passed specific to the trade.
		▪ Establish appropriate communication network to ensure that information reach targeted stakeholders timely

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for Poverty Reduction
Positive	**Negative**	
Provide seasonal income for collectors		**DTI/ LGU/ NGO and development workers in collaboration with people's organisations (POs*)*** ▪ Raise awareness of poor stakeholders to the value of 'savings' and available saving schemes that are appropriate for collectors (e.g. *paluwagan* system) ▪ Promote and support formation of self-help groups (please refer to BPG on self-help groups for details at www.streaminitiative.org) ▪ Look into potential alternative or supplementary sources of livelihoods that could be developed to avoid loss of income during off-season. ▪ Market expansion (export and domestic markets) to accommodate by-catch or not too in-demand species.
Trade related trainings and initiatives raised awareness on the value of group formation: ▪ of fish collectors to act as stewards of the resources which they depend on. ▪ of fish collectors to improve access to livelihood opportunities and increased participation in governance. ▪ of LGUs and communities to combat destructive fishing practices like cyanide fishing		**LGU** ▪ Actively give support to the formation of properly organised groups of collectors in terms of legislation and budget allocation (BPG on self-help groups @ www.streaminitiative.org for details) ▪ Build partnerships with: o organizations that have the skill and experience in organizing fishers' groups to further strengthen capacity to organise; o agencies or service providers who have he skill and experience in participatory livelihoods development **BFAR/ LGU** ▪ Improve access to reasonably priced materials such as monofilament nets, collection jars, etc to collectors to minimize their dependence on exporters, middlemen, and MAC. ▪ Regulated freight cost. ▪ Collaborate with stakeholders in the trade in developing incentive schemes for net caught fish.

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for Poverty Reduction
Positive	**Negative**	
Trade related trainings (cont'd)		▪ LGUs or cluster of adjacent LGUs to initiate collaboration with BFAR in establishing localized cyanide testing network whenever possible to ensure effective implementation on the ban for cyanide possession and use. Institutionalise the support though legislation and fund allocation. **BFAR/LGU/Collectors' Groups** ▪ Institutionalise periodic conduct of training on better practice guidelines on methods of collection, handling, and packing of ornamental fish. ▪ Periodic trainings on proper diving and proper collection techniques as well as basic CRM. ▪ Shorten the trade chain through developing self-help groups or collectors' association who could be capacitated to deal direct with exporters and importers through support mechanisms that could be developed by collaborative efforts of stakeholders concerned.
Certification process showed positive outcome: ▪ better pricing of certified fish ▪ better income for collectors due to reduced mortality rates and shortening of the chain of custody ▪ improved collection, handling, holding, packing	**Certification process has somehow created conflict between the certified collectors and non-certified ones because the latter's access to collection sites have been curtailed.**	**BFAR/LGU** ▪ Review MAC's certification process and cost involved to assess viability of adopting it. ▪ LGUs independent of MAC to initiate the 1) development of alternative mechanisms to shorten the trade chain, 2) developing better practice guidelines in collecting, holding, handling and packing processes and 3) regulatory measures for quality assurance in the domestic and export market. ▪ BFAR in collaboration with other allied agencies and organisations to develop its own certification process if it's more cost effective than adopting existing ones.

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for Poverty Reduction
Positive	**Negative**	
Certification process… (cont'd) practices; significant reduction of incidence of cyanide fishing ▪ more regulated use of the resources in the area ▪ generating valuable data and information that could be used for management planning of the resource through installation of resource assessment, monitoring and recording systems providing incentive to subsistence fishers to foster marine conservation.		▪ Formalise and publicise the national certification process both domestically and internationally. **Mandated government agencies like DTI or BFAR** ▪ Strengthen link with exporters associations (PTFEA)/ collectors' associations to facilitate sharing of data and information that would be valuable in developing viable equitable pricing schemes for stakeholders involved in the trade. ▪ DTI to establish a price monitoring system that could readily be accessed by stakeholders concerned. ▪ DTI, Bureau of Customs, BFAR to ensure effective use of existing required monitoring forms which serve as base resources for generating valuable data for planning/ decision-making purposes. **LGUs** ▪ Develop specific plans/schemes for the sustainable development of this trade along with its CRM programs and institutionalize such plans through legislation with appropriate fund allocations. ▪ In consultation with stakeholders, Legislative Councils to pass ordinances to clarify and strengthen priority use rights. Improve open two-way communication channels to ensure effective information dissemination to stakeholders concerned.
Provide strong incentive to communities to foster marine conservation		**LGUs** ▪ to actively support formation of collectors' organisations or SHG and establishment of institutional mechanisms through legislation and budget allocation that would ensure improved economic and social incentives to collectors.

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for Poverty Reduction
Positive	**Negative**	
	Use of cyanide (mostly sodium cyanide) in marine ornamental fish collection led to: ▪ coral reef degradation ▪ resource depletion increased mortality of harvested fish resulting to reduction of income and increased fishing pressure.	*To combat the negative practice at the national and local levels in exporting countries as well as importing countries at policy and institutional level.* **BFAR** ▪ Establish cyanide detection test (CDT) laboratory facilities at all major ornamental fish collection and transshipment points: o supported by a larger network of agencies and monitoring posts, and staff trained in sampling prospective live fish shipments and rapid sample transport; and o directives on participating in sampling and monitoring from central agencies to their local offices, and training in correct sampling and shipping-to-lab procedures. ▪ Establish a national system of data gathering and monitoring to generate useful data for regulating the trade. ▪ Establish legal framework for detection and prosecution of cyanide fishing and trading in cyanide-caught fish. Institutionalise through inclusion of such provisions in R.A. 8550 and issuance of corresponding Fisheries Administrative Orders. o require mandatory testing and certification of all marine ornamental exports to regulate the trade o ban or restrict export of vulnerable species and key indicator species such as the napoleon wrasse (*Cheilinus undulatus*) and sea horses. o regulate the importation, distribution and use of cyanide. o address corruption within BFAR, Bureau of Customs, PNP, Fishery Law Enforcement Teams. ▪ Initiate public awareness campaigns in the media and schools

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for Poverty Reduction
Positive	**Negative**	
	Use of cyanide… (cont'd)	**BFAR/LGU** ▪ Periodic training of fish collectors in cyanide-free collection methods and techniques such as use of microfilament barrier nets. ▪ Enhance collectors' income from the trade and other supplementary sources. ▪ Strengthen community-based management of municipal aquatic resources. ▪ Build capacity of local communities in anti-cyanide monitoring and enforcement. **Importing countries** ▪ Monitor importation of ornamental fish and provide data to exporting countries. ▪ Move towards legally requiring certification of ornamental fish imports as cyanide-free. ▪ Provide donor development assistance to the Philippines to help combat cyanide fishing. Raise consumer awareness about the impacts of cyanide fishing
	Overfishing of individual species and some key species which are popular in the market	**BFAR** ▪ BFAR in collaboration with DENR, LGU and other institutions like Reef Check or MAC should look into available resources and develop better practice guidelines on sustainable use of reef resources, for example: o the conduct of periodic wild stock assessment on specific key indicator species. o a modified order-basis system introduced by MAC in Batasan that will be informed by results of assessment and orders.

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for poverty reduction
Positive	**Negative**	
	Overfishing of individual species…(cont'd)	○ establishment catch per unit effort through these data generated coupled with results of stock assessment studies ○ establishment of mortality trends in each level of custody that could be valuable in coming up with industry standards on packing densities of fish for transport and handling and holding practices ▪ Look into the possibility of initiating development of programs geared towards aquaculture of some important species to lessen ecological impact of the trade. **LGU** ▪ LGU to institutionalise such conservation/ protection initiatives through passage of specific local ordinances with corresponding penalties for non-compliance to strengthen implementation of national laws.
	Human health risks associated with diving: ○ bends causing paralysis and death ○ inhalation of contaminated air from old and poorly operated compressors	**BFAR/ DOH** ▪ BFAR to collaborate with DOH in developing specific training programs to educate and capacitate rural health units and fishers' associations to respond to diving related-emergencies and ailments **BFAR/ LGU/ Rural Health Units** ▪ Include training on health hazards as part of the requirements in the issuance of permits or licenses Raise awareness of communities involved in the avoidance and causes of bends and other diving hazards through periodic seminars. **LGUs/Rural Health Units** ▪ Understand the health needs of the communities and improve provision of more appropriate health services. For instance in areas where OF collection is a main livelihood, service providers in health centers

APPENDIX 16 INFLUENCE OF THE TRADE ON LIVELIHOODS OF POOR STAKEHOLDERS … (CONT'D)

Influences		Options for poverty reduction
Positive	**Negative**	
	Human health risks … (cont'd)	should be equipped and skilled in giving first aid measures for diving-related emergencies or ailments. ▪ LGUs to promote and support establishment of self-help groups (SHG) or collectors' association that could develop some sort of an "insurance system" as one of their important projects to lessen vulnerabilities in this high-risk livelihood. LGUs to support these projects in terms of services and initial fund assistance.
	Long absences of collectors from their families due to the migratory nature of their livelihood	**National government/LGUs and concerned agencies** ▪ Promote mechanisms to improve the existing pricing structure for ornamental fish to make this livelihood a viable one to reduce poverty among this group of stakeholders.
	Emergence of informal, mostly opportunistic credit sources from private individuals which keep the poor indebted for years	**National government and LGUs** ▪ Develop more accessible and appropriate credit systems specific for collectors considering the seasonal nature of their livelihoods ▪ Promote and support formation of SHG and build their capacities (BPG on self-help groups @ www.streaminitive.org for details). ▪ Support self-help groups in networking with importing countries and consumers for establishing credit schemes.
	Hiring of minors (ages below 15) for packing operations at the community level lures school boys to quit schooling	**LGU/DSWD/Dept Ed.** ▪ LGU/DSWD to conduct periodic monitoring activities in their specific areas of concern to avoid proliferation of such practice. ▪ Local schools or Dept Ed should actively collaborate with DSWD in developing programs to address this issue.

FIGURE 1 POPULATION DISTRIBUTION BY EDUCATIONAL ATTAINMENT (2003)

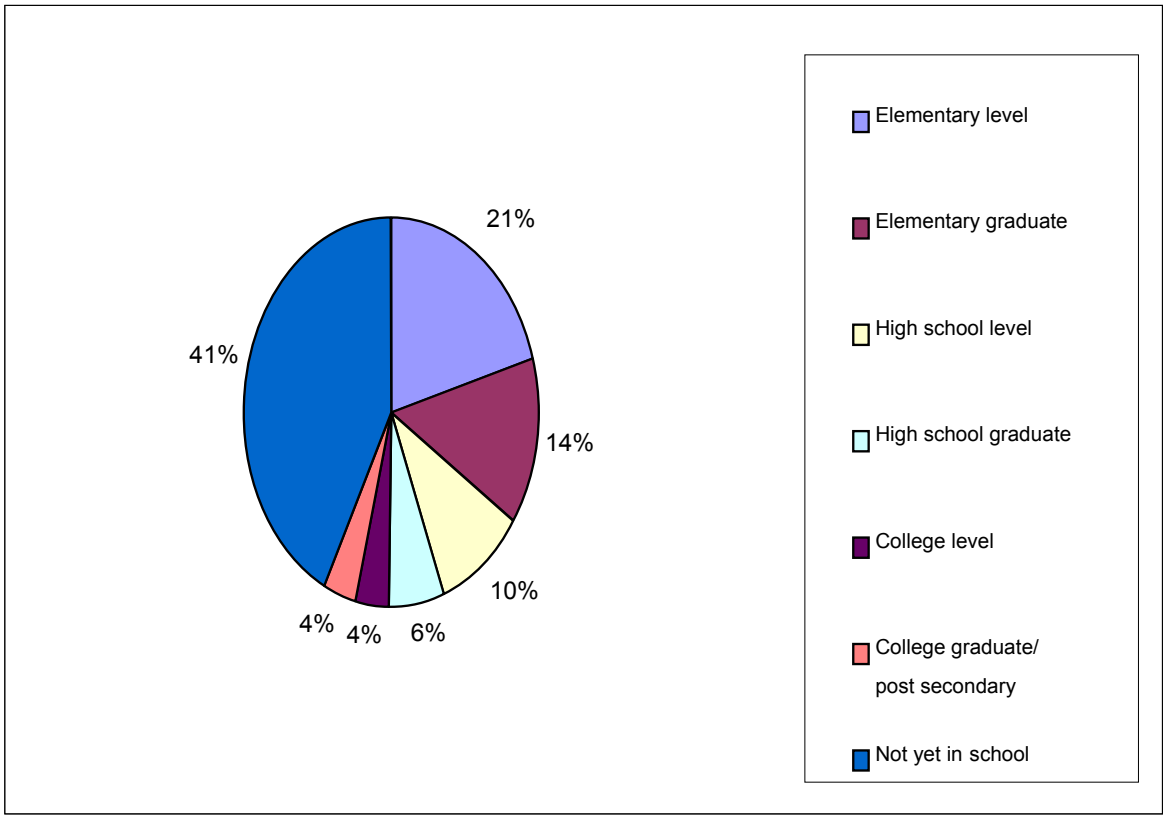
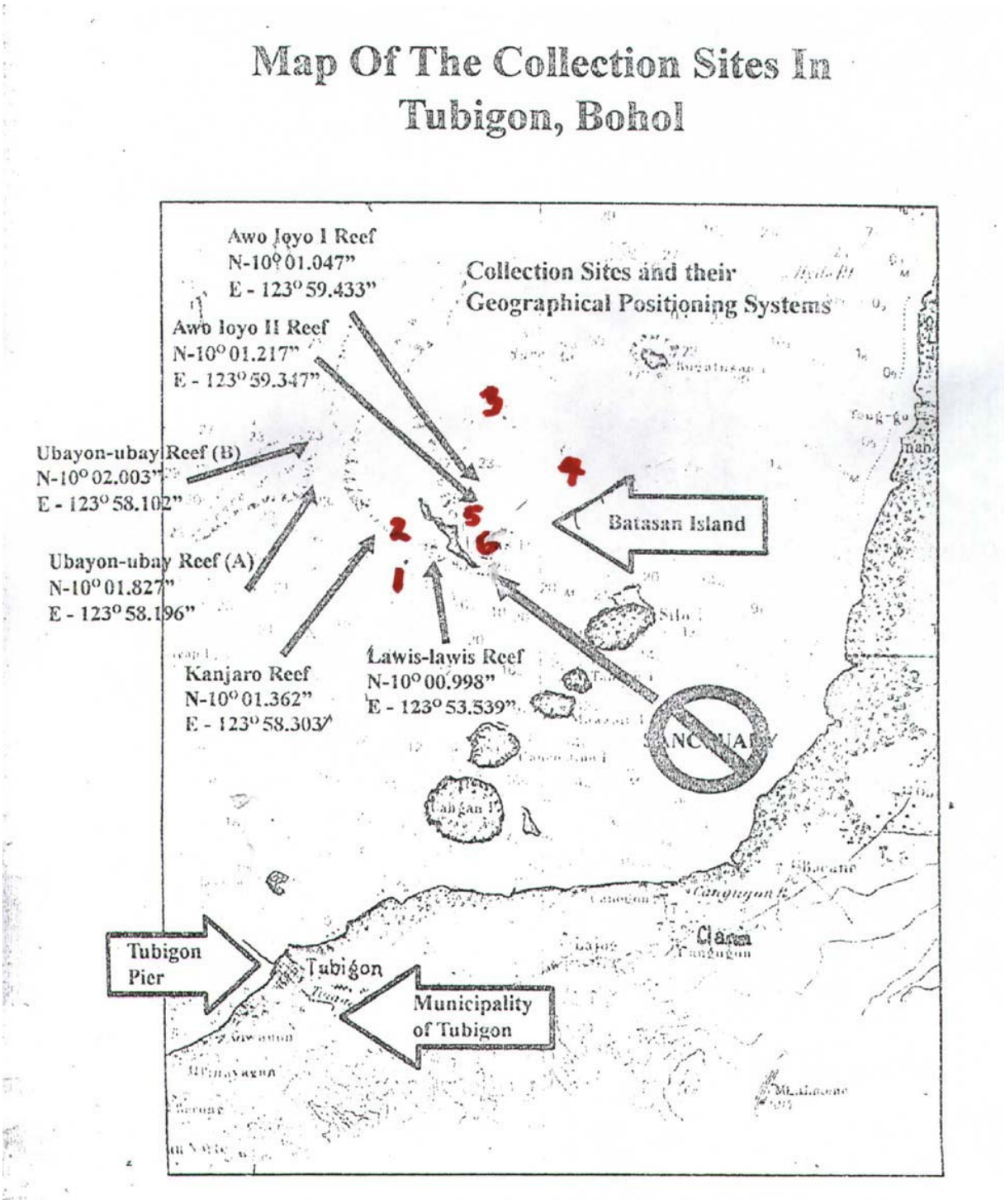
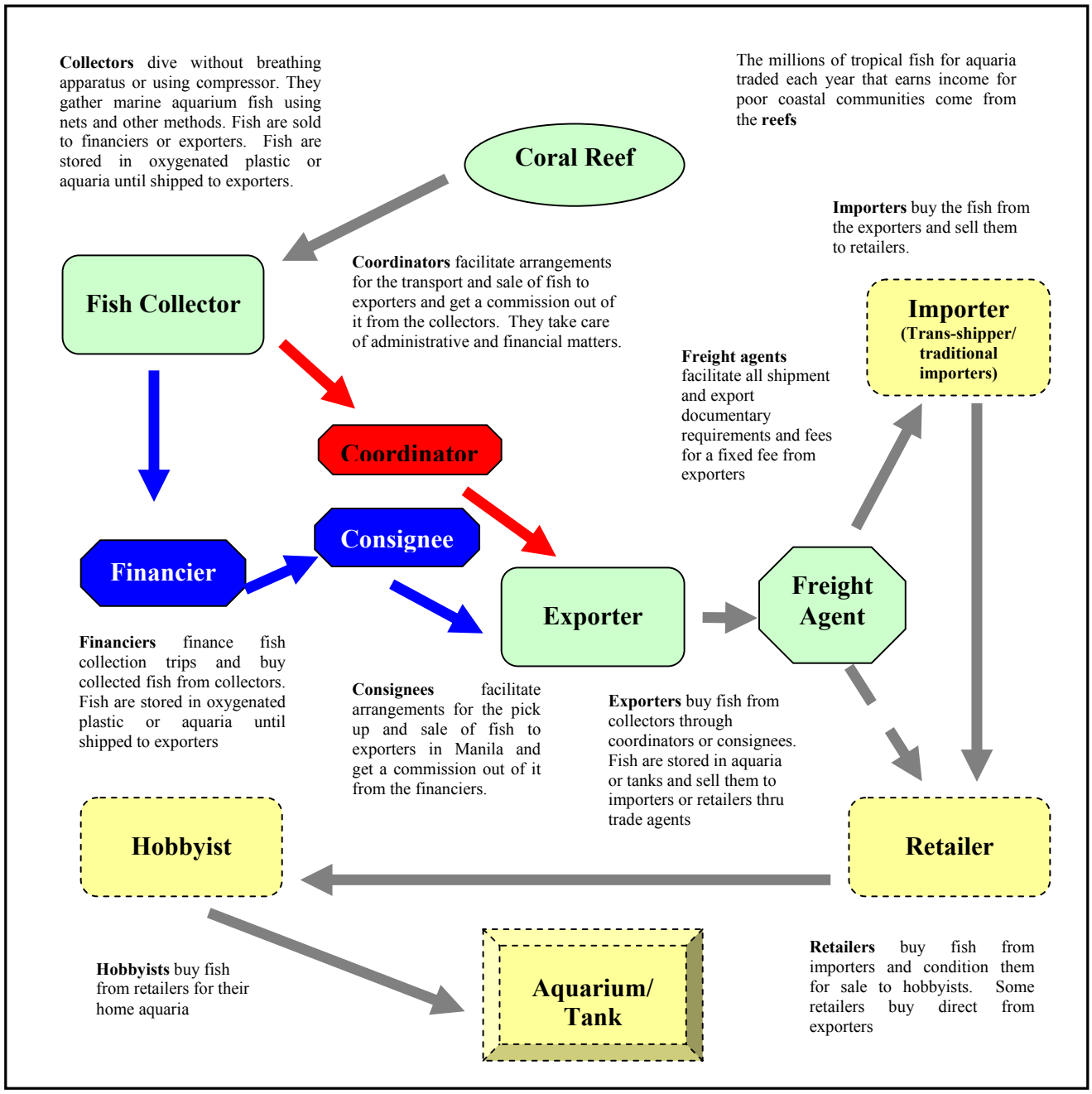


FIGURE 2 MAP OF THE COLLECTION SITES IN TUBIGON, BOHOL



Source: BATFCA CAMP

FIGURE 3 MARINE ORNAMENTALS CHAIN OF CUSTODY IN THE PHILIPPINES



Legend:

MAC site

Non-MAC site

common to both sites

outside the country

FIGURE 4 RESPONSIBILITY AND ACCOUNTABILITY FROM COLLECTOR TO EXPORTER

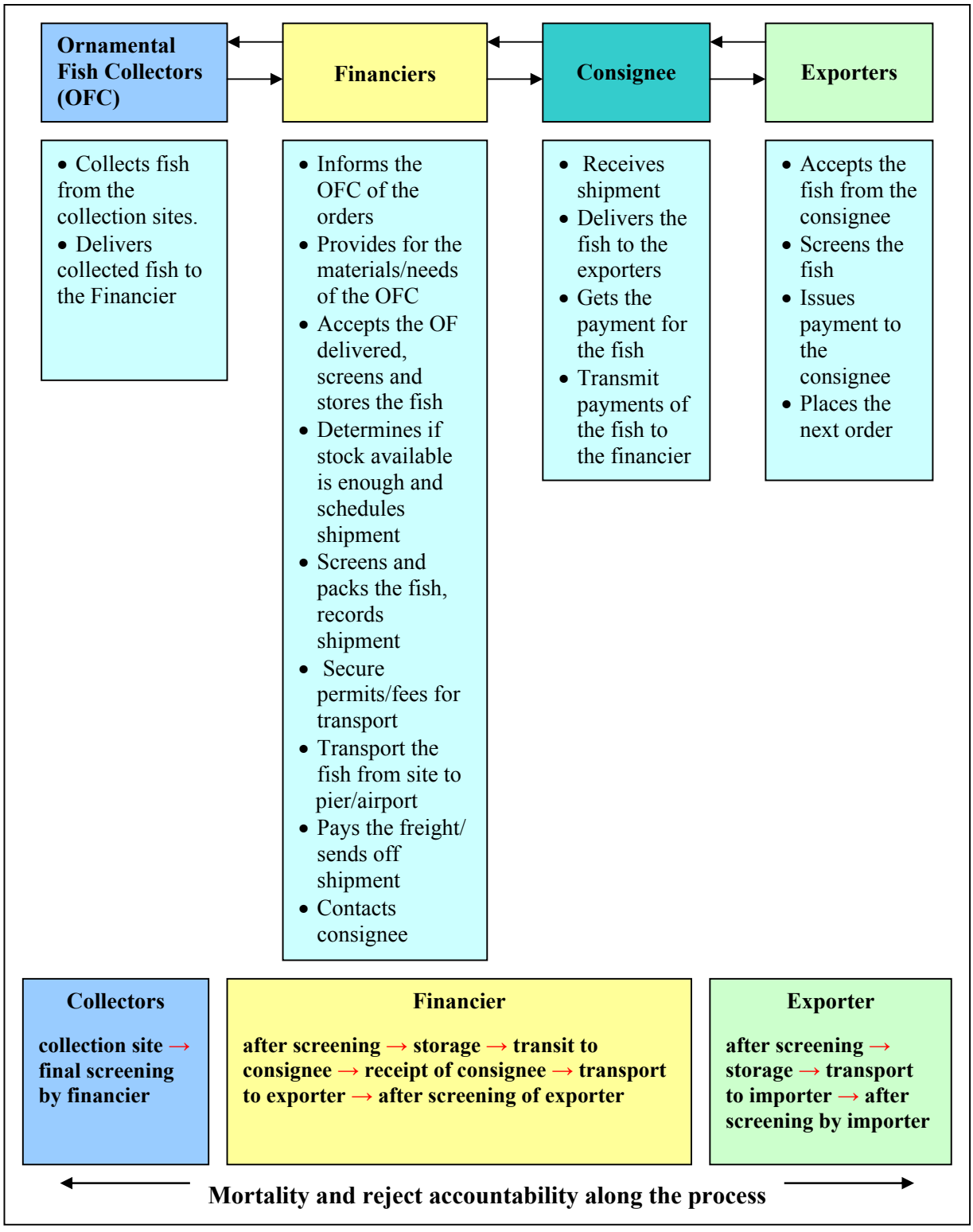


FIGURE 5 FREIGHTING NEMO FROM CEBU TO MANCHESTER

FIGURE 6 BFAR 7 LABORATORY SERVICES FLOW CHART

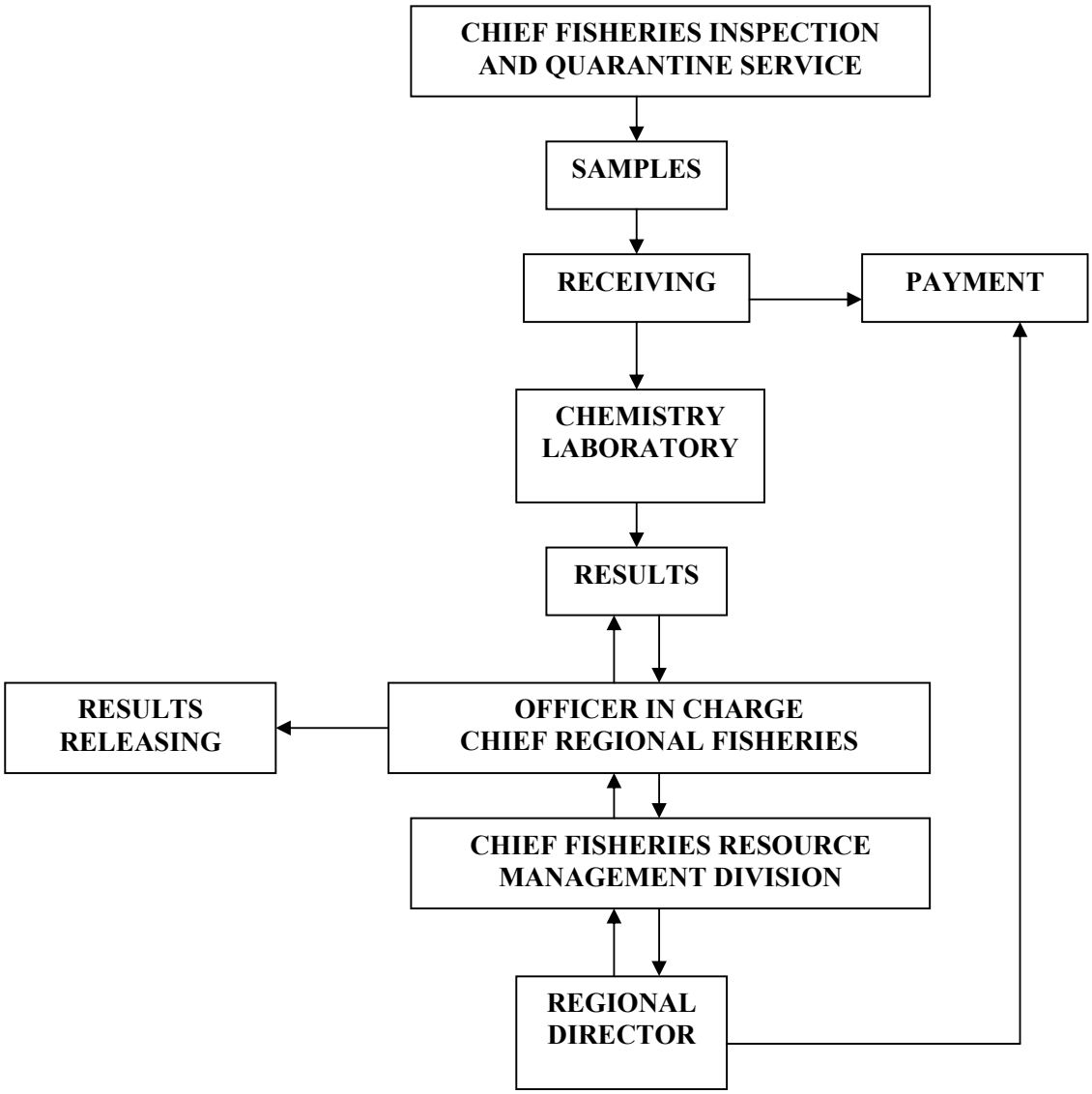
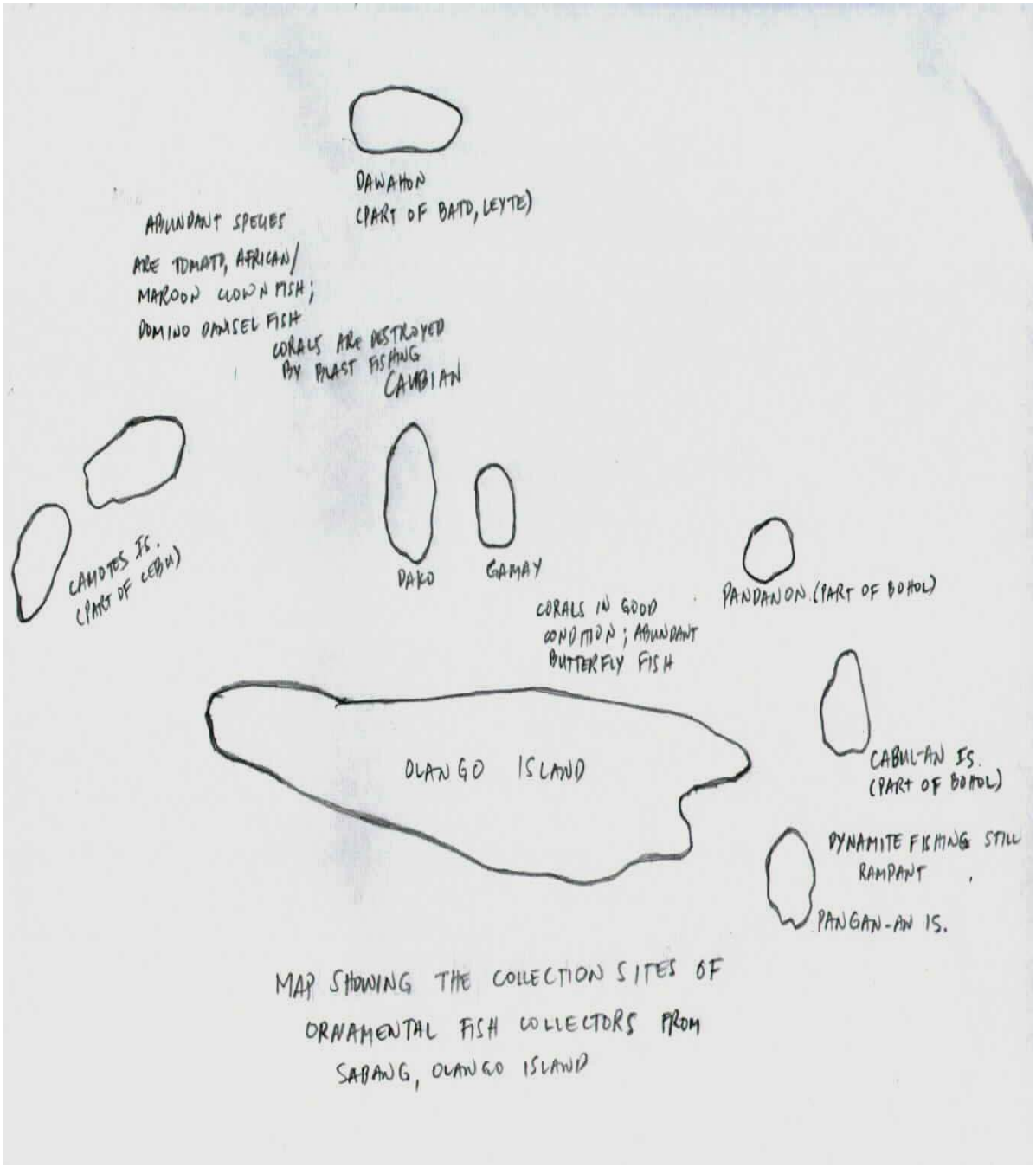


FIGURE 7 MAP OF THE COLLECTION SITES OF OLANGO COLLECTORS



Source, FGD Output

FIGURE 8 VENN DIAGRAM OF SOCIAL RELATIONS OF COLLECTORS WITH OTHER STAKEHOLDERS IN SITIO TAM-ISAN, STA. ROSA, OLANGO ISLAND, LAPU-LAPU CITY

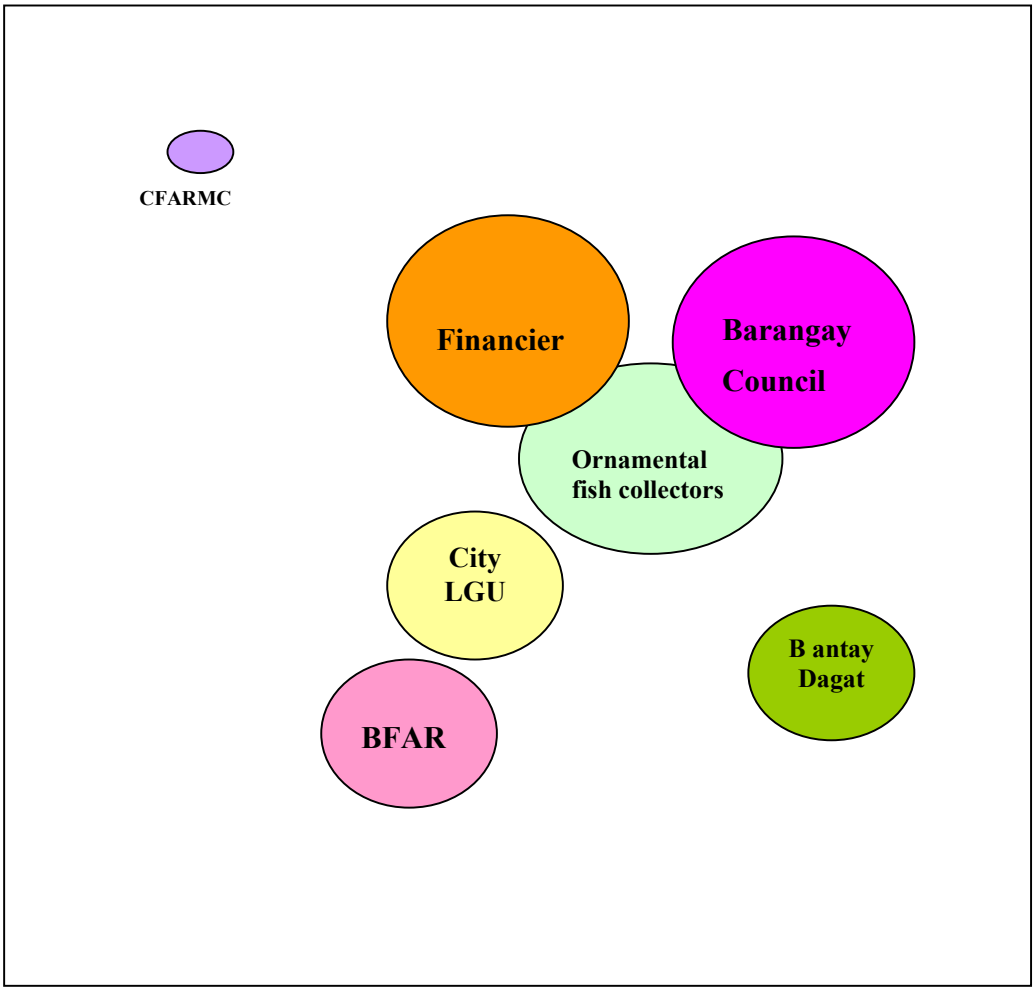


FIGURE 9 VENN DIAGRAM OF SOCIAL RELATIONS OF COLLECTORS WITH OTHER STAKEHOLDERS IN SITIO TUBURAN, BARANGAY SABANG, OLANGO ISLAND, LAPU-LAPU CITY

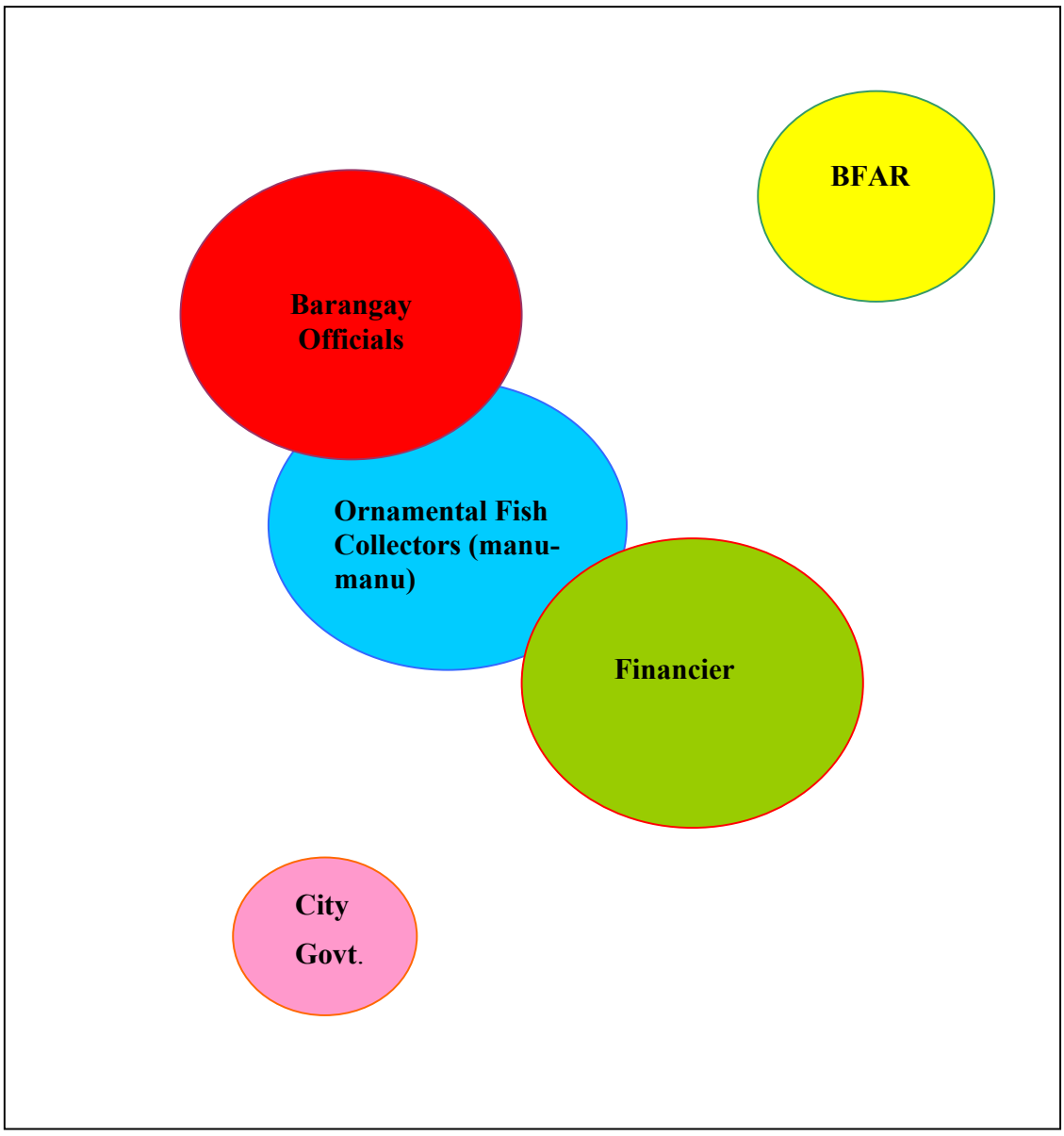


FIGURE 10 VENN DIAGRAM OF SOCIAL RELATIONS OF COLLECTORS WITH OTHER STAKEHOLDERS IN BATASAN ISLAND, TUBIGON, BOHOL

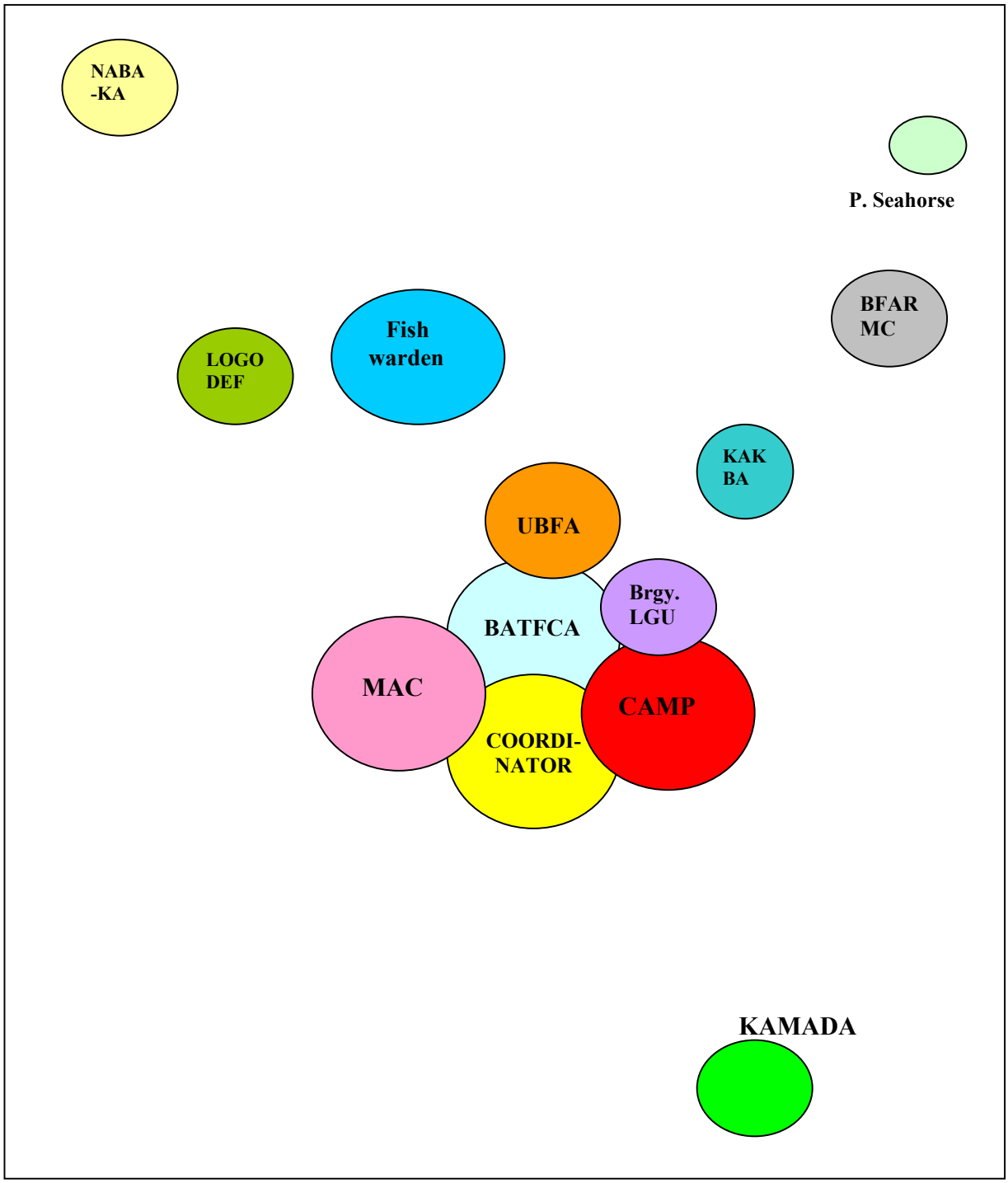
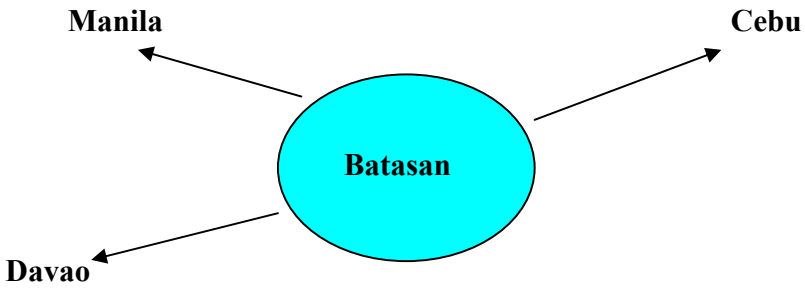


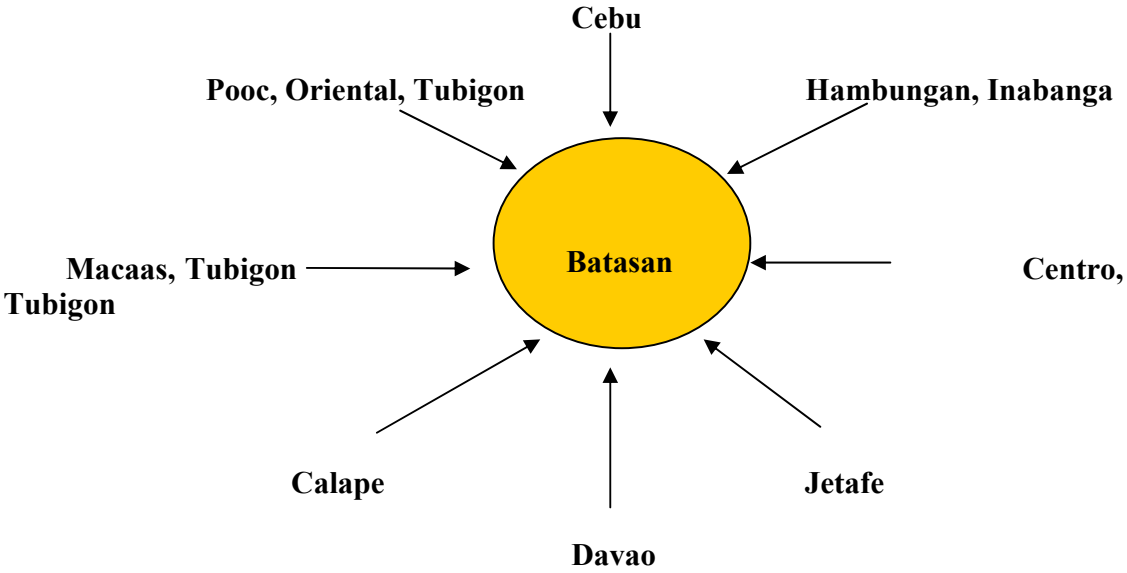
FIGURE 11 MIGRATION PATTERN IN BATASAN ISLAND, TUBIGON, BOHOL

Out-migration from 1999-2004



Place of destination	Male	Female
Manila	5	5
Cebu	6	5
Davao	2	1

In-migration from 1999-2004



Place of origin	Male	Female
Tubigon	6	7
Calape	3	1
Jetafe	3	3
Cebu	3	3
Davao	2	1
Inabanga	2	3

FIGURE 12A SEASONAL CALENDARS OF MARINE ORNAMENTALS COLLECTION IN OLANGO ISLAND

Seasonal calendar of ornamental fish collection in Sta. Rosa, Olango Island

Period	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Peak months												
Lean months												
Weather conditions	Too cold for free-divers.			Water is clear and warm.					Peak season for all because of good weather.			Too cold for free divers.
Other reasons	No competition from free divers. Period when fish lay eggs.			OF have grown and easily identifiable.					OF have grown into adults			Period when fish lay eggs.
Dominant species caught:	3-striped damsel											

Arrows in blue: Collectors using compressor for diving or hookah divers
Arrows in red: Free divers or manu-manu or breath-hold divers

Seasonal calendar of ornamental fish collection in Sabang, Olango Island

Period	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Peak season												
Lean months												
Weather conditions				HOT	HOT	Good weather condition; not too cold and not too hot						
Other reasons (market trends, closed season, fiestas, etc)	Fish are big			Unfavorable to the OFC; fish are small		OF are plenty; favorable to the OFC			Fish are too small to be caught; low price for small fish			
Dominant species caught during peak seasons • Coral shrimp • Banded shrimp • Stone fish • Domino damsel fish • African clown fish • False Percula clown fish	X X X		X X X			X X X						

N.B.: OF collectors stated that 2 growth cycles are observed in OF species.
The OFC do not stop collecting even during fiesta in June-July in their barangay and the adjacent barangays. Domino damselfish species abundant in June and July. Money is saved in advance in cases when the OFC cannot go on dive operations during fiesta.

FIGURE 12B SEASONAL CALENDARS OF MARINE ORNAMENTALS COLLECTION IN BATASAN ISLAND

Seasonal calendar of ornamental fish collection in Batasan Island

Season	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Peak season	→		→	→	→	→	→	→	→	→	→	→
Lean season	→	→										→
Weather conditions			Hot						High tide at nighttime, low tide during the day therefore water is shallow and favorable for diving (manu-manu divers)			
Other reasons (market trends, closed season, fiestas, etc)		Season for collecting sea cucumber; OFC instead of collecting OF engage in collecting sea cucumber because they earn higher income from engaging in the latter (manu-manu divers)										Cold

N.B.: Arrows in blue are hookah divers
Arrows in red are manu-manu divers
Fiesta does not have any effect on OFC. Enough money is reserved prior to the fiesta.
Price of fish is maintained all year round.

FIGURE 13 TREND IN GROSS SALES OF ORNAMENTAL FISH IN BATASAN

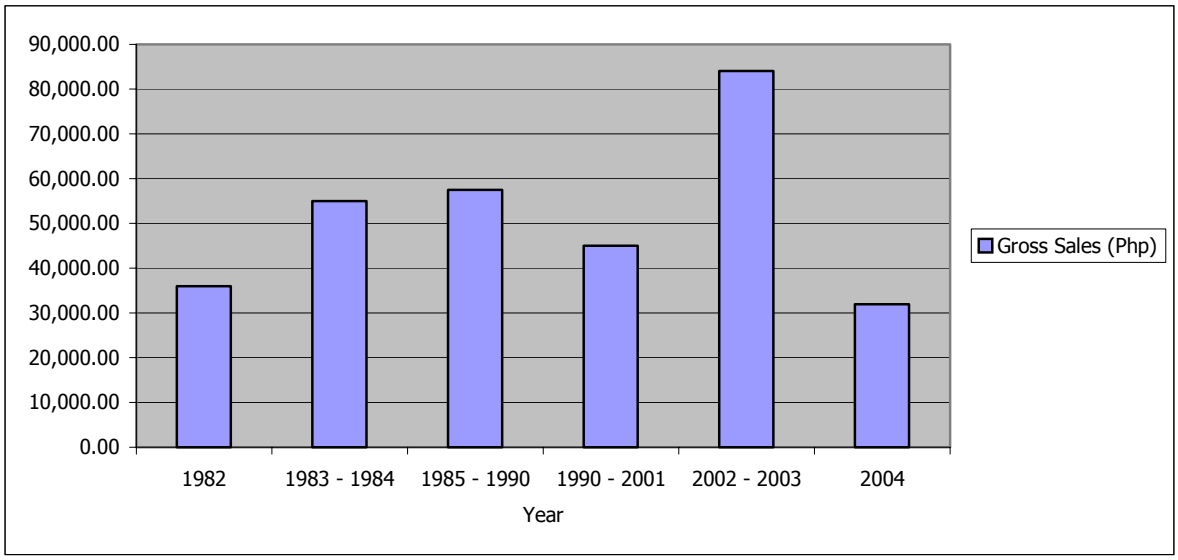


FIGURE 14 ADJUSTED MONTHLY INCOMES AGAINST PER CAPITA POVERTY THRESHOLD

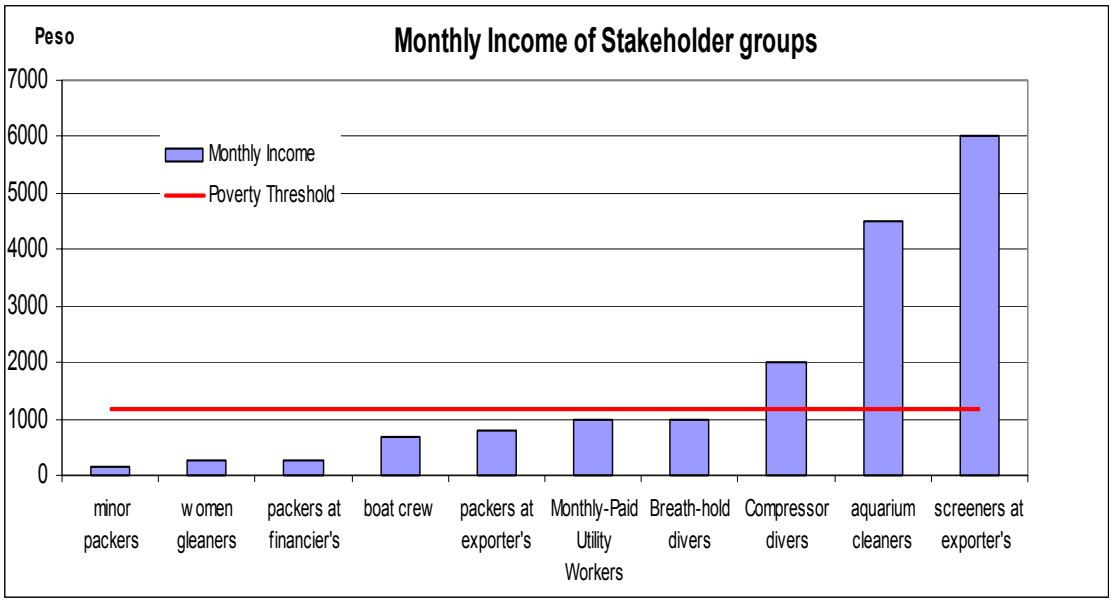


PHOTO 1 COLLECTION WITH THE USE OF COMPRESSOR

1. Prepare the materials to be used in diving

a) Compressor
b) Improvised wet suits
c) Diving mask, some have wooden frames
d) Improvised flippers made of plywood or *panapak*
e) Knife
f) Zipper (10 inches)
g) Lead sinkers or *tingga* ($^1/_2$ kg. attached in plastic pails plus 2-5 kgs. for the rope)
h) Nylon
i) Decompression bucket (made of pail with net and zipper)
j) Scoop net
k) Barrier net
l) Pails
m) Perforated collecting jars

2. Checking the boat engine and fuel

3. Upon arrival at the collection site the boat's engine is poured with water to cool off before the compressor is started. The compressor supplies the air needed by the diver underwater.

PHOTO 1 COLLECTION WITH THE USE OF COMPRESSOR (cont'd)

4. On board the boat, the diver changes into improvised wet suits and flippers.

5. Before diving, the compressor hose is tested if functioning properly.

6. Diver jumps off and checks current strength and direction

PHOTO 2 CONDITIONING, SCREEENING AND HOLDING AT THE FINANCIER'S LEVEL

1. The collector delivers the catch to the financier.

2. Upon arrival at the bodega, conditioning is done by floating plastic bags containing fish in big plastic jars filled with fresh seawater for sometime.

3. First screening takes place. The financier inspects the fish delivered.

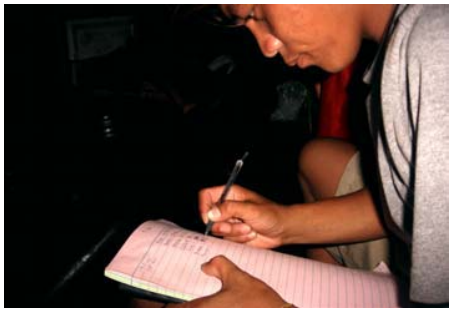
4. The fish are then released in a plastic basin with seawater. Screener inspects individual fish for damages or any sign of weakness. Bare hands is used in this particular operation.

PHOTO 2 CONDITIONING, SCREEENING AND HOLDING AT THE FINANCIER'S LEVEL (cont'd)

4. OF with damages or are weak are considered rejects. They are placed separately in big jars and released back to the sea.

5. The screener or the financier himself then counts the good ones. The fish are classified as to species.

6. The species and the number per species are recorded in a piece of paper. These become the basis for pricing and payment.



7. Enough water is placed in 20x20 plastic bags ("handbag") where the screened OF are placed and stocked.

PHOTO 2 CONDITIONING, SCREEENING AND HOLDING AT THE FINANCIER'S LEVEL (cont'd)

8. The plastic bags are oxygenated and piled in the bodega.

Fragile species are packed individually.

9. Water and oxygen are replaced daily. Weak and dead OF are also discarded daily.

PHOTO 3 PACKING AND SHIPMENT OPERATIONS AT THE FINANCIER'S LEVEL

1. Preparation of materials/equipments needed for packing such as:

- Basins
- Clean seawater
- Oxygen tank
- Plastics of varied sizes (i.e. 3x10, 5x10, 10x10 inches)
- Rubber bands
- Styrofoam boxes
- Cartoons
- Packaging tapes
- Pens for labeling

2. Fishes stored in plastics bags are opened and their contents are placed in a basin. Fishes of the same kind are placed together in one basin. Screening for good quality fish and fish of the right size also takes place at this point.

3. Clean seawater of just the right amount is placed in new plastic bags (doubled). The size of fish and its vulnerability would determine the number of fish to be placed in a plastic bag. Some species such as the tomato clown fish, orbie bat fish, chelmon butterfly fish and spotted grunt fish needs to be packed individually.

PHOTO 3 PACKING AND SHIPMENT OPERATIONS AT THE FINANCIER'S (Cont'd)

4. Plastic bags are oxygenated and tied with rubber band.

5. Plastic bags are placed in Styrofoam boxes. The number of bags per box would depend on the size of the plastic used.

6. Styrofoam boxes are placed in cardboard boxes for shipment to Manila. Those that are delivered to exporters in Lapu-lapu City or the Japanese exporter in Olango are placed in 20x20 plastic bags (doubled) and are hand carried.

PHOTO 4 CONDITIONING, SCREENING AND HOLDING AT THE COORDINATOR'S LEVEL

1. A fish collector delivers the catch to the coordinator

2a. Fishes are screened for quality and good ones are counted. Bare hands are used.

2b. Fishes are screened for good quality using scoop net.

3. Screened fish are placed in jars. The jars collected are then placed in a net bag and submerged in seawater for conditioning. Gathered jars are then delivered to the purging area.

4. The purging area where the fishes are kept for a maximum of 4 days The "Wall Street" is a purging composed of cages located Offshore.

PHOTO 4 CONDITIONING, SCREENING AND HOLDING AT THE COORDINATOR'S LEVEL (cont'd)

5a. Some species, after screening and counting are placed in 20x20 plastics in the bodega. This process applies to species that can be stocked in volume (green mandarin).

5b. Plastic bags are oxygenated prior to stocking

5c. Species that are packed individually (chelmon butterfly) are stocked in the bodega.

6. Water in the plastic bags are replaced daily.

PHOTO 5 PACKING AND SHIPMENT OPERATIONS AT THE COORDINATOR'S LEVEL

1. Fishes are released in basins for final screening.

2. Screened fish are placed individually in plastic bags.

3. Plastic bags are oxygenated and tied with rubber bands.

4. The plastic bags are coded using The Collector's code numbers.

5. The species packed with the corresponding code number and quantity are listed in the collectors packing list.

6. Counting the number of plastic bags before placing them in Styrofoam boxes for shipment.

PHOTO 6 CATCHING MANDARIN FISH WITH THE USE OF SPEAR GUN

The Mandarin fish is hard to catch because it usually inhabits on *Porities nigrescens* and *Porities cylindrica* corals. It only hovers several inches above the finger winging corals. These species has sensitive hearing, it can easily detect another creature approaching and will quickly hide in the nearest coral crevice. Collectors use a spear gun with a stainless wire to catch it.

Procedure:

1. Hit the fish belly sides towards the tail area. The slime excreted by this species self-heals the wound at the tail area fast enough to be noticed.
2. Catcher should be at least away 1 to 1 ½ feet away from the fish.
3. Once hit, fish can be picked up by scoop net.
4. Caught fish is placed in a plastic bag or jar.

One cannot mix this fish with other species, as its slime is poisonous. It can only be mixed with their own species as long as there is free flowing water. The slime is the indicator that the fish is stressed. Like the blue eel, Mandarin fish excretes a lot of slime when it is stressed out, especially when it is newly caught. Slowly change water until the slime is washed off and fish is conditioned. The prescribed time for catching Mandarin fish is during 6:00 to 7:00 in the morning and 3:00 to 5:00 in the afternoon, when it is feeding.

PHOTO 7 CATCHING CERTAIN SPECIES OF ORNAMENTAL FISH WITH THE USE OF SPEAR GUN

Procedure:

1. Gradually submerge into the water.
2. Check your surrounding for targeted species available.
3. Spread the *mini push net* to form a "V" form, with its wide end facing fish.
4. Upon sighting the fish, slowly approach it, position the mini poker at the top of the burrow where the fish are hiding, spread the net over the hole, wait for the fish to return on top of the burrow and slip the poles of the mini push net on the fish to capture it.
5. Flip the mini push net, and then slowly transfer the fish to the container/ decompression bucket.

Note: Mini push net is intended for catching fish species such as gobies and dotty backs.