

## Symposium Proceedings

### **Socioeconomic assessment of small-scale fisheries of Naro Island, Masbate: with focus on the scallop fishery**

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#### **Abstract**

This paper assessed the socioeconomic conditions of scallop fishermen in one of the few scallop resource-rich islands in the Philippines. The data were generated through a survey involving 100 fishing households in Naro Island Masbate, Information on the sociodemographic status, material style of life, the income and occupational structure of fishers, assets and cost structure of fishing operation as well as the distribution and marketing of the fisheries products were described and analyzed. Based on the above, we discussed ways in addressing the challenges that confront the scallop fishery in the context of sustainable fisheries resource management and development.

## **INTRODUCTION**

Scallop fishing has been the main industry in Naro Island of the municipality of Cawayan in Masbate. It is the livelihood of more than 200 families in the coastal barangays of Talisay, Naro, Looc, and Punta Batsan. In the 28,300-hectare scallop area which is more than one-tenth of Asid Gulf, the scallops are harvested from the sea bottom at depths of 45-100 feet by divers using improvised underwater breathing devices known as hookah during the harvest season from March to June. A team of three to five divers can collect as much as 10-30 sacks (80 kg per sack) at the rate of four to six hours per diver per day. Similar with many fisheries in the country and around the world, the island's scallop fishery over years has been mined towards depletion that explained the history of boom and bust economic prosperity and scallop resource abundance in Naro Island (Bradecina and Soliman 2014).

Effective fisheries management must respond to understanding fisheries, considering social issues, linking fisheries management with trade and with marketing standards, enhancing institutions and governance for management as key challenges to promote resource sustainably and alleviate poverty in the fishery sector (Nomura 2008). Refocusing policies and programs government toward sustainable fisheries management could be a key towards alleviating poverty (Green *et al.* 2008). In the last decades, the Philippine fisheries are at the crossroads of change. Its fisheries policies and

directions are changing considerably to implement appropriate and practical measures to fully benefit the small-scale fishers. These underscore the need for information that will provide the vital link in explicating the human and economic dimensions of scallop fishery enhancement and management as critical inputs in the sustainable utilization of the scallop fishery in Naro Island and many similar scallop fishing communities in the country.

This paper described and analyzed the sociodemographic status, material style of life, the income and occupational structure of fishers, assets and cost structure of fishing operation as well as the distribution and marketing of the fisheries products as critical inputs in sustaining the small-scale scallop fishery in the island in the context of fishery resource management.

## **METHODOLOGY**

A survey questionnaire for the Naro Island fishers was developed. It consisted of four sections namely: 1) Sociodemographic Information; 2) Economic condition of households, 3) Economic information of fishers, and 4) Marketing of catch. The sociodemographic characteristics included the following information: sex, civil status, education, age, number of children, and years in fishing. The economic condition of fishing households included the following items: 1) household income from agriculture,

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**Table 1.** Sociodemographic profile of the respondents.

	N	%	Mean
Sex			
Male	100	100	
Female	0		
Civil Status			
Single	4	4	
Married	96	96	
Widow			
Age			39.4
Education			5.5
Number of children			4.4
Years fishing			21.1
Years of Residence			36.2

household income from other sources. The economic information of individual fishers included the following items: 1) primary occupations, 2) secondary occupation, 3) tertiary occupation, 4) monthly income from these occupations, 5) fishing assets 6) boat and gear ownership, 7) monthly operating expenses 8) volume of catch and cost of catch, 9) quantity of catch consumed at sea, given to co-workers, and consumed at home, 10) frequency of operation in peak and lean months. The information on marketing of catch included the following items: 1) place of distribution and marketing channels of catch, 2) to whom catch is sold, 3) why catch is sold to whom, 4) manner of selling catch, 5) who sells catch, 5) fairness of pricing and source of information on buying price of catch.

The questionnaires were pre-tested in the field and subsequently revised. The revised questionnaire was administered to a total of 100 fishing households in the island. The survey made use of stratified sampling of respondents by village (*sitios*) in the island Barangay of Naro, Masbate.

The survey data were analyzed using percentage and means. Two basic units of analysis were used namely, the fisherman and the fishing households.

## RESULTS

### Sociodemographic characteristics of fishers

Majority of the respondents are male (100), and have familial obligations (96%). The average age of the fishers is 39.4 indicating that the fishers are moderately older. Also, fishers on the average completed 5.5 years of education which

means that they barely finished elementary education. The number of children is 4.4, relatively lower than the region's average number of 5 children per household. The average fisher has been fishing for more than 21 years spending more one half of his life in the occupation. It appeared that fishers in the island are mostly native, if not born in the same fishing village with an average of 36.2 years of residence (Table 1).

### Standard of living

As it may be inappropriate to measure standard of living by income alone, two further indicators are examined: the household facilities and access to amenities such as electricity, water source, etc.

Majority of the fishing households do not own lots (81%), but almost all own their houses (98%). More than half (53%) of the houses have indigenous *nipa* shingles as roof, while less than one half (46%) have galvanized iron (GI Sheets). More than one half (52%) of the households are made of bamboo and *nipa*, while less than one half (42%) are made up of combined materials of wood, *nipa* or concrete. More than one half of the houses have bare soils as flooring only 29% have paved floor. The rest are either wooden (12%) or bamboo (4%) (Table 2). More than one half (52%) have ordinary *de-buhos* toilets while the rest ranges from KYBO (16%) and other forms of toilets. In terms of power, more than one half of the households (53%) have electricity while less than one half (47%) don't have electricity. Almost majority of the households get their drinking water from artesian well and deep well (23%).

**Table 2.** Household facilities and other amenities.

Facilities and Amenities	Details	N	%
Residential lots ownership	Own	19	19
	Rented	0	0
	Not owned	79	81
House ownership	Owned	97	98
	Rented	1	1
	Not owned	1	1
Type of house roof	Nipa	50	53
	Concrete	1	1
	Galvanisado	44	46
	Other materials	0	0
Type of house walls	1 Nipa/Bamboo	46	52
	2 Galvanized iron	0	0
	3 Wood	5	6
	4 Other materials	37	42
Type of house floor	1 Earthen	52	55
	2 Bamboo	4	4
	3 Wooden	11	12
	4 Concrete	28	29
Type of house toilet	1 Dug-out	14	16
	2 De-buhos	46	53
	3 De flush	1	1
	4 Others	26	30
Electricity	With	52	53
	Without	46	47
Source of water supply	Spring	1	1
	Well	23	23
	Artesian	74	75
	Other	1	1

### Fishing income

The mean monthly income of fishers from major occupation is PhP 3000. While the monthly income from secondary occupation is slightly higher at PhP 3,031. Monthly income from tertiary occupation is estimated at an average of PhP 1,076. The differences in primary, secondary and tertiary incomes are explained by the quality and quantity of catch from the different occupations. Scallop gathering, considered by most of the respondents as secondary occupation has relatively higher buying price than squid fishing although seen as primary occupation by many. The lowest income derived from seaweed farming as tertiary occupation could be attributed to its scale of operation and the low buying price per kilo of seaweed in relation to scallops and squids. The average monthly total income of fishers with combined fishing

occupations amounts to PhP 7,107 (Table 3).

### Volume of Catch and Revenues

Average fisher in the island grosses 122 kilos of catch on a monthly basis during peak months. These usually command an average of PhP 97 a kilo yielding an average of PhP 11,911 monthly. On lean months however, a fisher only gross 46 kilos a month. These command a relatively lower buying price of PhP 95 kilo yielding mean revenue of PhP 4,379 monthly (Table 4).

Of the volume of catch estimated above, an average of 10 kilos worth PhP 922 were consumed while fishing, 15 kilos worth PhP 1,313 were given to co-workers, and 16 kilos worth PhP 1,254 were consumed at home per month during peak months. However, on lean months, an average of 8 kilos worth PhP 670 were eaten on fishing, 10 kilos worth PhP 550 were given to co-workers and 11 kilos equivalent to PhP 762 were consumed in the household per month (Table 5).

**Table 3.** Income by Occupational structure of Naro Island fishers.

	Mean	Min	Max
Major Occupation	3,000	175.00	24,000.00
Secondary Occupation	3,031	500.00	9,000.00
Tertiary Occupation	1,076	100.00	4,000.00
Total	7,107		

**Table 4.** Catch volume and cost of catch in peak and lean months.

	Peak Months	Lean Months
Volume of catch (kg)	122	46
Price per kilo of catch	97	95
Total cost of catch	11,911	4,379

**Table 5.** Volume and cost of catch eaten on board, given to co-workers and consumed at home.

Season	Consumed at sea			Give to co-workers		Consumed at home			Total		
	Kilo	Price/kilo	Total	Kilo	Price/kilo	Total	Kilo	Price/kilo	Total	Kilo	Total
Peak Months	10	91	922	15	88	1,313	16	81	1,254	41	3,489
Lean Months	8	79	670	10	55	550	11	69	762	29	1,982

## Fixed assets and current value of assets

Fishing assets of small-scale fishers in Naro island is estimated at PhP 101,208. These ranges between PhP 15 and PhP 69,023. Among the fishing assets, sack posted the lowest mean cost valued at PhP 15. While the cost of nets posted the highest at PhP 69,023, followed by engine (PhP 13,540) and boat (PhP 10,963). Most of the major assets such as nets, boats and engines, have been in service for a relatively shorter period of time than their expected life span ranging between 5-6 years. On the other hand, the minor assets such as scoop nets, sacks and evelon nylon have served more than one half of their expected life span. These indicate that the major assets have been recently acquired suggesting initiatives to upgrade fishing power if not constant replacement of these assets. Considering the depreciation of these acquired assets, the current value is estimated at PhP 70,564 per fisher (Table 6). Minus the boat, engine and net however, fixed assets of an average fisher is only estimated at PhP7,683 with a current value of PhP 3,999. In Naro Island, only 37% of the fishers' own boats. While majority or 95% own scallop gathering gears made up of indigenous materials.

## Cost Structure

The average monthly operating cost incurred in fishing is estimated at PhP 7,852. Of the expenses, the cost of gasoline occupied the largest proportion accounting for 42% followed by cost of repair which account for 25% of the total. It is interesting to note that the respondents did not include labor and marketing as cost items (Table 7). This is explained by the fact that only a handful of the respondents (at least 2 of them)

**Table 7.** Monthly Operating Expenses of Fishers.

Items	Mean Monthly Expenses	
	PhP	% to Total
Gasoline	3,336	42
Kerosene	750	10
Engine oil	458	6
Cigarette	543	7
Cost of repair	1,955	25
Food	809	10
Labor		
Marketing Cost		
<b>Total</b>	<b>7,852</b>	

**Table 6.** Mean acquisition cost, years in use, life span and mean book value of fishing assets.

Items	Mean Cost	Mean Years in		Mean Book Value
		Service	Life Span	
Engine	13,540	6	15	6,022
Boat	10,963	6	20	6,687
Net	69,023	5	15	53,854
Bamboo	1,317	3	6	844
Floats	730	5	15	621
Sinker	1,587	6	25	1,141
Spear gun	31	3	15	11
Mask	148	6	7	55
Diving fins (wooden)	125	1	10	135
Scoop nets	59	6	10	21
Evelon	3,641	7	10	1,153
Sack	15	3	5	6
Styrofoam	30	3	5	12
	<b>101,208</b>			<b>70,564</b>

provided a very minimal cost for labor. Most of the fishers also did not almost incur marketing cost as the catches are just brought manually to a buyer who is situated in the island.

**Distribution and Marketing of Catch**

Fishers sell their catch either by himself to community through retail, or wholesale in community buying stations in Naro Island which is located in barangays Looc and Talisay, or in the wholesaling stations in Cawayan town proper. From the wholesalers in Cawayan town proper, the produce is destined to either Cebu or Manila, where the products are sold to producers or processed for exports (Fig. 1).

Two types of marketing fish produce exist in the area. Result of the survey showed that fish produce reaches the consumer through direct retailing and indirect marketing channels. In retailing, marketing between producer and consumer is direct. In this type, the fisher sells his produce directly to consumer residents in the community. This usually occurs when the quantity of fish catch is small. In indirect marketing channels, producers channel their catch through middlemen/buyers and brokers/wholesalers. In this type, fisher sells their produce to middlemen (suki), or to brokers/wholesalers. This happened if there is sufficient volume of catch (Fig. 2). In the indirect marketing channels in Naro Island, fishers channeled their catch to middlemen who in turn sold to the different buyers and wholesalers based in Cawayan. However, some middlemen directly sell their catch to wholesaler/exporters based and in Manila or Cebu.

Direct selling through retailing is done by only very few or 4% of the respondents. Selling of produce to middlemen

locally based in Look and Talisay is done by merely 10% of the respondents. The same holds true for fishers selling directly their produce to Cebu or Manila-based buyers (8%). Most of the produce are sold directly to buyers/wholesalers in Cawayan by 78% of the respondents. The reasons for selling their catch to middlemen/buyer/wholesaler varied. The existence of credit for operating expenses or daily subsistence accounts for more than one half, (52%) of the responses. The perceived higher price given by the preferred suki middlemen/buyer accounted for less than one half (43%) of the responses. Other reasons include prior contract for rent of boat and lack of other buyers present in the area. The marketing transaction and buying scheme is perceived by almost majority (69%) as unfair to them.

**DISCUSSION AND POLICY IMPLICATIONS**

Fishers in Naro Island have familial obligations. The number of dependents is quite smaller than the national average of 5.24 children per household. The absence of alternative form of employment aside from fishing is evident in the number of years spent fishing as well as the age of the respondents. These fishers have spent more than one half of their lives fishing and their mean age is relatively younger than the rest of the region (i.e in Lagonoy Gulf with mean fishing experience of 22 years and mean age of 46 years).

Material style of life as alternative measure of standard of living showed that more than one half of the fishers lived with bare necessities in life. As another indicator of social status, the presence of different types and materials used for various parts of their dwellings indicated the variations of social status

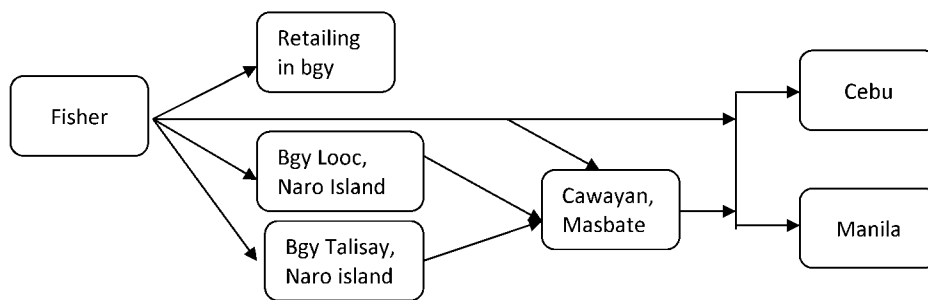


Fig. 1. Distribution channels of fish catch.

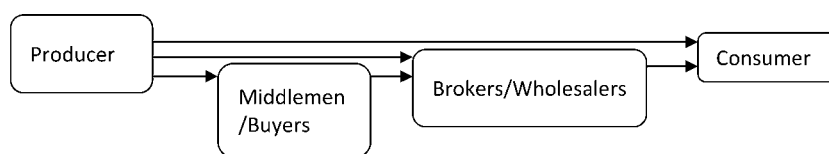


Fig. 2. Marketing Channels of fish catch in Naro Island, Masbate.

in the island from poor to very poor.

It is quite notable that scallop gathering is now considered as secondary occupation by most of the fishers. This could be explained probably by the declining stocks and catch from the scallop fishery (Bradecina and Soliman 2014). Among the three occupations which are usually combined in most of the fishers, scallop fishing is still the most lucrative with comparatively higher income than the rest of the types of fishing activities. The average income of fishers from this combined fishing occupation is PhP 7,107. The lowest income generated from seaweed farming as a tertiary occupation showed that much is desired for the improvement of the sector in terms of technology and capital infusion. Similarly, the highest income derived from scallop farming despite being considered as secondary occupation is attributed to its high price, underscoring immediate rehabilitation and management.

The hypothetical average cost of volume of catch that remained to a fisher after the volume of fish consumed at sea, given to co-workers and consumed at home have been accounted for is estimated at P 9,735 per month on peak season and PhP 2,947 per month during lean months. The mean cost of the remaining volume of catch after all these deductions is estimated at PhP 6,341. This value is quite close to the combined average monthly incomes from primary, secondary and tertiary fishing occupation at PhP 7,107.

The investment requirement in fishing estimated at PhP 101,208 makes offshore fishing prohibitive to marginal fishers. The cost of nets, boat and engine form the largest part of the fishing capital. This explained why only very few (37%) of the fishers own boats while mostly (95%) own the scallop-gathering gears with very minimal cost of acquisition.

The average monthly operating cost incurred in fishing is estimated at PhP 7,852. Of the expenses, the cost of gasoline occupied almost one half, while the cost of repair expenses costs one fourth of the total. If we factored in this amount against the cost of catch at P 9,735 per month on peak season, we more or less get the same amount generated for offshore fishing pegged at more or less PhP 3,000 as primary occupation. On lean season, the profit is negative. These explained why fishers have combined fishing activities to earn a living. The small profit margin derived from offshore fishing encourages more fishers to shift to non-intensive, low-input fishing activities such as crab-fishing, sea cucumber gathering aside from scallop gathering which is faced with problems of declining stocks. The non-profitability of offshore fishing and the sustained pressure on limited coastal resources such as sea cucumber, seahorse and scallops may drive the socioeconomic condition of the fishers to deeper poverty in the future.

The distribution and marketing channels for their produce seemed to play against the interest of the fishers. Inaccessibility of market for their produce as well as the

circuitous marketing channels let them fall prey to the dictates of middlemen/ buyers in the island and in the town proper where they mostly brought their catch. Most of the fishers noted that their products are unfairly priced by the middlemen/wholesalers both in the island and in the town proper. The lack of other buyers/middlemen and the existence of cash advance and credits to these middlemen/wholesalers by fishers resulted to the lopsided relationship characterized by exploitation and unfair pricing of catch. The monopoly of the trade by few middlemen/wholesalers is fueled by the existing social and political culture in the island characterized by influential families having stakes both in government and business as well as non-mainstreamed participation of the grassroots in governance. On the other hand, the limited, if not the unprofitability of fishing as a primary occupation and the declining resources for other coastal-related occupations such as scallop gathering and seahorse gathering could have caused the fishers to borrowings and credit from middlemen. This explained for their perpetual bondage to the unfair and usurious practices of their middlemen suki whom they can turn to for food and operating expenses in times of lean months, where fishing, as this study initially shows, appeared to be unprofitable.

The situations of material poverty of fishers, unprofitable fishing activity, declining coastal resources and unfair marketing relationship are common phenomenon in the Philippines and many fishing communities in the third world where institutions are weak to effect fisheries and ecosystem governance and ensure complete markets for fisheries products. The reasons why fishers still ply the trade despite unprofitability have been discussed widely in literatures. These include the subsistence nature of the fishery where fishers do not mind losing for as long as they still catch fish for the table (e.g. Kronen 2004), and the classic culture of short-run economic strategy of the fishers in many fishing villages of the Philippines (e.g. Pomeroy). What made the case of Naro Island Masbate peculiar is the fact that despite the relegation of the once vibrant scallop fishery to the sideline as secondary fishing occupation due to its decline in the last 5 years, the income from the fishery still tops all other types of fishery-related occupations in the island. The scallop boom and bust phenomenon in the island certainly have left some lessons for the fishers and stakeholders on aspects of sustainability and conservation. The link between resource management and economic prosperity is made concretized among their psyche by the information, education and communication activities done directly through research and extension outreach by different institutions (e.g. Bicol University, LGU of Masbate, etc). All of these point towards a common policy direction on coastal and fisheries resource management in the island integrating techno-transfer and livelihood, skills training and

education, health and water facilities, credit resource enhancement and resource governance as components. Sanitary and water facilities maybe an important infrastructure component of the program. The lack of cooperative and exploitative relationship between fish producers and buyers underscores collective marketing and credit support facilities for the fishers. The continued promise of the scallop fishery as low-input, low-tech, but high profit fishing occupation among other fishery-related occupations confirms that the on-going scallop restoration and enhancement activity is in the right direction and needs upscaling. The establishment of institutional framework for participatory resource governance in the island encouraging multi-stakeholder involvement to resource sustainability may hold the key towards addressing the prevailing socioeconomic condition of fishers in the island.

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