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SUSTAINABILITY OF FISHING INDUSTRY IN ABORLAN, PALAWAN

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Abstract

This study was conducted to provide information on the sustainability of fishing industry of Aborlan specifically it aims to (1) describe the nature and mode of fishing activity employed by the respondents (2) volume of fish catch; (3) marketing method, utilization and sustainability (4) find out the government support among the respondents using descriptive research. It was conducted in the Municipality of Aborlan, Palawan which consists nine coastal barangays namely: Apo-aporawan, Apurawan, Culandanum, Isaub, Magsaysay, Poblacion, San Juan, Tagpait and Tigman. The stratified random sampling was used to determine the samples with a total 235 fishermen were serves as respondents of the study. The study uses different statistical tools to analyze and interpret the data. Descriptive statistics such as frequency counts, means and weighted means were also employed to discuss the nature and mode of fishing activity, volume of fish catch, status of market outlet and support extended by the local government unit among the respondents. Result reveals that respondents used commercial nets in their fishing activity and caught variety of fish with a minimal volume of more or less 20 kgs per operation. Further, respondents sold the caught fish directly to the market rather than to process it into other fish products as they practiced the sustainable fishing in the area. Meanwhile, the LGU was supportive to them by giving support and granting loan programs, conducting trainings and assessment. It is recommended that respondents should attend to the trainings and seminars conducted and offered by the authority to enhance their fishing skills, engaging in other activity for additional source of income and develop the fish by-products to increase their income. Furthermore, the LGU may provide assistance to the fisher folks like financial support to the local fishers. Conduct trainings to the fishing village with regards to fish processing and strictly implement the local laws or Municipal Ordinance particularly in the provision of illegal fishing. Promote the importance of sustainable fishing.

Keywords: fishes, volume of catch, marketing method, sustainability, respondents, utilization, fishing industry

INTRODUCTION

The Philippines is known as the country that is rich in marine resources. To the average Filipino, fish and shell fishes constitute an independent part of its diet since it is a major source of animal protein. The small scale fishing and aquatic resources are likely important as any of the other natural resources of the country (Ramos, 1995).

On the other hand, the fishing and aquatic resources are likely important as any of the other natural resources of the province. It is considered as the potential source of livelihood and small business opportunities that can be supplied by the members of the family.

Aborlan is one of the most productive fishing grounds in the province which contributes a large volume of fishes in the locality and in Metro Manila. It even exports dried, fresh and live marine products. A lot of small scale fishermen were concentrated in the place and made small scale fishing their primary source of living.

Fishing is an economic activity of the residents in the area that's why it would be useful to study their fishing operation and fishing gears used by small-scale fishermen. It will also provide useful information to our government in formulating policies concerning small-scale fisheries activity.

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In the Philippine Fisheries Code of 1998 states that in order to achieve food security, as the overriding consideration in the utilization, management, development conservation and protection of fishery resources in order to provide the food needs of the population. A flexible policy towards the attainment of food security shall be adopted in response to changes in demographic trends for fish, emerging trends in the trade of fish and other aquatic products in domestic and international markets, and the law of supply and demand;

Despite all the efforts exerted by the different sector towards the concerned for more fish resources, it is sad to note that there are times when very little fishes reached the market. This situation could significantly be observed in Aborlan where the source of livelihood of its residents is small-scale fishing.

In spite of the presence of abundant marine resources, most fishermen in the study locale are live below poverty line due to the loss of fishing grounds to big fishers, rent gear and boats at burdensome rates or become exploited as they are forced to sell their services to commercial fishers (Magbanua, 2006).

Thus, this study was conducted to provide information on the sustainability of fishing industry of Aborlan.

Objectives of the Study

Generally, study would like to assess the sustainability of fishing industry in Aborlan, Palawan. Hence, it aims to; (1) describe the nature and mode of fishing activity employed by the respondents (2) volume of fish catch; (3) marketing method, utilization and sustainability (4) find out the government support among the respondents.

REVIEW OF LITERATURES

The Philippine fisheries industry comprises marine fisheries, inland fisheries, and aquaculture. Marine fisheries can be further divided into municipal fisheries and commercial fisheries. Recreational fisheries have not developed in the country. Municipal marine fisheries operate in coastal waters within 15 km from the coastline ("municipal marine waters"), using vessels, as well as fishing without the use of vessels. Commercial fisheries operate outside municipal waters, using vessels.

Inland fisheries operate in inland waters such as lakes, reservoirs and rivers, including estuaries. Aquaculture involves aquatic organisms in fresh, brackish and marine waters. The Philippines ranked eleventh among the top fish producing countries in the world in 2003, with production of 2.63 million tons of fish, crustaceans, mollusks and aquatic plants (including seaweed).

In addition, over 2.2 million km2 of highly productive seas, the Philippines is fortunate to have vast fishery resources at its disposal. However, all of the country's main fish species and marine organisms are showing signs of overfishing. And it was further reported that 2003, marine fisheries production was 2 169 164 tons: 45.38% from municipal and 54.62% from commercial fisheries. The commercial fisheries catch in 2003 comprised small pelagics (59.6%), tunas

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(36.2%) and demersal fishes (4.2%). Accordingly, the eight top species caught by both municipal and commercial fisheries, almost two-thirds were harvested by commercial fishers compared with one-third caught by municipal fishers. This suggests that, although the commercial and municipal fisheries are purported to be two distinctly different sectors, they are in fact competing directly with each other (BFAR. 2005).

According to Aguilar (2005) Philippine fishing boats are classified into municipal and commercial. Municipal fishing boats may further be classified into non-motorized and motorized types. Commercial fishing boats have three categories: small, medium and large.

A majority of boats are double-outrigger craft, consisting of a narrow main hull with two attached bamboo outriggers, commonly called banca. The non-motorized municipal fishing boats use either paddle or sail as means of propulsion, and carry from one to several people, depending on the fishing gear used. During favorable monsoon weather, popular fishing gear used by sail-powered craft includes trolling, hand lines and gillnets. It is also usual for fishers to sail to payao (bamboo rafts, a fish aggregating device), moor their boats to these and fish using hand lines.

As to fishing gear is used by commercial and municipal fisheries to exploit the small pelagic resources. Commercial fisheries use mostly purse seines (61.6%), ring nets (15.7%) and bag nets (12.4%). The small pelagic catch of the municipal fisheries is taken using gillnets (45.5%), hook-and-line (15.3%), ring net (11.5%), beach seine (8.3%), purse seine (3.7%), fish corral (2.9%) and bag net (2.9%), based on 1995 statistics (Zaragosa, et al., 2006).

He further stressed that variety of fishing gear is used to catch tuna. The purse seines, ring nets and hand lines usually account for over 80% of the annual tuna catch, with nearly half the commercial tuna catch in 1995 taken by purse seine. The municipal fisheries employ a variety (over 20 types) of fishing gear for tuna. In 1995, two-thirds of the municipal fisheries tuna catch came from line gear.

Lastly, he added that the principal stocks exploited in the Philippines are small pelagics, tuna and other large pelagic fishes, demersal fishes and invertebrates.Small pelagic (surface- and mid-water-dwelling) fishes as a group comprise predominantly round scads (Decapterus spp., Carangidae), anchovies (Stolephorus spp., Engraulidae), sardines (Sardinella spp., Clupeidae) and mackerels (Rastrelliger spp., Scombridae). Also included in this group are the round herrings (Clupeidae), flying fishes (Exocoetidae) and halfbeaks (Hemiramphidae).

However, a market outlet of any products is essential in its sustainability. According to Luna (2008), the Philippines is an exporter as well as importer of fish and fishery products. In 2003, the balance of trade was positive in terms of quantity and value.

In 2003, total exports of fish and fishery products amounted to 202 016 t, valued at over US$ 525.4 million. The products consisted mainly of fresh and processed fish, crustaceans and mollusks. Leading fishery products were tuna, shrimp and seaweed. The major export destinations of tuna were Japan and the United States of America. The major export destinations of shrimps were Japan, Spain and the United States of America.

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The information somewhat agree with Luna (2008), as he stressed that fish demand is robust in the Philippines, with three main uses. Domestic human consumption is by far the largest single use (2 335 474 t in 2003). The most important species consumed are round scad, Indian sardines, frigate tuna, big-eyed scad, fimbriated sardines and anchovies, which originate from marine waters and are augmented by imports and milkfish and tilapia from aquaculture and inland fisheries.

Fish exports are the second largest use of supply (155 129 t in 2003). The main exported products are tuna, which originate from commercial and municipal marine fisheries, and shrimp from aquaculture.

The smallest portion of demand (332 268 in 2003) is for non-food uses. This consists mainly of imported fishmeal for animal feeds, and snails caught in inland waters for duck feed. The supply divides as about 83% for human consumption and 17% for exports and non-food uses.

According to Bernacsek (2006), the role of fisheries in food security in the Philippines, stated that there are clear indications that fisheries quantity production is approaching real limits to further growth. Government of the Philippines fisheries policy should re-orient and re-focus to emphasize growth in product value added and increase in profitability, rather than the historical focus on quantity output. A new development climate needs to be created which will facilitate active entrepreneurial exploration of new markets for fish products and new export opportunities.

Parallel to this policy shift, sustainability of domestic production needs to be achieved through effective management in order for producers to be able to provide a secure source of raw materials for processors and marketers.

Ingles (2005) reported that in order to attain sustainability, the government should assist fishing industry by providing assistance through awareness program, provisions of policies that enhance further the continuous operation of fishing industry of the country. Philippine Fisheries Code (Republic Act 8550) was signed into law. The Code consolidates all laws pertaining to the fisheries sector and repeals or modifies previous statutes that are inconsistent with it. It declares as a state policy that achieving food security is the main consideration in the development, management, and conservation of fisheries and aquatic resources. Its provisions reflect a strong adherence to long-term sustainability, fully recognizing its multiple dimensions and complex elements in the fisheries context through several prohibitive and regulatory measures seeking to balance protection with reasonable and responsible use

Earlier, in 1991, the Local Government Code (LGC) devolved authority over the management of municipal waters to Local Government Units (LGUs) within the parameters set by national fisheries legislation and policies.

The establishment of Fisheries and Aquatic Resources Management Councils (FARMCs) at the national, provincial and municipal levels has established a legal commitment by the government to involve stakeholders in the development and management of the fisheries industry.

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The Government of the Philippines' most significant policy shift in the past decade has been the introduction of joint management mechanisms of the fisheries sector, involving both the central government and the municipalities, and the government and the fishers (through the FARMCs). The Philippine Community-Based Coastal Resource Management (CB-CRM) program has been very successful at awareness building, with notable pockets of success in implementation. The Philippines has been a leader in devolution of authority for coastal resource management through the LGC and has thus become an example for such actions. However, the challenges of managing fisheries resources in a sustainable manner still remain in most areas.

Silvestre and Pauly (2007) outlined seven main categories of management intervention that the authors believed to be appropriate, given the status of coastal fisheries in the developing countries of Asia. These management interventions are:

1. Limited entry and effort reduction.
2. Gear, area and temporal restrictions.
3. Improvement of marketing and post-harvest facilities.
4. Enhancement of awareness and participation of stakeholders.
5. Reduction of environmental impacts.
6. Institutional strengthening and upgrading.
7. Enhancement of research and information.

METHODOLOGY

This study was conducted in the Municipality of Aborlan, Palawan which consists nine coastal barangays namely: Apo-aporawan, Apurawan, Culandanum, Isaub, Magsaysay, Poblacion, San Juan, Tagpait and Tigman. The stratified random sampling was used to determine the samples. Ten percent of the barangay population was drawn with a total 235 fishermen were serves as respondents of the study. A survey questionnaire was used in the data gathering process as researcher personally administered the instrument to the respondents based on the sampling procedure. The study uses different statistical tools to analyze and interpret the data. Descriptive statistics such as frequency counts, means and weighted means were also employed to discuss the nature and mode of fishing activity, volume of fish catch, status of market outlet and support extended by the local government unit among the respondents.

RESULTS AND DISCUSSIONS

Nature and Mode of Fishing Activity

Table 1 presents the fishing activities performed by the fishermen in Aborlan, Palawan in terms of mode of fishing, type of fishing gear, area of fishing, volume of fish catch, marketing method, fish utilization and process method.

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The study reveals that all (235 or 100%) of the respondents used netting as mode of fishing. Accordingly, all of them affirmed that they used fish net as type of fishing gear. It implies that netting is the common fishing method used by the fishermen in Aborlan, Palawan.

Moreover, majority (155 or 66%) of them confirmed that they catch fish in the Aborlan waters while, 80 or 34 percent of them conducted their fishing activity in Puerto Princesa City waters. This implies that Aborlan waters are abundant in different fish species that sustain the fish consumption of the locale consumers.

Meanwhile, the respondents affirmed that most of their catch fishes are: Bisugo (55 or 23.4%), Bitilya (46 or 19.6%), Burara (37 or 15.7%), Bidbid (35 or 14.9%), Banak (32 or 13.6%), Biloan (30 or 12.8%), Danggit (26 or 11.1%), Biya (25 or 10.6%), Isu (25 or 10.6%) and Buan-buan (21 or 8.9). This implies that different fish species can be found in the municipal waters of Aborlan.

In terms of volume of fish catch, most of the respondents revealed that they catch fish from 10 to 15 kgs. (81 or 34.5%), next are more than 20 kgs. as affirmed by 62 or 26.4 percent, 16 to 20 kgs. as confirmed by 58 or 24.7 percent. Based on the volume, it implies that respondents are small time fishers. This means that fishermen caught the quantity of fish which is according to the market demands.

Among the other type of sustainable fishing practices are minimizing total energy consumption in fishing operations as practice by 43 or 18.3 percent, minimizing the catch of non-targeted species with 25 or 10.6 percent, survival of fish escaping from fish gear with 24 or 10.2 percent and unaccounted mortality in the purse seine fisheries with 5 or 2.1 percent. This implies that fishermen practiced the sustainable fishing in the area.

Table 1: Nature and Mode of Fishing Activity of the Respondents

Characteristics	Frequency	Percent
Mode of Fishing		
Netting	235	100.0
Type of Fishing Gear Used		
Commercial Fish Net	235	100.0
Area of Fishing		
Aborlan	155	66.0
Puerto Princesa City	80	34.0
Kind of Fish Caught		
Bisugo	55	23.4
Bitilya	46	19.6
Burara	37	15.7
Bidbid	35	14.9
Banak	32	13.6
Table 1. Cont...		
Characteristics	**Frequency**	**Percent**

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Kind of Fish Caught		
Biloan	30	12.8
Danggit	26	11.1
Biya	25	10.6
Isu	25	10.6
Buan-buan	21	8.9
Malaga	19	8.1
Gulyasan	18	7.7
Kanduli	17	7.2
Agoot	15	6.4
Chabeta	15	6.4
Espada	15	6.4
Alakaak	12	5.1
Dapa	12	5.1
Twakang	12	5.1
Maming	12	5.1
Kabasi	11	4.7
Matangbaka	10	4.3
Dilat	9	3.8
Dilis - anchovy	9	3.8
Galunggong	9	3.8
Igat / palos - eel	9	3.8
Alumahan	8	3.4
Labahita	8	3.4
Samaral	8	3.4
Salay-salay	8	3.4
Alimango	8	3.4
Lapu-lapu	7	3.0
Malakapas	6	2.6
Alimasag	6	2.6
Ludong	5	2.1
Malakapas	5	2.1
Mamali	5	2.1
Maya-maya	5	2.1
Salay ginto	5	2.1
Tanigue / tangigue	5	2.1
Torsilyo	5	2.1
Hasa-hasa	4	1.7
Sagisi	4	1.7
Sapsap	4	1.7
Talakitok	4	1.7

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Tamban	4	1.7
Torsilyo	4	1.7
Kalaso	3	1.3
Table 1. Cont…		
Characteristics	**Frequency**	**Percent**
Kind of Fish Caught		
Tambakol	3	1.3
Tulingan	3	1.3
Tulya	3	1.3
Dalagang bukid	2	0.9
Lohoran	2	0.9
Loro – parrotfish	2	0.9
Malasugi	2	0.9
Pampano	2	0.9
Pusit	2	0.9
Silinyasi	2	0.9
Halaan	1	0.4
Volume of Fish Catch		
less than ten kilos	34	14.5
10 – 15 kgs.	81	34.5
16 – 20 kgs.	58	24.7
More than 20 kgs.	62	26.4

Marketing Method, Utilization and Sustainability

Majority of them sell to market as fresh with 187 or 79.6 percent while, 44 or 18.7 percent of them engaged in drying and four or 1.7 percent of them process the fish in fermentation. It implies that respondents prepared to sell the catch fish directly to the market rather than to process it into other fish products.

With regards to fish utilization, majority (224 or 95.3%) of the respondents utilized the fish as market demand. Only small percentage of them utilized fish as food consumption and for processing purposes. Moreover, all (235 or 100%) of them affirmed that they conducted drying in processing method. This implies that respondents preferred to sell fish directly to the market rather than to process it into other forms of by-products.

Further, sustainable fishing is practice in the study locale. Majority of the fishermen used the ideal fishing gear in fishing (223 or 94.9%). More than half (122 or 51.9%) maintain the quantity of the catch (Table 2).

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Table 2: Marketing Method, Utilization and Sustainability

Characteristics	Frequency	Percent
Marketing Method		
Sell To Market (Fresh)	187	79.6
Drying	44	18.7
Fermentation	4	1.7
Utilization		
As food consumption	7	3.0
As market demand	224	95.3
For processing	4	1.7
Table 2. Cont...		
Characteristics	**Frequency**	**Percent**
Process Method		
Drying	235	100.0
Type of Sustainable Fishing*		
Survival of fish escaping from fish gear	24	10.2
Unaccounted mortality in the purse seine fisheries	5	2.1
Minimizing total energy consumption in fishing operations	43	18.3
Minimizing the catch of non-targeted species	25	10.6
Maintain the quantity of the catch	122	51.9
Using ideal fishing gear	223	94.9

Government Support towards Fishing Industry of Locality

It reveals that at much evident fishers cooperative establish by the LGU and the LGU is full support to the needs of the fishermen with mean scores of 4.07 and 4.06 respectively. Moreover, according to them as much evident regular evaluation and assessment is conducted by LGU (4.03), loan is provided to local fishermen (3.92) and the LGU conducted trainings and seminars about fishing (3.99).

The over-all mean of 4.01, implies that the LGU is supportive to the fishermen in Aborlan, Palawan. This was evident by giving support to them like granting loan programs, conducting trainings and assessment (Table 3).

Table 3. Government Support towards Fishing Industry of Locality

Statement	MS	DR
The LGU conducted trainings and seminars about fishing.	3.99	ME
Fishers cooperative establish by the LGU.	4.07	ME
Loan is provided to local fishermen.	3.92	ME
The LGU is full support to the needs of the fishermen.	4.06	ME
Regular evaluation and assessment is conducted by LGU.	4.03	ME
Over-all Mean:	**4.01**	**ME**

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Legend:	Scale	Descriptive Rating
	4.50 - 5.00	Very Much Evident
	3.50 - 4.49	Much Evident
	2.50 - 3.49	Evident
	1.50 - 2.49	Evident to a Little Extent
	1.00 - 1.49	Not Evident

CONCLUSIONS

Based on the significant findings of the study, respondents used commercial nets in their fishing activity and caught variety of fish with a minimal volume of more or less 20 kgs per operation. Further, respondents sold the caught fish directly to the market rather than to process it into other fish products as they practiced the sustainable fishing in the area. Meanwhile, the LGU was supportive to them by giving support and granting loan programs, conducting trainings and assessment.

RECOMMENDATIONS

After a comprehensive assessment of the findings and conclusion of the study it was found out that the fishing industry in the Municipality of Aborlan is sustainable enough for a consumption and local market distribution. Hence, the following recommendations was made;

To the Respondents

1. Attend to the trainings and seminars conducted and offered by the authority to enhance their fishing skills.
2. Engage in other activity by which an additional source of income may derived.
3. Develop the fish by-products to increase their income. If possible try to process the caught fish into different products or items that are accepted in the general market.

To the LGU Officials

1. Provide assistance to the fisher folks like financial support to the local fishers. Conduct trainings to the fishing village with regards to fish processing.
2. Strictly implement the local laws or Municipal Ordinance particularly in the provision of illegal fishing. Promote the importance of sustainable fishing.

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