# The Fishing Industry in Ilocos Sur: An Occupation

SOLITA EVANGELINE S. BANEZ
CONCEPCION B. AZARES,
MATEO L. CABANTING, JR.
AVELINO B. FELICITAS, JR.

## Abstract

*The study was conducted to determine the socio-demographic and socio-economic characteristics of fishermen in Ilocos Sur. Likewise, it sought to evaluate the catches per fishing effort of the fishermen. Problems confronting the fishermen were also determined. Fishing methodologies, materials and equipment used by the fisher-respondents were assessed and the kind and source of assistance received by the fishermen were also determined.*

*The study covered the municipalities of Ilocos Sur with coastal barangays namely: Sta. Maria, Narvacan, San Juan, Tagudin, Cabugao, Santa, San Esteban, Magsingal, Sinait, Sta. Lucia, San Vicente, Santiago, and Vigan. It was conducted from April 2000 to March 2001. It utilized the descriptive method with the aid of a questionnaire, supplemented by personal interviews.*

*Most of fisherfolks were male, married, belonged to ages 35-44, attained elementary or high school education, and their average number of dependents was four.*

*Most of the respondents were earning below P5,000.00 monthly. Aside from fishing, 31.24% were engaged in farming. Majority of them bought and built their houses, described as semi-permanent bungalow dwelling. Radio and electric iron were the most acquired appliance and facility. Most of the fishermen did not have helpers in fishing and claimed that their income was not enough for their family.*

*Majority of the fishermen went fishing everyday. The most frequently caught fishes were buslugan, pusit, balaki, mataan, barangawan, barangan, burador, kabalias, oriles, and talakitok. As to the mmber of kilos caught per fishing effort, sapsap had the highest average, followed by barangawan, kurapo, tirong, burador, pusit, dorado, talakitok, talibuno, and mulmol. The most expensive fishes (pesos per kg) were the following: angrat, buliduw, kapiged, kambaya, maya-maya, kabalias, pasayan, susay, barangawan, and dorado. Majority used bantak fishing rod because it was cheap and affordable. Motorized boat was the most expensive material and petromax was the cheapest. Out of 445 respondents only 10.11% received technical assistance and 6.52% received material assistance. A few catch was the most common problem met by the fishermen. Strict implementation of fishery laws was the first suggestion of the fisherfolks to solve their problems*

# Introduction

In a world in which the arable land areas have been almost fully explored, the food potential of the seas is attracting increased attention.

Filipinos are fish consumers by tradition. Although the Philippines has vast areas of aquatic resources which serve as great sources of food and income, it is ironic that fish shortages for local consumption are perennially felt. The inland fishing industry is faced with a fry shortage crisis at present. Fish farmers hardly get enough fry for year-round production. To make matters worse, the price of fry is increasing because of limited sources.

We must realize that there is an ever present sense of urgency in everything we must do to manage our natural resources as the main source of our survival. Through the experiences of fishermen today, the number of fish they catch is already declining compared to that of the previous years. Several factors may have contributed to this condition, among which are: a) lack of cooperation among fishermen and fish vendors as well as lack of appreciation or concern to develop a uniform system of measuring device in wholesale and retail transactions; b) improper management and conservation of water resources; c) engaging in illegal fishing activities like the use of finemesh nets, electrofishing, blast/explosive fishing, and cyanide fishing which tremendously affect the life cycle of the fishes as well as destroy their habitat; and d) dumping of human and industrial wastes into the bodies of water which results to water pollution.

Clearly, there is a need to improve the system. The government through the Philippine Council for Aquatic and Marine Resources Development (PCAMRD) and the Department of Science and Technology (DOST) launched "ISDA Para sa MASA" or Fisheries Information and Services for Depressed Areas, a flagship program. It aims to benefit upland and coastal fisherfolk and farmers. In the implementation of the program, beneficiaries will be identified by the DOST Regional Offices in cooperation with local government units.

The PCAMRD has initiated various national and international programs on aquaculture, inland waters, marine fisheries, coastal resources management, and marine science.

Cognizant of the government's aim, the researchers believe that this study will serve as a basis of information regarding the present status of fishermen in the province. They further inferred that something has to be done to improve or re-structure the present system of fishing in Ilocos Sur.

In the future this study will lead to a mechanism to be developed to gather and put together the latest and most relevant findings into a "packaged" technology so that it could be used more easily to improve production and subsequently, the livelihood of our people.

## Objectives

This study aimed to determine the socio-economic profile of fishermen in the coastal barangays of the Province of Ilocos Sur.

Specifically, it aimed to:

I. Determine the profile of the respondents in terms of socio-demographic and economic characteristics.
2. Evaluate the fishermen's catches per fishing effort.
3. Assess the fishing methodologies and the materials/equipment used by the fisher-respondents.
4. Determine the kind and source of assistance received.
5. Identify the problems confronting the fishermen and to source out possible solutions, thus alleviating their livelihood.

## Scope and Limitation of the Study

The scope of the study covered the municipalities of Ilocos Sur with coastal barangays, namely: Sta. Maria, Narvacan, San Juan, Tagudin, Cabugao, Santa, San Esteban, Santiago, Sinait, Sta. Lucia, Magsingal, San Vicente, and Vigan. The researchers attempted to study the socio-economic profile of the fishermen. It also determined the fishing practices in the said coastal areas. The problems of the fisherfolks and the assistance received were also included.

This study was conducted from April 2000 to March 200I.

## Review of Related Literature

Rabanal and Correa (1998) conducted a similar study entitled, "Socio-Economic Evaluation of Mud Crab and Prawn Industry in Northern Cagayan" and found out that majority of the respondents involved in the mud crab industry of Northern Cagayan are 41 years old and above. The grower-respondents were mostly high school graduates which could be an indicator that this particular segment of the industry requires a slightly more complex skill. Majority of the mud crab respondents had an average catch of 10I kg or more (83.3%), which they sold directly to consumers at P90-l29/kg (87.5%). Their average income from mud crab growing ranged from P6,000-16,000.

Asia, et. al. (1998), in their study entitled, "Socio-Economic Study of Fishery Resource Management in Ilocos Norte", found out that majority of the respondent fishermen are married and most of them are elementary graduates. Majority of them had an estimated annual income of P31,000-40,000.

Villarao, et. al. (1998) in their study entitled, "Catch and Effort in Batanes Waters", found out that for two consecutive years (October 1997-September 1999), a

total of 516 fish species belonging to 64 families were identified. During the second year, there was about 49% increase from the 346 species and 32 families observed on the first year of the study. The most abundant groups in terms of aggregate weight particularly during the summer months are Exocoetidae (flying fish), Coryphaenidae (dolphinfish), Belonidae (needlefish), Caesonidae (fusilier), and Lethrinidate (surgeonfish).

Based on the data from October 1997 to September 1998, annual fish production is estimated at 40 tons. The data, however, from October 1998-September 1999 yielded a higher figure, approximately 71 tons (76.6% increase from the previous year). A total of 943 fishermen residing in the five study areas and employing 24 kinds of fishing gears contributed to this production. Modified encircling gillnet contributed the highest annual production of 20.59 tons (28.94% of the annual production); followed by the bottom drive-in gillnet – 10.03 tons (14.11%); troll line – 9.93 tons (13.96%), drift gillnet-9.08 tons (12.76%); spear gun – 7.79 tons (10.95%); and the rest of the gears accounted for the remaining – 13.72 tons (19.28%).

In the study of Domingo (1998) entitled, "Inventory and Assessment of Tuna Fishes and By-Catches in Major Fishing Grounds of Ilocos Sur, she concluded that:

1. There are no seasonal differences in the mean catch per fishing effort of tuna fishes in Ilocos Sur.
2. There are seasonal and spatial differences in the mean price per kilo of tuna fishes in Ilocos Sur. Prices are lower during the months of January to March, the month when there are more tuna by-catches. Prices are also lower when there are more catches, supportive of the "Law of Supply and Demand."
3. There tends to be a big gap between the in-shore price and the local market price. This is probably due to the presence of middlemen and poor postharvest handling operations.
4. Several fish species are caught in association with tuna. These include salmon, dorado, roundscad, and marlin.

The fishing industry contributes significantly to national food security by generating jobs and livelihood opportunities to small entrepreneurs. Likewise, it generates business opportunities for big-scale entrepreneurs. The importance of the fishing industry is reflected in its contribution to the gross value added in agriculture, in general.

## Methodology

This section presents the research design, the population and sample, data gathering instrument, and statistical treatment of data.

**Research design.** This study utilized the descriptive method with the aid of a questionnaire, supplemented by personal interview. Out of the data gathered, findings were summarized, analyzed, and interpreted.

**Population and sample.** The fisher folks in the 13 municipalities of Ilocos Sur served as the primary respondents of this study. There were 445 respondents of the study, chosen through random sampling. Table 1 shows the distribution of respondents per municipality.

**Table 1. Frequency distribution of respondents by municipalities of Ilocos Sur.**

| MUNICIPALITY | POPULATION |
|---|---|
| Tagudin | 48 |
| Sinait | **48** |
| Sta. Lucia | 42 |
| Narvacan | 40 |
| Magsingal | 40 |
| Cabugao | 39 |
| Santiago | 35 |
| San Juan | 34 |
| Sta. Maria | 33 |
| Vigan | 30 |
| Santa | 27 |
| San Vicente | 15 |
| San Esteban | 14 |

# Discussion of Results

## Socio-demographic Characteristics of the Respondents

Table *2* presents the socio-demographic characteristics of the respondents.

**Sex.** As expected there were more male fishermen (96.85%) than female fishermen (3.15%). This implies that men are really stronger to explore the sea and are really the breadwinners of their families.

**Civil status.** Among the respondents, 88.55% were married, 8.76% were single, 2.02% were widow/er, and 0.67% were separated.

**Age.** Out of the 445 respondent-fishermen, 34.38% belonged to the age bracket of 35-44 and 31.69% to age bracket of *45-54.* Only a few belonged to the 55-74 age bracket (15.25%) and 15-24 age bracket (2.70%). The average age of fishermen in Ilocos Sur was 44 years.

**Table 2. Distribution ofrespondents in terms of their socio-demographic characteristics.**

| SOCIO-DEMOGRAPHIC CHARACTERISTIC | NO. N=445 | % |
|---|---|---|
| **Sex** | | |
| Male | 431 | 96.85 |
| Female | 14 | 3.15 |
| **Civil status** | | |
| Single | 39 | 8.76, |
| Married | 394 | **88.55** |
| Widower | 9 | 2.02 |
| Separated | 3 | 0.67 |
| **Age** (years) | | |
| 15--24 | 12 | 2.70 |
| 25 –34 | 71 | 15.95 |
| 35–44 | 153 | 34.38 |
| 45–54 | 141 | 31.69 |
| *55–64* | 54 | 12.13 |
| 65–74 | 14 | 3.15 |
| Average ape = 43.9 or 44 | | |
| **Educational attainment** | | |
| No schooling | 2 | .45 |
| Did not finish Elementary | 61 | 13.71 |
| Elementary graduate | 130 | 29.21 |
| Did not finish High School | 95 | 21.35 |
| .. High School graduate | 110 | 24.72 |
| Did not finish college | 27 | 6.07 |
| College graduate | 20 | 4.49 |
| **Number of children** | | |
| 1 - 2 | 116 | 26.07 |
| 3–4 | 190 | 42.70 |
| **5--6** | 94 | 21.11 |
| **7 - 8** | 31 | 6.97 |
| 9–10 | 10 | 2.25 |
| 11--12 | 4 | 0.90 |
| Average number of children = 3.9 or 4 | | |
| **Number** of **dependents** | | |
| 1–2 | 68 | 15.28 |
| 3–4 | 174 | 39.10 |
| 5–6 | 147 | 33.03 |
| 7--8 | 38 | 8.54 |
| 9–10 | 14 | 3.15 |
| 11–12 | 4 | 0.90 |
| Average number of dependents = 4.5 or 4 | | |

**Educational attainment.** More fishermen finished elementary (29.21%) or high school (24.72%) than those who finished college (4.49%). Only 0.45% did not have any schooling.

. **Number** of children, Less than half (42.70%) of the respondents had 3-4 children; 26.07% had 1-2 children; and 0.90% had I1–12 children. The average number of children was four.

Number of dependents. More or less one-third of the respondents had 3-4 dependents (39.10%) or 5-6 dependents (33.03%). Only 0.90% had 11–12 dependents. Similar to the number of children, the average number of dependents was 4.

## Economic Characteristics of the Respondents

Table 3 presents the distribution of respondents in terms of their economic characteristics.

Monthly income of the family. The monthly income of 62.02% of the respondents was below P5,000; 36.40% had P5,000-10,000; and 1.57% earned Pl 1,000 and above.

Other sources of income. The respondents had also other sources of income, namely: farming (31.24%), work with neighbors (16.18%), carpentry (10.79%), tricycle/jeep driver (6.97%), private employee, government employee, teaching, SK chairman, swine fattening, tailoring, and sari-sari store owner, but 30.79% did not have any other source of income which means that their maintenance depends only upon fishing.

Sufficiency of family income. Two-thirds (65.62%) of the fisher-respondents claimed that their income was not sufficient for their family.

**House** ownership. Majority of the respondents (85.17%) owned their houses. Out of 14.83% who did not own their houscs, 16.67% were renting, 27.27% were caretakers, 50.0% stayed in the house of their relatives, and 6.06% did not still own their house because they acquired it through loan.

**Kind of** house. An almost equal number of respondents had permanent bungalow dwelling (26.29%), a semi-permanent bungalow dwelling (27.86%), and a temporary bungalow dwelling. On the other hand, a few had permanent two-storey house (2.70%), semi-permanent two-storey house (6.52%), and temporary two-storey house (2.92%). These indicate that the majority of the fisherfolks had semi-permanent and temporary dwellings. This implies that the fisherfolks are living below the poverty line. They need more assistance to improve their livelihood so that they can afford to build a permanent dwelling to protect them from typhoons and other natural calamities.

Table 3. Distribution of respondents in terms of their economic characteristics.

| ECONOMIC CHARACTERISTIC | NO. N=445 | % |
|---|---|---|
| **Monthly income of the family** | | |
| Below P 5000 | 276 | 62.02 |
| P 5000–6999 | 84 | 18.88 |
| 7000–8999 | 71 | 15.95 |
| 9000 – 10999 | 7 | 1.57 |
| 11000– 12999 | 4 | 0.90 |
| 13000 – 14999 | 2 | 0.45 |
| 15000 & above | 1 | 0.22 |
| **Other sources of income** | | |
| Fanning | 139 | 31.24 |
| Tricycle/jeep driving | 31 | 6.97 |
| Carpentry | 48 | 10.79 |
| Work with neighbors | 72 | 16.18 |
| Private employee | 2 | 0.45 |
| Government employee (clerical) | 3 | 0.67 |
| Teaching | 2 | 0.45 |
| SK chairman | 2 | 0.45 |
| Swine fattening | 3 | 0.67 |
| Tailoring | 1 | 0.22 |
| Sari-sari store | 5 | 1.12 |
| None | 137 | 30.79 |
| **Sufficiency of income for the family** | | |
| Sufficient | 153 | 34.38 |
| Not sufficient | 292 | 65.62 |
| **House ownership** | | |
| Yes | 379 | 85.17 |
| No | 66 | 14.83 |
| **Ifnot, what?** | n=66 | |
| House of relative | 33 | 50.00 |
| Caretaker | 18 | 27.27 |
| Renting | 11 | 16.67 |
| Loan | 4 | 6.06 |
| **Kind of house** | | |
| Bungalow | | |
| Semi-permanent | 124 | 27.86 |
| Temporary | 121 | 27.19 |
| Permanent | 117 | 26.29 |
| Two-storey | | |
| Semi-permanent | 29 | 6.52 |
| Temporary | 13 | 2.92 |
| Permanent | 12 | 2.70 |
| Bahay-kubo | 29 | 6.52 |

Table 3. Continued.

| ECONOMIC CHARACTERISTIC | NO. N=445 | % |
|---|---|---|
| Appliances | | |
| Radio | 348 | 78.20 |
| Television | 230 | 51.69 |
| Refrigerator | 127 | 28.54 |
| Washing machine | 95 | 21.35 |
| Living room set | 62 | 14.16 |
| Dining set | 55 | 12.36 |
| Stereo | 53 | 11.91 |
| Component | 50 | 11.24 |
| Electric fan | 25 | 5.62 |
| Sewing machine | 5 | 1.12 |
| Karaoke | 2 | 0.45 |
| Cell phone | I | 0.22 |
| Facilities | | |
| Electric iron | 168 | 37.75 |
| Water pump | 142 | 31.91 |
| Generator | 80 | 17.98 |
| Tricycle | 47 | 10.56 |
| NAWASA | 31 | 6.97 |
| Jeep (passenger) | 9 | 2.02 |
| Jeep (owner) | 7 | 1.57 |
| Kuliglig | 6 | 1.35 |
| Car | 4 | 0.90 |
| Motorcycle | 3 | 0.67 |
| Number of helpers in fishing | | |
| No helper | 340 | 76.40 |
| 1–2 | 77 | 17.30 |
| 3–4 | 24 | 5.39 |
| 5–6 | 3 | 0.67 |
| 7--8 | I | 0.22 |

Appliances. The radio was the most acquired communication facility (78.20%) because it was affordable and it provides updated infonnation that can be easily understood by the fisherfolks. The other appliances owned by the fisherfolks were television (51.69%), refrigerator (28.54%), washing machine (21.35%), living room set (14.16%), and dining set (12.36%).

**Facilities**. The most acquired facility was electric iron (37.75%). This indicates that pressing their clothes was their priority and it was affordable because it was inexpensive. Moreover, 31.91% had water pump; 17.98% had generator; 10.56%, tricycle; and 2.02% had passengers jeep. Ownership of the last two mentioned facilities shows that they also use these as other sources of income.

Number of helpers in fishing. Majority of the respondents (76.40%) had no helper in their fishing activities. Only a few had 1-2 helpers (17.30%) or 3-4 helpers (5.39%). Three respondents had 5-6 hclpers and one fisherman had 7-8 helpers. This implies that only a few fisherfolks could afford to hire helpers in their fishing activities and these have more capital and fishing facilities.

## Fishing Activities of the Respondents

Table 4 presents the distribution of respondents in terms of their fishing activities.

Table 4. Distribution of respondents in terms of their fishing activities.

| FISHING ACTIVITY | NO. N=445 | % |
|---|---|---|
| Frequency of catching fish | | |
| Once a week | 27 | 6.07 |
| Twice a week | 76 | 17.08 |
| Three times a week | 148 | 33.26 |
| Everyday | 194 | 43.59 |
| Time spent for fishing | | |
| One hour | 16 | 3.59 |
| Two hours | 31 | 6.97 |
| Three hours | 138 | 31.01 |
| Four hours | 82 | 18.43 |
| Five hours | 16 | 3.59 |
| Seven hours | 11 | 2.47 |
| One-half day | 84 | 18.88 |
| Whole day | 67 | 15.06 |
| Average fishing time = 8 hrs. | | |

Majority of the fishermen (43.59%) caught fish everyday. Some (33.26%) did so three times a week, 17.08%, twice a week, and 6.07%, once a week.

Almost one-third of the fisherfolks (31.01%) spent three hours fishing; 18.88% spent one-half day; 18.43% spent four hours; 15.06% spent the whole day; and 6.97% spent two hours. The average fishing hour was 8. This shows that the average respondent was a full-time fishennan.

## Kinds of Fishes Caught

Table 5 presents the distribution of respondents in terms of the kinds of fish caught.

Table 5. Distribution of respondents according to the top 10 fishes most abundantly caught.

| KIND OFFISH | | NO. | % | RANK |
|---|---|---|---|---|
| LOCAL NAME | SCIENTIFIC NAME | | | |
| Buslugan | *Katsuwonus pelamis* | 56 | 12.58 | 1 |
| Pusit | *Loligo* sp. | 54 | 12.13 | 2 |
| Balaki | *Mullidae* spp. | 49 | 11.01 | 3 |
| Mataan | *Carangidae* sp. | 42 | 9.44 | 4 |
| Barangawan | *Thunnus albacares* | 36 | 8.09 | 5 |
| Barangan | *Siganus canaliculatus* | 35 | 7.87 | 6 |
| Burador | *Cypsehurus agoo agoo* | 31 | 6.97 | 7 |
| Kabalias | *Carangidae* sp. | 30 | 6.74 | **8.5** |
| Oriles | *Thunnidae* sp. | 30 | 6.74 | 8.5 |
| Talakitok | *Carangidae* sp. | 29 | 6.52 | 10 |

The top 10 fishes most abundantly caught are the following: buslugan (12.58%), pusit (12.13%), balaki (11.01%); mataan (9.44%), barangawan (8.09%), barangan (7.87%), burador (6.97%), kabalias (6.74%), oriles (6.74%) and talakitok (6.52%).

The fishes that were least caught are the following: tirong, purong, bakalaw, bonito, palapal, dongdongpop, ikuran, pugot, and babayo.

Other kinds of fishes caught are the following: amber, ampid, angrat, arideng-deng, ariyaw-yaw, baraniti, baramban, barasot, bilis, bisugo, bogsi, bulong-unas, bukto, bulidaw, camcambaya, dorado, ilek, kurapo, kambaya, kapiged, kurita, lapu-lapu, layalay, lalakasen, lumitog, maya-maya, monamon, mulmol, oso-os, padas, pasga, pating, pasayan., salmon, sapsap, susay, sungayan, talibuno, tanggigi, tamban, ti-i, and tuna.

## Weight of Fishes Caught

Table 6 presents the average weight (kg) per kind of fish caught per fishing effort.

The data show that sapsap ranks first with an average of 109.50 kg, followed by barangawan (72.28 kg), kurapo (47.00 kg), tirong (46.24 kg), burador (45.89 kg), pusit (44.68 kg), dorado (43.25 kg), talakitok (42.23 kg), talibuno (40.59 kg) and mulmol (39.90 kg).

Sapsap was not one of the most abundant and easily caught fish, however, it ranks first as to the average weight per kind of fish caught per fishing effort of the fishermen.

Table 6. Top 10 fishes according to average weight (kg) per kind of fish caught per fishing effort.

| KIND OF FISH | | AVERAGE WEIGHT (kg) | RANK |
|---|---|---|---|
| LOCAL NAME | SCIENTIFIC NAME | | |
| Sapsap | *Leiognathidae* sp. | 109.50 | 1 |
| Barangawan | *Thunmus albacares* | 72.28 | 2 |
| Kurapo | *Serranidae* sp. | 47.00 | 3 |
| Tirong | *Caesio* sp. | 46.24 | 4 |
| Burador | *Cypselurus agoo agoo* | 45.89 | 5 |
| Pusit | *Loligo* sp. | 44.68 | 6 |
| Dorado | *Coryphaeinidae* sp. | 43.25 | 7 |
| Talakitok | *Carangidae* sp. | 42.23 | 8 |
| Talibuno | *Leiognathidae* sp. | 40.59 | 9 |
| Mulmol | *Libridae* sp. | 39.90 | 10 |

**Price of Fishes Caught**

Table 7 shows that the most expensive fishes are the following: angrat, with an average price of P93.50/kg, followed by bulidaw (P89.50/kg), kapiged (P89.50/kg), babayo (P86.64/kg), maya-maya (P78.97/kg), kabalias (P77.00/kg), pasayan (P73.35/kg), susay (P73.31/kg), barangawan (P72.28/kg), and dorado (P60.70/kg).

**Table 7. Top 10 fishes according to average price per kilo of fish caught per fishing effort (in pesos).**

| KIND OF FISH | | AVERAGE PRICE PER Kg (Pesos) | RANK |
|---|---|---|---|
| LOCAL NAME | SCIENTIFIC NAME | | |
| Angrat | *Lutjanus* sp. | 93.50 | 1 |
| Bulidaw | *Gemyplidae* sp. | 89.50 | 2.5 |
| Kapiged | ***Scatophagus argus*** | 89.50 | 2.5 |
| Babayo | *Tylosorus sp.* | 86.64 | 4 |
| Maya-maya | *Lutjanidae* sp. | 78.97 | 5 |
| Kabalias | *Carangidae* sp. | 77.00 | 6 |
| Pasayan | *Penasus* sp. | 73.35 | 7 |
| Susay | *Hemiramphus sp.* | 73.31 | 8 |
| Barangawan | *Thunnus albacares* | 72.28 | 9 |
| Dorado | *Coryphaenidae* sp. | 60.70 | 10 |

According to the fish vendors, when these fishes are sold at the local market, angrat costs P250/kg, bulidaw (P350/kg), kapiged (P120-150/kg), maya-maya (PI50-I70/kg), kambaya (PI20-150/kg), pasayan (PI20-180/kg), susay (P80-90/kg), barangawan (P80-90/kg), and dorado (PI00-120/kg).

This implies that there is a big difference in the prices of fish between the wholesalers and retailers. The fish vendors have bigger gains.

According to the fisher-respondents, the cheapest fishes are the following: ampid, lumitog, and tirong (P9.50/kg each), followed by salmon, lapu-lapu (small), and barangan (P13.50/kg each). While these are considered the cheapest fishes bought from the fishermen, the fish vendors sold them at high prices in the market because they had to pay the rental and market fees.

## Materials/Equipment Used by Fisher-respondents

Table 8 presents the materials and equipment used by the respondents in fishing.

Less than half of the respondents (44.49%) used a fishing rod (bantak); 41.35% used a net (sigay); 35.95% used a motorized boat; 16.40% used non-motorized banca; and 9.44% used net (tabukol). The data imply that the fisherfolks could not afford to buy motorized banca because it was expensive and majority used fishing rod (bantak) because it was cheap and affordable. On the other hand 6.29% borrowed a net (sigay); 5.62% borrowed motorized boat; 5.17% rented motorized boat; and 3.15% rented a net (tabukol).

**Table 8. Fishing materials/equipment used by fishermen.**

| MATERIAL | FREQUENCY OF MENTION N=445 | % |
|---|---|---|
| **Owned** | | |
| Fishing rod (Bantak) | 198 | 44.49 |
| Net (Sigay) | 184 | 41.35 |
| Motorized boat | 160 | 35.95 |
| Non-motorized banca | 73 | 16.40 |
| Net (Tabukol) | 42 | 9.44 |
| Cages | 32 | 7.19 |
| Raft | 23 | 5.17 |
| Pana | 21 | 4.72 |
| Petromax | 8 | 1.80 |
| **Borrowed** | | |
| Net (Sigay) | 28 | 6.29 |
| Motorized boat | 25 | 5.62 |
| Non-motorized banca | 13 | 2.92 |
| Fishing rod (Bantak) | 9 | 1.57 |
| Cages | 4 | 0.90 |
| Net (Tabukol) | 3 | 0.67 |
| Raft | 2 | 0.45 |
| **Rented** | | |
| Motorized boat | 23 | 5.17 |
| Net (Tabukol) | 14 | 3.15 |
| Net (Sigay) | 11 | 2.47 |
| Non-motorized boat | 6 | 1.35 |

## Expenses in Procuring Materials/Equipment

Table 9 presents the expenses incurred in buying the materials/equipment used in fishing.

Out of 183 fishermen 22.95% spent P90,000-109,999 in acquiring a motorized boat although 21.86% spent less (P30,000-49,999). The average fisherman spent P60,709.88 for motorized boat. Their average expenses for materials/equipment are the following: P5,901.28 for non-motorized banca; P4,463.98 for gasoline per month; P3,124.50 for a net (tabukol); P6,240.52 for a net (sigay); P3,749.48 for cages; P218.25 for petromax; P2,572.23 for fishing road; P869.26 for pana; and P1,163.41 for a raft.

The data indicate that the most expensive equipment used by the fishermen was the motorized boat and the least costly was the petromax . This implies that most of the respondents are daytime fishermen. Majority of them made use of fishing rods (44.49%) and sigay (43.82%) in fishing because these are cheap.

**Table 9. Expenses incurred in procuring materials/equipment used in fishing.**

| ITEM/EXPENSE (pesos) | NO. | % |
|---|---|---|
| **Motorized boat** | **n= 183** | |
| Below 10,000 | 9 | 4.92 |
| 10,000 – 29,999 | 24 | 13.11 |
| 30,000 -- 49,999 | 40 | 21.86 |
| 50,000–69,999 | 35 | 19.13 |
| 70,000 -- 89,999 | 33 | 18.03 |
| 90,000 & above | 42 | 22.95 |
| Average = 60,709.88 | | |
| Non-motorized banca | n= 79 | |
| 1,000 & below | 4 | 5.06 |
| 1,001 –3,000 | 12 | 15.19 |
| 3,001 – 5,000 | 13 | 16.46 |
| 5,001 --7,000 | 23 | 29.11 |
| 7,001--9,000 | 14 | 17.72 |
| 9,000 & above | 13 | 16.46 |
| Average = 5,901.28 | | |
| Gasoline per month | **n= 183** | |
| 1,000 & below | 33 | 18.03 |
| 1,001 – 3,000 | 24 | 13.11 |
| 3,001– 5,000 | 43 | 23.50 |
| 5,001–7,000 | 50 | 27.33 |
| 7.001 --9,000 | 33 | 18.03 |
| Average = 4,463.98 | | |

Table 9. Continued.

| ITEM/EXPENSE (pesos) | NO. | % |
|---|---|---|
| Net (tabukol) | **n= 56** | |
| I000&below | 13 | 23.21 |
| 1,001 –3,000 | 16 | 28.57 |
| 3,001 – 5,000 | 20 | 35.72 |
| 5,001 --7,000 | 3 | 5.36 |
| 7,001 –9,000 | 4 | 7.14 |
| Average = 3,124.50 | | |
| Net (sigay) | **n= 195** | |
| P1,000 & below | 23 | 11.79 |
| 1,001 –3,000 | 39 | 20.00 |
| 3,001– 5,000 | 21 | 10.77 |
| 5,001 –7,000 | 11 | 5.64 |
| 7,001 –9,000 | 22 | 11.28 |
| Above 9,000 | 79 | 40.52 |
| Average = 6,240.52. | | |
| Cages | **n= 32** | |
| 1,000 & below | 4 | 12.50 |
| 1,001 –3,000 | 10 | 31.25 |
| 3,001 -- 5,000 | 11 | 34.38 |
| 5,001 –7,000 | 6 | 18.75 |
| 7,001 –9,000 | I | 3.12 |
| Average = 3,749.48 | | |
| Petromax | **n=8** | |
| 100–149 | 1 | 12.50 |
| 150 – 199 | 3 | 37.50 |
| 200–249 | 1 | 12.50 |
| 250 –299 | 2 | *25.00* |
| Above 300 | 1 | 12.50 |
| Average = 218.25 | | |
| Fishing rod | **n =198** | |
| 500 & below | *59* | 29.80 |
| 501–2,500 | 60 | 30.30 |
| 2,501 – 4,500 | 32 | 16.16 |
| 4,501–6,00 | 30 | 15.15 |
| abovc6,500 | 17 | 8.59 |
| Average = 2,572.23 | | |
| **Pana** | **n= 21** | |
| 500 & below | 6 | 28.56 |
| 501 –1,000 | 8 | 38.10 |
| 1,001 –1,500 | 3 | 14.29 |
| 1,501–2,00 | 4 | 19.05 |
| Average = 869.26 | | |
| Raft | **n= 23** | |
| P500 & below | 3 | 13.04 |
| 501 – 1,000 | *5* | 21.74 |
| 1,001 –1,500 | 10 | 43.48 |
| 1,501–2,000 | 3 | 13.04 |
| Above2000 | 2 | 8.70 |
| Average = 1,163.41 | | |

**Assistance Received by the Fisher-respondents**

Table IO shows that out of 445 fishermen, only 132 received technical assistance in the form of seminar on fishing laws and regulations (27.27%), training on fish catching using a fishing rod (18.94%), lecture on fishing and trainings on fish preservation (17.42% cach).

**Table to. Distribution of respondents in terms of the kind of assistance received.**

| KIND OF ASSISTANCE | NO. | % |
|---|---|---|
| **Technical assistance** | n = 132 | |
| Seminar on fishing laws & regulations | 36 | 27.27 |
| Training on fish catching using fishing rod | 25 | 18.94 |
| Lecture on fishing | 23 | 17.42 |
| Training on fish preservation | 23 | 17.42 |
| Training on net-making | 15 | 11.36 |
| Brochure on fish propagation | 10 | 7.58 |
| **Marketing assistance** | **n =61** | |
| Provision of transportation for marketing | 20 | 32.79 |
| Information on the best place to market | 15 | 24.59 |
| Seminar on selling techniques | 14 | 22.95 |
| Seminar on marketing techniques | 12 | 19.67 |
| **Financial assistance** | n=74 | |
| Cash for the purchase of fishing equipment | 33 | 44.59 |
| Cash for maintenance of fishing equipment | 26 | 35.14 |
| Cash for paying laborers | 15 | 20.27 |
| **Material assistance** | n=74 | |
| Boat | 22 | 29.73 |
| Fishing rod | 18 | 24.32 |
| Net (tabukol) | 16 | 21.62 |
| Net (sigay) | 13 | 17.57 |
| Pana | 5 | 6.76 |

Marketing assistance was given to 61 fisher-respondents. They were given transportation for marketing (32.79%), information on the best place to market (24.59%), seminar on selling techniques (22.95%), and seminar on marketing techniques (19.67%).

Financial assistance to 74 respondents was in the fonn of cash for the purchase of fishing equipment (44.59%), cash for maintenance of fishing equipment (35.14%), and cash for paying laborers (20.27%). This implies that only a few received financial assistance. Most fishermen had low risk-taking attitude towards loans because of their low income.

Material assistance was given to 74 respondents through assistance in acquiring a boat (29.73%), fishing rod (24.32%), net (tabukol) (21.62%), net (sigay) (17.57%), and pana (6.76%).

The data imply that only a few fishermen received assistance, hence, the need for the government to extend its helping hand to alleviate poverty, sustain development, and improve their livelihood.

## Source of Assistance Received by the Fisher-respondents

Table 11 shows that only few fishermen received assistance from the government. Out of 445 respondents only 45 received technical assistance from the Department of Agriculture or DA (4.94%), from the Local Government Unit (3.37%) and from a congressman (1.80%). For financial assistance only 2.47% availed of assistance from the Rural Bank; 2.25%, from the DA; and 1.80% from the Local Government Unit (LGU). For material assistance, 3.82% received assistance from the LGU and 2.70%, from the DA.

Through an interview, most of the fishermen disclosed that they didn't have the courage to ask help from authorities/agencies because they were pessimistic of the results.

**Table 11. Sources of assistance to fisher-respondents.**

| SOURCE OF ASSISTANCE | NO. | % |
|---|---|---|
| **Technical** | | |
| Dept. of Agriculture | 22 | 4.94 |
| Local Government Unit | 15 | 3.37 |
| Congressman | 8 | 1.80 |
| Financial | | |
| Rural Bank | 11 | 2.47 |
| Dept. of Agriculture | 10 | 2.25 |
| Local Government Unit | 8 | 1.80 |
| **Material** | | |
| Local Government Unit | 17 | 3.82 |
| Dept. of Agriculture | 12 | 2.70 |

## Problems Met by the Fisher-respondents

Table 12 presents 14 problems encountered by the fishermen. The most frequently mentioned problem was a few catch. This could be due to the fact that the use of high-end technology was not yet practiced among the fisherfolks of Ilocos Sur. The low income and problem on finance did not permit the fisherfolks to avail of the state-of-the-art technology in fishing.

Table 12. Problems met by the fisher-respondents in their fishing ventures.

| PROBLEM | NO. | % | RANK |
|---|---|---|---|
| 1. Few catch | 57 | 12.81 | I |
| 2. High price of gasoline, gas and fishing materials | 47 | 5.39 | 2 |
| 3. Lack of fishing equipment. | 44 | 5.17 | 3 |
| 4. Illegal fishing | 31 | 10.56 | 4 |
| 5. Incomplete equipment for fishing | 26 | 4.94 | 5 |
| 6. Lack of fishing nets | 25 | 5.84 | 6 |
| 7. Low catch when it is high tide | 24 | 4.72 | 7.5 |
| 8. Lack of capital to buy fishing equipment and gadgets | 24 | 6.97 | 7.5 |
| 9. Lack of discipline on the part of the fishermen | 23 | 9.89 | 9 |
| 10. Very low price of fish when supply is high | 22 | 3.37 | IO |
| 11. Lack of assistance from the government | 21 | 5.39 | 11 |
| 12. Dynamite fishing | 15 | 3.15 | 12 |
| 13. Lack of motorized boat for fishing | I4 | 5.62 | 13 |
| I4. Presence of big fishing boats | 12 | 2.70 | 14 |

High price of gasoline, gas, and fishing materials ranked second among the problems encountered by fishermen and lack of fishing equipment ranked third. These data strengthen further the allegation that fishermen lived below the poverty line and they could hardly make both ends meet.

The fourth major problem, illegal fishing indicates that some fishermen were not properly oriented on existing fishing laws and they lacked ordinance or environmental concern. This implies that the local leaders were not able to enact strictly the ordinances regarding fishing.

Incomplete equipment for fishing, the fifth problem of the fishermen, also supports the fact that fishermen belonged to the poverty line and needed assistance to improve their livelihood.

## Suggestions to Solve the Problems

Table 13 presents the fishermen's suggestions to solve the problems they met in their fishing activities.

Strict implementation of fishery laws ranked first as mentioned by 56.40% of the respondents. This implies that fishermen believed that if fishery laws were strictly followed, there would be a tremendous improvement in their industry. Fisherfolks will be properly oriented on existing fishing laws, they will be more concemcd with their environment, and they will be more courageous to enact fishing ordinances.

**Table 13. Suggestions of the fishermen to solve their problems in fishing.**

| SUGGESTION | NO. | % |
|---|---|---|
| 1. Strict implementation of fishery laws | 251 | 56.40 |
| 2. Illegal fishennen should be punished | 110 | 24.72 |
| 3. Provision of other livelihood projects | 98 | 22.02 |
| 4. Government assistance for small-time fishennen | 65 | 14.61 |
| 5. Prohibition of dynamite fishing | 50 | 11.24 |
| 6. Provision of cages | 49 | 1L.OI |
| 7. Loans with no interest should be provided | 45 | 10.11 |
| 8. Provision of fishennen's organizations to look after the welfare of fishennen | 42 | 9.44 |
| 9. Loans with law interest | 40 | 8.99 |
| 10. Discipline in fishing should be maintained | 38 | 8.54 |
| 11. Prohibition of fishermen from other places | 35 | 7.87 |
| 12. Dynamite fishing should be penalized | 35 | 7.87 |
| 13. Procurement of motorized fishing boats | 30 | 6.74 |
| 14. Prohibition in the use of compressor | 30 | 6.74 |
| 15. Prohibition of commercial fishing | 28 | 6.29 |
| 16. All illegal fishing should be penalized | 25 | 5.62 |
| 17. Prohibition of dynamite selling | 23 | 5.17 |
| 18. More financial and technical assistance from the government | 20 | 4.49 |
| 19. Strict implementation of coastguard policies | 15 | 3.37 |
| 20. Seminar on fishing technologies | 15 | 3.37 |

Illegal fishennen should be punished, the second frequently mentioned suggestions, implies that fishermen believed that sanctions to illegal fishing would finally cease this prohibited practice.

Provision of other livelihood projects was suggested by 22.02% of the respondents. The fishermen believed that this could augment their family income and alleviate poverty, thus improve their livelihood. Government assistance for small-time fishermen ranked fourth (14.61%) and prohibition of dynamite fishing ranked fifth (11.24%).

## Conclusions

Based on the findings of the study, the following conclusions were drawn:

**Socio-demographic Profile of the Fisherfolks**

The fishing industry in Ilocos Sur is manned by the male sector who are mostly married, with an average age of 44 years, finished elementary or high school education, and with an average of four children and four dependents.

## Economic Characteristics

Most of the fishermen earn below P5,000 which is insufficient for the family. Aside from fishing, they are engaged in fanning, work with their neighbors, and are engaged in carpentry. Majority own their houses, which arc mostly semi-pennanent bungalow dwelling. Their appliances comprise mostly of the radio, television, refrigerator, washing machine, living room set, and dining set. They use facilities such as electric flat iron, water pump, and generator. Majority do not have helpers in fishing.

## Fishing Activities

Majority of the fishennen go fishing everyday. The most frequently caught fishes are buslugan, pusit, balaki, barangawan, barangan, burador, kabalias, oriles, and talakitok. Sapsap has the highest average weight (kg) per fishing effort, followed by barangawan, kurapo, tirong, burador, pusit, dorado, talakitok, talibuno, and mulmol. The most expensive fishes (pesos per kg) were angrat, bulidaw, kapiged, kambaya, maya-maya, kabalias, pasayan, susay, barangawan, and dorado.

Most of the fishermen use fishing rod (bantak), net (sigay), and motorized boat. Their most expensive fishing equipment is the motorized boat and the cheapest is the petromax.

Only a few of the fishermen avail of technical, marketing. financial, and material assistance from the Department of Agriculture, local government unit, the congressman, and the Rural Bank.

The fishermen have problems concerning a few catch, high price of gasoline, gas, and fishing materials, and lack of fishing equipment. To solve their problems, they suggest the strict implementation of fishery laws, punishment for illegal fishermen, and provision of livelihood projects.

# Recommendations

To alleviate the fishing industry in Ilocos Sur, the following recommendations are hereby forwarded:

1. The fishennen should strengthen their capability in organizing themselves to come out with their full membership in their organization.
2. Assistance should be given to the fisherfolks for the continuous development of their coastal resource area.
3. Further studies on fishing technology in the province is highly recommended to improve the livelihood of the people.
4. Further study on the economic aspect, taking ROI (Return of Investment) during a specific fishing season is also recommended.
5. Gender involvement in fisheries, i.e. quantify role of women in aquarium, tuna, oyster, and sea urchin ventures, should also be considered.

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