

Fisheries Resources of Dasol Bay in Western Pangasinan, Philippines

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Abstract — The coastal zone of Dasol Bay covers an area of about 18,570 ha and of this, 84% is designated as the municipal fishing ground while the other 16% is allocated for seaweed culture and other sustainable uses. The registered number of commercial fisherfolks is 40 who operate 4 commercial fishing vessels in the bay while 1,320 municipal fisherfolks were registered operating 650 motorized and 20 non-motorized boats. A survey was then conducted to determine the fisheries resources of Dasol Bay in terms of the type of fishing gears used and the species composition of marine fishes caught by the fisherfolks. Result showed that the eight fishing gears commonly used by the fisherfolks in Dasol Bay include hook and line, gill net, cast net, long line, drive-in gill net, spear without or without compressor, scoop net, and fyke net. Hook and line and gill net were the most commonly and frequently used in capture fishing. The recorded peak season for fishing in Dasol Bay is from January to May and from October to December. In these said months, fishing is favorable even for deep-sea fishing because of the calmness of the sea. A total of 70 species of marine fishes are found in Dasol Bay belonging to 13 families, namely: Leognathidae, Carangidae, Scombridae, Serranidae, Labridae, Belonidae, Hemiramphidae, Exocoetidae, Istiophoridae, Balistidae, Theraponidae, Nemipteridae, and Siganidae. Many of the municipal fisherfolks consumed 10-12 hours of fishing while most of the commercial fisherfolks spent fishing from 5-7 days a week. The catch per unit of effort of most of the fisherfolks ranged from 1-10 kg of small to medium-sized fish per trip using gill net while 30-200 kg per trip for those using long line, and hook and line in catching tuna and other big fishes and squid.

Keywords — *marine fishes; fisheries resources; fishing gears; Dasol Bay; Pangasinan*

I. INTRODUCTION

The coastal waters of Dasol, also known as Dasol Bay, in Western Pangasinan is a vast and rich fishing ground of more than 100 species of fish and other commercially important marine invertebrates. It has an area of approximately 18,570 ha where 84% of which is designated as the municipal fishing area and 16% of which is allocated for seaweed culture and other sustainable uses (CRM-TWG, 2006). Weber (1993) stated that the coastal environment is like a magnet, attracting the interest of many people to the shoreline, mangroves, coral reef, and fisheries that inhabit nearshore waters. It has been said that “the coasts are the crossroad of human activity with the sea.

Dasol Bay is the center area for fishing activities of fisherfolks residing in its nine coastal barangays of Amalbalan, Eguia, Petal, Macalang, Malacapas, Hermosa, Osmeña, and Uli. Both municipal fisherman and commercial fisherman are found to be

dependent on Dasol Bay as their main source of livelihood. According to Bene et al. (2006), small-scale fishermen usually target dozens of different species at different times of year, using up to 20 different kinds of fishing gear, each affecting the fishery differently. They reported small fisheries in developing countries are often perceived as producing little fish of commercial value and therefore attract little or no attention from national decision-makers. Hence, fishery biologists in developing countries are interested in evaluating the status of the stocks exploited by small-scale fishers using very limited resources.

According to FAO-UN (2015), the assessment of the size and status of the stocks exploited by fisheries is one of the pillars of modern management. Fisheries scientists have developed techniques to estimate the nature, abundance, distribution, structure, and population dynamics of fishery resources from catch data. The fisheries resources of Dasol Bay are derived mainly from capture fisheries and a few from

aquaculture. There is a need to determine the status of the fisheries resources of Dasol which will serve as basis for the preparation of an updated plan and program for the management of the bay. Hence, this study was conducted to determine the status of the fisheries resources of Dasol Bay in Western Pangasinan. Specifically, the study aimed to: (1) determine the socio-economic profile of the respondents which include gender, age, civil status, educational qualification, number of household, and number of years in fishing; (2) determine the type of fishing gear and equipments use by the fisherfolks in Dasol Bay; (3) determine the time devoted by fishermen in fishing in Dasol Bay which include the frequency in fishing, number of hours in fishing, and specific time of fishing; (4) determine the volume of catch of fisherfolks in Dasol Bay in fishing trip; and (5) determine the common edible fishes caught by fisherfolks in Dasol Bay.

II. MATERIALS and METHODS

The study made use of the descriptive-survey method of research which intended to describe the status of the fisheries resources of Dasol Bay. The study was conducted in four coastal barangays of the municipality of Dasol, Pangasinan, namely Hermosa/GaisGuipe, Petal, Eguia and Macalang.

A total of 53 fishermen who owned motorized boats were surveyed using personal interview with the aid of a survey questionnaire. The questionnaire include question on the socio-economic profile of the municipal fishermen, their fishing gear used in fishing, the time and duration of fishing, their volume of catch and the common species caught by the fishermen. The family and species of marine fish caught by the fisherfolks were identified and classified using books on fishes (Broad, 2003; Moyle and Cech, 2000; Eschenmeyer, 1998; Myers, 1991).

All responses of the respondents were tallied, tabulated and analyzed using descriptive statistics such as frequencies and percentages.

III. RESULTS AND DISCUSSION

A. Socio-Economic Profile of Fisherfolks

The 53 respondents who were surveyed were all males (Table 1). Their ages ranged from 10 to 69 years old or an average of 43 years of age. It was observed that more than half (66%) of them belong to the age bracket of more than 40 years old. As to their civil status, 94.3% are married and only 5.7% were single.

Results also showed that 58.5% of the fisherfolks surveyed were high school graduates while 32.1% were elementary graduates. The rest were college undergraduates (9.4%). With regards to the number of household members, more than half (68%) of the respondents have 5 or more number of family members while the rest (32%) had less than 5 number of family members.

TABLE 1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF FISHERFOLKS.

VARIABLES	FREQUENCY(f)	RELATIVE FREQUENCY (%)
Gender		
Male	53	100
Female	0	0
Total	53	100
Age		
10-19	2	3.8
20-29	6	11.3
30-39	10	18.8
40-49	18	34.0
50-59	13	24.5
60-69	4	7.6
Total	53	100
Average Age	43 years old	
Civil Status		
Single	3	5.7
Married	50	94.3
Total	53	100
Educational Qualification		
Elementary Graduate	17	32.1
High School Graduate	31	58.5
College Undergraduate	5	9.4
Total	53	100
No. of Household Members		
1-2	5	9.4
3-4	12	22.6
5-6	24	45.3
7-8	10	18.9
9-10	2	3.8
Total	53	100
Average No. of Household Members	5 household members	

B. Years of Experience in Fishing

In terms of the number of years of experience in fishing (Table 2), there were more fisherfolks (24.5%) who had fishing experience of 26-30 years, while very few (3.8%) had fishing experience of 41-45 years.

TABLE 2. NUMBER OF YEARS OF EXPERIENCE IN FISHING.

NO. OF YEARS IN FISHING	FREQUENCY (f)	RELATIVE FREQUENCY (%)
1-5	6	11.3
6-10	6	11.3
11-15	4	7.6
16-20	7	13.2
21-25	5	9.4
26-30	13	24.5
31-35	3	5.7
36-40	7	13.2
41-45	2	3.8
Total	53	100

C. Fishing Gears Used in Fishing

Based on the results of the survey, 8 fishing gears were commonly used by fisherfolks in Dasol Bay (Table 3). Of these, hook and line is the most commonly and frequently used gear in fishing with a relative frequency of 75.47%. This followed by the gillnet with (52.83%). It was also revealed in the survey that cast net, long line, scoop net, spear, and fyke net were the least commonly used fishing gear in Dasol Bay.

TABLE 3. FISHING GEAR USED BY THE FISHERFOLKS IN DASOL BAY.

GEAR TYPE	LOCAL NAME	FREQUENCY (f)	RELATIVE FREQUENCY (%)
Hook and Line	<i>Baniit</i>	40	75.47
Gill net	<i>sigay</i>	28	52.83
Cast net	<i>Sabukol</i>	3	0.06
Long line	<i>Kitang</i>	2	0.04
Drive-in gill net	<i>Parisris</i>	2	0.04
Scoop net	<i>karwas</i>	1	0.02
Spear	<i>Pana</i>	1	0.02
Fyke net	<i>Puket</i>	1	0.02
Total		53	100.00

D. Frequency and Time of Fishing

Table 4 shows that fisherfolks in Dasol Bay go on fishing daily (49.1%), or every night (20.8%), while others go fishing once, 2 or 3x in a week and their specific time of fishing is from 4 pm - 7 am while only few of them go on fishing from 5 pm - 7 am respectively.

TABLE 4. FREQUENCY AND TIME OF FISHING OF FISHERMEN IN DASOL BAY.

FREQUENCY OF FISHING	FREQUENCY	RELATIVE FREQUENCY (%)
Daily	26	49.1
Every night	11	20.8
Once a week	1	1.9
2x a week	2	3.8
3x a week	11	20.8
5x a week	1	1.9
5 x a month	1	1.9
Total	53	100
No. of Hours In Fishing		
1 -12	25	47.2
13 - 24	27	50.9
72 (5 days)	1	1.9
Total	53	100
Specific Time Of Fishing		
3 am - 4 pm	6	11.3
4 pm - 8 am	47	88.7
Total	53	100

E. Volume of Fish Catch

Table 5 shows that the total volume of catch by the fisherfolks ranged from 10 kg to as high as 200 kg per fishing operation.

TABLE 5. VOLUME OF CATCH

VOLUME OF CATCH (kg)	FREQUENCY (f)	RELATIVE FREQUENCY (%)
1-10	20	31.3
11-20	8	12.5
21-30	3	4.7
31-40	7	10.9
41-50	3	4.7
51-60	1	1.6
61-70	1	1.6
71-80	0	0
81-90	2	3.1
91-100	2	3.1
101-200	8	12.5
201-300	2	3.1
301-400	3	4.7
401-500	1	1.6
501-1000	1	1.6
1001-10000	2	3.1
Total	64	100

F. Common Fish Species Caught by the Fisherfolks

Table 6 presents the common edible fishes caught in Dasol bay. Results showed that most common edible fish species caught in Dasol bay were from the family Carangidae and Scombridae with 7 and 6 representatives, respectively. In the family Carangidae, shrimp scad, bigeye scad, oxeye scad, rainbow runner, giant trevally, bigeye trevally, and bumpnose trevally were included. Included in the family Scombridae are Japanese mackerel, bigeye

tuna, skipjack tuna, short-bodied mackerel, and mackerel.

Results of the survey also showed that large fishes were also caught by fisherfolks in Dasol Bay like Blue Marlin, Big Eyed Tuna, Dolphin Fish or Durado, Spanish mackerel and Yellow fin tuna. There were also reported species of shark caught in

the area. Reef fishes were common in Dasol Bay, but some were not suitable for the diet of human being. Some reported edible reef fishes in the area were wrasse, emperor, and triggerfish. Commercially sold small fishes in the market were also reported to have been caught by fisherfolks in the area which include pony fishes and breams.

TABLE 6. COMMON EDIBLE FISHES CAUGHT IN DASOL BAY.

Local Name	English Name	Scientific Name	Common Name	Family
Alumahan, Mata-an	Japanese mackerel	<i>Scomber australasicus</i>	Alumahan, Mata-an	Scombridae
Angtol	Wrasse	<i>Choerodon anchorago</i>	Anglot, angtol	Labridae
Aso-aso	Shrimp Scad	<i>Alepes djedaba</i>	Salay-salayaso	Carangidae
Barangan	Pin-spotted spinefoot	<i>Siganus fuscescens</i>	Barangen	Siganidae
Baraungan	Jarbuaterapon	Terapon jarbua	Baraungan	Theraponidae
Bisugo	Threadfin bream	<i>Nemipterus japonicus</i>	Bisugo	Nemipteridae
Bisugo	Yellowbelly Threadfin bream	<i>Nemipterus bathybius</i>	Bisugo	Nemipteridae
Bisugo	Redf filaments threadfin bream	<i>Nemipterus marginatus</i>	Bisugo	Nemipteridae
Blue Marlin	Indo Pacific Blue Marlin	<i>Makaira mazara</i>	Marlin	Istiophoridae
Bonjing	Bigeye tuna	<i>Thunnus obesus</i>	Yellowfin tuna	Scombridae
Burasot	Garfish	<i>Hemiramphus far</i>	Barasot	Hemiramphidae
Cabalias	Short-bodied mackerel	<i>Rastrelliger brachysoma</i>	Kabalyas	Scombridae
Dorado	Dolphinfish	<i>Coryphaena hippurus</i>	Dorado	Coryphaenidae
Flying Fish	Flying fish	<i>Cypselurus opisthopus</i>	Bolador	Exocoetidae
Flying Fish	Small-scaled flying fish	<i>Cypselurus oligolepis</i>	Bolador, Iliw	Exocoetidae
Flying fish	Flying fish	<i>Oxyporhamphus micropterus</i>	Bolador, Iliw	Exocoetidae
Gulyasan	Skipjack tuna	<i>Katsuwonus pelamis</i>	Gulyasan, tambakol	Scombridae
Hasa -hasa	Short bodied mackerel	<i>Rastrelliger brachysoma</i>	Hasa- hasa	Scombridae
Hasa-hasa	Mackerel	<i>Rastrelliger neglectus</i>	Hasa- hasa	Scombridae
Kurapo	Orange-dotted grouper	<i>Epinephelus coiodes</i>	Lapu-lapu	Serranidae
Layalay	Crocodile longtom	<i>Tylosurus crocodilus crocodilus</i>	Layalay	Belonidae
Lugso	Emperor	<i>Lethrinus obsoletus</i>	Lugso	Lethrinidae
Mataan	Bigeye scad	<i>Selar crumenophthalmus</i>	Matangbaka, Mataan	Carangidae
Mataan	Oxeye scad	Selar boops	Matangbaka, Mataan	Carangidae
Papakol	black triggerfish	<i>Rhinecanthus aculeatus</i>	Pakol, Papakol	Balistidae
Pating	Blacktip Shark	<i>Carcharinus melanopterus</i>	Pating	Charcharinidae
Salmon-Salmon	Rainbow runner	<i>Elegatis bipinnulata</i>	Salmon	Carangidae
Sap sap	Common ponyfish	<i>Leiognathus equulus</i>	Sap-sap, Lawayan	Leiognathidae
Susay	Black marlin	<i>Makaira indica</i>	Susay, marlin, malasugi	Istiophoridae
Sword Fish	Swordfish	<i>Xiphias gladius</i>	Malasugi	Istiophoridae
Talakitok	Giant Trevally	<i>Caranx gnobilis</i>	Talakitok, Maliputo	Carangidae
Talakitok	Bigeye trevally	<i>Caranx sexfasciatus</i>	Talakitok	Carangidae
Talakitok	Bumpnose trevally	<i>Carangoides hedlandensis</i>	Talakitok	Carangidae
Tanguague	Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i>	Tanigue	Scombridae
Tanguague	Indo-Pacific king mackerel	<i>Scomberomorus guttatus</i>	Tanigue	Scombridae
Yellon Fin Tuna	Yellow fin tuna	<i>Thunnus albacares</i>	Yelowfin tuna	Scombridae

Based on the results of the study, fishing gears like hook and lines and gill nets, were the most common fishing gears used by fisherfolks in Dasol Bay. Most fisherfolks fish daily and most of them consumed 10 hours in fishing. During every fishing session, fishers catch a total volume of 10-200 kg,

which means that fisheries resources in Dasol Bay is not affected by any pollution.

Dasol Bay's fisheries resources commend good conditions. However, a study on the evaluation of best management practices employed by the Local Government Unit (LGU) of Dasol, Pangasinan in the

management of their fisheries resources must be documented to serve as basic information that can be used by other Local Government Units along the coastal areas of Pangasinan.

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