Coral Reef Fishes in the Island Towns of Northern Samar, Philippines

Divina Minguez-Galenzoga[1]

***Abstract*—**This study aimed to identify the species composition of coral reef fishesin the island towns of Northern Samar, Philippines; describe their morphological characteristics as to body weight (gm), body length (cm), maturity level, and gender; and determine their abundance and local names. Sampling areas included the five island towns of the province, i.e. Biri, Capul, Laoang, San Antonio, and San Vicente. Data gathering was done during the summer months of April-May 2012-2014. There were 75 species of fish belonging to 48 genera, 20 families, 3 sub-orders, 2 orders, 2 sub-classes, and 1 class. The most abundant fish species is *Atule mate* Cuvier (Carangidae), while the least abundant is *Plectropomusleopardus*Lacepede (Serranidae).There were more coral reef fishes in the island of Laoang than in the other island towns. This island town has the largest land area and so, has the largest coastlines. Moreover,the island town is composed of other islets, some facing the Pacific Ocean and others facing the mainland (province).

***Keywords*—**Abundance,coral reef, fishes,island towns

I. Introduction

MARINE fishing is chiefly restricted to the continental shelf which forms only 8% of the total marine water surface. The depth of the continental shelf, where corals thrive, is only 200 meters. According to FAO data, the continental shelf contributes to about 80% of the marine catch which is currently estimated at 41 million tons annually [1].

The Philippines, being in the center of the richest terrestrial and aquatic biodiversity regions of the world, has continued to this day to be the subject of investigations on biodiversity albeit on sporadic basis. The southern regions of the country are no exception although the attention given to them is usually not proportionate to the rich resources which are actually present[2].

As stated by Padolina, then Department of Science and Technology (DOST) Secretary in his keynote address:

"As an archipelagic country, the Philippines is blessed with aquatic resources. We have 220 million hectares of marine waters, including 27,000 sq. km. of coral reefs…In addition, we have also extensive ground water resources. Our aquatic resources provide us not only with water for our domestic, agricultural, and industrial needs; but a myriad of other benefits that include food, minerals, marine products, and recreation. There are no figures available to show how much our aquatic resources are worth. [3].

Divina Galenzoga[1] is with the College of Science, University of Eastern Philippines, Catarman, Northern Samar 6400 Philippines (e-mail: galenzoga@yahoo.com).

Despite the progress made by various academic and government institutions alike in the promotion of taxonomic studies on marine biodiversity in southern Philippines, much work remains to be done. Thus, this study is an effort to answer the cause of biodiversity studies especially in the local islands of the country.

II. Objectives

The objectives of this study are:

1. To identify the species composition of coral reef fishes in the island towns of Northern Samar, Philippines;
2. To describe their morphological characteristics as to body weight (gm), body length (cm), maturity level, and gender;
3. To determine their abundance; and
4. To identify their local names.

III. Methodology

Northern Samar lies in the northeast portion of the island of Samar, Philippines with longitudes of 12° 15' - 12° 45' and latitudes of 124° 15' - 125° 30'. It is one of the six provinces comprising Region VIII (Eastern Visayas). The province consists of 24 municipalities, i.e. 15 coastal towns, 5 island towns, and 4 interior towns. Catarman is the capital town of the province of Northern Samar.

Sampling areas included the five island towns of the province, i.e. Biri (24.62 sq.km. or 9.51 sq.miles); Capul (35.56 sq.km. or 13.73 sq.miles); Laoang (246.94 sq.km. or 95.34 sq.miles); San Antonio (27.00 sq.km. or 10.42 sq.miles); and San Vicente (15.80 sq.km. or 6.10 sq. miles).Data were gathered using interview guide in English and translated into Samarnon dialect, about the names of coral reef fishes, their abundance and local names. Sampling was done during the summer months of April-May 2012-2014. Fishes were gathered using fish nets; somefishes were caught using spears. Selected fishermen in the coastal areas were requested to catch different varieties of fish in the coral reefs for sampling. Fishes also were described with their morphological characteristics as to body weight (gm) using the weighing scale; body length (cm) using the tape measure, ruler, and caliper; maturity level, fishes were categorized whether juveniles or adults, based on gonadal activity; and gender, whether male or female, based on external and internal examination. Preliminary identification was done at the seashore using field guides and other reference books. Final identification was made at the College of Science Biological Laboratory, University of Eastern Philippines.

Fishes in the tropical countries are in abundance during the

summer months where the water is warmer. Many species of marine animals also spawn during this time, thereby providing more food to coral reef fishes and other organisms [4].

Fig. 1 Map of Northern Samar
4 island towns are found in the Balicuatro Area; 1 island town is found in the Pacific Area; no island town in the Central Area

IV. Results and Discussion

A. Species Composition of Coral Reef Fishes in the Island Towns of Northern Samar, Philippines

The fishes listed below were found during the sampling done in the five island towns of the province. There were 75 species of fish belonging to 48 genera, namely: *Caesio, Pterocaesio, Atule, Alepes, Decapterus, Selaroides, Selar, Sardinella,Amblygaster,Escualosa, Herklotsichthys, Dussumieria, Stolephorus, Coryphaena, Gerres, Mugil, Hyporhampus, Cheilinus, Choerodon, Coris, Cirrhilabrus, Halichoeres, Oxycheilinus, Stethojulis, Leiognathus, Gazza, Lutjanus, Parupeneus,Coryphaena, Pentapodus, Scolopsis, Nemipterus, Parapercis, Pygoplites, Centropyge, Abudefduf, Chromis, Chrysiptera, Pseudochromis, Scarus, Plectropomus, Cephalopholis, Epinephelus, Siganus, Scomberomorus, Katsuwonus, Thunnus, Scomber, Auxis, Rastrelliger, Euthynuus, Makaira, Helates, and Arothron.* 20 families, namely: *Caesionidae, Carangidae, Clupeidae, Coryphaenidae, Gerridae, Hemiramphidae, Labridae, Leiognathidae, Lethrinidae, Lutjanidae, Mullidae, Nemipteridae, Pinguipedidae, Pomacanthidae, Pomacentridae, Pseudochromidae, Scaridae, Serranidae, Siganidae, and Tetraodontidae;* 3 sub-orders, namely: *Percoidei, Siganoidei, and Scombroidei*; 2 orders, namely: *Beryciformes and Perciformes*; 2 sub-classes, namely: *Elasmobranchii and Actinopterygii*; and 1 class, namely: *Osteichthyes.*

Table I
Species Composition of Coral Reef Fishes in the Island Towns of Northern Samar, Philippines

1. Family Caesionidae
*Caesiocaerulaureus*Lacepede
*Pterocaesiodiagramma*Bleeker
Caesioerythrogaster
2. Family Carangidae
Atule mate Cuvier
Alepesvari Cuvier
Decapterusmaruadsi
Selaroidesleptolepis
Selarboops
Selarcrumenophthalmus
Herklotsichthysdispilonotus
Dussumieriaacuta
3. Family Clupeidae
Sardinellalemuru
Sardinellafimbriata
Sardinellaalbella
Sardinellahualiensis
Sardinellalongiceps
*Sardinellagibbosa*Blecker
Stolephorusindicus
Amblygastersirm
Esqualosathoracata
Herklotsichthysquadrimaculatus
Scolopsismargaritifera Cuvier
Nemipterusjaponicus Ishikawa
Scolopsistaenioptera
4. Family Coryphaenidae
Coryphaenahippurus Linnaeus
5. Family Gerridae
*Gerresmacracanthus*Blecker
*Gerresshima*Iwatsuki, Kimura &Yeshimo
*Mugilcephalus*Linnaeus
6 .Family Hemiramphidae
*Hyporhampusquoyi*Valenciennes
7. Family Labridae
Cheilinusfasciatus Bloch
Choerodonanchorago Bloch
*Corisbatuensis*Bleeker
Cirrhilabruslyukyuensis Ishikawa
Halichoeresmelanochir Fowler & Bean
*Oxycheilinusdigramma*Lacepede
*Stethojulisinterrupta*Bleeker
8. Family Leiognathidae
*Leiognathusequulus*Forsskal
Gazzaminuta Bloch
9. Family Lethrinidae
*Lethrinuserythropterus*Valenciennes
10. Family Lutjanidae
Lutjanusdecussatus Cuvier
Lutjanuslutjanus Bloch
*Lutjanusfulviflamma*Forsskal
Lutjanussebae
Lutjanusrusselli
11. Family Mullidae
*Parupeneusbarberinus*Lacepede
*Parupeneusmultifasciatus*Quoy &Gaimard
*Parupeneusbrbarinoides*Bleeker
Parupeneuscyclostomus
Coryphaenahippurus
12. Nemipteridae
Pentapodusaureofasciatus Russell
Pentapodustrivittatus Bloch
13. Family Pinguipedidae
*Parapercisxanthozona*Bleeker
14. Family Pomacanthidae
*Pygoplitesdiacanthus*Boddaert
*Centropygevrolikii*Bleeker
15. Family Pomacentridae
*Abudefdufsexfasciatus*Lacepede
*Abudefdufvaigiensis*Quoy& Gaimard
Chromisweberi Fowler &BEan
Chrysipterarollandi Whitley
16. Family Pseudochromidae
Pseudochromisfuscus Muller & Troschel
17. Family Scaridae
*Scarushypselopterus*Bleeker
*Scarusniger*Forsskal
Scarusghobban
Scarusguacamaia
18. Family Serranidae
*Plectropomusleopardus*Lacepede
Cephalopholiscyanostigma Valenciennes
Cephalopholissonnerati Valenciennes
*Epinephelusfuscoguttatus*Forsskal
Cephalopholisminiatus
Epinephelusfasciatus
19. Family Siganidae
*Siganusvirgatus*Valenciennes
*Siganusargenteus*Quoy& Gaimard
Siganuscanaliculatus
20. Family Tetraodontidae
*Helatessexlineatus*Quoy& Gaimard
Arothronnigropunctatus Bloch & Schneider
Arothronhispidus

B. Morphological Characteristics

Most of the fishes collected during the sampling were 50gm-150gm in body weight; 8cm-15cm in body length; mostly were juveniles and immature individuals; and were females. Fishes in the coral reefs of the island towns suggested spawning commenced when the waters started to become warmer; i.e. from February to May; thus during the sampling, summer months (April-May) fishes were still young.

Table II
Morphological Characteristics Of Fishes By Family

Family	Body weight (gm)	Body length (cm)	Maturity level	gender
1.Caesionidae	50-100	8-12	juvenile	Female
2. Carangidae	50-95	8-15	juvenile	Female
3. Clupeidae	50-90	8-14	juvenile	Female
4. Coryphaenidae	90	15	Young adult	male
5. Gerridae	50-130	8-15	juvenile	Female
6. Hemiramphidae	110	15	Young	male

			adult	
7. Labridae	50-120	8-15	Juvenile	Female
8. Leiognathidae	50-100	8-10	juvenile	Female
9. Lethrinidae	80	12	Young adult	Male
10. Lutjanidae	50-100	8-12	Juvenile	Female
11. Mullidae	50-140	10-14	Juvenile	Female
12. Nemipteridae	50-140	8-12	Juvenile	Female
13. Pinguipedidae	150	15	Young adult	Male
14. Pomacanthidae	50-120	10-15	Juvenile	Female
15. Pomacentridae	50-100	10-14	Juvenile	Female
16. Pseudochromidae	145	15	Young adult	Male
17. Scaridae	50-130	10-14	Juvenile	Female
18. Serranidae	50-120	10-15	Juvenile	Female
19. Siganidae	50-90	8-10	Juvenile	Female
20. Tetraodontidae	50-120	10-15	juvenile	female

C.Abundance of Coral Reef Fishes in the Island Towns

The most abundant family of coral reef fish species belonged to Family Carangidae, which has the largest number of species, i.e. 12. The most abundant species, which has the largest in number of fish, is *Atule mate* Cuvier (finletscad). This fish species, which belongs to Family Carangidae, is caught by fishermen anytime of the year in large quantities. This species, found throughout the five islands, inhabit coastal waters, forming large schools, distinguished by clear fleshy eyelid covering most of the eye except narrow slit in the center. It is implied that since this fish species is abundant, the status of the coral reefs in the province is still in their good condition.

While, the least abundant families of coral reef fish species belonged to Families Coryphaenidae, Hemiramphidae, Lethrinidae, Pinguipedidae, and Pseudochromidae which has only 1 species each. And the least abundant species, which has the least in number of fish, is *Plectropomusleopardus*Lacepede (coral grouper). This fish species, which belongs to Family Serranidae, is caught only in a small number during good weather condition of the year, especially during the summer time. They inhabit coral reefs, distinguished by numerous small round spots on head and body, found in the Philippines and throughout South East Asia. They are called as group – groupers. They are the dominant element of the fish community on all coral reefs especially the larger species. They are important table fish at many localities and they play an important role in the reef's food chain [5]. The fish meat, white in color and delicious, is a favourite fish diet of the island folks, especially cooking it in sweet and sour, broiled in hot charcoals, or cooked with vegetables.

There were more coral reef fishes in the island of Laoang than in the other island towns. This island town has the largest land area and so, has the largest coastlines. Moreover,the island town is composed of other islets, some facing the Pacific Ocean and others facing the mainland (province).

TABLE III
ABUNDANCE OF CORAL REEF FISHES BYNUMBER OF GENERA AND SPECIES

FAMILY	No. of Genera	No. of Species
1. Caesionidae	2	3
2. Carangidae	5	6
3. Clupeidae	6	12
4. Coryphaenidae	1	1
5. Gerridae	2	3
6. Hemiramphidae	1	1
7. Labridae	7	7
8. Leiognathidae	2	2
9. Lethrinidae	1	1
10. Lutjanidae	1	5
11. Mullidae	2	5
12. Nemipteridae	3	5
13. Pinguipedidae	1	1
14. Pomacanthidae	2	2
15. Pomacentridae	3	4
16. Pseudochromidae	1	1
17. Scaridae	1	4
18. Serranidae	4	6
19. Siganidae	1	3
20. Tetraodontidae	2	3
TOTAL	**48**	**75**

Fig.2 Mostabundant fish species in the 5 island towns
Atule mate Cuvier (Carangidae)

Fig. 3 Least abundant fish species in the 5 island towns
*Plectropomusleopardus*Lacepede (Serranidae)

D. Local Names of Coral Reef Fishes

Local names that were identified by the fisherfolks and older residents of the coastal areas were mostly based on the families and/or genera of the fishes. Some names are patterned from the Tagalog versions, while others are from the Cebuano version, nor necessarily that of Samarnon names.

TABLE IV
LOCAL NAMES OF CORAL REEF FISHES

FISH SPECIES COMPOSITION	ENGLISH NAME	LOCAL NAME
1. Caesionidae		
*Caesiocaerulaureus*Lacepede	Blue and gold fusilier	dalagang-bukid
*Pterocaesiodiagramma*Bleeker	Black-tipped fusilier	dalagang-bukid
Caesioerythrogaster	Yellow-tailed fusilier	dalagang-bukid
2. Carangidae		
Atule mate Cuvier	Yellowtail scad/finletscad	matang-baka
Alepesvari Cuvier	Herring scad	Matang-baka
Decapterusmaruadsi	Round scad	galunggong
Selaroidesleptolepis	Yellowstripescad	Salay-salayginto
Selarboops	Ox-eyed scad	Matang-baka
Selarcrumenophthalmus	Big-eyed scad	Matang-baka
3. Clupeidae		
Sardinellalemuru	Bali sardinella	Tamban/tunsoy
Sardinellafimbriata	Fringescalesardinella	Tamban/tunsoy
Sardinellaalbella	White sardinella	Tamban/tunsoy
Sardinellahualiensis	Taiwan sardinella	Tamban/tunsoy
Amblygastersirm	Spotted sardinella	Tamban/turay
Escualosathoracata	White sardine	bolinaw
Herklotsichthysdispilonotus	Blacksaddle herring	dilat
Herklotsichthys quadrimaculatus	Bluestripe herring	dilat
Dussumieriaacuta	Rainbow sardine	Tulis/alabaybay
Sardinellalongiceps	Indian sardine	Tamban/tunsoy
*Sardinellagibbosa*Blecker	Gold stripe sardinella	Tamban/tunsoy
Stolephorusindicus	Indian anchovy	Dilis/bolinaw
4. Coryphaenidae		
Coryphaenahippurus Linnaeus	Dolphin fish	lamadang
5. Gerridae		
*Gerresmacracanthus*Blecker	Long spine silver biddy	lumuan
*Gerresshima*Iwatsuki, Kimura &Yeshimo	Banded silver biddy	latab
*Mugilcephalus*Linnaeus	Flat head mullet	balanak
6. Hemiramphidae		
Hyporhampusquoyi Valenciennes	Quoy's garfish	balo
7. Labridae		
Cheilinusfasciatus Bloch	Scarlet-breasted maori wrasse	Isdasabato
Choerodonanchorago Bloch	Anchor tuskfish	Isdasabato
*Corisbatuensis*Bleeker	Variegated wrasse	Isdasabato
Cirrhilabruslyukyuensis Ishikawa	Ryukyu wrasse	Isdasabato
Halichoeresmelanochir Fowler & Bean	Purple wrasse	Isdasabato
Oxycheilinusdigramma Lacepede	Cheek-lined wrasse	Isdasabato
*Stethojulisinterrupta*Bleeker		Isdasabato
8. Leiognathidae		
*Leiognathusequulus*Forsskal	Common pony fish	Sap-sap
Gazzaminuta Bloch	Toothed pony fish	Sap-sap
9. Lethrinidae		
Lethrinuserythropterus Valenciennes	Longfin emperor	Maya-maya
10. Lutjanidae		
Lutjanusdecussatus Cuvier	Checkered snapper	Maya-maya
Lutjanuslutjanus Bloch	Yellow-lined snapper	Maya-maya
*Lutjanusfulviflamma*Forsskal		Maya-maya
Lutjanussebae	Red emperor	Maya-maya
Lutjanusrusselli	Russell's snapper	Maya-maya
11. Mullidae		
Parupeneusbarberinus Lacepede	Dash- dot goatfish	Dorado
*Parupeneusmultifasciatus*Quoy &Gaimard	Banded goatfish	dorado
Parupeneusbrbarinoides Bleeker		
Parupeneuscyclostomus	Gold-saddled goatfish	dorado
Coryphaenahippurus	Dolphin fish	dorado
12. Nemipteridae		
Pentapodusaureofasciatus Russell	Yellow-striped whiptail	Sagision/bisugo
Pentapodustrivittatus Bloch	Three-striped whiptail	Sagision/bisugo
Scolopsisbilineata Bloch		
Scolopsismargaritifera Cuvier	Pearly monocle bream	Sagision/bisugo
Nemipterusjaponicus Ishikawa	Japanese threadfin bream	Sagision/bisugo
Scolopsistaeniopterus	Lattice monocle bream	Silay/tagisanglawin
13. Pinguipedidae		
*Parapercisxanthozona*Bleeker	Whitestripesandperch	balo
14. Pomacanthidae		
*Pygoplitesdiacanthus*Boddaert	Regal angelfish	Isdasabato
*Centropygevroliki*Bleeker	Pearl-scaled angelfish	Isdasabato
15. Pomacentridae		
Abudefdufsexfasciatus Lacepede	Six-barred sergeant major	Isdasabato
*Abudefdufvaigiensis*Quoy& Gaimard	Sergeant major	Isdasabato
Chromisweberi Fowler &BEan	Weber's chromis	Isdasabato
Chrysipterarollandi Whitley	Roland's demoiselle	Isdasabato
16. Pseudochromidae		
Pseudochromisfuscus Muller & Troschel	Brown dottyback	Isdasabato
17. Scaridae		
*Scarushypselopterus*Bleeker	East indies parrotfish	Loro/molmol
*Scarusniger*Forsskal	Swarthy parrotfish	
Scarusghobban	Blue-barred parrotfish	Loro/molmol
Scarusguacamaia	Rainbow parrotfish	Loro/molmol
18. Serranidae		
Plectropomusleopardus Lacepede	Coral grouper/ Leopard cod	Lapu-lapu
Cephalopholiscyanostigma Valenciennes	Blue-spotted grouper	Lapu-lapu
Cephalopholissonnerati Valenciennes	Tomato grouper	Baraka
Epinephelusfuscoguttatus Forsskal	Brown-marbled grouper	Lapu-lapu
Cephalopholisminiatus	Coral trout	Lapu-lapung senora
Epinephelusfasciatus	Black-tipped grouper	Lapu-lapu/kulapo
19. Siganidae		
*Siganusvirgatus*Valenciennes	Virgate rabbitfish	danggit
*Siganusargenteus*Quoy& Gaimard	Forktailrabbitfish	danggit
Siganuscanaliculatus	White-dotted rabbitfish	Danggit/samaral
20. Tetraodontidae		
*Helatessexlineatus*Quoy& Gaimard		rahildahil
Arothronnigropunctatus Bloch & Schneider	Black-spotted pufferfish	butete
Arothronhispidus	White-spotted pufferfish	butete

V. CONCLUSIONS

There were 75 species of coral reef fishes found in the five island towns of Northern Samar, Philippines. They belonged to 48 genera; 20 families; 3 sub-orders; 2 orders; 2 sub-classes; and 1 class.

Most of the fishes were 50gm-150gm in body weight; 8cm-15cm in body length; mostly were juveniles and immature individuals; and were females.

The most abundant family belonged to Family Carangidae, which has the largest number of species, i.e. 12. Themost abundant species, which had the largest in number of fish, was*Atule mate* Cuvier (finletscad) of the Family Carangidae.

The least abundant families of coral reef fish species belonged to Families Coryphaenidae, Hemiramphidae, Lethrinidae, Pinguipedidae, and Pseudochromidae which had only 1 species each. And the least abundant species, which had the least in number of fish, was*Plectropomusleopardus*Lacepede (coral grouper) of the Family Serranidae.

There were more coral reef fishes in the island of Laoang than in the other island towns. This island town has the largest land area and so, has the largest coastlines. Moreover, the island town is composed of other islets, some facing the Pacific Ocean and others facing the mainland (province).

The local names that were identified by the older residents, fisher folks were mostly based on the families of the coral reef fishes.

VI. RECOMMENDATIONS

1. Freshwater fishes should also be included since there are many large rivers in the province.
2. Include other marine fauna and flora in the biodiversity studies.
3. Conservation and preservation measures of marine resources be adopted by the Local Government Units of the island towns.

ACKNOWLEDGMENT

The author would like to thank the following: Atty. Mar P. de Asis, Ph.D., President, University of Eastern Philippines; Dr. Pio P. Tuan, Research Director, UEP;Dr. Karina Milagros R. Cui, Dean, College of Science, UEP; Municipal Mayors of the five island towns; Mr. Felipe A. Balleta, Director, LAEF-BFAR, Lavezares, Northern Samar;Mr. Arnold Lorenzo M.Galenzoga.

REFERENCES

[1] G.S. Sandhu, *A Textbook of Fish and Fisheries*, New Delhi, India: Wisdom Press, 2010.
[2] L. M. Liao, "*Marine Biodiversity of the Visayas and Mindanao*," Plenary Speech, 30th FIFMS Convention, December 9-11, 1998, UEP, Catarman, Northern Samar.
[3] W. Padolina, "Affirming Our Commitment for the Preservation of Philippine Aquatic Resources," Keynote Address, 30th FIFMS Convention, December 9-11, 1998, UEP, Catarman, Northern Samar.
[4] K. F. Lagler, J. E. Bardach, and R. R. Miller, *Ichthyology*. MI: Mc-Graw Hill, 1962.
[5] G. R. Allen and M. V. Erdmann, *Reef Fishes of El Nido, Palawan*. Philippines: Primex Printers Inc., El Nido Foundation Inc., 2009.
Philippine Biodiversity: An Assessment and Plan of Action. Makati City, Philippines: Bookmark Inc., UNEP-DENR, 1997.
B. Bowen, *Diversity of Fishes: Biology, Evaluation, Ecology*. USA: Wiley Blackwell Inc., 2009.
H. Maserda, et. al., *Fishes of South East Asia*. Tokyo, Japan: Tokai University Press, 1987.
J. W. Nybakken and M. D. Bertness, *Marine Biology: An Ecological Approach, 6th Edition*. San Francisco, CA: Pearson Education Inc., 2005.
PSU Research and Development Journal. Camarines Sur, Philippines: Partido State University, 2011.
CSU Research and Development Journal. Catanduanes, Philippines: Catanduanes State University, 2013.
T. Storer, et. al. *General Zoology, 6th Edition*. USA: McGraw-Hill, 2007.
CRM Journal, BFAR-DENR, Northern Samar, 2012.
Charts and hand-outs, LAEF – BFAR, Northern Samar, 2010.
Charts and hand-outs, BFAR-DENR, Region IV and VIII, 2011.