

FISH FAUNA OF SAN PEDRO ESTUARY, DAPITAN CITY

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Date Submitted: October, 2009

Date Revised: November, 2009

Word Count: 1, 813

Abstract

*This study determined the species composition and abundance of fish caught from San Pedro Estuary, Dapitan City. Thirteen finfish species in ten families were identified from actual catch data enumeration. Family Serranidae registered the most abundant with *Epinephelus coioides* (34.29%) as the highest. Based on the length measurements of grouper juveniles, it appeared that spawning occurs from June to August in each year.*

Keywords: *Epinephelus coioides, fish fauna, serranids, grouper juveniles, relative abundance*

Introduction

San Pedro Estuary is located at Barangay San Pedro, Dapitan City, 8° 29' N latitude and 123° 25' E longitude (Figure 1), about 5 kilometers from the Poblacion. The estuary receives its freshwater from two adjacent rivers, Owaon and Antipolo (Figure 2). It is about 1.8 kilometers long and 200 meters wide. Its depth is three (3) meters as measured in mid-stream at high tide and 1.5 meters at low tide with salinity ranging from 30-32 ppt downstream and 1.3 visibility. Naturally growing mangroves are lined along the banks or edges of the estuary though few were planted predominantly the *Rhizophora* species. Several houses can be found at either sides of the estuary especially at the opening.

San Pedro has been known locally for its floating fish cages for serranid and lutjanids and oyster and green mussel farms. Moreover, juveniles of some commercially important fish species (lutjanids and serranids) are reportedly caught and sold for grow-out floating cages existing in the vicinity. However, no formal classification has been made to these organisms, thus, they are only known on their local names.

It is therefore the aim of this proposed study to determine the species composition and abundance of fish caught from the estuary. For its is believed that the results of this study will be an important basis for resource management taking into consideration the growing number of human settlers, fish cages oyster and mussel farms in the estuary. It

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should also be noted that the estuary is just a few kilometers away from the Dapitan Port where ships from other cities docked every day.

Methodology

Data Collection. Data gathering was done through actual shoreline enumeration of the fishers in the estuary to collect information on the fishing activities in the study area. Fishermen were interviewed based on the following information:

1. Kinds of fish caught
2. Average catch in kilogram
3. Specific area where commercially important species like grouper are abundantly caught
4. Fish gear type used to catch grouper juveniles

Sample length (total length) and weight of economically important species were collected. Identification was based on Masuda, et al. (1984), Schroeder (1980), Smith (1980) and FishBase 1996. Fish samples were preserved in 10 % formalin to serve as voucher specimen.

Data Analysis

Species Composition. Catch composition was recorded and relative abundance of dominant species was established. These provided information on species diversity of the estuary.

Length and Weight Measurements. Total length (TL) in inches and weight (g) measurements of not less than 15 individuals for each species were taken of catch made to provide information on the average sizes of caught species.

Relative Abundance (RA). Relative abundance was calculated for each species and each family. These were expressed in percentages:

$$RA_{sp1} = \frac{\text{Total weight}_{sp1}}{\text{Total weight of sample} \times 100}$$

Descriptive Statistics such as mean and ranges will be used in body length-weight measurements of the more economically abundant species sampled.

Results and Discussion

Catch Composition and Relative Abundance. Thirteen finfish species in ten (10) families were classified from actual catch data listing in San Pedro Estuary (Table 1). Family Serranidae registered the most abundant with *Epinephelus coioides* (34.29%) as the highest. This was followed by *Leiognathus* sp. and *Priopidichthys marianus*

(11.24%). These two species are sold to grouper growers in the estuary for feeds at a very low price.

Fish sizes were generally small, as illustrated in Table 1, thus mostly were juveniles which is unsurprising in an estuary. Estuaries are known to be nursery grounds of most marine finfishes such as the groupers and snappers.

Analysis on the catch per unit effort (CPUE) for each gear type revealed an average of 0.1696 Kg/manhour $SD \pm 0.056$ for the hook and line method and 0.632 kg/manhour $SD \pm 0.429$ for the lift net. All of the fishermen were fulltime. Since serranid juveniles were sold by piece in the area depending on the length, CPUE was also calculated in terms of the number of pieces per man hour. Calculations registered a mean of 1.51 pieces per man hour $SD \pm 0.183$ f using hook and line method.

Table 1. Species of Finfish Caught by Lift Net on June 2003 at San Pedro Estuary
Based on Actual Enumeration. (TWT- total weight; RA- relative abundance).

SPECIES	LOCAL NAME	TWT (Kg)	RA (%)	STANDARD LENGTH (cm)
Family Chanidae (Milkfish) <i>Chanos chanos</i>	bangus	1.5	8.43	20.32
Family Chandidae (Perchlet) <i>Priopidichthys marianus</i>		2	11.24	5.18
Family Engraulidae (anchovies) <i>Stolephorus</i> sp.	bolinao	0.06	0.33	7.59
Family Leiognathidae (slipmouths) <i>Leiognathus</i> sp.	palotpot	2	11.24	7.90
Family Lutjanidae (snappers) <i>Lutjanus argentimaculatus</i>	pantaan	0.75	4.22	18.29
Family Mugilidae (mulletts) <i>Liza argentea</i>	gisaw	0.5	2.81	19.51
Family Platycephalidae (flatheads) <i>Platycephalus fuscus</i>	sunugan	0.3	1.69	12.19
Family Scatophagidae (butterfish) <i>Scatophagus argus</i>		1	5.62	12.50
Family Serranidae (groupers) <i>Epinephelus coioides</i>	Lapu-lapu	6.1	34.29	17.5
<i>E. malabaricus</i>	Lapu-lapu	0.65	3.65	13.58
<i>E. fasciomaculatus</i>	Lapu-lapu	1.33	7.48	10.95
<i>Aethaloperca rogaa</i>	Lapu-lapu	0.60	3.37	11.2
Family Siganidae (rabbitfishes) <i>Siganus guttatus</i>	kitong	1	5.62	13.5



Length Sizes of Serranid Juveniles. As to the major catch of the estuary, lengths of serranid juveniles (*Epenephelus coioides*) were measured on March 2003, May 2003 and June 2003, January 2004, February 2004 and April 2004. This was to estimate the size distribution of the juveniles during those months so as to determine the breeding period of the species.

As shown in Figure 2, 32.30% of the catch in March 2003 were on the size range between 6 cm to 7 cm and 25.8% fall within 10-11 cm and 22.6% between 3-4 cm; Fifty percent (50%) of the May 2003 catch were on 9-10 cm. In both samplings there were large catch (19-30 cm). The June 2003 data revealed larger sizes, 10 to 11 cm as the smallest size range (4.3%), and most of the catch were on the size ranges 16-17 cm (30.4%) and 17-18 cm (34.8%). Addition measurements were made on January, February and April 2004. As shown in Figure 3, January sampling recorded 50% within 8-9 cm while February had 35.29% with size range between 11 and 12 cm though 17.65% were between 13-14 cm and 14-15 cm and 5.88% between 16-17 cm.

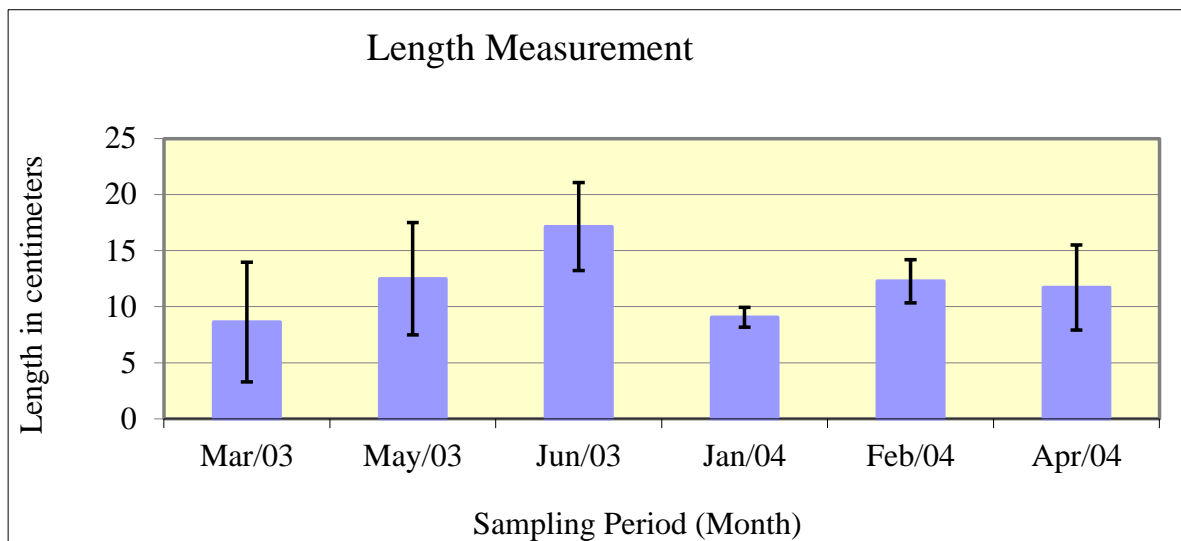


Figure 4. Mean Standard Length (SL) Measurements of *Epinephelus coioides* Juveniles Caught in San Pedro Estuary by Single Hook and Line Method. (March/03 = 8.624 ± 5.34 cm.; May/03 = 12.49 ± 5.01 cm.; June/03 = 17.15 ± 3.92 cm.; Jan/04 = 9.06 ± 0.879 cm.; Feb/04 = 12.27 ± 1.93 cm.; Apr/04 = 11.71 ± 3.79 cm.)

Generally, the January to May samplings showed smaller size ranges which was less than and equal to 10 centimeters (3-4 cm, 6-7 cm, 8-9 cm and 9-10 cm). These sizes were definitely juveniles since FishBase records (1996) showed that a 22 year-old *Epinephelus coioides* measured 111 cm SL and growth curve of this species revealed that individuals less than one year old have standard lengths less than 10 cm (FishBase

1996) which means *E. coioides* is a large species. Moreover, dissection showed no evidence of a distinct gonad indicating that the specimens were still immature. Findings were only based on visual assessment due to histological laboratory equipment limitation.

When monthly mean standard lengths were plotted (Figure 4), it revealed an increasing size from March 2003 to June 2003 then it dropped in January 2004 and showed an increasing trend again on February although relatively smaller. It should be noted that April measurement was slightly smaller than the February sampling, however, T-test analysis of the two sampling months revealed no significant difference ($t = 0.481$, $df = 22$, $c.v. = 1.72$ at $p = 0.05$) which means the two measurements were more or less the same. Thus, the decrease may be due to sampling error since sample size was only seven.

Conclusion

San Pedro Estuary is a haven of fish juveniles of economically important species particularly groupers, lutjanids and siganids. Thus, there should be an effort to protect and sustainably manage this fishery. The juveniles, on the other hand, were of different cohorts as measured on March to June 2003 and January to April 2004. This signifies that based on the species growth curve (1 year-old = less than 10 cm SL), spawning could have occurred 5-7 months prior to January or March (FishBase 1996). Probably spawning occurs from June to August in each year. Depending on the species, the reproductive seasons for groupers range from March to August as cited by Sadovy (1997). However, further study is highly recommended particularly in the monthly monitoring of the fish lengths for one straight year and histological examination of the gonads and otoliths counting to establish the reproductive seasonality of *Epinephelus* spp. in the coastal waters of Dapitan City.

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