



**Establishment and Operation of a Regional System of
Fisheries *Refugia* in the South China Sea and Gulf of Thailand**

REPORT

**PRELIMINARY RESULTS OF FISHERIES DATA COLLECTION IN
BOLINAO, CORON, MASINLOC DURING JANUARY-JUNE 2019**

PALAWAN, ZAMBALES AND PANGASINAN, PHILIPPINES

JANUARY – JUNE 2019

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A. INTRODUCTION AND OBJECTIVES OF BASELINE FISHERIES DATA COLLECTION

During the start of the project last 2017, various baseline data were collected in 3 target Fisheries Refugia sites e.g. number of fisherfolks and boat registered), fish catch data by species, gears and area. We also gathered data on number of Marine Protected Area (MPA) and Fish Sanctuary (FS) in the Fisheries Refugia sites, numbers of fisheries related ordinances/laws and number of peoples/fisherfolks organization among others. Baseline data fisheries collection is a three-year field survey which aims to collect data that would contribute to the regional database of the fish catch of Southeast Asian Countries specifically the members of the ASEAN through the SEAFDEC as the project coordinating unit.

B. PRELIMINARY RESULTS

1) Results of Fisheries Data Collection in Bolinao, Pangasinan

1.1 Production Estimates

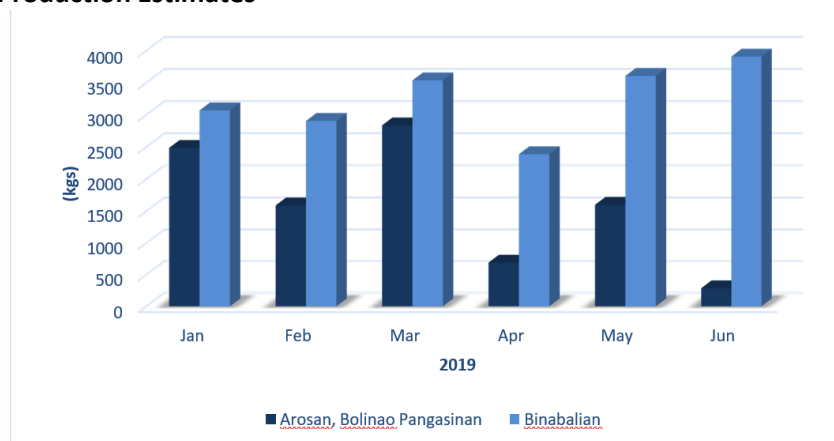


Figure 1.1 Production trend in Bolinao, Pangasinan in January to June 2019

In Figure 1.1, it was observed that the peak of production in the first half of 2019 were during the months of March, May and June in Binabalian with the estimate of around 11 metric tons. Almost 67 percent of the production in Bolinao was contributed by Spear gun Fisheries. It was also observed that during the month June, the production was in its lowest in Arosan maybe because of the typhoons during these months. Fisherfolk were expected not to fish during typhoon season.

1.2 Catch/ Species Composition

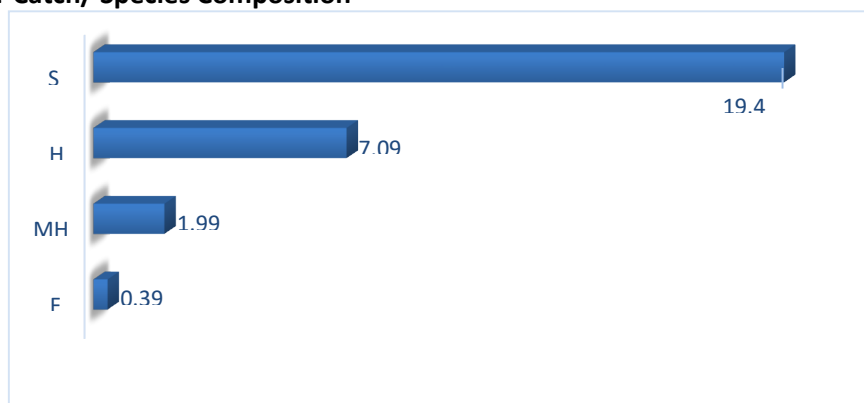


Figure 1.2 Catch per Gear, Bolinao, Pangasinan (January to June 2019)

In the Fisheries data collection in Bolinao, Pangasinan from January to June of 2019, it was observed that in the total landed catch of 29 MT, almost 67% was contributed by Spear gun Fisheries with a catch of 19.41 MT (Fig. 1.2), hook and line fisheries with 7.10 MT and 25% of the total landed catch, Multiple hook and line about 7% of total landed catch, and the lowest catch of almost 2 percent was from fish corral.

• **Fish Corral**

A total of 12 species was recorded from January to June of 2019 from Fish Corral Fisheries (Fig. 1.2.1). Out of 12 species recorded, *Herklotsichthys quadrimaculatus* dominated the catch with 0.7 MT which is about 17% of the total Fish Corral landed catch, followed by *Trichiurus lepturus* and *Siganus guttatus* with 14% share each from the total landed catch around 0.11 MT. *Scolopsis ciliata* with 0.5 MT contributed about 13% of catch from Fish Corral Fisheries, followed by *Leiognathus equulus* with 10% landed catch. 12% percent of the catch was shared by both *Gazza minuta* and *Lutjanus fulviflamma* contributing a total of 0.05 MT of the total catch. The lowest with 3% contribution was by *Caranx sexfasciatus* while 5% total landed catch by *Lethrinus lentjan* and *Siganus canaliculatus* was also observed.

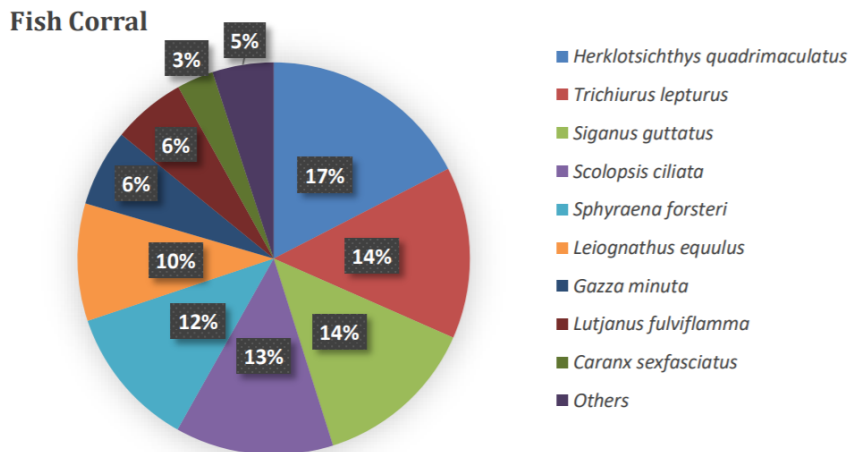


Figure 1.2.1 Fish Corral species catch composition, Bolinao, Pangasinan (Jan-Jun 2019)

• **Hook and Line**

A total 18 species were recorded from January to June of 2019 from hook and line Fisheries. A total landed catch of 7.1 metric tons was also recorded; it was also observed that Yellow-fin Tuna dominated the total catch of hook and line. Almost 32% of the catch was contributed by *Katsuwonus pelamis* with 2.3 MT. 25 percent of the total catch was contributed by *Coryphaena hippurus*. Minimal catch from family Lutjanidae and Lethrinidae was also observed (Fig. 1.2.2).

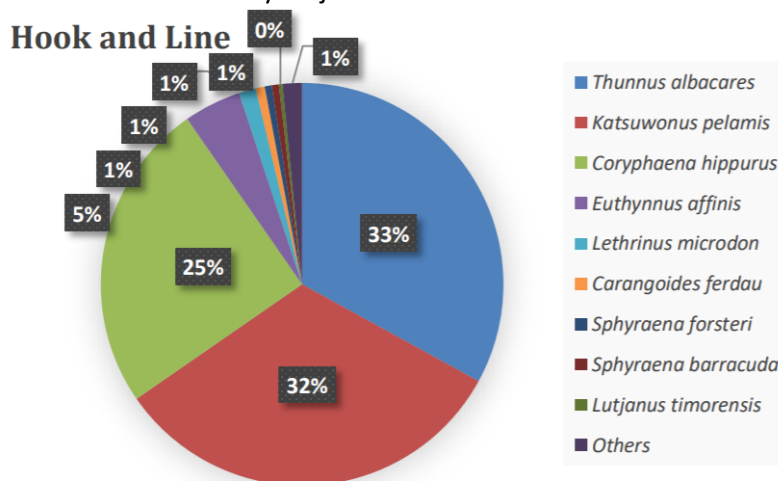


Figure 1.2.2 Hook and Line species catch composition, Bolinao, Pangasinan (Jan-Jun 2019)

• **Multiple Hook and Line**

A total of 5 species was recorded from January to June of 2019 from multiple hook and line Fisheries. A total landed catch of 2 metric tons was also recorded (Fig. 1.2.3); it was observed that family Scombridae dominated the catch contributing almost 88% to the total catch with the use

of multiple hook and line. 8 percent of the catch was by *Coryphaena hippurus*. The remaining species, *Euthynnus affinis*, contributed minimal catch of 4%.

Multiple Hook and Line

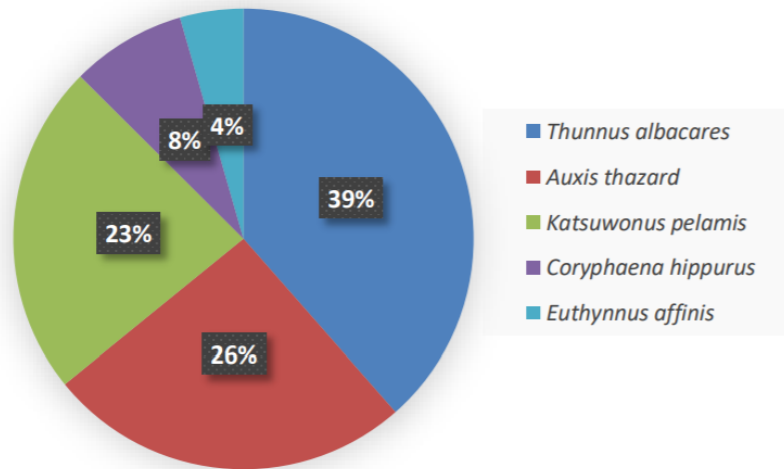


Figure 1.2.3 Multiple Hook and Line species catch composition, Bolinao, Pangasinan (Jan-Jun 2019)

- **Spear gun**

Figure 1.2.4 shows the total Spear gun Fisheries in Bolinao, Pangasinan where a total of 45 species was recorded from January to June of 2019. A total landed catch of 19 metric tons was also recorded; it was observed that family Scombridae dominated the catch contributing almost 40% to the total catch with the use of spear gun. 13 percent of the catch was by *Coryphaena hippurus*, 11% by *Naso lituratus*, 9% *Scarus ghobban*, 8% by *Naso unicornis*, and 7% by *Lethrinus ornatus*. The remaining species, *Siganus guttatus* and *Acanthurus olivaceus*, shared the same percentage of the total catch with 6% contribution.

Spear Gun

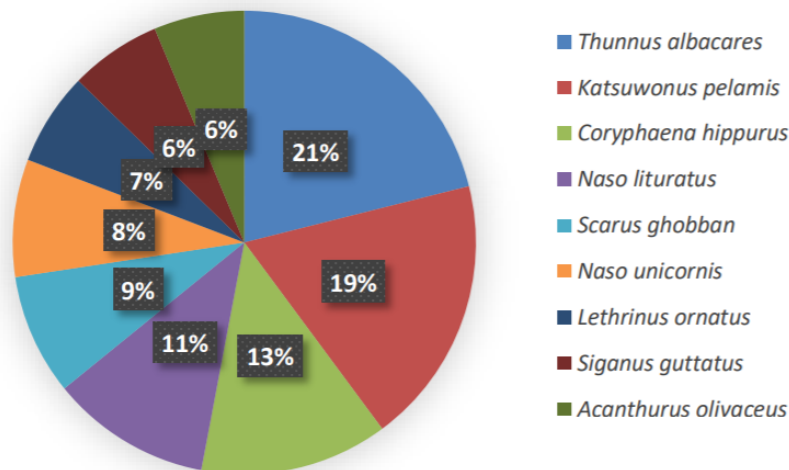


Figure 1.2.4 Spear gun species catch composition, Bolinao, Pangasinan (Jan-Jun 2019)

- **Seasonality**

Seasonality of species caught from January to June of 2019 was also recorded. Highest catch of *Katsuwonus pelamis* was observed during the month of March while catch for *Coryphaena hippurus* was observed highest during the month of February (Fig. 1.2.5).

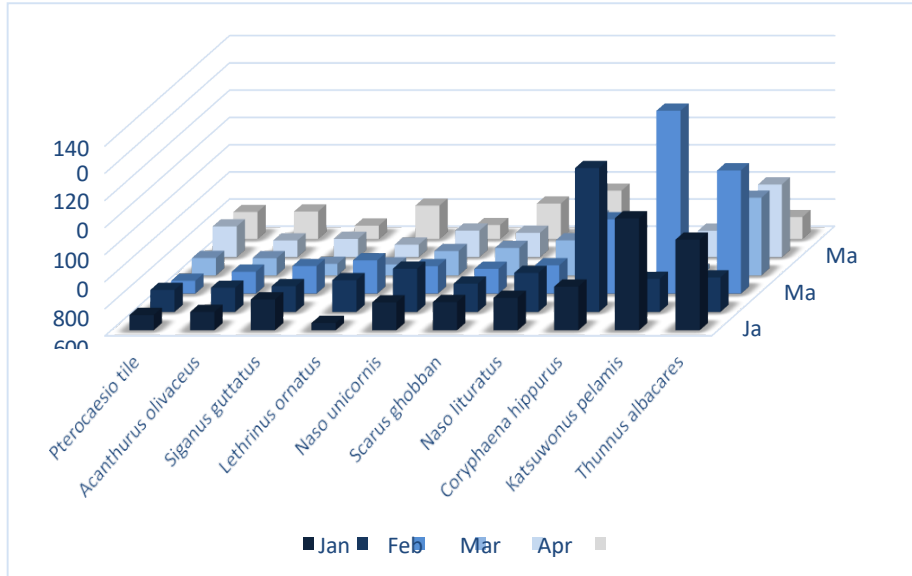


Figure 1.2.5 Seasonality of catch per species caught in Bolinao, Pangasinan (Jan-Jun 2019)

• **Catch Per Unit Effort (CPUE)**

Highest CPUE recorded was the operation of spear gun with an average of 154 kg/day, followed by the hook and line with 56 kg/day, and fish corral with almost 19 kg/day. Lowest CPUE in recorded was the use of and multiple hook and line with almost 16 kg/day (Table 1).

Gear	Ave kg/day
Fish corral	18.97
Hook & Line	56.33
Multiple hook and line	15.79
Spear gun	154.07

Table 1. CPUE by Gear in Bolinao, Pangasinan (Jan-Jun 2019)

2. Results for the Fisheries Data Collection in Coron, Palawan

2.1 Production Estimates

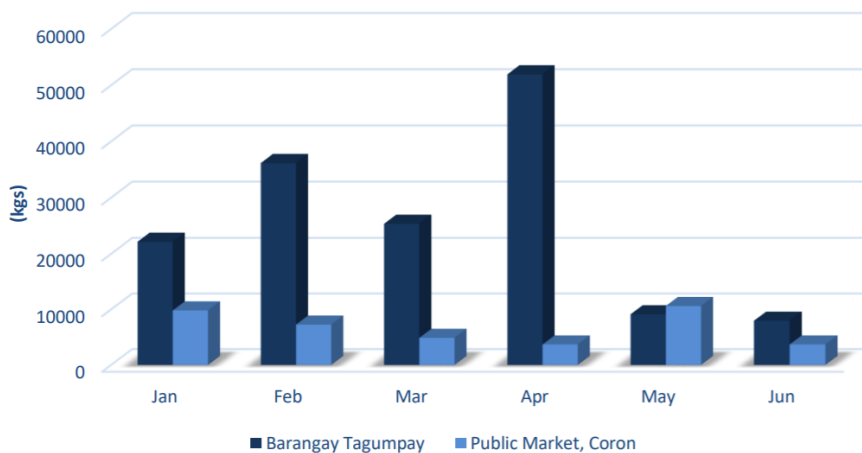


Figure 2.1 Production trend in Coron, Palawan in January to June 2019

In Figure 2.1, it was observed that the peak of production in the first half of 2019 were

during the months of February and April in Barangay Tagumpay, Coron, Palawan with the estimate of around 119 MT. Almost 63 percent of the production in Coron was contributed by Bagnet Fisheries with highest landed catch in Barangay Tagumpay. It was also observed that during the month June the production was at its lowest in both landing sites maybe because of the typhoons during these months. Fisherfolk in Coron follow strict compliance not to fish during typhoon season.

2.2 Catch/ Species Composition

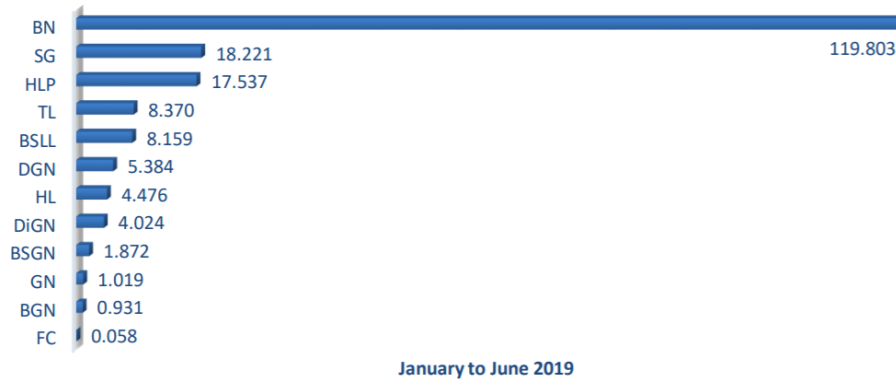


Figure 2.2 Catch per Gear, Coron, Palawan (January to June 2019)

In the Fisheries data collection in Coron from January to June of 2019, it was observed that in the total landed catch of 190 MT, almost 63% was contributed by Bagnet Fisheries with a catch of almost 120 MT (Fig. 2.2), spear gun fisheries with 18 MT and 10% of the total landed catch. Minimal landed catch was observed for troll line, bottom set long line, hook and line, and various gillnets. The lowest catch contributing 0.03% of the total landed catch in Coron was from fish corral.

Species Composition

• **Bagnet**

A total of 16 species was recorded from January to June of 2019 from multiple hook and line Fisheries. A total landed catch of 2 metric tons was also recorded (Fig. 2.2.1); it was observed that family Scombridae dominated the catch contributing almost 88% to the total catch with the use of multiple hook and line. 8 percent of the catch was by *Coryphaena hippurus*. The remaining species, *Euthynnus affinis*, contributed minimal catch of 4%.

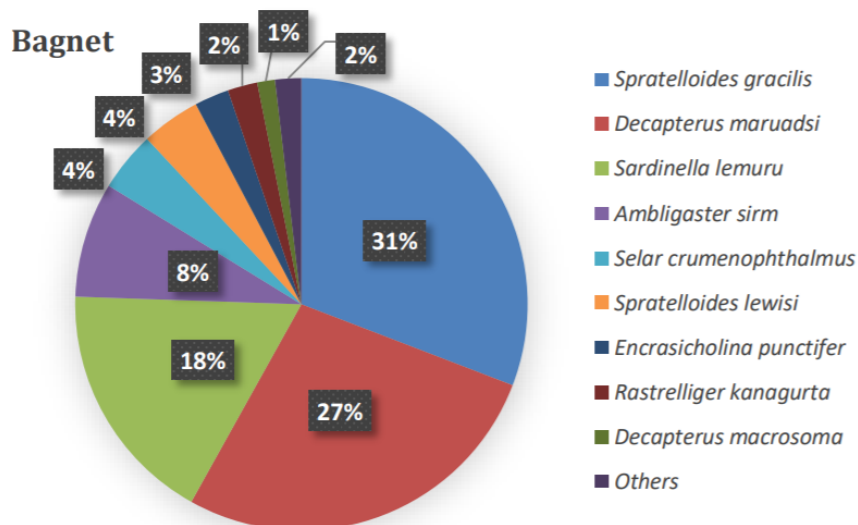


Figure 2.2.1 Bagnet species catch composition, Coron, Palawan (Jan-Jun 2019)

• **Bottom Set Long Line**

A total of 83 species was recorded from January to June of 2019 from bottom set long line Fisheries in Coron, Palawan. A total landed catch of 8 metric tons was also recorded (Fig. 2.2.2); it was observed that *Lutjanus lutjanus* gained the highest catch contributing almost 14%. 11 percent of the catch was by *Lethrinus lentjan*, 8% by *Caranx ignobilis*, 7% by *Lutjanus bohar*, and 6% by *Lethrinus atkinsoni*. *Pristipomoides multidens* and *Epinephelus areolatus*. The remaining species contributed a total catch of 40%.

Bottom Set Long Line

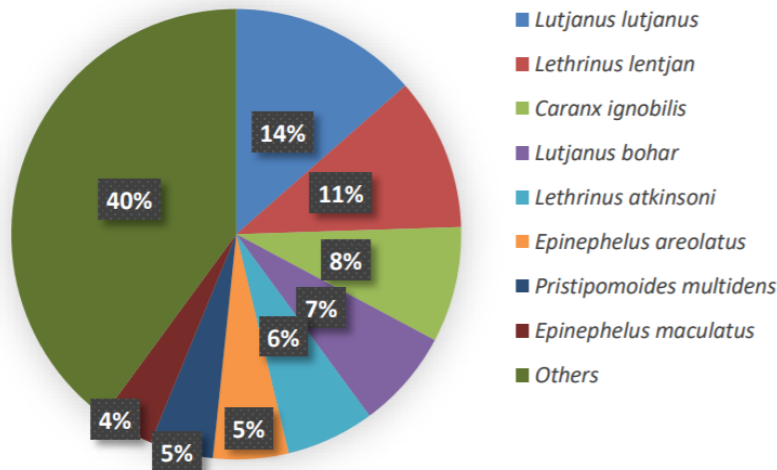


Figure 2.2.2 Bottom Set Long Line species catch composition, Coron, Palawan (Jan-Jun 2019)

• **Bottom Gillnet**

A total of 57 species was recorded from January to June of 2019 from bottom gillnet Fisheries in Coron, Palawan. A total landed catch of almost 1 metric ton was also recorded (Fig. 2.2.3); it was observed that *Selar crumenophthalmus* gained the highest catch contributing 22%. 8 percent of the catch was by *Caranx sexfasciatus*, 6% by *Megalaspis cordyla*, and 5% by *Carangoides bajad*. Species such as *Sphyraena jello*, *Epinephelus corallicola*, *Plectorhinchus chaetodonoides*, *Alectis indicus* and *Lethrinus lentjan* shared the same percentage of catch with 6% contribution to the total catch of Coron, Palawan. The remaining species contributed a total catch of 39%.

Bottom Gillnet

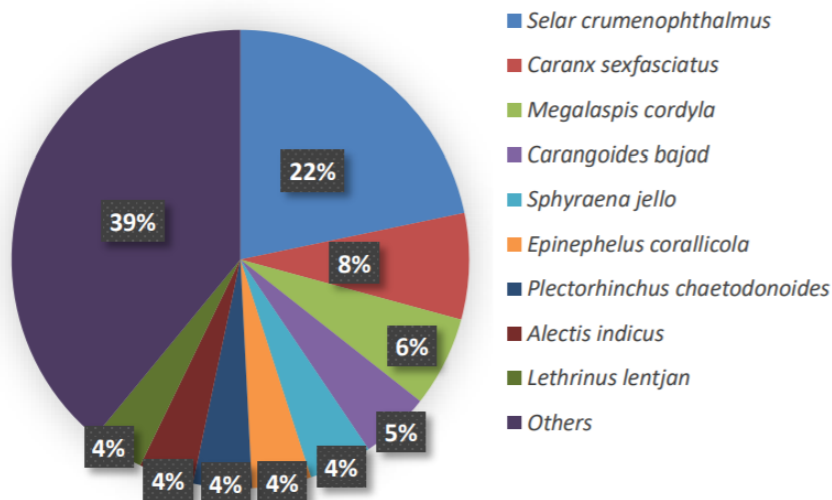


Figure 2.2.3 Bottom Gillnet species catch composition, Coron, Palawan (Jan-Jun 2019)

• **Bottom Set Gillnet**

A total of 38 species was recorded from January to June of 2019 from bottom set gillnet Fisheries in Coron, Palawan. A total landed catch of almost 2 metric tons was also recorded (Fig. 2.2.4); it was observed that Siganids gained the highest catch with a total of 35% followed by *Lethrinus erythropterus* with 7%. *Lutjanus carponotatus* and *Scarus ghobban* shared the same percentage of 5 from the total catch of Coron. The remaining species contributed a total catch of 48%.

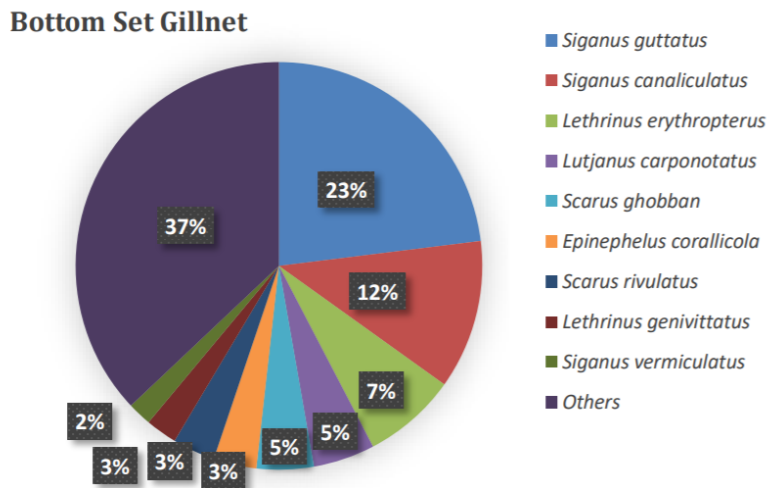


Figure 2.2.4 Bottom Set Gillnet species catch composition, Coron, Palawan (Jan-Jun 2019)

• **Seasonality**

Seasonality of species caught from January to June of 2019 was also recorded. Highest catch of *Decapterus maruadsi* was observed during the month of May while catch for *Sardinella lemuru* was observed highest during the month of January (Fig. 1.2.5).

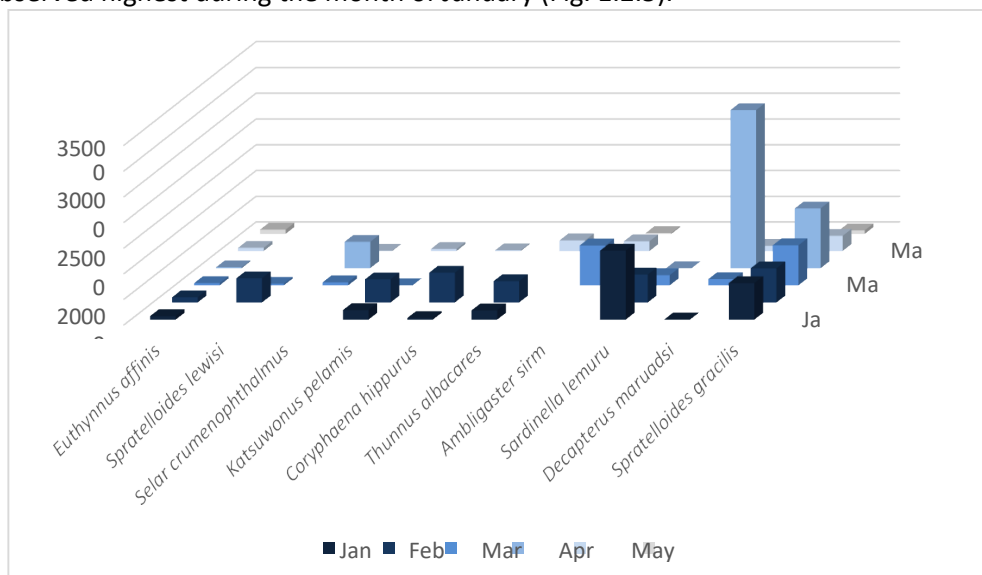


Figure 2.3.5 Seasonality of catch per species caught in Coron, Palawan (Jan-Jun 2019)

• **Catch Per Unit Effort (CPUE)**

Highest CPUE recorded was the operation of Bagnet with an average of 950.82 kg/day, followed by the spear gun with almost 145 kg/day, hook and line with payaw with almost 139 kg/day, and troll line with 66 kg/day. Lowest CPUE in recorded was the use of and drift gillnet with almost 43 kg/day (Table 2).

Gears	Ave kg/day
Bagnet	950.82
Spear gun	144.61
Hook and Line with Payao	139.18
Troll Line	66.43
Drift Gillnet	42.73

Table 2. CPUE by Gear in Coron, Palawan (Jan-Jun 2019)

3. Results for the Fisheries Data Collection in Masinloc, Zambales

3.1 Production Estimates

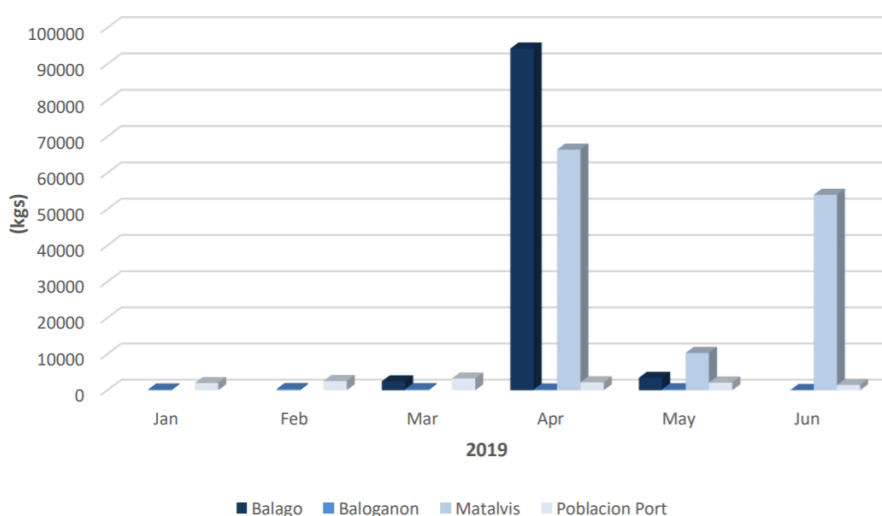


Figure 3.1 Production trend in Masinloc, Zambales in January to June 2019

In Figure 3.1, it was observed that the peak of production in the first half of 2019 were during the months of March and June in Balago and Matalvis, respectively. Ring net produced a total of 296 MT comprising almost 95% of the total landed catch in Masinloc. The total production estimate in Masinloc, Zambales was almost 312 MT. It was observed that during the first quarter of the year, production was in its lowest in all fish landing sites maybe due to strong winds brought by the northeast monsoon.

3.2 Catch/ Species Composition



Figure 3.2 Catch per Gear, Masinloc, Zambales (January to June 2019)

In the Fisheries data collection in Coron from January to June of 2019, it was observed that in the total landed catch of 312 MT, almost 95% was contributed by Ring net Fisheries with a catch of almost 296 (Fig. 3.2), Bagnet fisheries with almost 15 MT and gillnet fisheries with almost 1.6 MT total landed catch. The lowest catch contributing 0.02% of the total landed catch in Masinloc, Zambales.

Species Composition

- **Bagnet**

A total of 3 species was recorded from January to June of 2019 from Bagnet Fisheries in Masinloc, Zambales. A total landed catch of almost 15 metric tons was also recorded (Fig. 3.2.1); it was observed that *Sardinella gibbosa* gained the highest catch with a total of 50% followed by species from family Engraulidae with 39%. The lowest catch for Bagnet fisheries was by *Pterocaesio tessellata* with about 11% of the total landed catch.

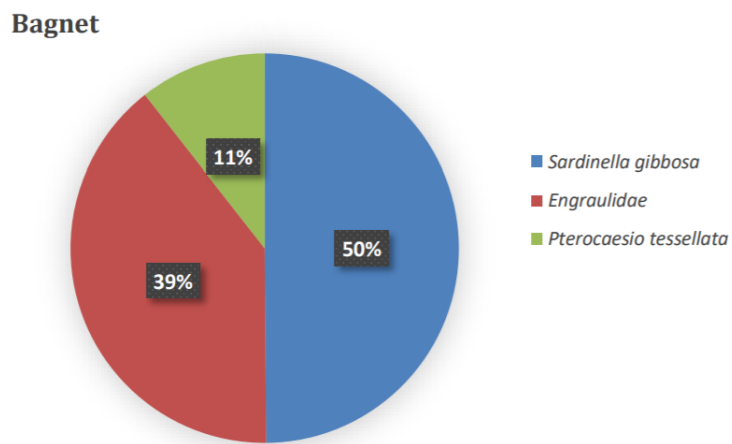


Figure 3.2.1 Bagnet species catch composition, Masinloc (Jan-Jun 2019)

- **Gillnet**

A total of 14 species was recorded from January to June of 2019 from Gillnet Fisheries in Masinloc, Zambales. A total landed catch of almost 2 metric tons was also recorded (Fig. 3.2.2); it was observed that *Sphyraena obtusata* gained the highest catch with a total of 29% followed by *Rastrelliger faughni* with 22%. 16 percent of the total gillnet catch was by *Selar crumenophthalmus*, 12% by *Spyrhaena jello* and 10% by *Nemipterus japonicus*. The remaining species contributed a total catch of 20%

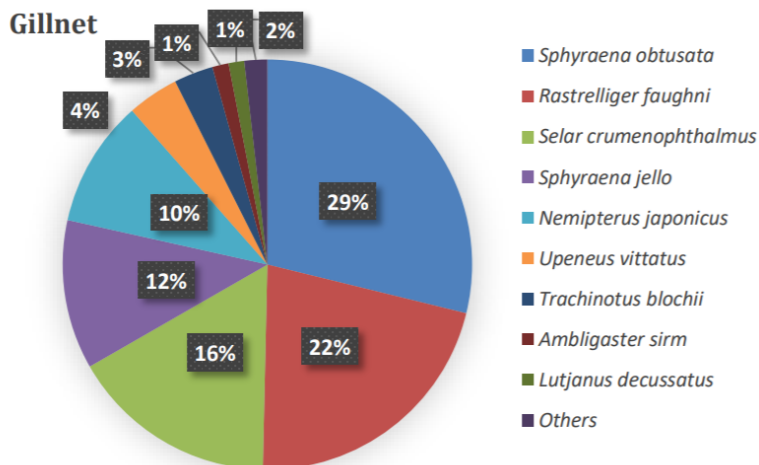


Figure 3.2.2 Bagnet species catch composition, Masinloc (Jan-Jun 2019)

- **Hook and Line**

A total of 6 species was recorded from January to June of 2019 from Hook and Line Fisheries in Masinloc, Zambales. A total landed catch of almost 1.6 metric tons was also recorded (Fig. 3.2.3); it was observed that *Thunnus obesus* dominated the catch with a total of 54% followed by *Decapterus macarellus* with 40%. The remaining species contributed a total catch of 6%.

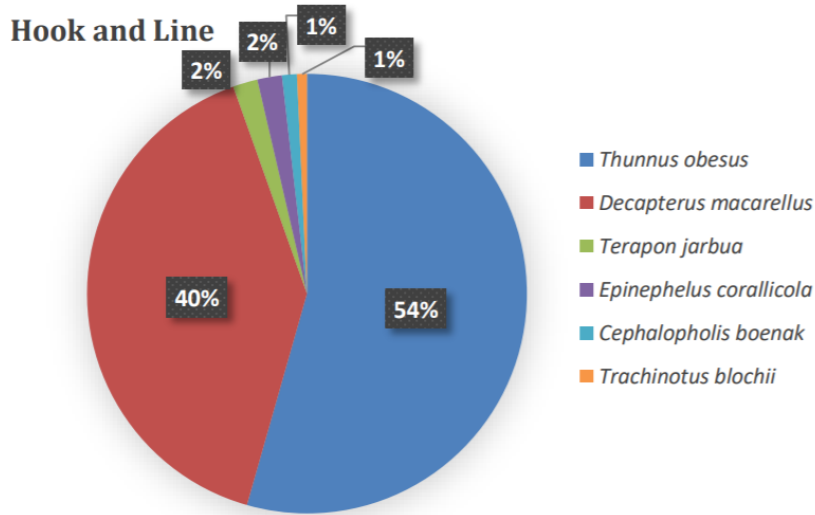


Figure 3.2.3 Hook and Line species catch composition, Masinloc (Jan-Jun 2019)

- **Ring net**

A total of 5 species was recorded from January to June of 2019 from Hook and Line Fisheries in Masinloc, Zambales. A total landed catch of almost 296 metric tons was also recorded (Fig. 3.2.4); it was observed that *Thunnus albacares* gained the highest catch with a total of 33% followed by *Decapterus macarellus* with 29%, 23% by *Katsuwonus pelamis*. The remaining species contributed a total catch of 15%.

Ring Net

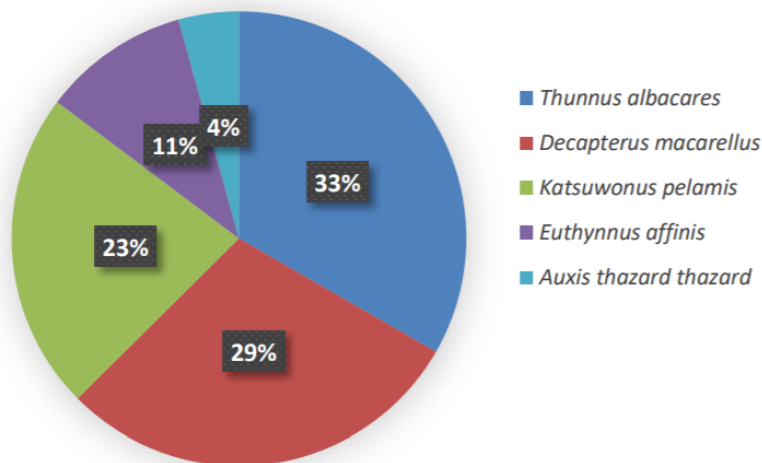


Figure 3.2.4 Ring net species catch composition, Masinloc (Jan-Jun 2019)

- **Seasonality**

Seasonality of species caught from January to June of 2019 was also recorded. Highest catch of *Decapterus macarellus*, *Thunnus albacares* and *Katsuwonus pelamis* were observed during the month of March (Fig. 3.2.5).

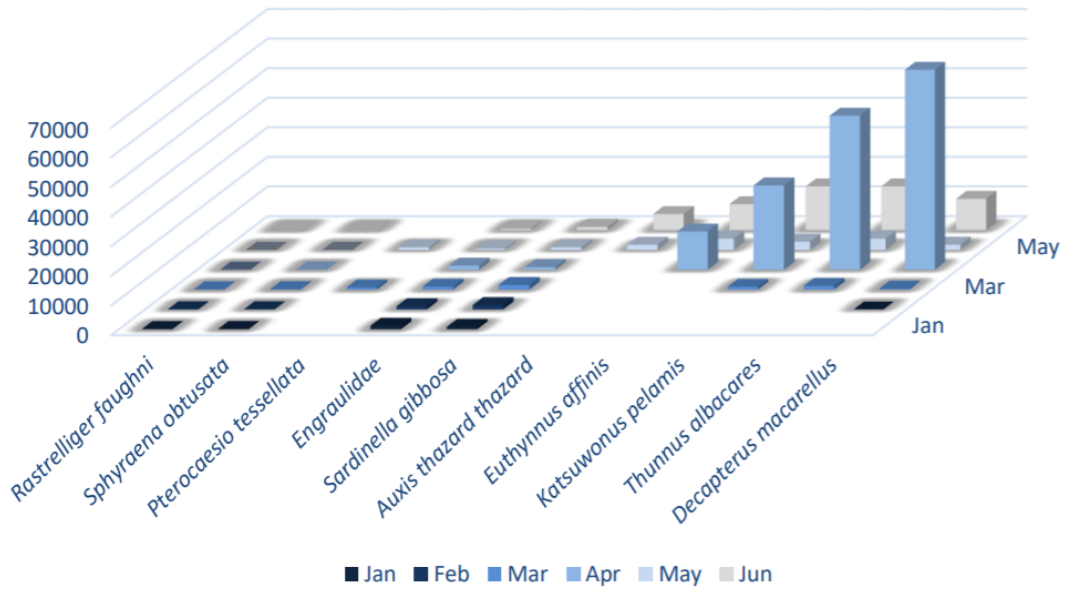


Figure 3.2.5 Seasonality of catch per species caught in Masinloc, Zambales (Jan-Jun 2019)

- **Catch per Unit Effort (CPUE)**

Highest CPUE recorded was the operation of spear gun with an average of 154 kg/day, followed by the hook and line with 56 kg/day, and fish corral with almost 19 kg/day. Lowest CPUE in recorded was the use of and multiple hook and line with almost 16 kg/day (Table 3).

Gears	Ave kg/day
Ring Net	1,833.11
Bagnet	108.24
Gillnet	11.43
Hook & Line	1.84

Table 3. CPUE by Gear in Masinloc, Zambales (Jan-Jun 2019)