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Group Seine Operations of Philippine Flagged Vessels in High Seas Pocket 1 (HSP1)

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ABSTRACT

This paper reports on the operations of Philippine group seine operations in High Seas Pocket 1 based on Observer reports in 2018. It covers the operations of thirty-three (33) catcher vessels during the period January-June and October-December 2018. It describes catch, effort and operation (catch-per-unit-effort, species and size composition, number of catcher and support boats, number of sets and the number of days) of the fleet in high seas pocket 1.

I. Introduction

High Seas Pocket No. 1 (HSP1) was closed to purse seine fishing for 2 years effective January 1, 2010 as a result of the implementation of Conservation and Management Measure 2008-01 (CMM 2008-01) adopted by the Western and Central Pacific Fisheries Commission (WCPFC). The CMM was intended to reduce fishing mortality of bigeye and yellowfin tunas. HSP1 is bounded by the exclusive economic zones or EEZs of Federal States of Micronesia, Republic of Palau,Indonesia, and Papua New Guinea.

In March 2012, the 8th Regular Session of the WCPFC adopted CMM 2011-01 as a temporary extension of CMM 2008-01 that gave access to Philippine traditional fresh/ice chilled seining vessels operating as a group in HSP1 until February 2013. Subsequently, CMMs on tropical tunas have provided the measures for this fleet in HSP1. The measures involved several conditions including access limit to 36 catcher fishing vessels, mandatory use of automatic location communicator (ALC) and regional observer onboard.

Consequently, Fisheries Administrative Order 245 (FAO 245, 245-1 to 4) was issued by the Department of Agriculture through the Bureau of Fisheries and Aquatic Resources (BFAR) to prescribe regulations and implementing guidelines on the operations of 36 fishing vessels in HSP1.

In addition, Fisheries Administrative Order 240 (FAO 240) was adopted for the implementation of the National Fisheries Observer Program (NFOP) covering high seas. Further, FAO 241 was issued to strengthen VMS operations in the high seas. More recently FAOs 260 and 261, prescribe the regulations for Vessel Monitoring Measures (VMM) and Electronic Reporting System (ERS), and Observer coverage for Philippine-flagged vessels operating in Philippine and distant waters.

This report was based from the reports of Observers, covering the catch of 33 vessels that were able to conduct fishing in HSP1. The fleet opted to operate only for 9 months (January-June; October-December) in adherence to paragraph 14 of CMM 2017-01.

II. Methods

A. Catch Estimation

Observers total catch estimates were derived from two methods. The main procedure was made by counting and estimating the capacity of brails as fish catch was transferred from the bunt to wells or fish holds of awaiting carriers. The other method was based on capacity and fullness of wells/fish holds. Catch rate was estimated as mT/fishing day. In general, only one set was made in one fishing day. In the brail count/capacity method, total catch was estimated using the following method:

Volume (V) = π r 2 h
Brail capacity = Volume x 80%
Where;
π = 3.14
h= Brail height
r = Brail diameter (d)/ 2

The volume of fish catch was estimated at 80% of the volume of the brail to account empty/water space. By using this method, a margin of +/- 2% error was observed (dela Cruz, 2010).

B. Catch Sampling

Spill sampling using the sampling bin specified by SPC was used as sampling protocol. The bin has a capacity of around 300-500 kilograms, depending on the size and species of fish caught. Samples were sorted according to species whenever possible and weighed to the nearest 0.1 kg. The lengths of all tunas and mackerel scad from the sample were measured to nearest cm (fork length for tuna and large pelagic species and total length for mackerel scad).

The large size tunas, billfish and other species that were separated as brails were emptied into the wells. These were weighed and measured separately.

C. Species identification

Species identification was done by Observers based on available identification guides. Special attention was given on the distinctive characteristics of small size yellowfin and bigeye tunas.

D. Analysis

Data were analyzed using descriptive presentation of data using Microsoft Excel to illustrate a general status of operation in HSP1. These include species composition, Effort, CPUE and length frequency.

Information on the number of days the vessels stayed at HSP1 was based VMS data on time/date of entry and exit from HSP1.

III. Results

A. Catch and fishing effort

The group seine fleet that fished in HSP1 in 2018 was composed of 28 purse seine and 5 ringnet catcher vessels. The fleet operated in accordance to paragraph 14 of CMM 2017-01.

Overall, the 33 vessels spent a total of 7,823 days in HSP1, with actual 2,749 fishing days, or about one (1) fishing day for every 2.8 days spent by each vessel in the HSP1. FAO 245 which provides regulation and guidelines for the operation of Philippine group seine operation set the annual catch limit not to exceed an equivalent of 9,846 fishing days for the 36 vessels.

In addition, of the total 2,696 fishing days, only 2,594 sets were successful or an efficiency rate of 94%. Unsuccessful fishing days were attributed to damaged gear, machinery malfunction, unfavourable sea condition and other factors, which resulted to no catch to be retained whole weight.

Table 1. Summary of catch and effort of Philippine group seine operation in HSP1, 2018

Month	No. of Catchers	Days @ HSP1	Fishing days	Set/HSP1 days	Total catch (t)	Catch rate (t/set)	Catch rate (t/HSP1 day)
JAN	29	852	224	3.80	2,150	9.60	2.52
FEB	29	819	215	3.81	1,413	6.57	1.73
MAR	30	926	308	3.01	2,957	9.60	3.19
APR	29	856	350	2.45	2,382	6.81	2.78
MAY	30	930	360	2.58	2,430	6.75	2.61
JUN	30	629	317	1.98	2,535	8.00	4.03
OCT	31	929	279	3.33	3,478	12.46	3.74
NOV	30	907	314	2.89	2,896	9.22	3.19
DEC	32	975	382	2.55	3,006	7.87	3.08
TOTAL	33	7,823	2,749	2.85	23,246	8.46	2.97

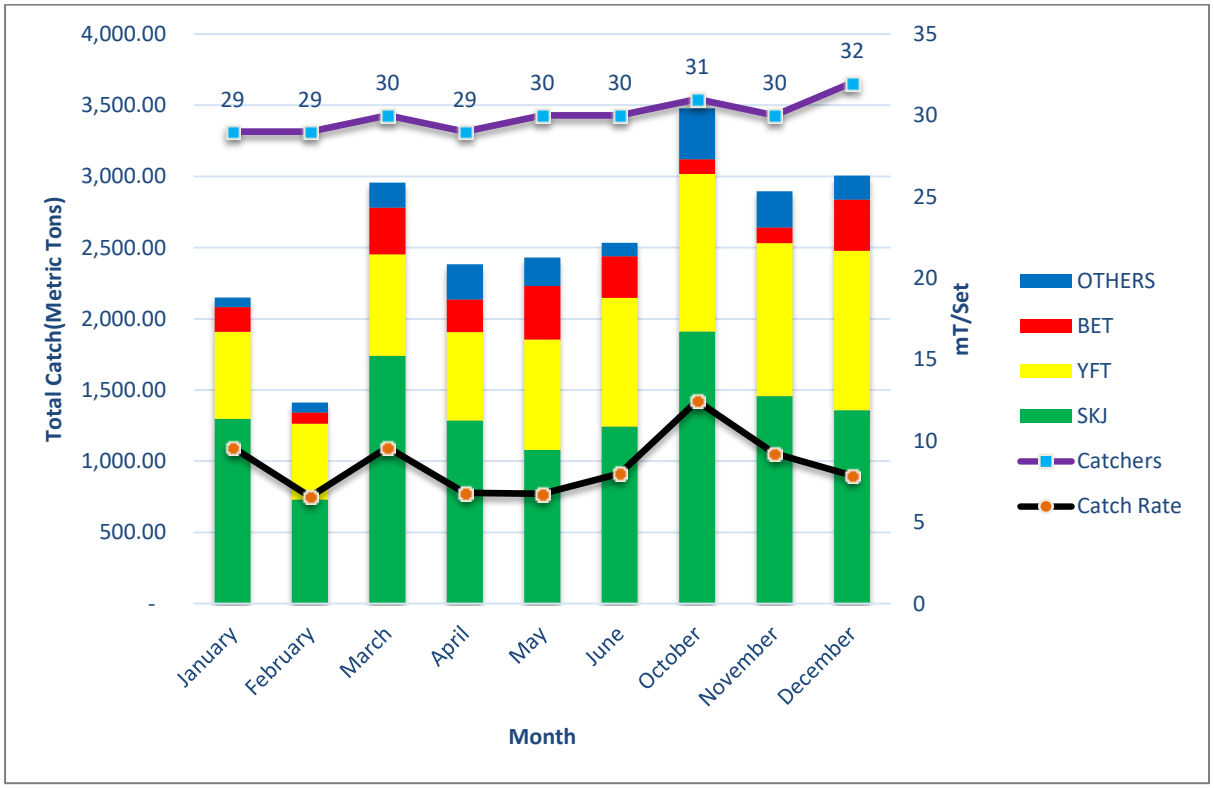

Figure 1. Catch and effort of Philippine group seine operations in HSP1, 2018

B. Catch and species composition

A total of 23,246 tons of fish was caught in HSP1 for 2018, translating to a catch-per-unit effort of 8.46 tons/vessel/fishing day or 2.97 tons/vessel/day in HSP1. The bulk of the catch was composed of skipjack (60.04%) and yellowfin (30.69%). Bigeye was at 4.13% while the remaining 5.14% was comprised of other species including mackerel scad, kawakawa, frigate and bullet tuna, bigeye scad, dolphin fish and triggerfish (Table 2, Fig. 1).

Sharks and other species of special interest were also occasionally caught during the operation, including 62 sharks, 18 dolphins, 1 whale, 1 sea turtle, 1 giant manta ray and 1 Mobula spp.

Table 2. Catch of major species by month

Month	SKJ	YFT	BET	OTHERS	TOTAL
JAN	1,297.18	610.82	174.01	67.75	2,149.76
FEB	730.61	533.66	77.41	71.36	1,413.04
MAR	1,741.18	712.04	328.90	174.72	2,956.84
APR	1,286.28	621.38	228.00	246.48	2,382.14
MAY	1,080.25	775.65	375.47	198.65	2,430.03
JUN	1,243.62	902.71	292.51	96.09	2,534.93
OCT	1,910.52	1,107.15	101.83	358.14	3,477.65
NOV	1,457.25	1,073.31	111.72	253.66	2,895.95
DEC	1,358.43	1,119.92	359.18	168.39	3,005.92
TOTAL	12,105.32	7,456.66	2,049.02	1,635.24	23,246.25

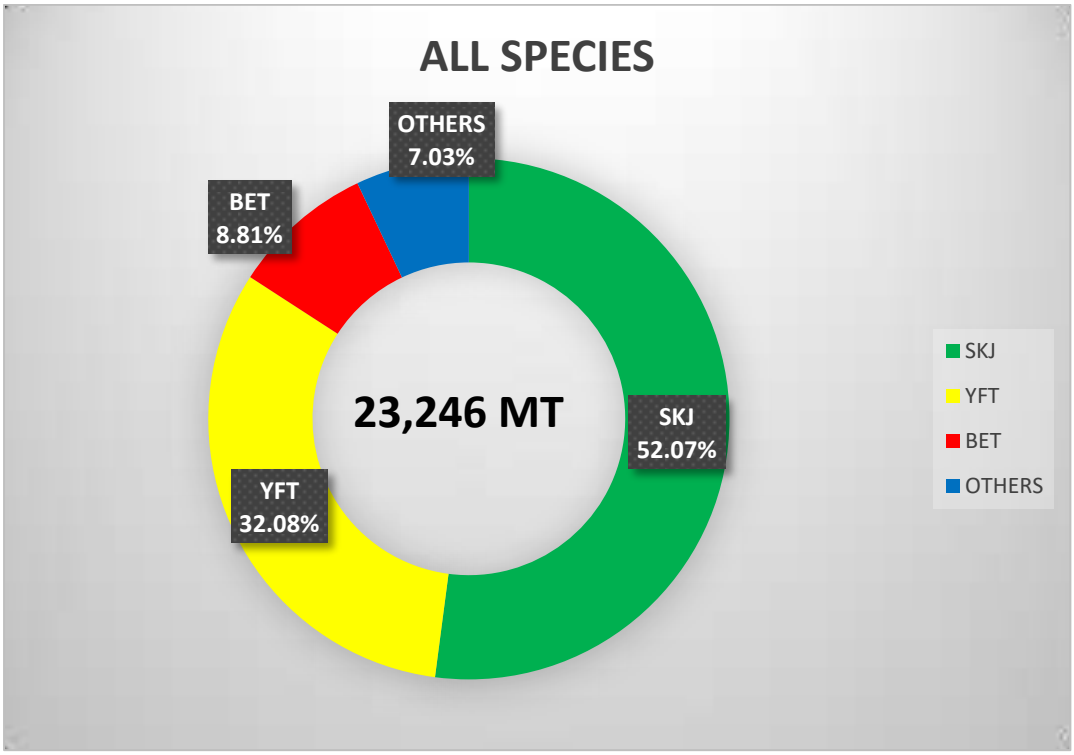

Figure 2. Catch composition of Philippine group seine in HSP1, 2018

C. Size composition

Table 3 illustrates the length frequency of SKJ, YFT and BET indicating average length of 35 cm, 43 cm and 57 cm respectively. The three major tuna species indicate a downward trend starting from March to April and uptrend from April to June. Skipjack indicated modal peaks at 29 and 50 cm (Fig 3, Table 3) while Yellowfin Tuna from modes at 30 cm and 50 cm and Bigeye Tuna at 30 cm and 60cm. The average size of the yellowfin and skipjack was found to be smallest at under 39 and 32 cm in the month of April and November respectively while BET found to be smallest in February (Fig 4).

Table 3. Average length of SKJ, YFT, BET and MSD caught in HSP1

Species	SKJ	YFT	BET	MSD
n	34,558	127,050	13,162	241,445
Ave (cm)	**35.30**	**43.61**	**57.61**	**23.50**
Min (cm)	11	11	16	10
Max (cm)	84	131	143	57
Mode(cm)	29,50	30,50	30,60	23

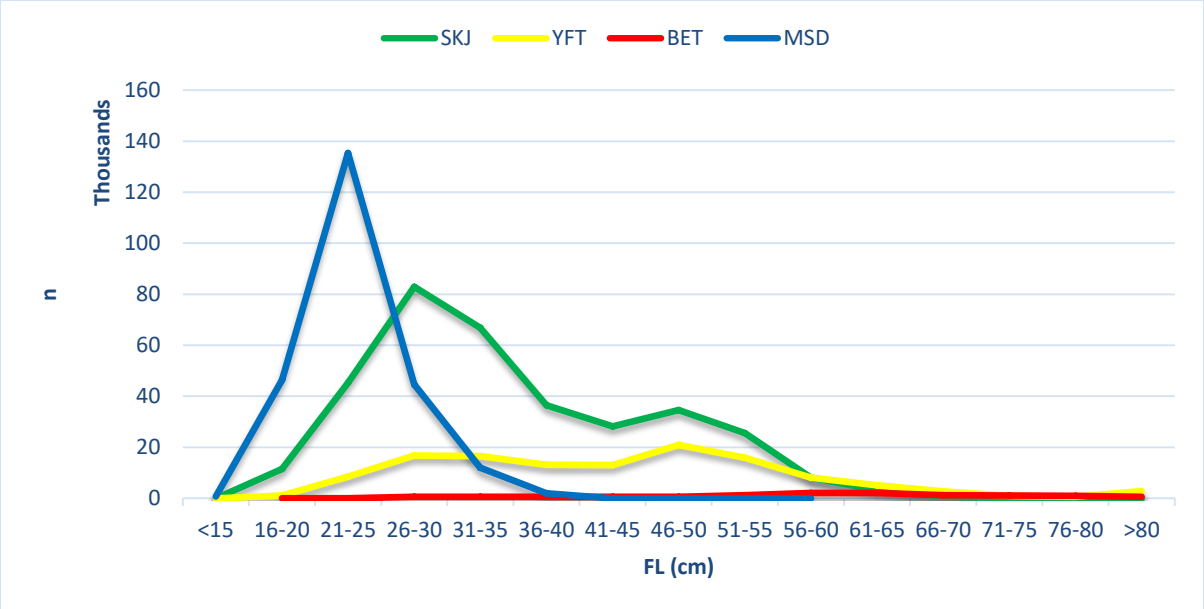

Figure 3. Size composition of SKJ, YFT, BET and MSD caught in HSP1

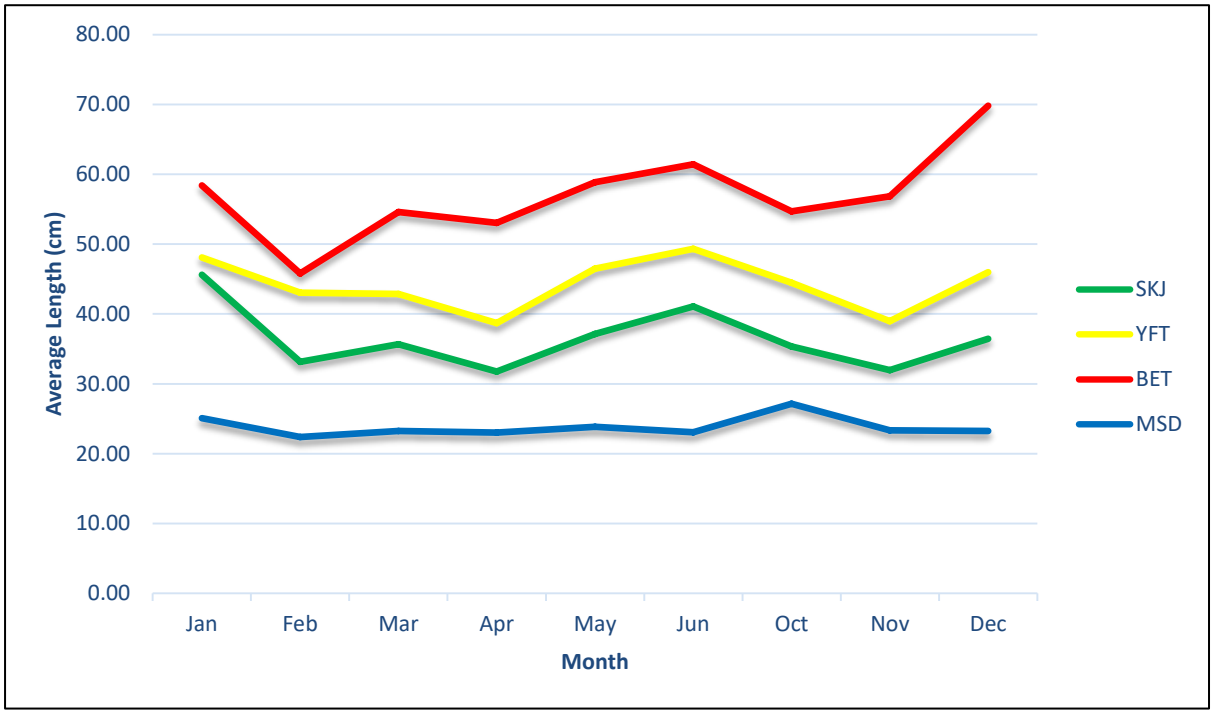

Figure 4. Average size of SKJ, YFT, BET and MSD caught in HSP1

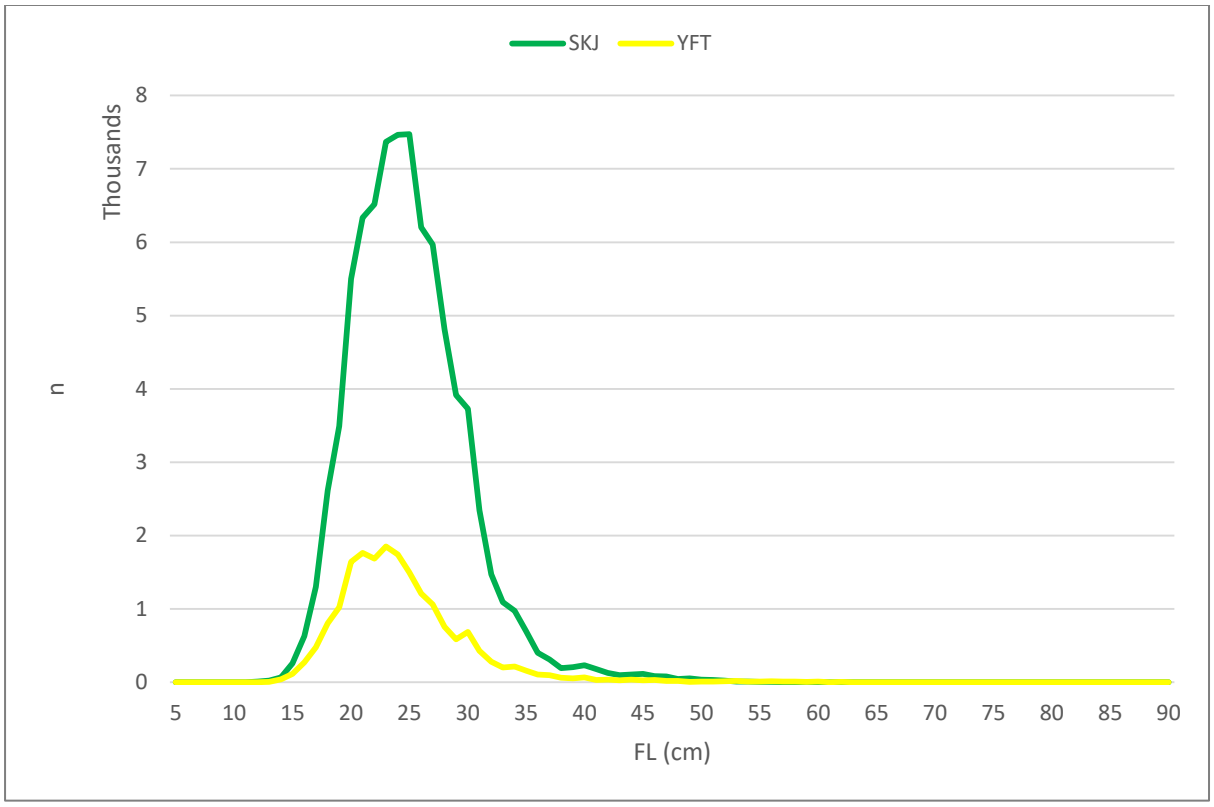

Figure 3. Size composition of SKJ, YFT, BET and MSD caught in Philippine EEZ (NSAP 2018)

In contrast with fish caught within Philippine EEZ in 2018, the lengths for the 2 tuna species (SKJ and YFT) were relatively smaller with modal lengths at

25 and 23 cm and average lengths of 30.46 cm and 25.62 cm respectively (Fig 5, Table 4).

Table 4. Range and size of SKJ, YFT, BET and MSD caught in Philippine EEZ (NSAP data, 2018)

Species	SKJ	YFT
n	185,678	24,403
Ave (cm)	25.00	24.48
Min (cm)	12	13
Max (cm)	68	89
Mode (cm	25	23

Table 5. Comparative Summary of HSP1 and Philippine EEZ Catch in 2018

Species	HSP1 Catch Composition(%)	PHIL EEZ Catch Composition(%)*	HSP1 Average Size (cm)	PHIL EEZ Average Size (cm)**
SKJ	52.07	49.11	35.30	25.00
YFT	32.08	27.56	43.61	24.48
BET	8.81	0.40	57.61	
MSD(OTHERS)	7.03	22.72	23.50	

*based on observer estimate during FAD Closure **NSAP data

D. Catch variation by depth of net

Analysis on the variation of catch with depth of net was made. The actual stretched depths of nets were measured during inspections as a condition to their license to fish in HSP1. Depth of nets ranged from103-198 fathoms (Table 6) and were classed by 20 fathoms, in particular >141, 121-140 and 101-120 fathoms.

Table 6. Number of observations by depth of net (class).

Depth of net (Class)	No. of sets
101-120	1,038
121-140	953
141-160	443
≥161	315
Grand Total	**2,749**

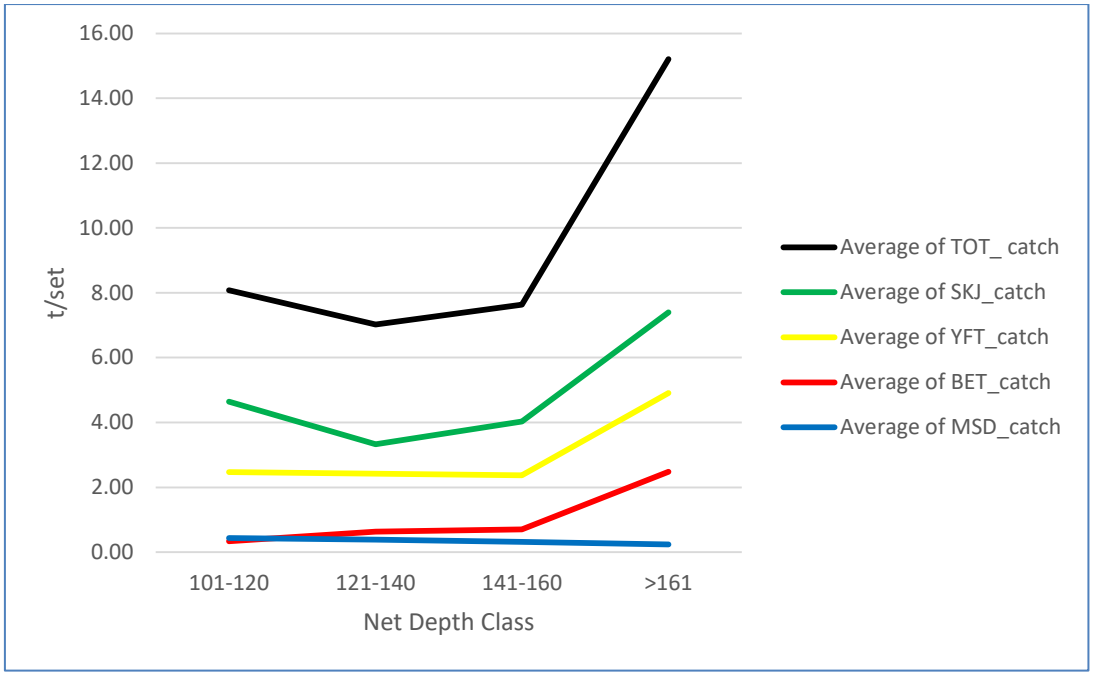

Figure 6. Average catch by species by net depth

Catch variation across gear depths is shown in Fig. 6, indicating increase on the average catch of BET and YFT with increasing depth of net. It was also observed that deeper nets had the lowest MSD catch.

Attempt was made to determine decrease of BET catch by depth of net class by forecasting (linear regression) indicating decrease of about 9%-72% for every 20 fathoms decrease in net depth.

Table 7. BET catch reduction by linear regression (forecast)

Net depth range	Average catch (t/set)	% BET Decrease
≥161	2.475	
141-160	0.701	72%
121-140	0.637	9%
101-120	0.339	47%

IV. Summary / Recommendations

1. The catch in 2018 of the Philippine group seine fleet in HSP1 totaled to 23,246 tons of which 21,611 mt were SKJ, YFT and BET or comprised about 15% of the production of these tuna species that were caught within Philippine EEZ.

2. The average catch was catch-per-unit effort of 8.46 tons/vessel/fishing day or 2.97 tons/vessel/day in HSP1.

3. The average length of SKJ, YFT and BET caught in HSP1 were relatively bigger than tunas caught from Philippine EEZ.

4. Reduction of net depth to reduce the catch of BET should be evaluated and considered as an alternative measure to reduce BET and YFT catch in purse seine fishery.

V. References

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