SCIENTIFIC COMMITTEE
EIGHTEENTH REGULAR SESSION

ELECTRONIC MEETING
10 – 18 August 2022

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

WCPFC-SC18-2022/ST-IP-07

I. C. Tanangonan[1], M. B. Demo-os[1], J. S. Jara[1], A. C. Dickson[2] and R. V. Ramiscal[2]

[1] Marine Fisheries Development and Vessel Operations Center, Bureau of Fisheries and Aquatic Resource (BFAR)
[2] Capture Fisheries Division, Bureau of Fisheries and Aquatic Resource (BFAR), PCA Bldg., Elliptical Road, Quezon City, Philippines

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

Isidro C. Tanangonan[1], Marlo B. Demo-os[1], Jeric S. Jara[1], Alma C. Dickson[2] and Rafael V. Ramiscal[2]

ABSTRACT

This paper reports the operations of Philippine group seine operations in High Seas Pocket Number 1 based on Observer reports in 2021. It covers twenty-seven (27) operational catcher vessels during the period January-June and October-December 2021. 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 is 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 and giving access to Philippine traditional fresh/ice chilled seining vessels operating as a group in HSP1 until February 2013. Subsequently, CMM 2012-01 provided the measures for this fleet in the high seas until February 2014, CMM 2013-01 for 2014-2017, CMM 2017-01 for 2018 and CMM 2018-01 for 2019-2021. The measures involved several conditions including access limit to 36 catcher fishing vessels, mandatory use of automatic location communicator (ALC) and regional observer onboard.

[1]*Marine Fisheries Development and Vessel Operations Center*

[2]*Capture Fisheries Division*
Bureau of Fisheries and Aquatic Resource (BFAR)
PCA Bldg., Elliptical Road, Quezon City,
Philippines

Consequently, Fisheries Administrative Order 245 (FAO 245, 245-1, 245-2, 245-3 and 245-4) 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, Fisheries Administrative Order no. 241 (FAO 241) was issued to strengthen VMS operations in the high seas.

This report was based from the reports of Observers, covering the catch of 27 vessels that were able to conduct fishing in HSP1 in 2021. The majority of fleet opted to operate only for 9 months (January-June; October-December) in adherence to paragraph 14 of CMM 2018-01.

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 fleets that were able to fish in HSP1 in 2021 were composed of twenty-five (25) purse seine and two (2) ringnet catcher vessels. The fleet opted to operate only for 9 months (January-June; October-December) in accordance to paragraph 14 of CMM 2018-01. During the FAD Closure period, Philippines allowed 3 vessels with free school fishing capacity to conduct free school operation during the FAD closure but unfortunately, only one free school set was made and no catch was recorded.

Overall, the 27 vessels spent a total of 5,997 days in HSP1 and actual 2,539 fishing days, or just about one (1) fishing day for every 2.4 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, or corresponding to 273 fishing days per vessel.

In addition, of the total 2,539 fishing days, only 2,209 sets were successful or an efficiency rate of 87%. Unsuccessful fishing days were attributed to damaged gear, machinery malfunction, unfavorable 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, 2021

Month	No. of Catchers	Days @ HSP1	Fishing days	Set/HSP 1 days	Total catch (t)	Catch rate (t/set)	Catch rate (t/HSP1 day)
JAN	23	702	244	2.88	1,607.53	6.59	2.29
FEB	22	639	187	3.42	1,166.65	6.24	1.83
MAR	23	703	314	2.24	3,555.32	11.32	5.06
APR	22	641	268	2.39	2,804.37	10.46	4.37
MAY	23	692	280	2.47	3,026.03	10.81	4.37
JUN	21	531	296	1.79	2,767.62	9.35	5.21
JUL[1]	2	3	1	3.00	3.23	3.23	1.08
SEP[2]	4	10	1	10.00	-	0.00	-
OCT	21	631	360	1.75	2,818.13	7.83	4.47
NOV	25	719	328	2.19	2,068.71	6.31	2.88
DEC	25	726	260	2.79	1,906.04	7.33	2.63
TOTAL		**5,997**	**2,539**	**2.36**	**21,723.63**	**8.56**	**3.62**

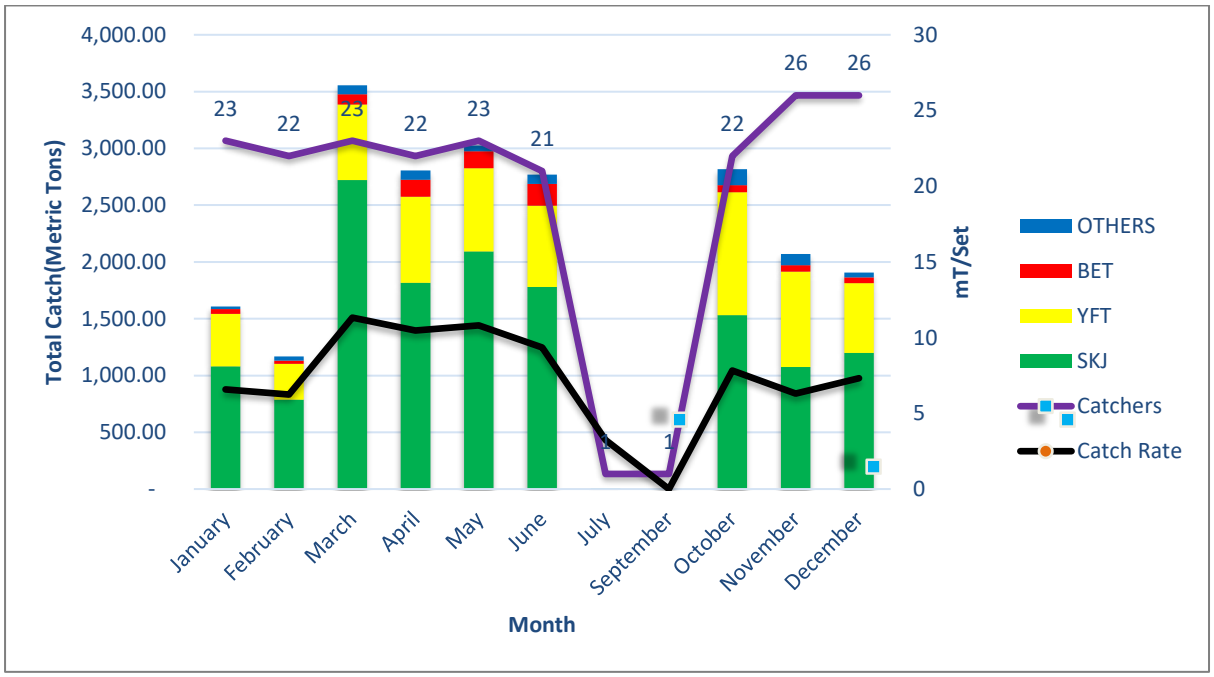

Figure 1. Catch and effort of Philippine group seine operations in HSP1, 2021

B. Catch and species composition

A total of 21,724 tons of fish was caught in HSP1 for 2021, translating to a catch-per-unit effort of 8.56 tons/vessel/fishing day or 3.62 tons/vessel/day in HSP1. The bulk of the catch was composed of skipjack (64.83%) and yellowfin (28.49%). Bigeye was at 3.76% while the remaining 2.92% was comprised of other species including mackerel scad, kawakawa, frigate and bullet tuna, bigeye scad, dolphin fish and triggerfish (Table 2, Fig. 1).

[1] Local date in HSP1, set date still corresponds to UTC June 30, 2021, the other vessel is transiting
[2] 3 vessels allowed for free school operation, 1 vessel transiting

Sharks and other species of special interest were also incidentally encircled during the operation, including 57 sharks, 9 whale shark, 21 whales, 206 dolphins, 4 sea turtles, 2 giant manta ray and 1 devil ray. These species were handled in accordance to the relevant Conservation and Management Measures (CMM-2019-04, CMM 2011-03, CMM 2018-04 and CMM 2019-05).

Table 2. Catch of major species by month

Month	SKJ	YFT	BET	OTHERS	TOTAL
JAN	1,080.57	461.40	42.64	22.93	1,607.53
FEB	786.96	316.88	26.99	35.82	1,166.65
MAR	2,720.14	667.41	87.93	79.84	3,555.32
APR	1,816.13	757.36	149.42	81.46	2,804.37
MAY	2,093.72	731.98	148.58	51.76	3,026.03
JUN	1,780.85	714.20	193.05	79.52	2,767.62
JUL	0.94	-	-	2.30	3.23
SEP	-	-	-	-	-
OCT	1,531.11	1,083.69	62.07	141.26	2,818.13
NOV	1,073.49	842.06	56.60	96.56	2,068.71
DEC	1,199.08	614.70	49.98	42.28	1,906.04
TOTAL	**14,082.99**	**6,189.67**	**817.26**	**633.71**	**21,723.63**

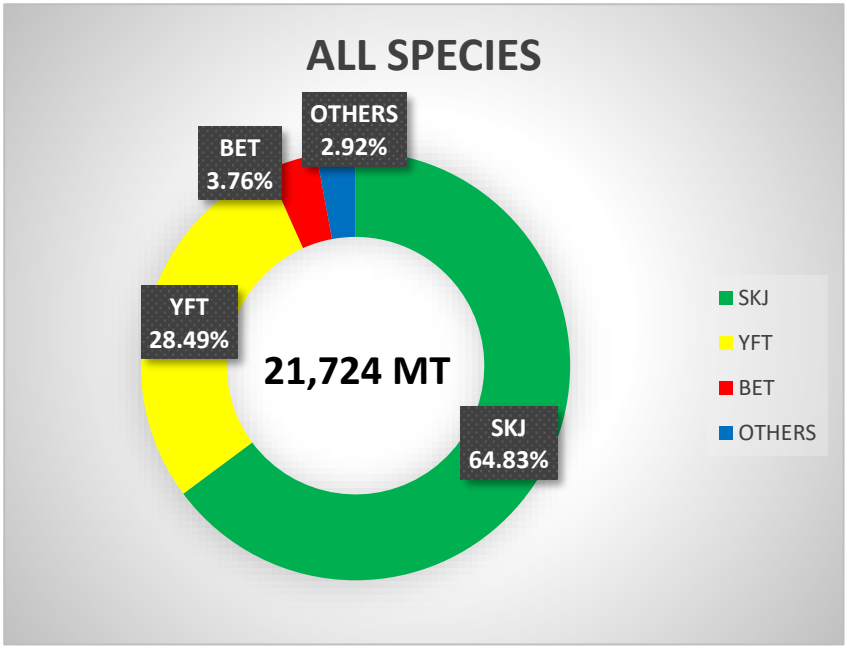

Figure 2. Catch composition of Philippine group seine in HSP1, 2021

C. Size composition

Table 3 illustrates the length frequency of skipjack, yellowfin, and bigeye tuna indicating the average length of 44.57, 46.67, and 51.9 centimeters respectively. Yellowfin and bigeye tuna show an upward trend starting from February to June (Fig 4). All three species of tuna show a downward direction from October to November. Skipjack, yellowfin, and bigeye tuna also indicated modal peaks at 50, 48, and 51 centimeters respectively (Fig 3, Table 3). The average size of the Skipjack Tuna and Bigeye Tuna were found to be smallest at under 36 and 42 centimeters respectively both in November while yellowfin tuna was found to be smallest in December at 43 centimeters (Fig 4). Conversely Skipjack and yellowfin tuna were both at their highest average size in the month of May at 50 and 54 centimeters respectively while the bigeye tuna was at 62 centimeters average length in the month of June.

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

Species	SKJ	YFT	BET	MSD
n	225,587	101,279	6,645	82,720
Ave (cm)	**44.57**	**46.67**	**51.9**	**24.69**
Min (cm)	12	13	15	9
Max (cm)	84	134	106	60
Mode(cm)	**50**	**48**	**51**	**21**

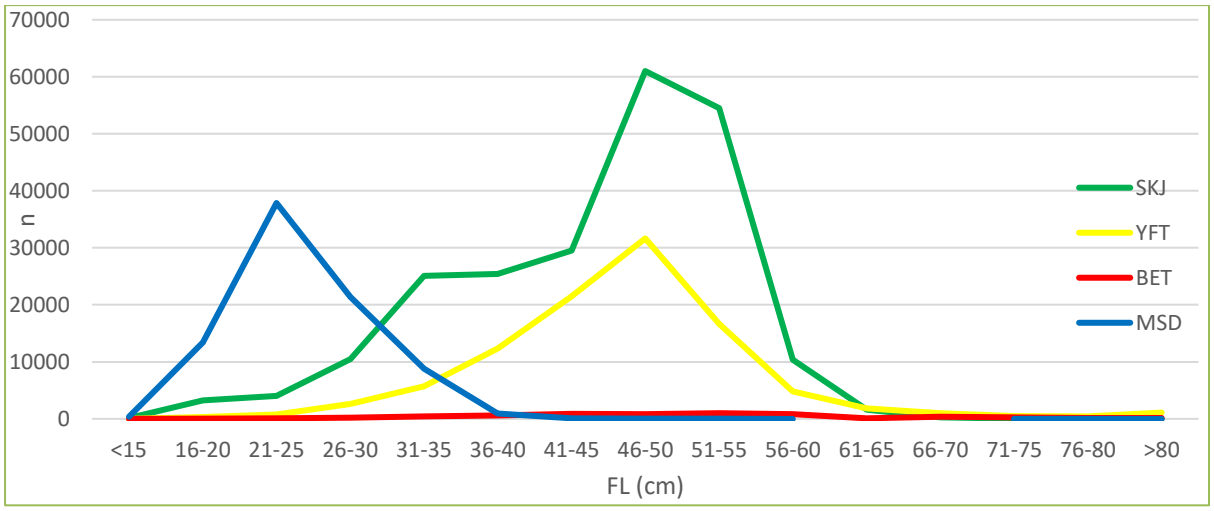

Figure 3. Size composition of SKJ, YFT, BET and MSD caught in HSP1

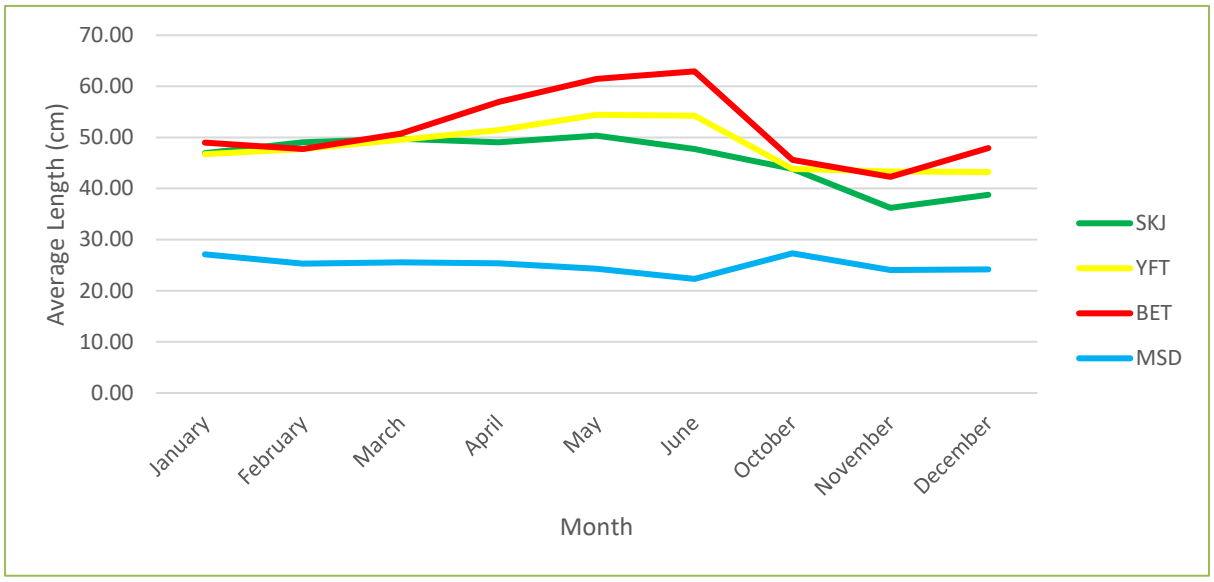

Figure 4. Average size of SKJ, YFT, BET and MSD caught in HSP1

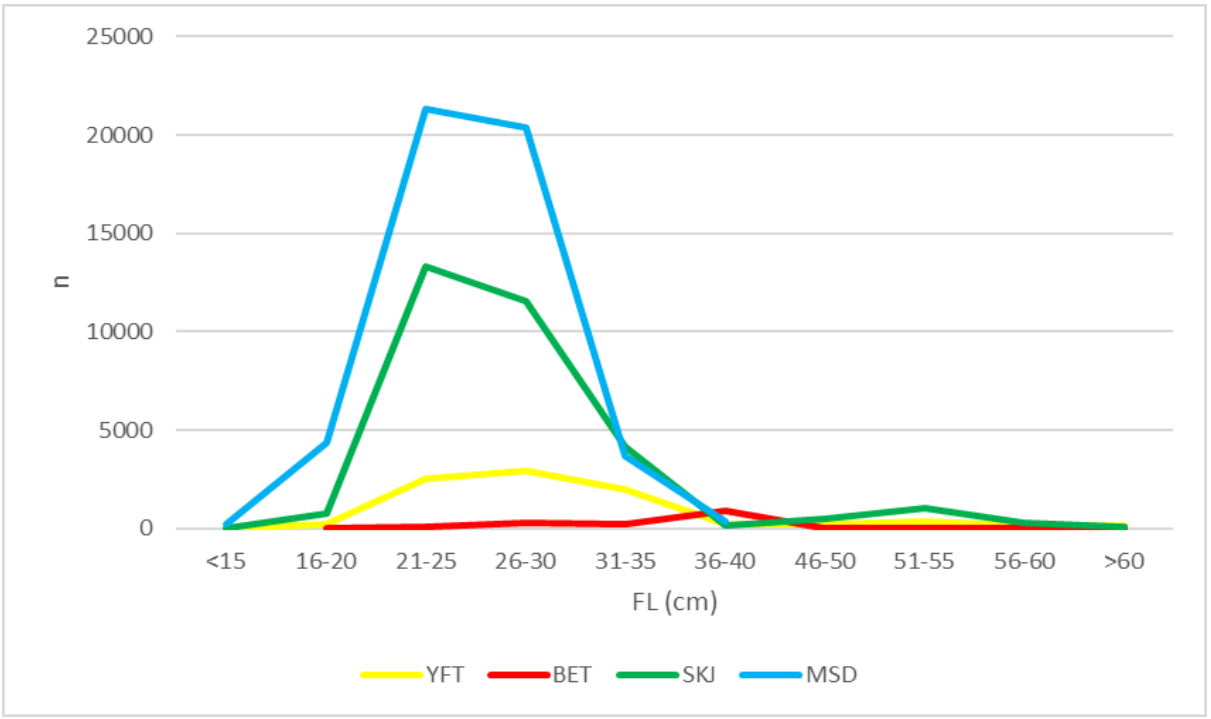

Figure 5. Size composition of SKJ, YFT, BET and MSD caught in Philippine EEZ (FAD Closure 2021)

In contrast with fish caught within Philippine EEZ in 2021, the lengths for the three tuna species (SKJ, YFT and BET) were relatively smaller with modal lengths at 24, 24 and 30 centimeters and average lengths of 29.15, 31.56 and 32.10 centimeters respectively (Fig 5, Table 4).

Table 4. Range and size of SKJ, YFT, BET and MSD caught in Philippine EEZ (FAD Closure, 2021)

Species	SKJ	YFT	BET	MSD
n	34,420	9,752	773	50,287
Ave (cm)	29.15	31.56	32.10	25.36
Min (cm)	13	12	17	10
Max (cm)	70	138	64	81
Mode (cm	24	24	30	26

Table 5. Comparative Summary of HSP1 and Philippine EEZ Catch in 2021

Species	HSP1 Catch Composition(%)	PHIL EEZ Catch Composition(%)*	HSP1 Average Size (cm)	PHIL EEZ Average Size (cm)*
SKJ	64.83	40.21	44.57	29.15
YFT	28.49	21.25	46.67	31.56
BET	3.76	1.68	51.90	32.10
MSD(OTHERS)	2.92	36.86	24.69	25.36

*based on observer estimate during FAD Closure

D. Catch variation by depth of net

Initial 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 from103-201 fathoms (Table 6) and were classed by 20 fathoms, in particular ≥161,141-160, 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	819
121-140	763
141-160	220
≥161	737
Grand Total	**2,539**

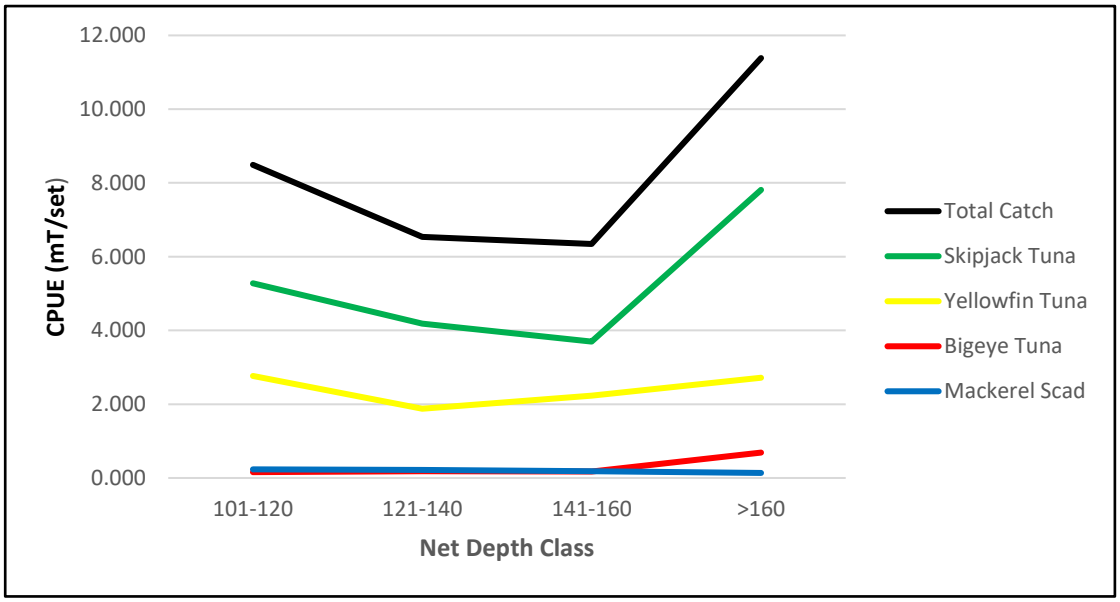

Figure 6. Average catch by species by net depth

Catch variation across gear depths is shown in Fig. 6, indicating an increase in the average catch of bigeye tuna and yellowfin tuna with increasing depth of net. For skipjack tuna, the catch is decreasing from net depth class 101-120 to 141-160 but abruptly increases for nets more than 160 fathoms depth. It was also observed that deeper nets had the lowest mackerel scad catch.

For bigeye tuna catch, Table 7 shows a decrease of about 15%-75% for every 20 fathoms decrease in net depth except for net depth range of 141-160 to 121-120 fathoms where there is an increase of 6% in average bigeye tuna catch.

Table 7. BET catch reduction

Net depth range (fm)	Average catch (t/set)	% BET Decrease
≥161	0.689	
141-160	0.175	75%
121-140	0.186	-6%
101-120	0.158	15%

IV. Summary / Recommendations

1. The catch in 2021 of the Philippine group seine fleet in HSP1 totaled to 21,724 metric tons of which 21,090 mt were skipjack, yellowfin and bigeye tuna or comprised about 12% of the production of these tuna species that were caught within Philippine EEZ.

2. The average catch was catch-per-unit effort of 8.56 tons/vessel/fishing day or 3.62 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

Dela Cruz, W.2010 *Observer Trip Report*

BFAR FAO 240 (2012).*Rules and Regulations in the Implementation of Fisheries Observer in the High Seas*

BFAR FAO FAO 241.*Regulations and Implementation of the Vessel Monitoring System in the High Seas*

FAO 245.*Regulations and Implementing Guidelines on Group Tuna Purse Seine Operation in High Seas Pocket 1 as a Special Management Area*

BFAR (2021). *Philippine Annual Report to the Commission for 2020. Part 1: Information on fisheries, research and statistics.* Paper submitted to the WCPFC 17th Regular session of the Scientific Committee.

Philippine Fisheries Observer Program Management Office. (2012). *Observer Program Operations Manual for Ringnet/Purse Seine*.

Tanangonan I., Demo-os M., Jara J., Ramiscal R. *Group Seine Operations of Philippine Flagged Vessels in High Seas Pocket 1 (HSP1)*. WCPFC-SC17-2021/ST-IP-11.

Tanangonan I. (2022). *2021 FAD Closure Tuna Catch Estimate.* Presented during the 15th Philippines-WCPFC Annual Tuna Catch Estimate Workshop, 26-27 May, 2022.

WCPFC CMM 2011-01.*Conservation and Management Measure for Temporary Extension of CMM 2008-01*

WCPFC CMM 2018-01.*Conservation and Management Measure Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.*