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

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ABSTRACT

This paper presents an analysis of the Philippine-flagged vessels engaged in group seine operations in High Seas Pocket Number 1, based on fisheries observer reports in 2024. The study encompasses the activities of nineteen (19) operational catcher vessels from January to December 2024. It details the catch, effort, and operational metrics, including catch-per-unit-effort (CPUE), species and size composition, number of sets, and fishing days. Additionally, it compares species catch rates at varying net depths, providing insights into the operational efficiency and ecological impact of the fleet.

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I. Introduction

High Seas Pocket No. 1 (HSP1) was closed to purse seine fishing for two years starting January 1, 2010, due to the implementation of Conservation and Management Measure 2008-01 (CMM 2008-01) adopted by the Western and Central Pacific Fisheries Commission (WCPFC). This measure aimed to reduce the fishing mortality of bigeye and yellowfin tunas. HSP1 is bounded by the exclusive economic zones (EEZs) of the Federated States of Micronesia, the Republic of Palau, Indonesia, and Papua New Guinea.

In March 2012, during the 8th Regular Session, the WCPFC adopted CMM 2011-01 as a temporary extension of CMM 2008-01, allowing Philippine traditional fresh/ice-chilled seining vessels to operate as a group in HSP1 until February 2013. Subsequently, CMM 2012-01 provided measures for this fleet in the high seas until February 2014. This was followed by CMM 2013-01 (2014-2017), CMM 2017-01 (2018), CMM 2018-01 (2019-2021), CMM 2021-01 (2022-2024), and CMM 2023-01 (2024-2027). These measures included several conditions, such as a limit of 36 catcher fishing vessels, mandatory use of automatic location communicators (ALC), and the requirement to have regional observers onboard.

Consequently, Fisheries Administrative Order 245 (FAO 245, along with its amendments 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 establish regulations and guidelines for the operations of 36 fishing vessels in HSP1. Additionally, Fisheries Administrative Order 240 (FAO 240) was adopted to implement the National Fisheries Observer Program (NFOP) covering high seas operations. Further, Fisheries Administrative Order 241 (FAO 241) was issued to strengthen VMS (Vessel Monitoring System) operations in the high seas.

This report is based on the observations and reports from observers, covering the catch of twenty-three (23) vessels that conducted fishing in HSP1 in 2024. Most of the fleet opted to operate only for ten and half months (January-June; mid-August-December) in adherence to paragraph 13 of CMM 2023-01.

II. Methods

A. Catch Estimation

Observers' total catch estimates were derived using two methods. The primary procedure involved counting and estimating the capacity of brails as the fish catch was transferred from the bunt to the wells or fish holds of awaiting carriers. The secondary method was based on assessing the capacity and fullness of wells/fish holds. The catch rate was estimated as metric tons (mT) per fishing day, with typically only one set made per fishing day. Using the brail count/capacity method, the total catch was estimated as follows:

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 for empty/water space. Using this method, a margin of error of +/- 2% was observed (Dela Cruz, 2010).

B. Catch Sampling

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

Large 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 conducted by observers using available identification guides. Special attention was given to the distinctive characteristics of small yellowfin and bigeye tunas.

D. Analysis

The data were analyzed using descriptive statistics and presented in tables and charts to illustrate the overall status of operations in High Seas Pocket No. 1 (HSP1). The analysis included species composition, fishing effort, catch per unit effort (CPUE), and length frequency distributions. Information on the number of days the vessels stayed in HSP1 was derived from Vessel Monitoring System (VMS) data, which recorded the time and date of entry and exit from the area.

III. Results

A. Catch and fishing effort

The group seine fleets operating in HSP1 in 2024 consisted of twenty-three purse seine catcher vessels. They operated for only ten and a half months (January-June; mid-August-December) in accordance with paragraph 13 of CMM 2023-01.

Overall, the 23 vessels spent a total of 4,977 days in HSP1, with 2,564 of those being actual fishing days, averaging about one fishing day for every two days spent in HSP1. Fisheries Administrative Order No. 245, which regulates Philippine group seine operations, set an annual catch limit not to exceed the equivalent of 9,846 fishing days for the 36 vessels, corresponding to 273 fishing days per vessel.

Out of the 2,564 fishing days, 2,292 sets were successful, resulting in an efficiency rate of 89%. Unsuccessful fishing days were attributed to damaged gear, machinery

malfunctions, unfavorable sea conditions, and other factors, which resulted in no catch being retained in whole weight.

Table 1. Summary of catch and effort of Philippine group seine operation in HSP1, 2024

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	17	461	202	2.28	4,202.01	20.8	9.1
FEB	17	405	211	1.92	4,305.73	20.4	10.6
MAR	18	426	184	2.32	3,469.71	18.9	8.1
APR	18	500	254	1.97	2,844.08	11.2	5.7
MAY	19	572	240	2.38	2,359.61	9.8	4.1
JUN	18	438	259	1.69	2,622.26	10.1	6.0
AUG	12	164	104	1.58	1,136.08	10.9	6.9
SEP	16	428	224	1.91	3035.782	13.6	7.1
OCT	18	536	260	2.06	3,165.61	12.2	5.9
NOV	18	508	274	1.85	3,216.07	11.7	6.3
DEC	19	539	352	1.53	4,445.78	12.6	8.2
TOTAL		**4,977**	**2,564**	**1.94**	**34,802.71**	**13.6**	**7.0**

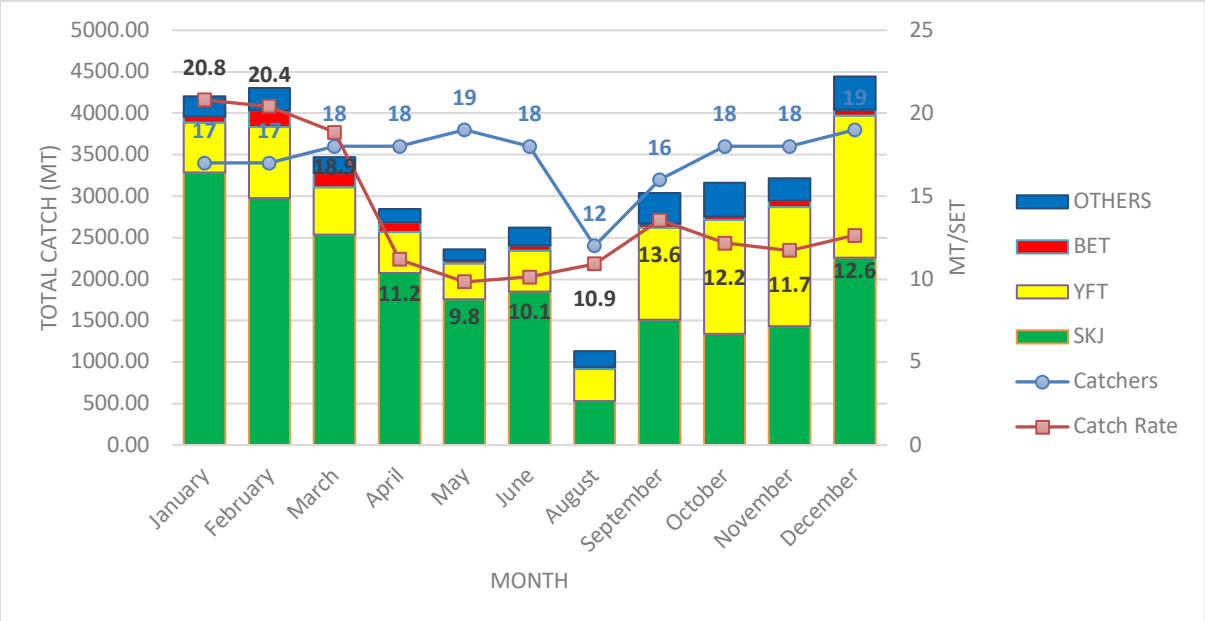

Figure 1. Catch and effort of Philippine group seine operations in HSP1, 2024

B. Catch and species composition

A total of 34,803 tons of fish was caught in HSP1 in 2024, resulting in a catch-per-unit effort of 13.6 tons per vessel per fishing day, or 7.0 tons per vessel per day. The majority of the catch consisted of skipjack (61.89%) and yellowfin (27.25%). Bigeye accounted for 2.61%, while the remaining 8.24% was made up of other species, including mackerel scad, kawakawa, frigate and bullet tuna, bigeye scad, dolphinfish, and triggerfish (Table 2, Fig. 1).

Sharks and other species of special interest were also incidentally encircled during the operation, including 167 sharks, 121 dolphins, 1 sea turtle, and 5 Mobula species. These species were handled in accordance with the relevant Conservation and Management Measures (CMM-2022-04, CMM 2011-03, CMM 2018-04, and CMM 2019-05).

Table 2. Catch of major species by month

Month	SKJ (MT)	YFT (MT)	BET (MT)	OTHERS (MT)	TOTAL (MT)
JAN	3,286.51	603.61	70.18	241.70	4,202.01
FEB	2,975.38	857.88	201.97	270.49	4,305.73
MAR	2,533.62	575.81	166.07	194.22	3,469.71
APR	2,070.02	500.29	109.51	164.26	2,844.08
MAY	1,755.10	430.67	42.97	130.87	2,359.61
JUN	1,847.86	496.19	61.18	217.02	2,622.26
AUG	529.54	387.09	19.54	199.91	1,136.08
SEP	1,508.35	1,110.43	49.02	367.98	3,035.78
OCT	1,340.05	1,377.31	39.30	408.95	3,165.61
NOV	1,435.60	1,432.33	77.11	271.03	3,216.07
DEC	2,258.91	1,713.64	72.13	401.10	4,445.78
TOTAL	**21,540.95**	**9,485.26**	**908.97**	**2,867.53**	**34,802.71**

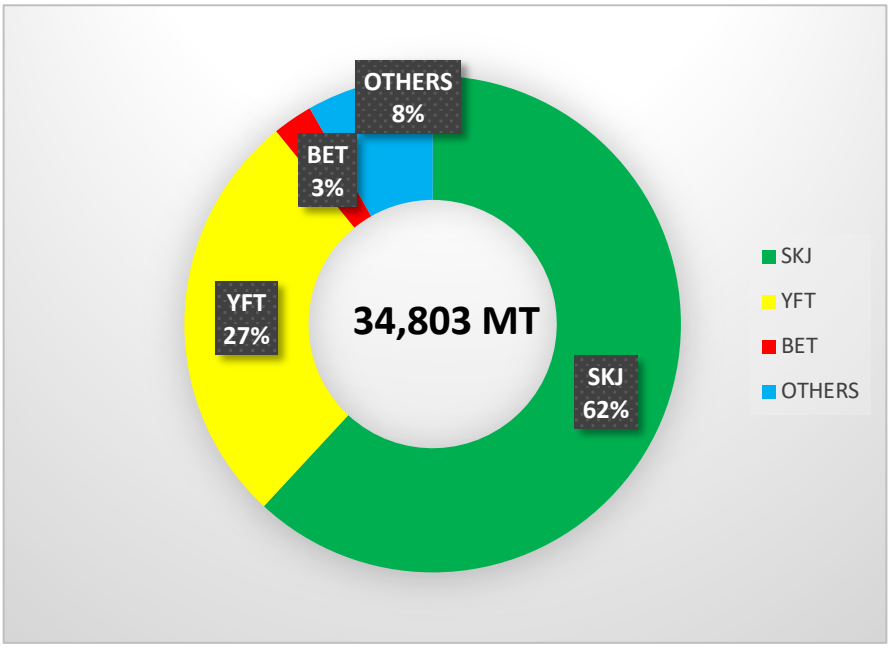

Figure 2. Catch composition of Philippine group seine in HSP1, 2024

C. Size composition

Table 3 presents the length frequency data for skipjack (SKJ), yellowfin (YFT), and bigeye (BET) tuna caught in HSP1. The average lengths observed were 37.38 cm for

skipjack, 41.24 cm for yellowfin, and 51.16 cm for bigeye tuna. Modal peaks for these species were recorded at 31 cm (SKJ), 40 cm (YFT), and 38 cm and 57 cm (BET), respectively (Fig. 3, Table 3).

Seasonal trends in average length were observed across all three species (Fig. 4). From January to June, all species exhibited an upward trend in average length. Conversely, a downward trend was noted from August to December. Specifically, the smallest average size for skipjack tuna was recorded in November (< 31 cm), for yellowfin tuna in September (< 38 cm), and for bigeye tuna in October (39 cm). In contrast, the largest average sizes for yellowfin and skipjack tuna were observed in June (51 cm and 48 cm, respectively), while bigeye tuna reached its peak average length of 57 cm in May.

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

Species	SKJ	YFT	BET	MSD
n	422,649	168,061	7,202	182,352
Ave (cm)	**37.38**	**41.24**	**51.16**	**26.63**
Min (cm)	15	15	16	10
Max (cm)	78	131	135	89
Mode(cm)	**31**	**40**	**38,57**	**24**

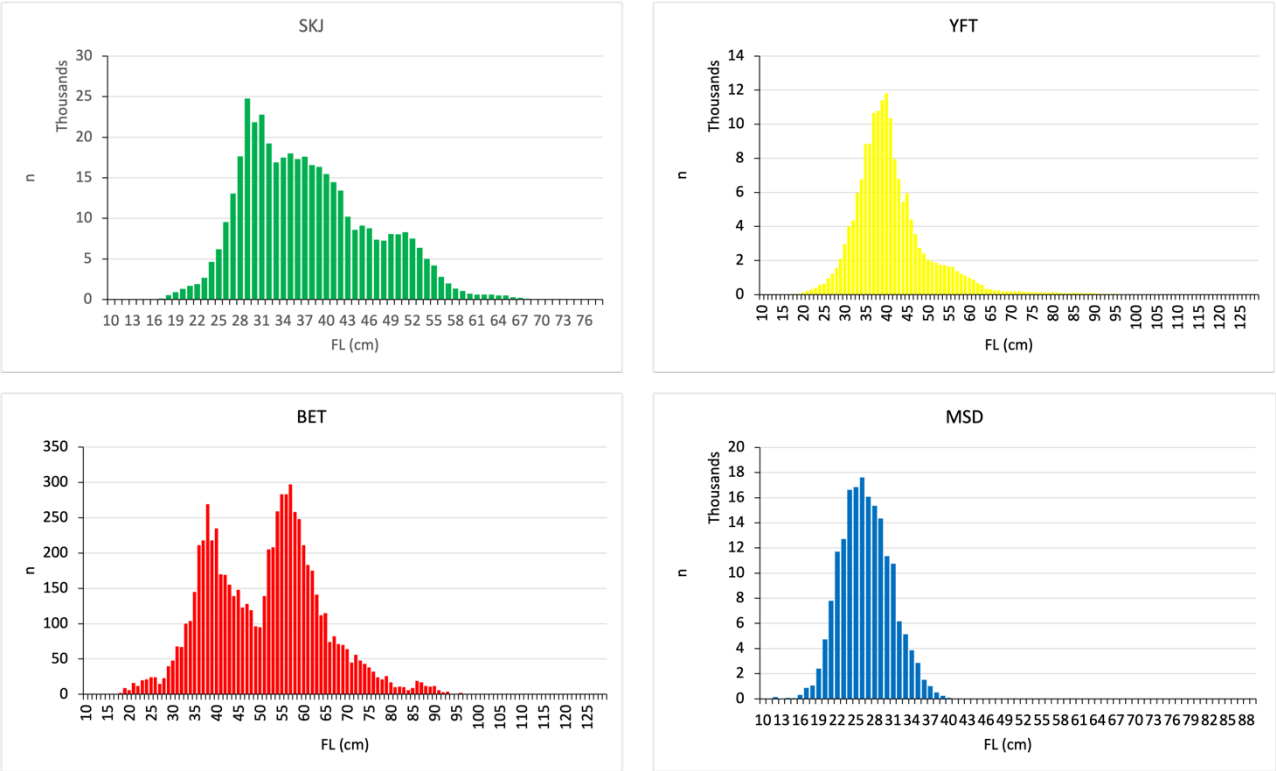

Figure 3. Size composition of SKJ, YFT, BET and MSD caught in HSP1

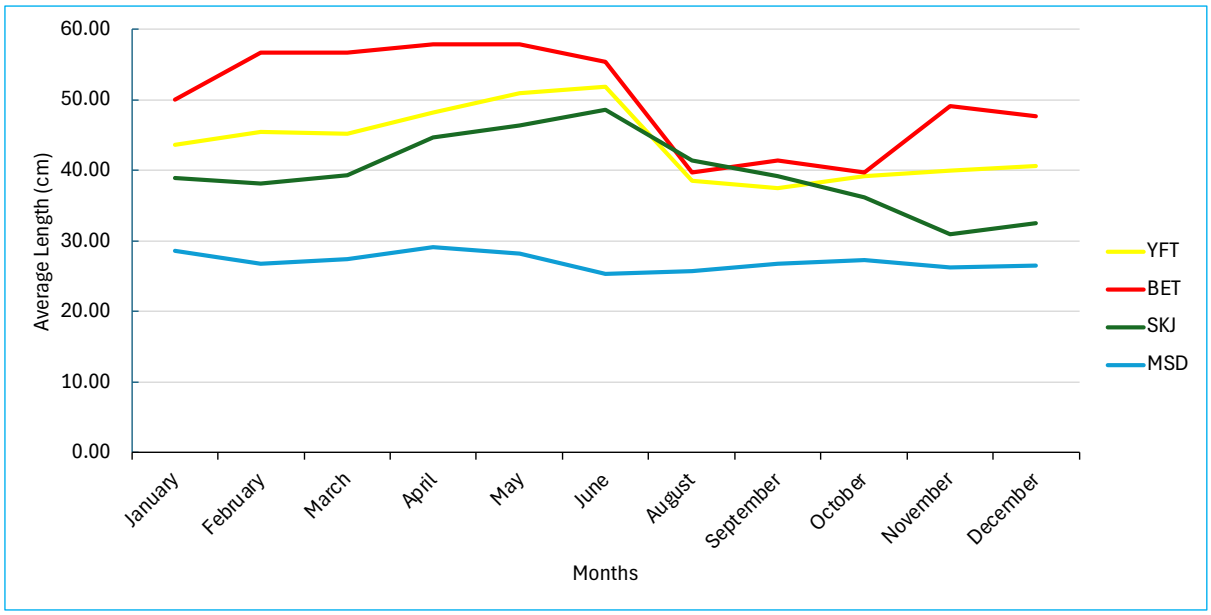

Figure 4. Average size of SKJ, YFT, BET and MSD caught in HSP1

A notable difference in size composition was observed when comparing fish caught in HSP1 with those caught within the Philippine EEZ in 2024 (Fig. 5, Table 4, Table 5). The three tuna species (skipjack, yellowfin, and bigeye) caught in the Philippine EEZ were comparatively smaller. Their modal lengths were 28 cm, 29 cm, and 31 cm, respectively, with corresponding average lengths of 27.98 cm, 28.85 cm, and 34.04 cm. This indicates that the tuna population in HSP1 consists of generally larger individuals compared to those found in the Philippine EEZ during the study period.

Table 4. Range and size of SKJ, YFT, BET and MSD caught in Philippine EEZ (FAD Closure, 2024)

Species	SKJ	YFT	BET	MSD
n	33,919	21,412	819	83,904
Ave (cm)	27.98	28.85	34.04	23.53
Min (cm)	13	13	19	10
Max (cm)	72	129	68	39
Mode (cm	28	29	31	23

Table 5. Comparative Summary of HSP1 and Philippine EEZ Catch in 2024

Species	HSP1 Catch Composition(%)	PHIL EEZ Catch Composition(%)*	HSP1 Average Size (cm)	PHIL EEZ Average Size (cm)*
SKJ	61.89	35.83	37.98	27.98
YFT	27.25	24.67	41.24	28.85
BET	2.61	4.73	51.16	34.04
MSD(OTHERS)	8.24	34.77	26.63	23.53

*based on observer estimate during FAD Closure

D. Catch variation by depth of net

An analysis was conducted to investigate the relationship between net depth and catch composition. The actual stretched depths of the purse seine nets, a mandatory measurement for fishing licenses in HSP1, ranged from 105 to 188 fathoms (Table 6). These depths were grouped into 20-fathom intervals for analysis: ≥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	669
121-140	666
141-160	577
≥161	652
Grand Total	**2,564**

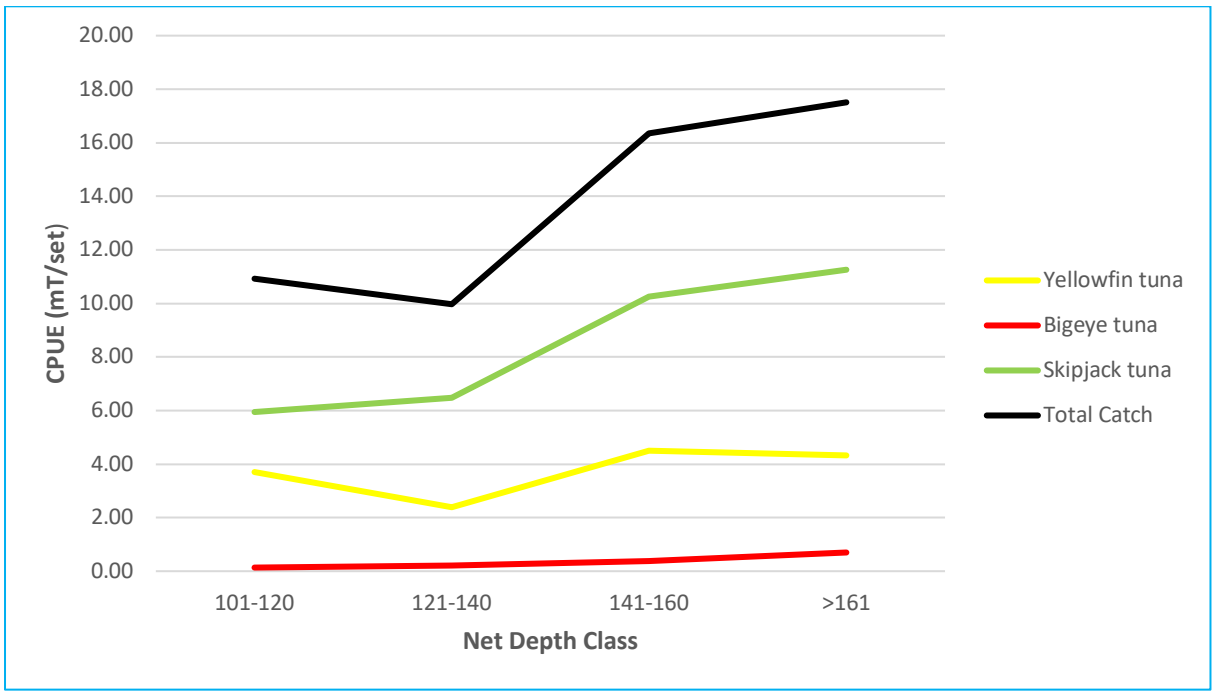

Figure 5. Average catch by species by net depth

Figure 5 illustrates the observed catch variation across these different net depths for key tuna species. A clear trend emerged for both bigeye tuna and skipjack tuna: their average catch increased notably with increasing net depth. This suggests that deeper nets are more effective at targeting these species within HSP1.

In contrast, yellowfin tuna exhibited a more complex relationship with net depth. Their average catch initially decreased as net depth increased from the 101-120 fathom class to the 121-140 fathom class. However, beyond 140 fathoms, the catch of yellowfin tuna increased and then stabilized, indicating a potential optimal depth range or a different behavioral response to very deep nets.

Further examination of bigeye tuna catch revealed a significant sensitivity to net depth reduction (Table 7). A decrease in net depth by approximately 20 fathoms consistently corresponded to a substantial reduction in the average bigeye tuna catch, ranging from 37% to 45%. This strong inverse correlation highlights the potential for managing bigeye tuna by regulating net depth, a critical insight given the conservation concerns for this species.

Table 7. BET catch reduction

Net depth range (fm)	Average catch (t/set)	% BET Decrease
≥161	0.699	
141-160	0.382	45%
121-140	0.215	44%
101-120	0.135	37%

IV. Summary / Recommendations

1. In 2024, the Philippine group seine fleet in HSP1 reported a total catch of 34,803 metric tons. Of this, 31,935 metric tons consisted of skipjack, yellowfin, and bigeye tuna, representing approximately 16% of the total production of these tuna species caught within the Philippine EEZ.

2. The fleet demonstrated an average catch-per-unit effort (CPUE) of 13.6 tons per vessel per fishing day, or 7.0 tons per vessel per day in HSP1.

3. Notably, the skipjack, yellowfin, and bigeye tuna caught in HSP1 were, on average, larger than those caught within the Philippine EEZ.

4. Analysis indicated that increasing net depth correlated with higher bigeye and skipjack tuna catches; conversely, a 20-fathom reduction in net depth significantly decreased bigeye tuna catch (37-45%). Therefore, evaluating net depth reduction as a management measure is recommended, as it could be a viable strategy to mitigate bigeye and yellowfin tuna catch in the purse seine fishery and support conservation efforts.

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 (2025). *Philippine Annual Report to the Commission for 2024. Part 1: Information on fisheries, research and statistics.* Paper submitted to the WCPFC 21st 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-SC21-2024/ST-IP-10.

Matubang B. (2025). *2024 FAD Closure Tuna Catch Estimate.* Presented during the 18th Philippines-WCPFC Annual Tuna Catch Estimate Workshop, 5-6 June, 2024.

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

WCPFC CMM 2023-01.*Conservation and Management Measure Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.*