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

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ABSTRACT

This paper give details on the operations of Philippine group seine operations in High Seas Pocket 1 based on Observer reports in 2013. It covers the operation of the entire operational twenty two (22) catcher vessels during the period January-June and November-December 2013. It describes catch and effort of the fleet (total catch, catch per-unit-effort, species and size composition, catch by depth of net, number of catchers, number of sets and the number of days 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 and CMM 2013-01 for 2014-2017. 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 and 245-1) 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 22 vessels that were able to conduct fishing in HSP1. The fleet opted to operate only for 8 months (January-June; November-December) in adherence to paragraph 11 (i) of CMM 2012-01.

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 kg/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 :

$$\text{Volume (V)} = \pi\, r\, 2\, h$$

Brail capacity = Volume x 80%

Where;

$\pi = 3.14$

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

Random procedure was carried out in sampling the catch. Samples were collected using tubs as the brail was emptied into the well or scooping the fish from fish holds/wells. Further sub-sampling procedures was conducted when necessary. Around 3-5 tubs were used as the final samples with an average of 123 individuals per set. 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 were able to fish in HSP1 in 2013 was composed of 20 purse seine and 2 ringnet catcher vessels. Another 5 vessels were able to reach HSP1 in the same year, but was not able to fish either due to major mechanical trouble that required them to return to port, or were only able to reach HSP1 late in the year and only started to fish the following year. The fleet opted to operate only 8 months (January-June; November-December) in accordance to paragraph 11 (i) of CMM 2012-01.

Overall, the 22 vessels spent a total of 3,461 days in HSP1 and actual 1,352 fishing days, or just about one (1) fishing day for every 2.6 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 273.5 fishing days per vessel.

In addition, of the total 1,352 fishing days, only 1,313 sets were successful or an efficiency rate of 97%. Unsuccessful fishing days were caused by damaged gear, machinery malfunction, unfavourable sea condition and other factors.

Table 1. Summary of catch and effort of Philippine group seine operation in HSP1, 2013

Month	No. of Catchers	Days @ HSP1	Fishing days	Set/HSP1 days	Total catch (t)	Catch rate (t/set)	Catch rate (t/HSP1 day)
JAN	12	317	120	2.64	1,396	11.629	4.40
FEB	10	263	77	3.42	713	9.265	2.71
MAR	12	385	140	2.75	1,224	8.746	3.18
APR	14	418	183	2.28	1,880	10.271	4.50
MAY	16	437	202	2.16	1,870	9.256	4.28
JUN	13	357	198	1.80	2,396	12.101	6.71
NOV	21	602	216	2.79	2,141	9.913	3.56
DEC	22	682	216	3.16	1,706	7.900	2.50
TOTAL	**22**	**3,461**	**1,352**	**2.56**	**13,326**	9.857	3.85

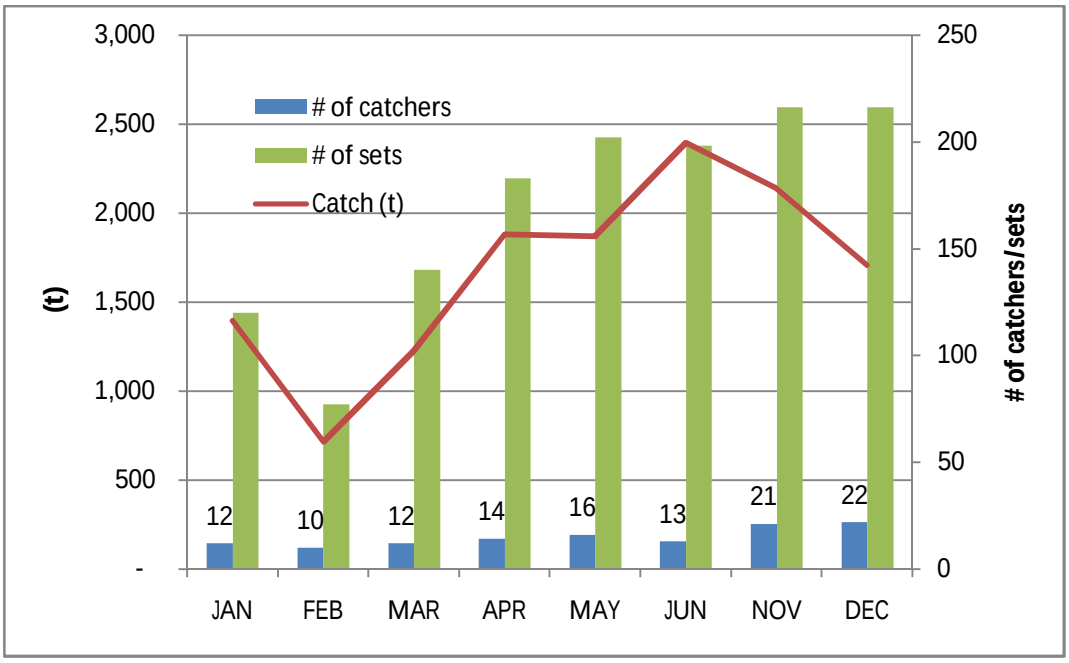

Figure 1. Catch and effort of Philippine group seine operations in HSP1, 2013

B. Catch and species composition

A total of 13,326 tons of fish was caught in HSP1 for 2013, translating to a catch-per-unit effort of 9.9 tons/vessel/fishing day or 3.85 tons/vessel/day in HSP1. The bulk of the catch was composed of skipjack (67.7%) and yellowfin (20.8%). Bigeye was at 3.6% while the remaining 7.86% was comprised of other species including mackerel scad, kawakawa, frigate and bullet tuna, bigeyed scad, dolphin fish and triggerfish (Table 2, Fig. 1).

Sharks and other species of special interest were also occasionally caught during the operation, including 96 sharks, 51 dolphins, 6 sea turtles, 2 whales and 2 stingrays.

Table 2. Catch of major species by month

Month	SKJ	YFT	BET	MSD	OTHERS	TOTAL
JAN	1,085.13	211.26	39.75	25.48	33.89	1,395.51
FEB	553.67	107.17	35.57	9.03	8.14	713.59
MAR	896.19	234.33	32.57	25.93	35.42	1,224.44
APR	1,303.38	365.81	58.22	77.37	74.81	1,879.60
MAY	1,044.43	472.94	97.21	119.05	136.02	1,869.66
JUN	1,389.87	613.64	148.56	159.34	84.64	2,396.06
NOV	1,594.91	374.77	37.64	89.22	44.77	2,141.30
DEC	1,159.50	394.30	28.93	61.75	61.83	1,706.30
TOTAL	**9,027.10**	**2,774.23**	**478.44**	**567.17**	**479.51**	**13,326.45**

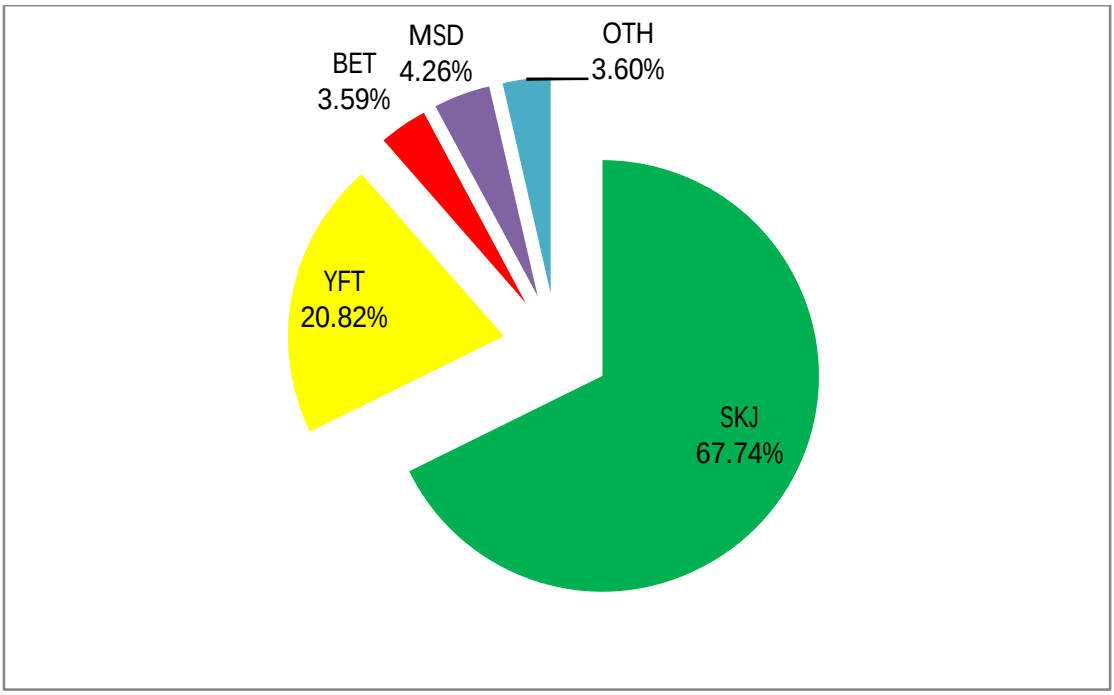

Figure 2. Catch composition of Philippine group seine in HSP1, 2013

C. Size composition

Figure 4 illustrates the length distribution of SKJ, YFT and BET indicating modal lengths at 35, 30-42 and 32-46 cm and average length of 34 cm, 36 cm and 41 cm respectively. Yellowfin tuna indicated 2 modal peaks at 30 and 42 cm (Fig 3, Table 3). The average size of the BET and SKJ was smallest at under 35 cm in December (Fig 4).

In contrast with fish caught within Philippine EEZ during the same period, the lengths for the 3 tuna species were relatively smaller with modal lengths at 25-28 cm and average lengths of 28.2 cm, 27.9 cm and 28.2 cm respectively (Fig 5, Table 4).

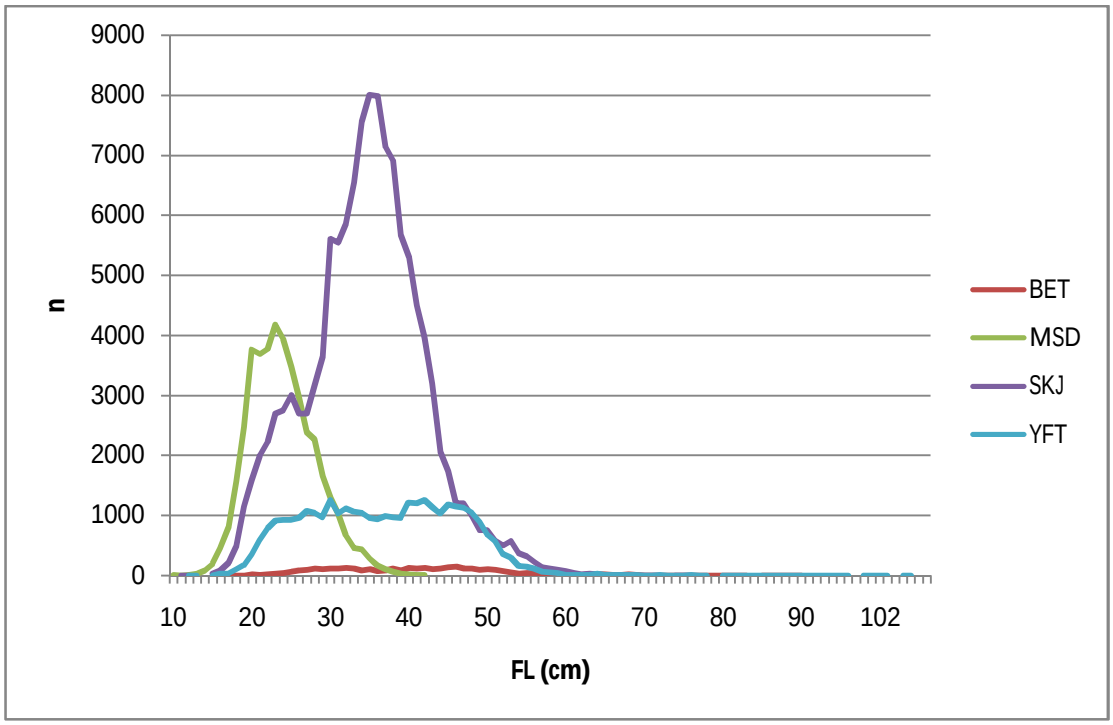

Figure 3. Size composition of SKJ, YFT, BET and MSD caught in HSP1

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

Species	SKJ	YFT	BET	MSD
n	124080	33309	3570	42430
Ave (cm)	**34.24**	**36.09**	**40.81**	**23.92**
Min (cm)	11	12	17	10
Max (cm)	76	117	110	47
Mode(cm)	35	30, 42	32, 46	23

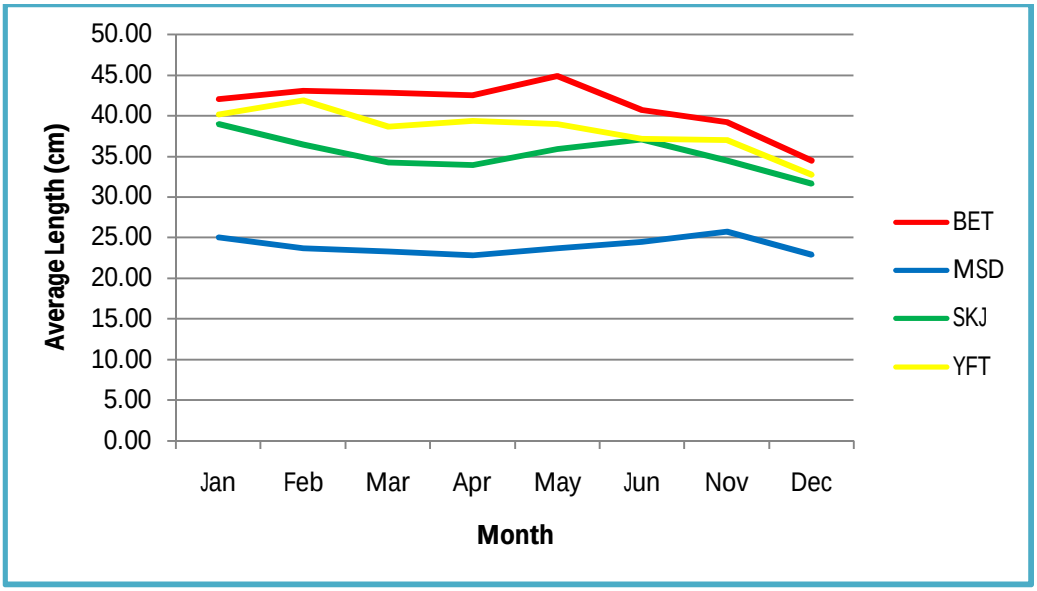

Figure 4. Average size of SKJ, YFT, BET and MSD caught in HSP1

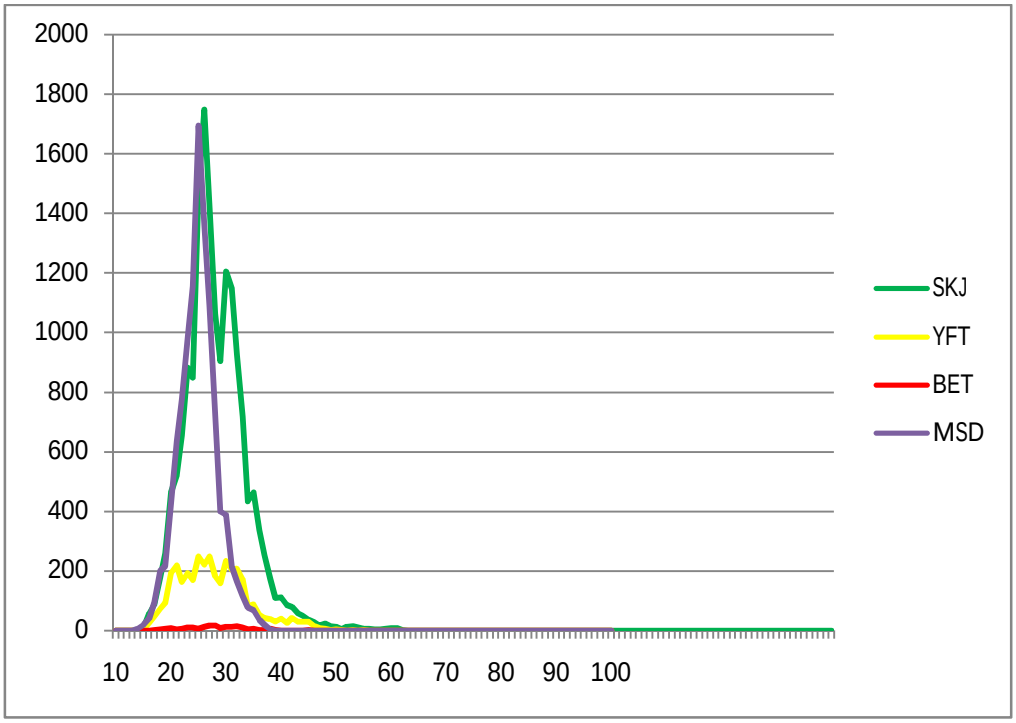

Figure 5. Size composition of SKJ, YFT, BET and MSD caught in Philippine EEZ (NSAP data, 2013)

Table 4. Range and size of SKJ, YFT, BET and MSD caught in Philippine EEZ (NSAP data, 2013)

Species	SKJ	YFT	BET	MSD
n	16956	3641	194	10921
Ave (cm)	28.2	27.9	28.2	25.1
Min (cm)	15	15	16	13
Max (cm)	63	58	45	49
Mode (cm	26	25 -27	27-28	25

D. Catch variation by depth of net

Initial analysis on the variation of catch with depth of net was made. The actual stretched depth of nets were measured during inspections as a condition to their license to fish in HSP1. Depth of nets ranged from 92-154 fathoms (Table 5) and were classed by 20 fathoms, in particular 141-160, 121-140, 101-120 and 81-100 fathoms. The distribution of observations by depth class is shown in Table 3.

Table 5. Number of observations by depth of net (class).

Depth of net (Class)	No. of sets
81-100	115
101-120	782
121-140	361
140-160	94
Grand Total	**1352**

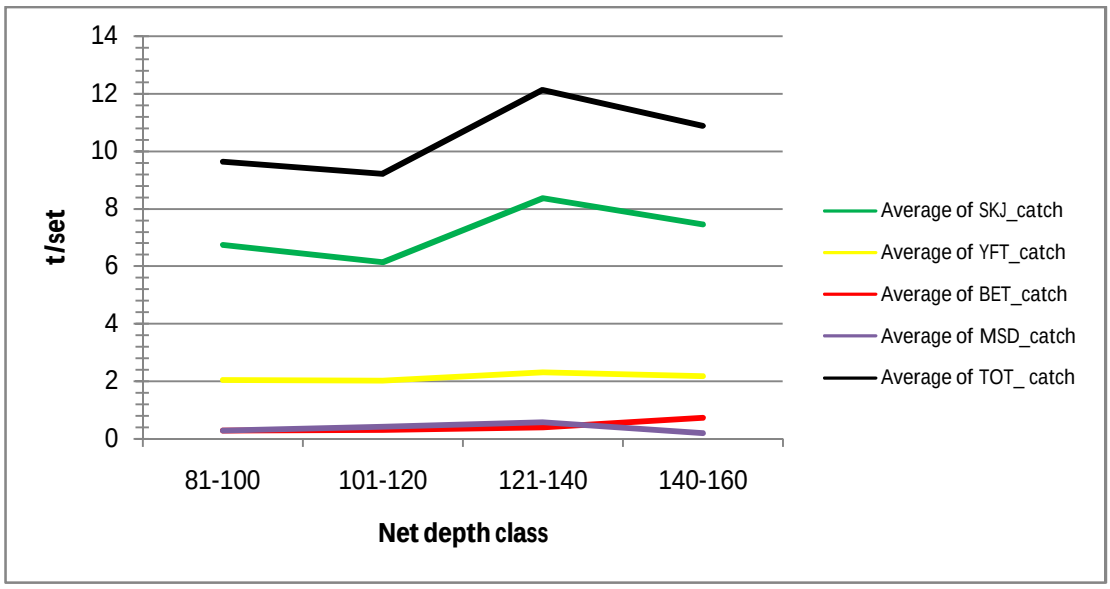

Figure 6. Average catch by species by net depth

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

Attempt was made to determine increase of BET catch by depth of net class by forecasting (linear regression) indicating increase of about 12%-89%.

Table 6. BET catch reduction by linear regression (forecast)

Net depth range	Average catch (t/set)	% BET increase
81-100	0.2854	
101-120	0.3194	11.9
121-140	0.3936	23.2
140-160	0.7419	88.5

IV. Summary / Recommendations

1. The catch in 2013 of the Philippine group seine fleet in HSP1 totalled 13,326 tons of which 12,280 mt were SKJ, YFT and BET or comprised about 12% of the production of these tuna species that were caught within EEZ.

2. The average catch was catch-per-unit effort of 9.86 tons/vessel/fishing day or 3.85 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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