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Pilot Test of MARLIN (Electronic Logsheet) Operation in High Seas Pocket 1

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ABSTRACT

MARLIN/Electronic Logsheet terminal designed to record and transmit daily logsheet data electronically was installed to all Philippine Flagged Fishing Vessels Licensed to Operate in High Sea Pocket 1 (HSP1). This paper reports on data and information generated from the system in 2016, including vessels departure date and time, position, daily activity, catch and species composition.

E-reporting approach provides timely information on catch and efforts which are advantageous in generating data for immediate recording, accounting and validation. Continuing effort are being undertaken to capacitate Boat Captains/Officers to sustain effective electronic data recording and its reliability.

INTRODUCITON

The Western and Central Pacific Fisheries Commission, the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean has the objective to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks of the Convention Area. From the start of the WCPFC Convention entered into force, scientific data has been the primary source of information in the formulation of Conservation and Management Measures. To achieve this, different data gathering scheme has been taken into force to ensure reliable data reported in the Commission such as Vessel Monitoring System, Fisheries Observer Program and Logsheet data.

Before the implementation of VMS and Regional Observer Program, logsheet has been the primary source of data from vessels operating in the High Seas Pocket 1. In view of the distance of the fishing ground to port the submission of the said data arrive weeks or months which often resulted to late recording and accounting of fish catch reporting .

To provide significant efficiency gains of Observer and Logsheet data, Secretariat of the Pacific Community (SPC) initiated the Electronic Reporting (E-Reporting) and conducted trial test to selected fishing vessels in the region. This includes Smart data entry form management system

(eTUNALOG) and Observer on-board data (eTUBS). OnBoard-an application for mobile phones and tablets was also developed for longline logsheet eReporting in TUFMAN 2 in the WCPFC area. Another mobile application is the TAILS which is designed for artisanal tuna data entry.

The Philippines, on the other hand conducted a pilot test and has integrated the e-reporting through a two-way Vessel Monitoring System to the 36 Philippine flagged catcher vessels operating in HSP1. The VMS provider through the guidance of BFAR, has developed an Electronic Logsheet program using a multifunction terminal device called MARLIN (**Mar**ine **L**ogbook **In**formation) attached to the vessel's monitoring system. The device is capable of emails, sending daily activity log (fishing area, species caught and fish amount). In addition, another useful built in function is the automatic reception of weather conditions (sea state – pressure, wind, swell) and manual typhoon alerts which are all sent from the BFAR Fisheries Monitoring Centre.

This paper will describe the current status of reporting in terms of the data gathered, frequency of reporting and its reporting processes. It also suggests some improvements and capacity building initiatives to further strengthen the data quality.

METHODOLOGY

The MARLIN is an electronic logbook terminal attached to vessel's monitoring system. It was designed to report just like the usual logsheet required by the Commission. In preparation for this, representative from the VMS provider conducted several handson training on MARLIN to key personnel involved in the project such as BFAR staff and hand over to the Fishing Operators and boat captains of vessels operating in HSP1. Follow-up trainings were also conducted to Fisheries Observers and Boat captains prior to their departure to HSP1. This will ensure that proper data reporting will be carried out.

The pilot test started on the departure of the first batch of catcher vessels during the send-off ceremony on October 24 2013. Out of 22 catcher vessels that were able to operate in 2013, 18 vessels were able to transmit data.

Fig. 1.Installation and trial operation of MARLIN onboard catcher vessel including VMS MTU.

Data is transmitted once a day which includes date, time, position, activity code. For activity code 1 or set activity, additional data is to be recorded which includes start and end of set, species caught, quantity, fate, fishhold number and carrier name used. For other activity data transmission is on the midday.

Transmitted data is processed and can be accessed in the web-based application. Each vessel activity is generated and can be exported in Microsoft Excel format. Catch reporting is also generated in excel format which is automatically presented in charts and graphs based on the criteria selected.

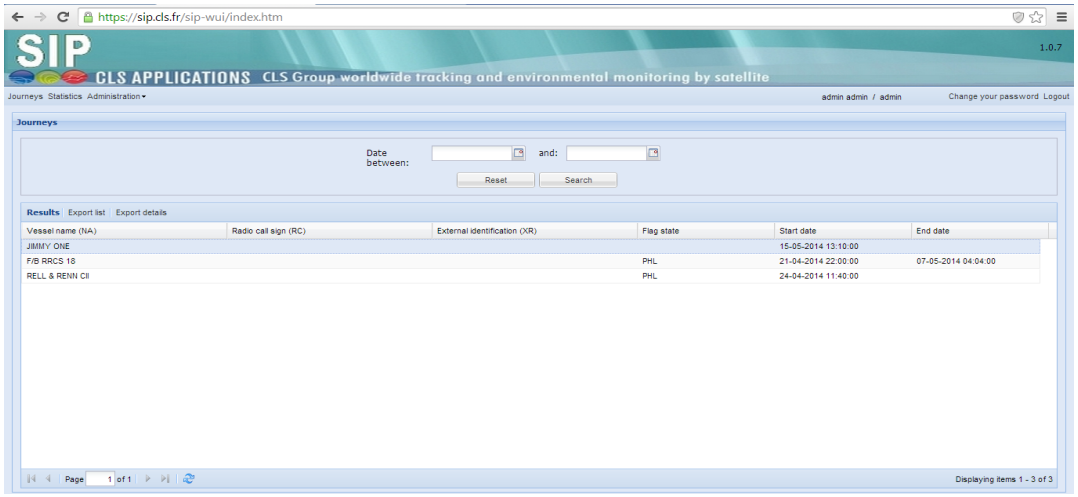

Fig. 2.Web-based application where MARLIN data is displayed.

Data transmitted were consolidated and reported in terms of number of sets made, catch rate and species composition.

RESULTS AND DISCUSSION

From the start of operation from November to December 2013, 18 out of 22 operational catcher vessels were able to transmit electronic data. The other 4 vessels have malfunctioned and repair and replacement will cost enough time and cost for travel since the vessels were already in the fishing ground. In 2016, a total of 28 out 32 catchers operating were able to transmit data, however there are some months that some vessel are not transmitting data.

Table 1.Summary of Transmitted Catch Data in 2013, 2014, 2015 and 2016.

YEAR	No. of Vessels	SKJ(MT)	YFT(MT)	BET(MT)	OTHERS(MT)	TOTAL(MT)
2013	18	2,129.3	283.4	17.7	40.2	2,470.6
2014	32	15,729.9	2,885.2	318.1	1,104.2	20,037.3
2015	31	12,762.3	4,113.4	379.4	951.0	18,206.1
2016	28	11,667.8	3,722.5	134.7	806.9	16,331.9
TOTAL		**42,289.30**	**11,004.5**	**849.9**	**2,902.3**	**57,046.00**

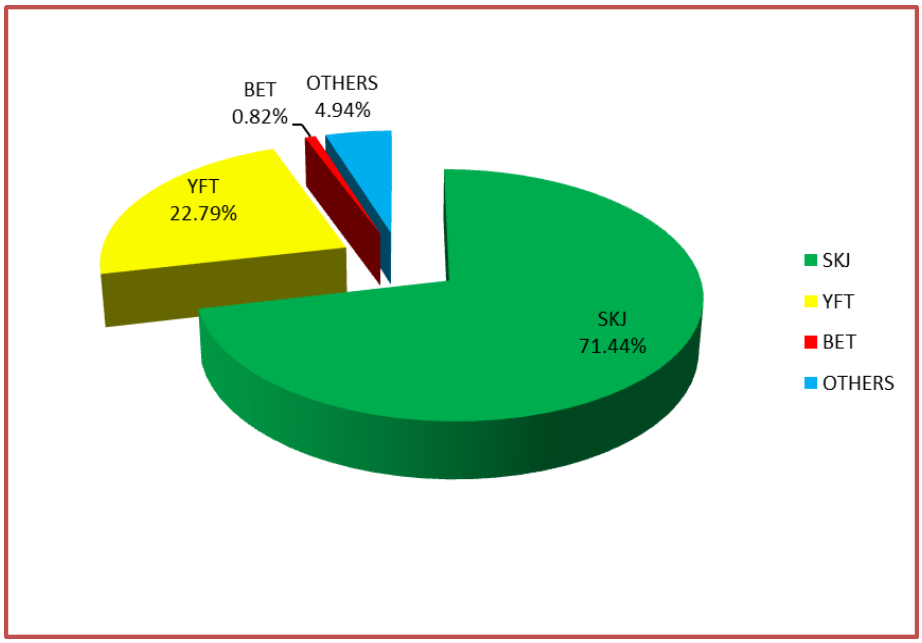

Fig. 3.Species Composition reported for 2016

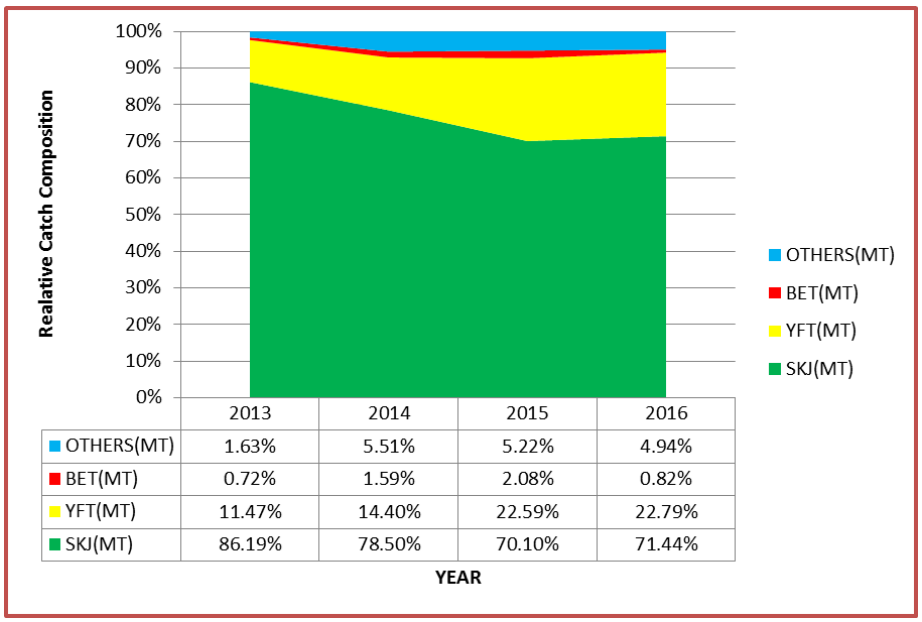

Fig. 4. Relative Catch Composition of Reported Catch from 2013-2016.

Data from reporting vessels shows a total catch of 16,331.9 MT in 2016. Majority of species caught is skipjack tuna at 71.4% followed by Yellowfin tuna at 22.79%, Bigeye Tuna at 0.82% and Other Species at 4.94%. Data also shows decrease in composition of Skipjack Tuna from 2013(86.19%), 2014(78.5%) and 2015(70.10) and slightly increase in 2016(71.44%) while the Yellowfin from 2013(11.47%), 2014(14.40%), 2015(22.59%) to 2016(22.79%). Bigeyes tuna on the other hand shows an increase in relative composition from 2013(0.72%), 2014(1.59%) to 2015(2.08%) and

abruptly decrease in 2016(0.82%)(Fig. 4). Other species which includes Mackerel Scad, Bigeye scad, rainbow runner, frigate tuna, bullet tuna and dolphin fish also show an increase in composition from 2013 to 2014 and slightly decreases in 2015 and 2016.

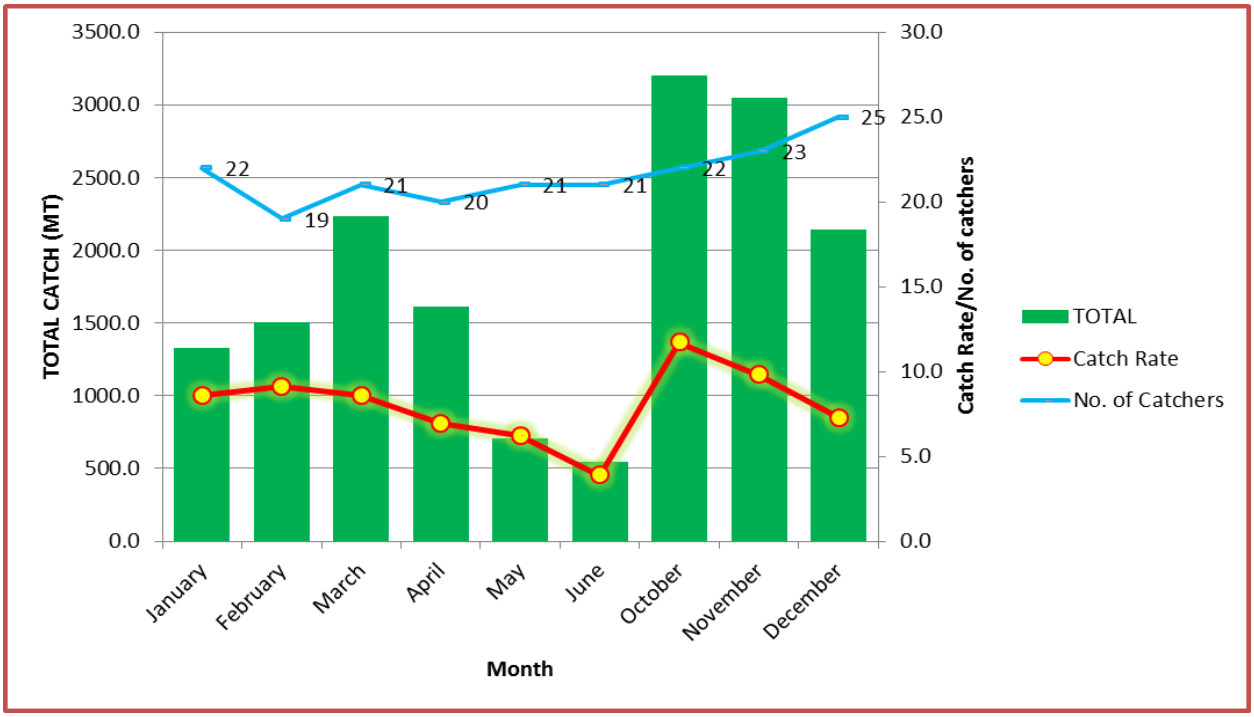

Fig. 5. Average Catch and total number of vessels operating

Average catch per set shows highest catch rate in October with 11.7 MT per set and lowest in June with 3.9 MT per set. Peak operation is also seen in December with 25 catchers operating and reporting. Decreasing catch from May to June is cause by very low catch rate and some vessels exited early in June while increasing total catch from October 2016 is caused by high catching rate and the increase in number of vessels operating.

Effort was also made to retrieve the missing data from Observer records of vessel logs. The following is the total catch from MARLIN plus logsheet data for 2016(Table 2).

Table 2. HSP1 total catch for 2016 based on MARLIN report and logsheet supplement.

Month	Vessel Reporting	Actual Vessels Operating	SKJ	YFT	BET	OTHERS	TOTAL CATCH
Jan-16	22	27	1,548.0	438.9	7.6	19.6	2,014.1
Feb-16	19	26	1,586.8	314.5	7.3	68.7	1,977.2
Mar-16	21	27	2,155.6	519.5	19.0	258.4	2,952.5
Apr-16	20	27	1,356.8	481.5	13.6	168.0	2,019.8
May-16	21	28	638.0	321.0	25.4	70.0	1,054.3
Jun-16	21	27	290.2	304.6	5.1	75.5	675.4
Oct-16	22	28	2,806.3	832.9	28.5	214.2	3,881.9
Nov-16	23	29	2,650.9	1,004.6	38.1	109.0	3,802.5
Dec-16	25	30	1,991.9	822.3	33.1	81.5	2,928.8
TOTAL			**15,024.3**	**5,039.7**	**177.7**	**1,064.8**	**21,306.5**

Table shows that around 77 percent of total HSP1 logsheet records have been transmitted through electronic reporting in 2016. It was also observed that a maximum of 7 vessels failed to transmit data. Four (4) of these vessels was not able to transmit for the entire duration of their operation in 2016.

In addition, of the total 2,643 sets conducted, 1,940 sets were reported thru MARLIN while 703 not reported, were retrieved from data on vessels logs from observer reports. 339 sets (13%) retrieved were not reported due to the failure of the device for the entire trip of the vessel. The remaining 364 sets from observer records is composed of 245 sets (9%) with no data received from the system and 119 sets (5%) not reported because the vessels did not catch anything. No catch sets were attributed to damaged gear, machinery malfunction, unfavourable sea condition and other factors which resulted to no catch to be retained whole weight.

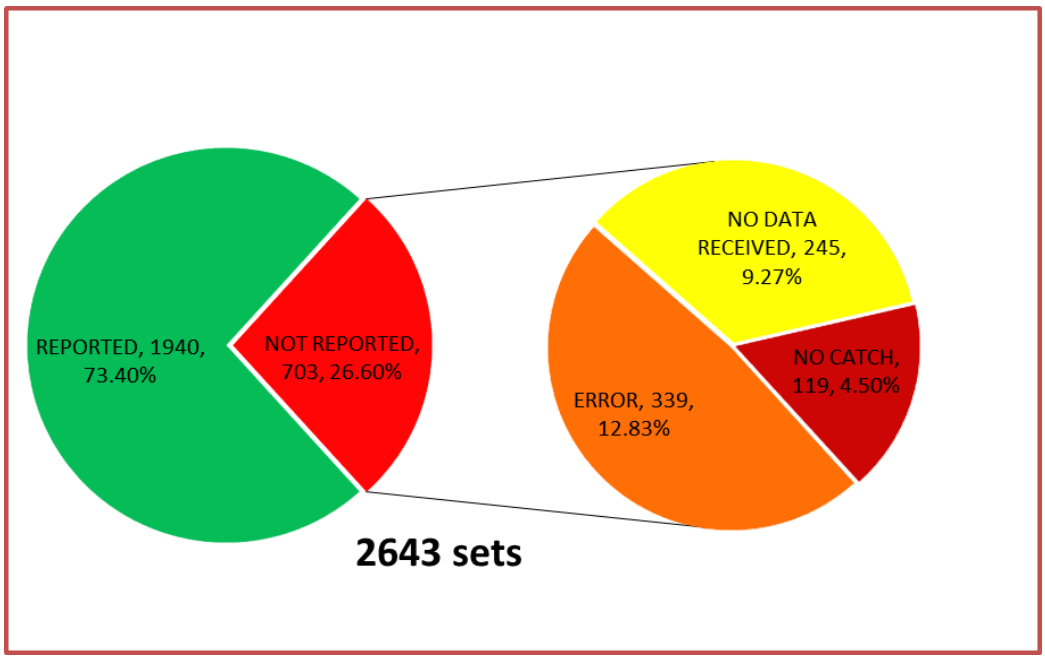

Fig. 6. Composition of transmitted and not transmitted sets.

Starting in 2017, all MARLIN for new application for HSP1 SMA was upgraded to a wireless tablet thru Bluetooth connection and transmitting via same VMS units. The upgraded version was easy to operate and technical problems was addressed by downloading and installing the application in Google® Playstore.

CONCLUSIONS AND RECOMMENDATIONS

1) Pilot test in of MARLIN has been effective in ensuring timely reporting of logsheet data. Catch data were reported at desired timeline and consolidated immediately. Success rate of reporting for 2016 is 77 percent based on the amount of data transmitted over the actual data generated.

2) Some field that needs improvement is to empower boat captains and fisheries observer to eliminate human errors in reporting and to ensure a daily reporting is undertaken.

3) With wireless technology, technical issues has been addressed by updating the application.

4) Data reported in this paper is still to be verified and cross-check with other data source such as Fisheries Observer data and Logsheet data submitted by the concerned fishing company.