



**SCIENTIFIC COMMITTEE  
FOURTEENTH REGULAR SESSION**

**Busan, Republic of Korea  
8-16 August 2018**

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**The Use of Electronic Logsheet on Philippine Flagged Vessels  
Operating in High Seas Pocket 1**

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**WCPFC-SC14-2018 ST-IP-08**

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# The Use of Electronic Logsheet on Philippine Flagged Vessels Operating in High Seas Pocket 1

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## ABSTRACT

MARLIN or the **Marine Logbook Information**, is a multifunctional electronic device or terminal that is designed to record and transmit daily logsheet data electronically. The terminals were installed in all of the Philippine-flagged catcher vessels operating in the High Sea Pocket 1 (HSP1). This paper reports on the data and information generated from the system in 2017, including vessels departure date and time, position, daily activity, catch and species composition.

E-reporting provides information on catch and effort for immediate recording, accounting and validation. Continuing effort are being undertaken to capacitate Boat Captains/Officers to sustain effective electronic data recording, transmission and data quality.

## I. Introduction

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention). It seeks to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks of the Convention Area. Scientific data and information have been crucial in formulating the Conservation and Management Measures (CMM) that are implemented by the Commission. To achieve this, various data gathering scheme and reporting requirements have been implemented by the Commission such as the Vessel Monitoring System (VMS), Fisheries Observer Program and Catch Logsheet.

Prior to the implementation of VMS and Regional Observer Program, logsheet had been the primary source of data from vessels. In view of the distance of the fishing ground to port data submission takes weeks or months, which often resulted to late recording and accounting of fish catch. In order to provide significant efficiency gains of Observer and Logsheet data, the 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 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 has also been conducting a pilot test with the MARLIN since 2013. The VMS provider, with the guidance of BFAR, developed the electronic logsheet program that is

capable of emails, sending daily activity log (fishing area, species caught and fish amount). In addition, it also features 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 describes the status of reporting of the MARLIN, in terms of the data gathered, frequency of reporting and its reporting processes. It also suggests some improvements and capacity building initiatives to further improve data quality and transmission.

## II. Methodology

The MARLIN was designed to report just like the standard logsheet required by the Commission. The VMS provider had conducted several hands-on training to key BFAR personnel, followed by similar capacity building activities involving Fisheries Observers, Boat Captains, Officers and crew prior to their departure to HSP1.

The pilot test started on the departure of the first batch of catcher vessels 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 are to be recorded, including start and end of set, species caught, quantity, fate, fishhold number and carrier name used. For other activity, data were transmitted at 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.

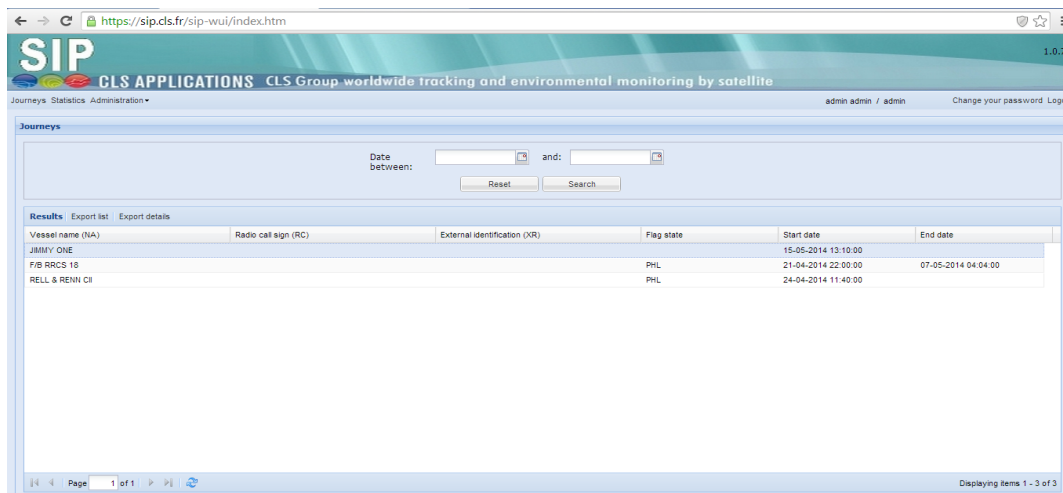


Fig. 2. Web-based application where MARLIN data is displayed.

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

### III. Results and Discussion

In November-December 2013, 18 out of 22 or 82% operational catcher vessels were able to transmit electronic data, with 4 devices malfunctioning upon reaching the fishing ground. From 2014-2016, successful transmission was about 90%.

In 2017, 28 out of 33 catchers operating (or 85%) were able to transmit data, however there were months that some vessels were not transmitting data because the device malfunctioned in the middle of the trip and restored when the vessel returned to port.

Table 1. Summary of Transmitted Catch Data in 2013, 2014, 2015, 2016 and 2017.

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
2017	<b>28</b>	<b>11,864.4</b>	<b>4,341.8</b>	<b>196.9</b>	<b>824.3</b>	<b>17,227.4</b>
<b>TOTAL</b>		<b>54,153.7</b>	<b>15,346.3</b>	<b>1,046.8</b>	<b>3,726.6</b>	<b>74,273.4</b>

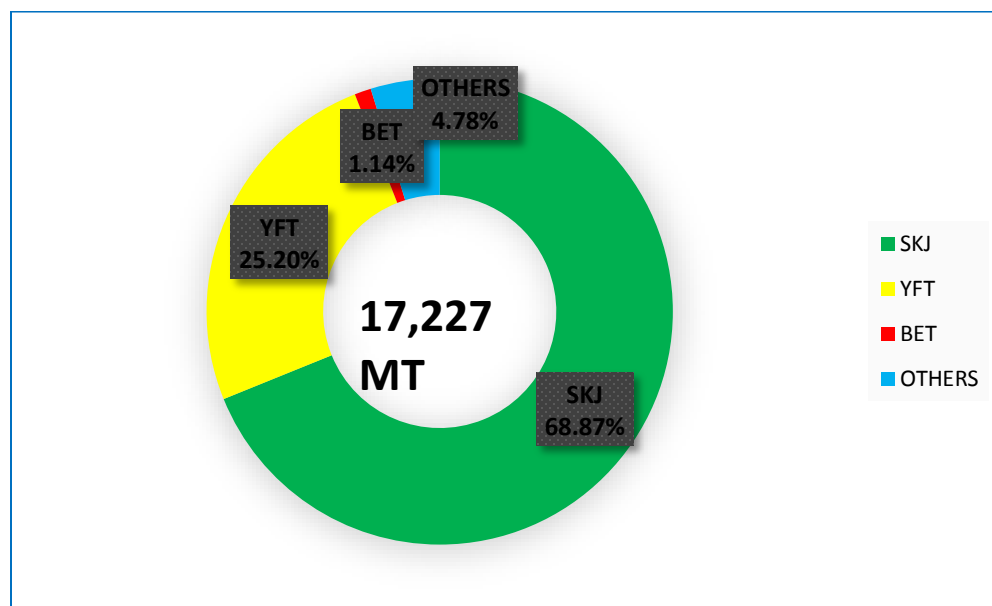


Fig. 3. Species composition reported for 2017

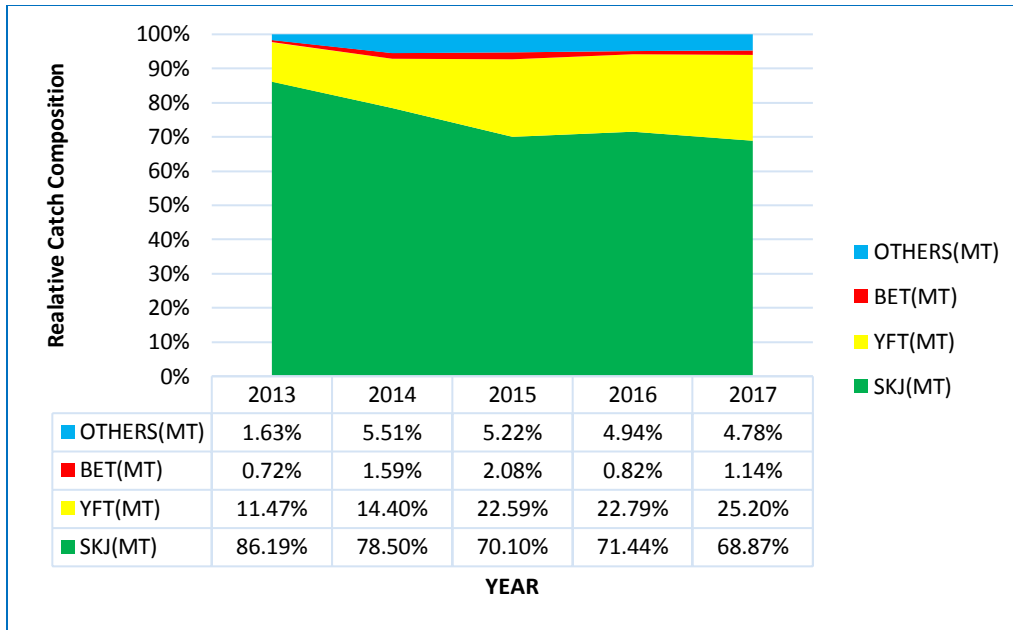


Fig. 4. Relative Catch Composition of Reported Catch from 2013-2017.

In 2017, data from electronic reporting vessel indicated a total catch of 17,227.4 MT or about 68% of the total catch (25,515 MT) reported by the Observer program. The catch was composed of skipjack (68.87%), yellowfin (25.20%), bigeye (1.14%) and other species (4.78%).

In comparison, Observer data in 2017 indicated the composition as skipjack (60.04%) and yellowfin (30.69%), bigeye (4.13%) and others (5.14%)

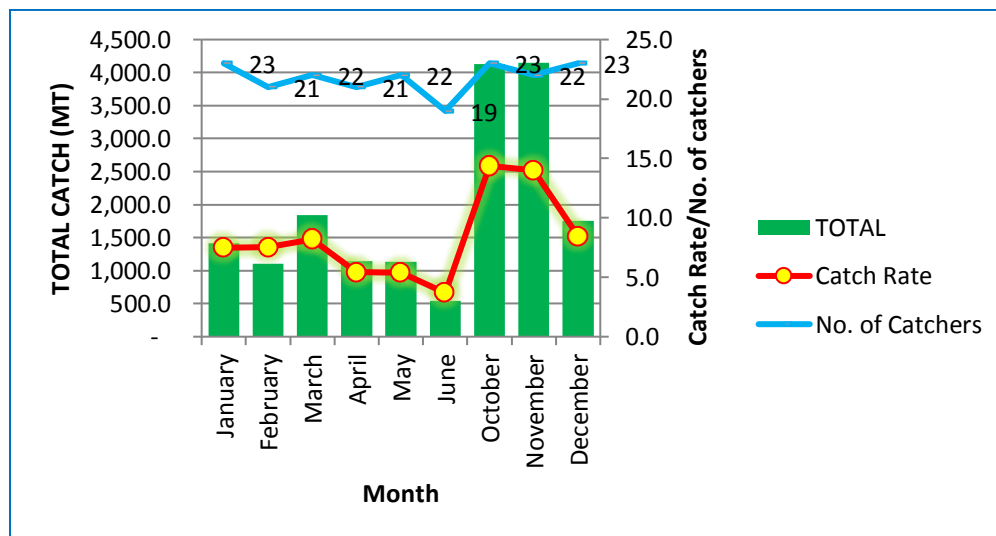


Fig. 5. Average catch and total number of vessels operating

In 2017, the average catch per set from MARLIN was about 8.95 MT/set, with the highest observed in October with 14.4 MT/set and lowest in June with 3.7 MT/set. Peak operation was also observed in November with 22 catchers operating and reporting. Decreasing catch from April to June was caused by very low catch rate and some vessels returned port early in June, while increasing total catch from October 2017 was due to high catch 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 2017 (Table 2).

As a comparison, the average catch per set based on Observer data was 9.46MT/set)

Table 2. HSP1 total catch for 2017 based on MARLIN report and logsheet supplement.

Month	Vessel Reporting	Actual Vessels Operating	SKJ	YFT	BET	OTHERS	TOTAL CATCH
Jan-17	23	29	1,313.4	604.5	23.2	57.9	1,999.0
Feb-17	21	27	1,104.2	388.8	30.5	29.6	1,553.1
Mar-17	22	29	1,361.6	615.4	41.3	156.1	2,174.4
Apr-17	21	31	923.3	391.2	34.0	212.0	1,560.5
May-17	22	31	875.8	445.3	32.8	155.5	1,509.4
Jun-17	19	28	335.1	276.7	7.4	187.1	806.3
Oct-17	23	29	3,724.6	1,280.7	23.0	140.6	5,168.9
Nov-17	22	30	4,117.1	1,148.6	26.2	43.0	5,334.8
Dec-17	23	30	2,457.3	1,815.4	581.8	30.6	29.6
<b>TOTAL</b>			<b>15,570.5</b>	<b>5,732.9</b>	<b>249.0</b>	<b>1,011.4</b>	<b>22,563.7</b>

Table 2 shows that about 76% of total HSP1 logsheet records were transmitted through electronic reporting in 2017. It was also observed that a maximum of 7 vessels failed to transmit data. Four (4) of these vessels were not able to transmit for the entire duration of their operation.

In addition, 71% of the sets reported on logsheets were reported on MARLIN (1,925 sets out of 2,696 sets on logsheets). Out of the 771 sets that were not transmitted on MARLIN, 663 sets (24.59%) were not transmitted due to the failure of the device for the entire trip of the vessel but were retrieved from vessel logs. The remaining 108 sets, based on validation from observer records, indicated that data from 50 sets (1.85%) were not received by the system and 58 sets (2.15%) were not reported because the vessels did not catch any on these sets. No catch were attributed to damaged gear, machinery malfunction, unfavourable sea condition and other factors which resulted to no catch to be retained whole weight.

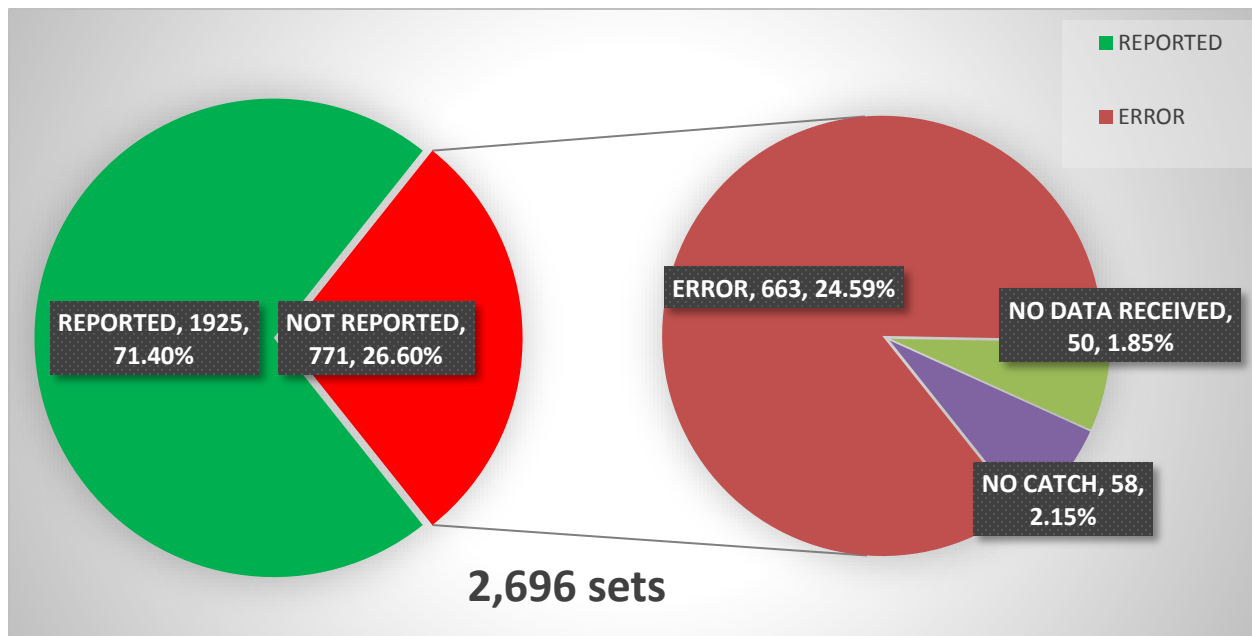


Fig. 6. Composition of transmitted and not transmitted sets.

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

#### IV. Conclusion and Recommendation

- 1) Pilot test of the MARLIN demonstrated that this can be a useful method to realize a timely reporting of catch data and operations. Catch data were reported at desired timeline, consolidated immediately and summary information can accessed. Success rate of reporting for 2017 is 76 percent based on the amount of data transmitted over the actual data generated.
- 2) However, continuing capacity building should be done with boat captains or officers to improve regular transmission and quality of reporting.
- 3) With wireless technology, technical issues has been addressed by updating the application.
- 4) The electronic catch reporting should now be implemented as a requirement of fishing license.
- 5) Data in this report should be cross-checked with other data source (Fisheries Observer data and Catch Logsheet).