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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 2014, including vessels departure date and time, position, daily activity, catch and species composition.

E-reporting approach can provide timely information that can be advantageous in generating data for immediate evaluation. Continuing effort is being undertaken to capacitate Boat Captains/Officers to sustain effective electronic data recording and its reliability.

I. Introduction

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 area. However, because of the distance of the fishing ground to port these data arrive weeks or months after the last data has been recorded.

To ensure timely submission of data, Secretariat of the Pacific Community (SPC) initiated the e-reporting and monitoring and conducted trial test to selected fishing vessel in the region. This includes eTUNALOG system, Observer on-board data and Longline E-Monitoring Trials.

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 (**Marine Logbook Information**) 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.

II. 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 hands-on training on MARLIN to key personnel involved in the project such as BFAR staff and Fishing Operators in General Santos City. 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.

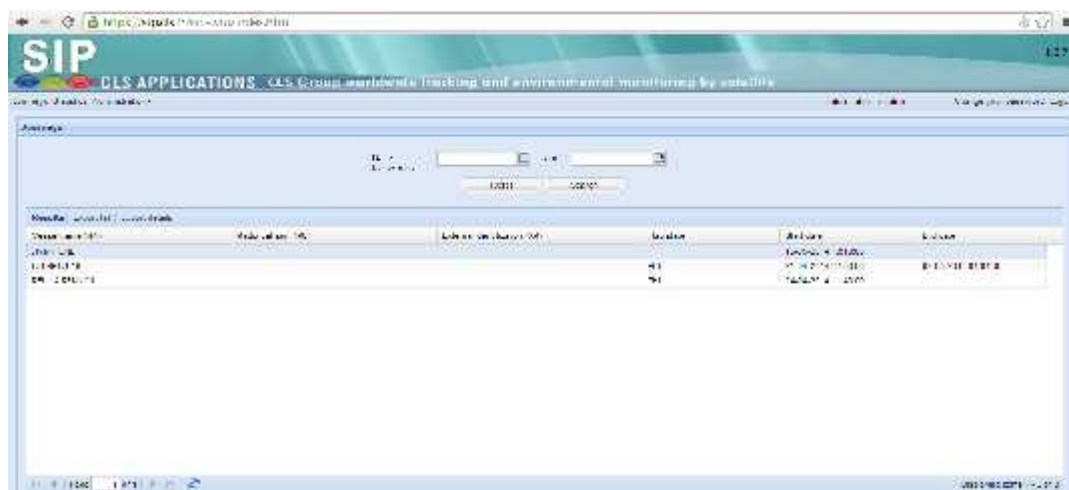


Fig. 2. Web-based application where MARLIN data is displayed.

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

III. 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 2014, a total of 32 out 35 catchers operating were able to transmit data, however there are some months that the vessel is not transmitting data.

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

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(April)	28	3,554.2	1,066.2	194.3	705.4	5,520.1
TOTAL		21,413.4	4,361.0	530.1	1,849.8	28,028.0

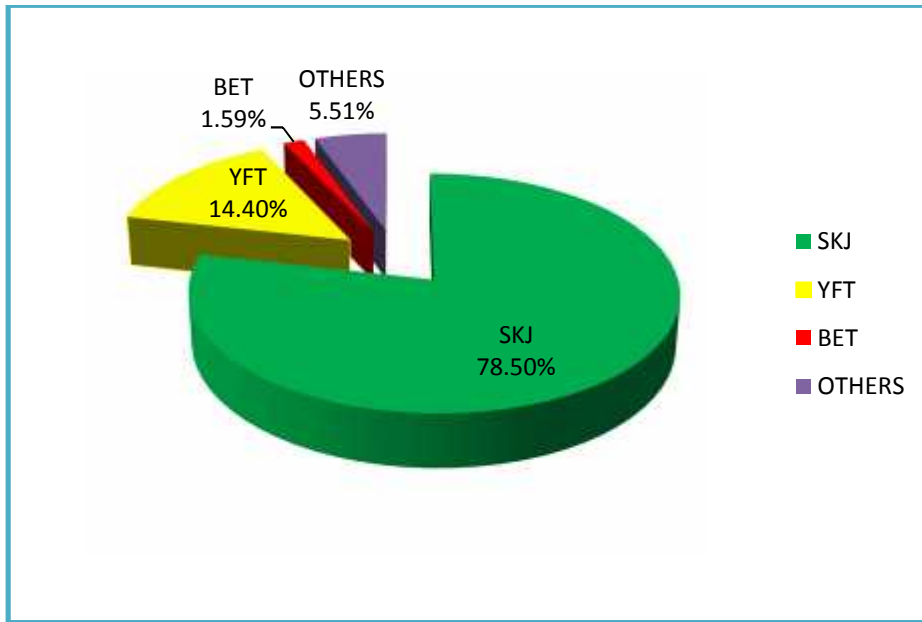


Fig. 3. Species Composition reported for 2014.

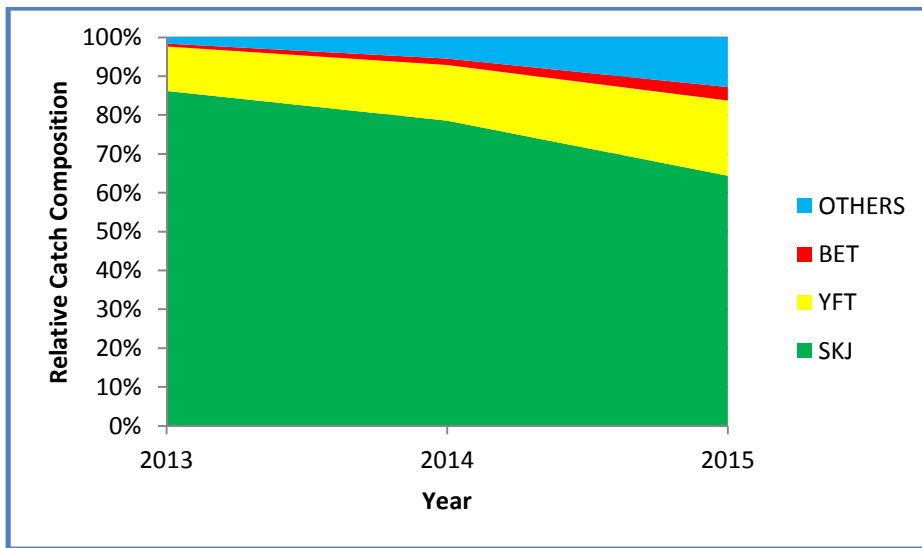


Fig. 4. Relative Catch Composition of Reported Catch from 2013-2015.

Data from reporting vessels shows a total catch of 20,037.3 MT in 2014. Majority of species caught is skipjack tuna at 78.50% followed by Yellowfin tuna at 14.40%, Bigeye Tuna at 1.59% and Other Species at 5.51%. Data also shows decrease in composition of Skipjack Tuna from 2013(86.19%), 2014(78.5%) and 2015(64.39) while the Yellowfin and Bigeye increases from 2013(11.47%), 2014(14.40%) to 2015(19.31%) and 2013(0.72%), 2014(1.59%) to 2015(3.852%) respectively (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 for 3 years.



Fig. 5. Total Catch per month and total number of vessels operating

Average catch per month shows highest catch in May with 147.4 MT and lowest in November with 66.65 MT per catcher. Peak operation is also seen in May with 28 catchers operating and reporting. Decreasing catch from May to June is cause by some vessels exited early from HSP1 while decreasing total catch from October 2014 to February 2015 is caused by the very low catch rate despite 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 2014(Table 2).

Table 2. HSP1 total catch for 2014 based on MARLIN report and logsheet supplement.

Month	Vessel Reporting	Actual Vessels Operating	SKJ	YFT	BET	OTHERS	TOTAL CATCH
Jan-14	23	27	1554.1	270.4	45.0	79.2	1,948.7
Feb-14	23	28	1509.2	429.2	56.5	67.0	2,061.9
Mar-14	25	32	2313.5	418.0	79.4	114.4	2,925.3
Apr-14	27	31	2782.7	422.9	88.7	166.9	3,461.3
May-14	28	33	3985.0	503.9	56.6	270.7	4,816.1
Jun-14	26	33	2948.8	382.5	31.4	180.1	3,542.8
Oct-14	22	24	1632.3	284.5	7.5	37.3	1,961.6
Nov-14	25	29	1043.9	401.5	60.5	99.5	1,605.4
Dec-14	26	30	642.7	230.9	41.4	322.3	1,237.3
TOTAL			18,412.8	3,343.9	466.9	1,337.3	23,560.3

Table shows that around 85 percent of total HSP1 logsheet records have been transmitted through electronic reporting in 2014. It was also observed that a maximum of 7 vessels failed to transmit data. Three (3) of these vessels was not able to transmit for the entire duration of their operation in 2014.

IV. Conclusion and Recommendation

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 2014 is 85 percent based on the amount of data transmitted over the actual data generated.

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.

Basic service and repair of the MARLIN should be considered and training provided to designated onboard personnel in the event that any technical issues are encountered whilst at sea.

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