Catch Trends of Tropical Tunas by Malaysian Tuna Longliners in the Indian Ocean, 2013 - 2017

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Abstract

Malaysian tuna fisheries had started with tropical tuna fishing since 2005. Malaysian tuna longline vessels were fishing in waters off Madagascar and southwards since the 3rd quarter of 2011. However, in 2012, Malaysia tuna longline vessels had shifted their operation from tropical tuna to albacore tuna fishing. The main species been caught for tropical tunas by Malaysian tuna longliners are Yellowfin tuna, big eye tuna and skipjack.

From 2013 to 2017, catches of tropical tunas (comprised of Yellowfin tuna, big eye tuna and skipjack) by Malaysian tuna longliners ranged from 279.94 to 1172.90 tonnes with the average 770.92 $\pm$ 363.90 tonnes. In 2017, landing of Yellowfin tuna was decreasing to 60% compare to 2013, meanwhile for bigeye tuna, 60% greater than 2013 landing. Meanwhile, the landing data for skipjack was just started since 2017. The catch trend and species composition during this period have been figured. From the current trend show there was a high demand of these species due to its high quality value for the market.

Keywords: Yellowfin tuna, big eye tuna, skipjack, tuna longliner. Indian Ocean, tropical tuna

Introduction

Malaysian longline vessels had started to operate in Indian Ocean since 2003 by using tuna longline. To date, 19 Malaysian tuna longline vessels were license whereby 13 of it were registered and operate in the east of Indian Ocean and another 6 tuna longline vessels registered and operate in southwest Indian Ocean. The main species been caught such as Albacore, Yellowfin tuna, big eye tuna (IOTC, 2015).

Before 2011, the tuna longline targeted tropical tuna species and most of the vessels fishing in southern part of Sri Lanka to the eastern part of Indian Ocean. Some of the Malaysian flag fishing vessels downloaded their catches in foreign ports such as Port Louis, Mauritius, Sri Lanka and Phuket, Thailand. From 2012, the Malaysian flag tuna fishing vessels shifted their target species to tuna albacore and their fishing areas at most of the time in the southwestern part of Indian Ocean.

Currently, the vessels that normally operating in southwest Indian Ocean will undertake a long fishing trips and all their catches were transported back to the fishing port by large fishing vessels. Port Louis in Mauritius was used by Malaysian vessels for transshipment to export all the catches to buyer countries. The vessels that unloaded at the

Port Louis Mauritius used to operate in fishing areas in the western Indian Ocean particularly during October to February (IOTC, 2016).

Material and methods

The tropical tuna catch data and fishing locations presented in this paper were obtained from logbooks weekly submitted via email to the Department of Fisheries Malaysia (DoFM). The data reporting is mandatory under Malaysia Fisheries Regulations as the part of the requirement for licensing Malaysian-flagged tuna fishing vessels.

A hundred (100) hooks were expressed for fishing effort analysis. Normally, Malaysia tuna longline fishing vessels operation using 3000 hooks for each shooting and took it one day to complete one haul.

Fishing operation

To date, 19 Malaysian tuna longliner were license whereby 13 of it were registered and operate in the east of Indian Ocean and another 6 tuna longline vessels registered and operate in southwest Indian Ocean. This longliners were fishing in waters off Madagascar and southwards since the 3rd quarter of 2011. The primary target of these vessels was Albacore and all catches were landed in Mauritius.

All the Malaysian vessels operate tuna longlines off the eastern coast of Madagascar, Lat S 10º to S 25º from January to March and from October to December, for each of the three years they were deployed. For the other month, these vessels operate off southern Madagascar until Lat S 35º. Based on the vessels deployment, longlining activities were carried out at the southern-most fishing area of Lat S 35º during the month of May each year. In 2017, the operation of tuna longline vessels has been expanded to Lat N 10º to N 25º.

A total of 3,000 hooks were used for each fishing operation by each tuna longliner. Immersion time is was between 8 to 10 hours for each operation. Generally, fishing effort was reduced in March and September since 2012. However, fishing effort appears to be more stable from 2014 onwards.

Annual Landings and Catch Composition of Tropical tunas

Since 2012, the Malaysian flag tuna fishing vessels shifted their target species to tuna albacore. The average catch composition from Malaysian longliners as shown in Figure 1 with the targets species was Albacore since 2012 whereby this species was dominated the catch with 70% or 772.12 mt of the total catch, followed by yellowfin tuna (9%), mix fishes (8%), swordfish (5%), marlin (3%), and bigeye tuna (5%).

The annual landings of these species from 2013 to 2017 as in Figure 2. From 2013 to 2017, catches of tropical tunas (comprised of Yellowfin tuna, big eye tuna and skipjack) by Malaysian tuna longliners ranged from 279.94 to 1172.90 tonnes with the average 770.92 $\pm$ 363.90 tonnes. In 2017, landing of Yellowfin tuna was decreasing to 60% compare to 2013, meanwhile for bigeye tuna, 60% greater than 2013 landing. Meanwhile, the landing data for skipjack has just started since 2017.

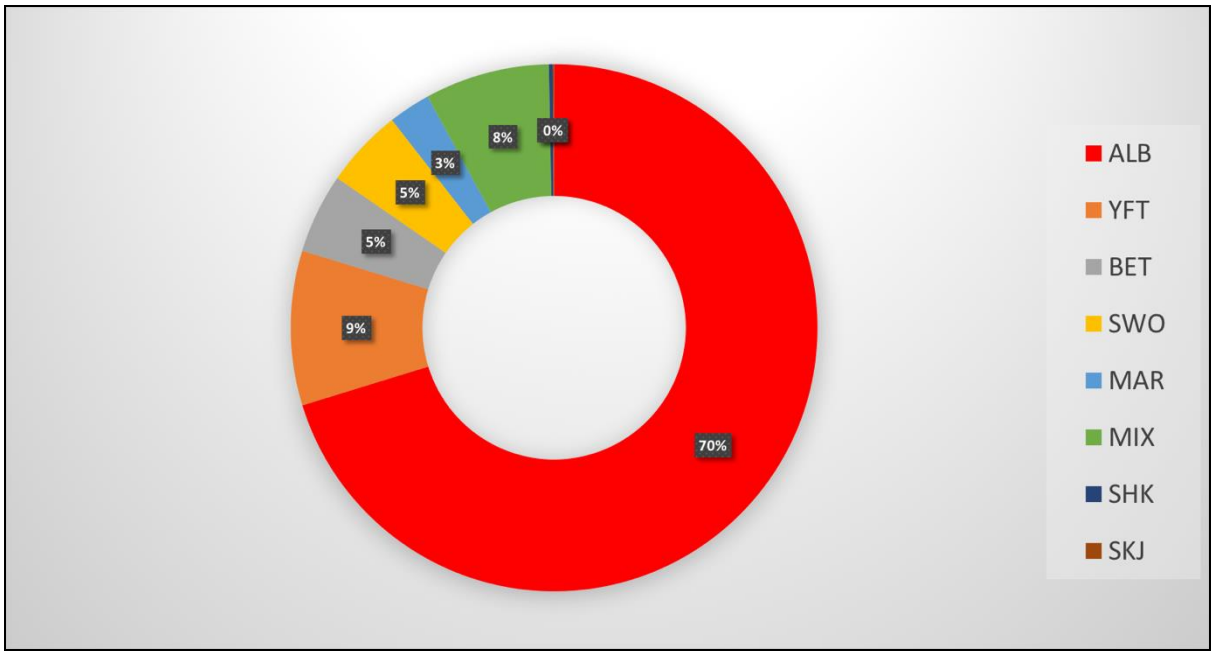


Figure 1: Average total catch composition from 2013 to 2017

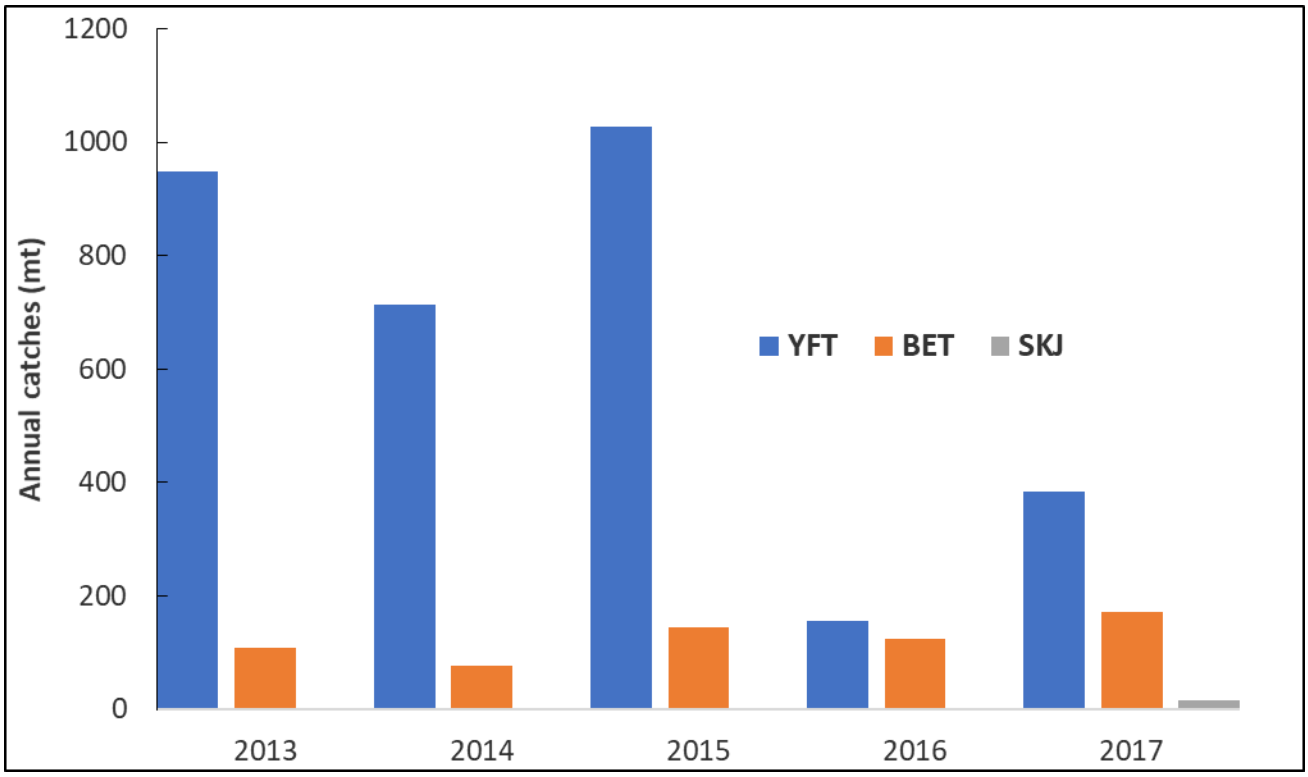


Figure 2: Total annual landings of Yellofin tuna (YFT), Bigeye tuna (BET) and Skipjack tuna (SKJ) by Malaysian tuna longline from 2013 to 2017

Monthly Catches and of Tropical tunas and Fishing Effort

Figure 3 and 4 shows the monthly catches of tropical tunas and fishing efforts by Malaysian tuna longliners in the Indian Ocean.

Overall, it appears that there are two peaks of highest landing were recorded for yellowfin tuna which were during end December to May every year and also highest peak was also observed during July throughout the year. Meanwhile for bigeye tuna, two peaks of highest catches were observed during middle and early of the year. As for skipjack, whereby the landing data for skipjack was just started since 2017, the highest catches was recorded during January. By referring to the Figure 4, the difference in peaks between fishing effort and landing also follows with the total landing for all tropical tunas species.

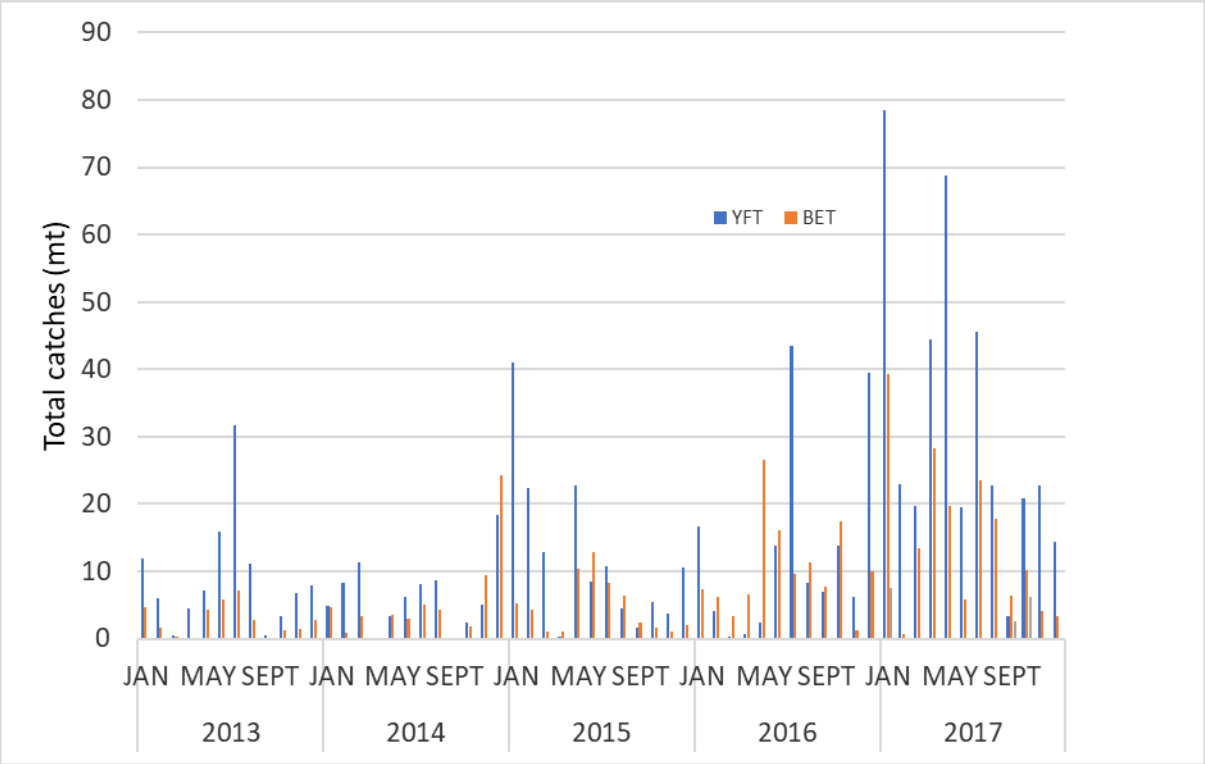


Figure 3: Monthly catches of Yellowfin and Bigeye tuna by Malaysian tuna longline vessels in 2013 to 2017.

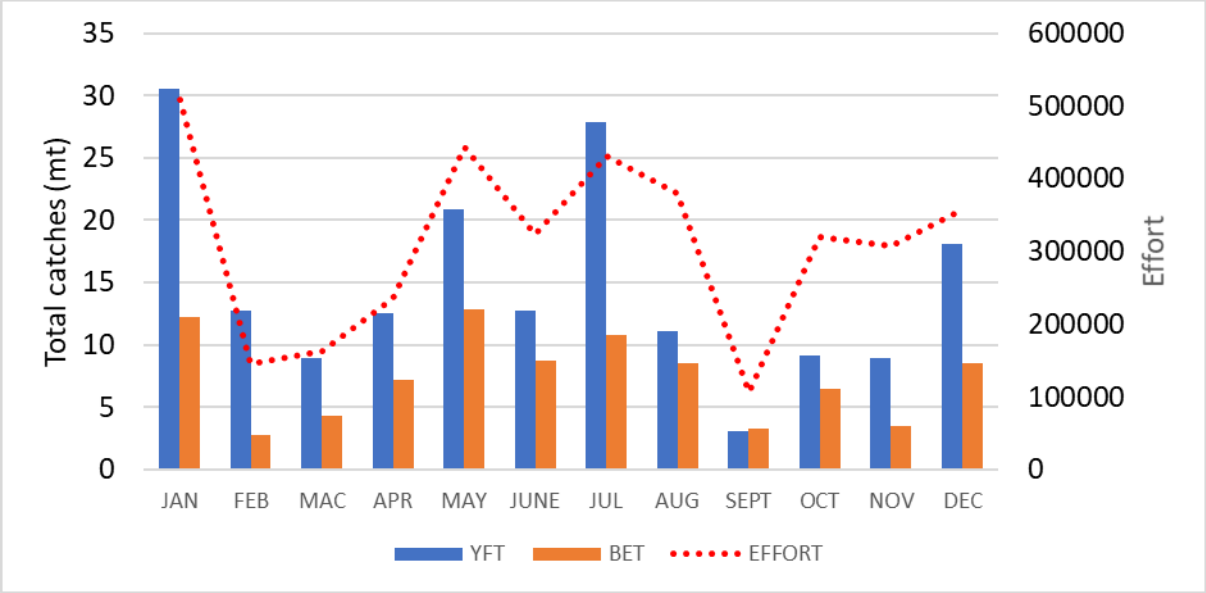
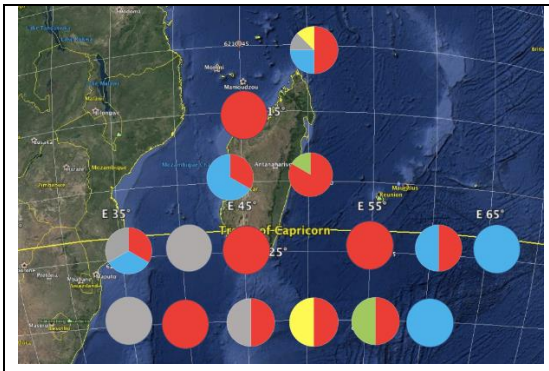
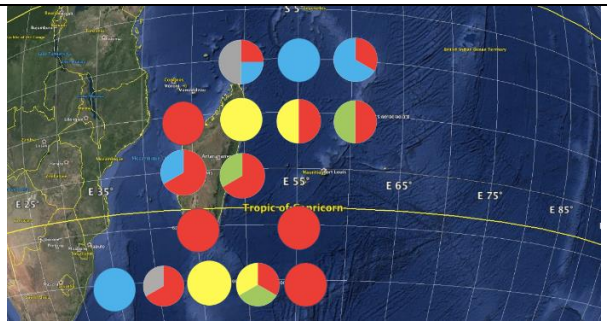


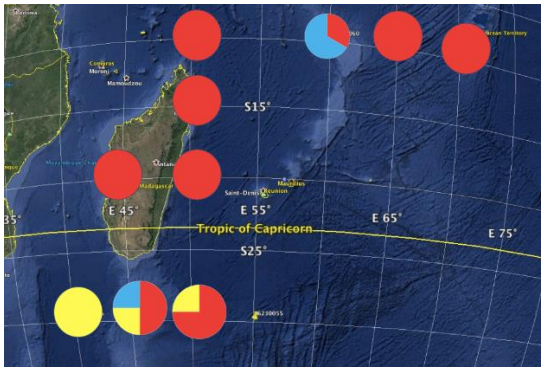
Figure 4: Average monthly catches and effort of Yellowfin and Bigeye tuna by Malaysian tuna longline vessels in 2013 to 2017.



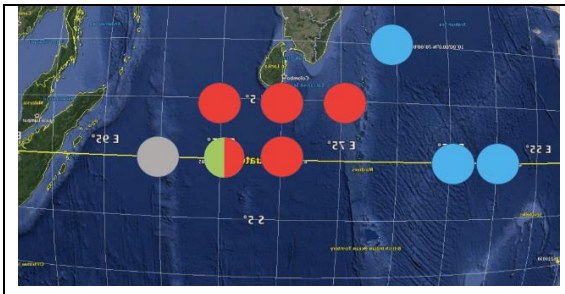
2013

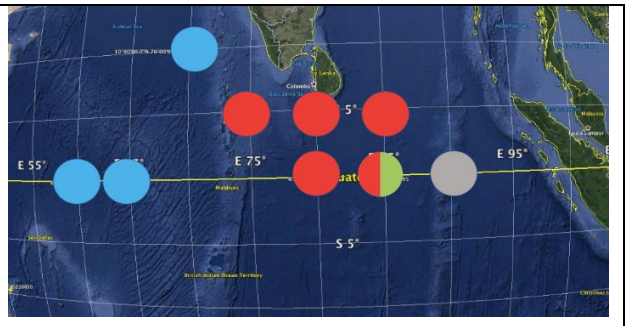


2014

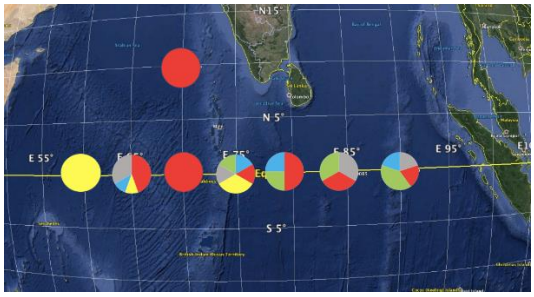


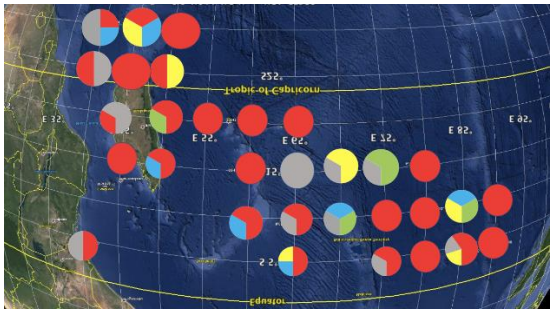
2015





2016 2016





2017 2017

Figure 5: Distribution of total catches (by month) of tropical tunas by 5° x 5° grid from 2013 to 2017

The mean monthly catches of tropical tunas by Malaysian tuna longliners according to Northeast and Southeast Indian Ocean from 2013 to 2017 followed by the fishing effort as appeared in the Figure 4. Malaysian tuna longliners had started to operated in Northeast Indian Ocean (Quadrant IOTC code: 1) since 2016 and this had contributed to the landing and fishing effort data. By referring to the Figure 4, the difference in peaks between fishing effort and landing can be expected since the longliners were not targeting for tropical tunas. Although it is not a targeting catch, their landing patterns do indicate their availability in the fishing areas.

Discussion

In 2017, landing of yellowfin tuna were decrease to 60% was two times over from 2013. Meanwhile for bigeye tuna, showing an increase about 60% compare to 2013, than 2013 landing. The increasing of landing data towards the end of 2017 was also because of the area of fishing operation was also covered the Northeast Indian Ocean. This may be due to these type of tunas was not a target or focus to be catch compare to albacore. However, by showing the number of landing, the landing catches of tropical tunas should be increase more in future.

According to monthly catches, the highest peak periods of tropical tunas landings may indicate the peak availability of these fishes in some parts of the southern Indian Ocean and may coincide with migration pattern. The monthly fishing efforts also increased during this period indicated that the fishing fleet intensify the fishing operations.

It is important for better understand of their biology, growth, life cycle, location preferences, interaction with environmental parameters and also genetic relationship in the Indian Ocean through information gathering of more data including oceanographic parameters. Therefore, it is recommended to increase the number of tropical tunas caught to obtaining further information on these species. By less of less than 10 years series of data is still not enough to for detailed analysis to be carried out. More detail data should be available for meaningful to describe the variation or pattern of the landing and fishing effort throughout of the year.

Conclusion

The landing of tropical tunas by Malaysian tuna longliners in the Indian Ocean had showed it trend from 2013 t0 2017 even though this species was not the primary target species by the fishing vessel in the particular area. This indicate their availability of tropical tunas in the fishing areas and due to its high value, the demand of these fishes will make them as an attractive by-catch. Therefore, it is recommended to update the landing data so that more comprehensive and conclusive research finding can be done in the future.

References

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