Status of catch and effort for albacore tuna by Malaysian Tuna Longliners in the Indian Ocean (2013-2017)

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Abstract

Malaysia tuna fisheries began with tropical tuna fishing in 2005 to 2011 before shifted to albacore tuna fishing in 2012. Currently, a total of 19 Malaysia tuna longline fishing vessels and 1 carrier are operated in the Indian Ocean. The Malaysia tuna longliners fishing activities covered the area from 10°S in the north to 39°S and longitude from 40°E to 70°E. This paper describes the detail on fishing characteristics of Malaysia tuna longliners, which emphasize on catch and CPUE trends for albacore tuna in southwest of Indian Ocean from 2013 to 2017. All the data described in this paper was based on the data extracted from fishing logbooks which were sent by vessel's owner to Department of Fisheries Malaysia. In 2017, the total catch of albacore increased significantly by 17% to 1, 607 tons from 1,330 tons in 2016. Catches of albacore tuna by Malaysia tuna fishing vessels ranged from 2.74-281.69 tons with average of 93.79 ± 66.07 tons. The average monthly catches for 5 years showed that there were two peaks seasons for albacore fishing; from May- August and October – January.

Keywords: Malaysia tuna longlines, albacore tuna, fishing efforts, CPUE, *Thunnus alalunga*

Introduction

Malaysian longline vessels started to operate in the Indian ocean in 2003 using tuna longline. From 15 tuna longline vessels in 2003, the number gradually increased to 58 vessels in 2010. However, in 2012, the number of active tuna longline vessels dropped drastically due to management problem faced by the vessel company. From 2012, a fleet of 5 longline from new fishing company started to operate by targeting albacore tuna. Their fishing areas were in the southeast of Indian Ocean. In 2017, 19 tuna longline vessels were licences where 13 of it were registered and operate in the east of Indian Ocean and another 6 tuna longline vessels registered and operate in southwest of Indian Ocean.

For vessels operating in southwest Indian Ocean, the vessels normally undertake a long fishing trips and all their catches were transported back to the fishing port by large fishing vessels. Some of the vessels used fishing port from other countries such as Port Louis in Mauritius. The catches were unloaded in the form of frozen albacore tuna and other by-catch species. From the Port Louis, the

catches were transhipped into commercial ship to be exported to buyer countries such as Thailand, Taiwan, China, Singapore and Iran.

Albacore (*Thunnus alalunga*) is a highly migratory species (Fonteneau, 2004) and an important commercial species in tropical, subtropical and temperate pelagic ecosystems (Essington, 2003). The main fisheries of this species are in temperate waters. In the Atlantic Ocean, their geographical limits are from 45-40° N and 30-40° S. Whereas in the Indian Ocean, their distribution ranges from 15° N to 40° S, and is more abundant between 15° N to 35° S (ISSF, 2014; Nishida & Tanaka, 2008). In the Indian Ocean, albacore are currently caught almost exclusively using drifting longline (over 90% of the total catches) and the remaining catches recorded under purse seines and other gears (IOTC, 2014). The average catches of albacore tuna in the Indian Ocean from 2010-2017 was 38,131 tons and the catch in 2014 alone was 40,981 tons which was below MSY level (IOTC, 205).

Material and Methods

The albacore tuna data, CPUE and fishing locations presented in this paper were obtained from logbooks submitted weekly via email to the Department of Fisheries Malaysia. Data reporting is mandatory under Malaysia Fisheries Regulation as part of the requirement in licensing Malaysian-flagged tuna fishing vessels operating in the high seas. For fishing efforts analysis, it was expressed in 1000 hooks. Normally Malaysia tuna longline fishing vessels operation using 3000 hooks for each shooting and it took one day to complete one haul. There is no observer on board for Malaysia tuna vessels and Malaysia is currently in the process of developing national observer scheme.

Annual catches

Malaysian tuna longline vessels started fishing albacore tuna from 2012. In 2012, the annual catches were only 316 tons with 5 fishing vessels (data not shown). The catch then increased significantly in 2013 to 947 tons. In 2014, the catch decreased to only 714 tons due to low number of fishing efforts. However, starting from 2015 the catches increase until reaching the highest record in 2017 with 1,607 tons (Figure 1). The range of areas covered by the fishing operation of the Malaysia tuna longlines extended from 0° S in the north to 40° S toward the south and longitude from 30°E to 90°E (Figure 2-6).

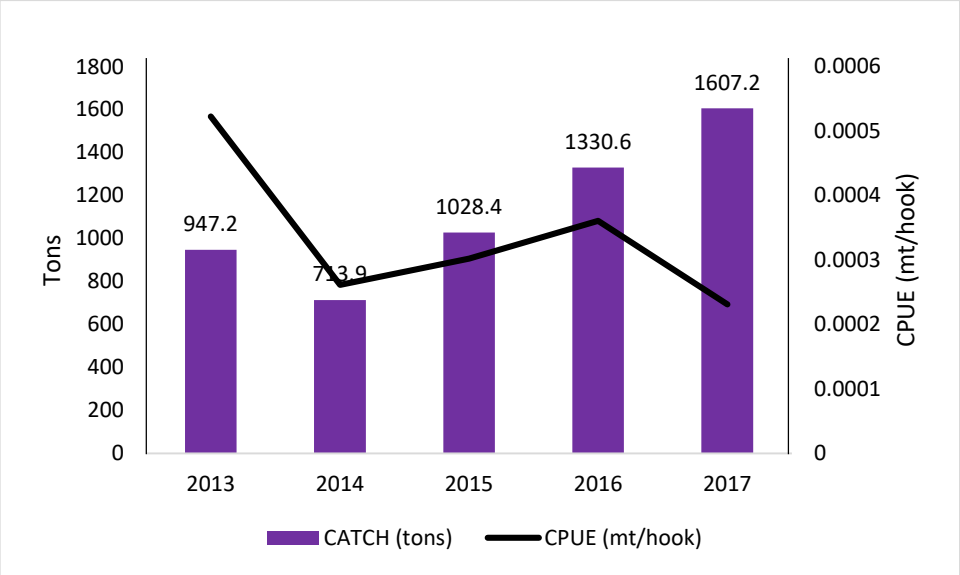

Figure 1: Annual catches of albacore tuna from Malaysian tuna longline vessels from 2013-2017

Monthly catches and efforts

From 2013 to 2017, catches of albacore tuna by Malaysian tuna fishing vessels ranged from 2.74 – 281.69 tons with the average of 93.79 ± 66.07 tons. The average monthly catches for 5 years showed that there were two peaks seasons for albacore fishing; from May – August and October – January (Figure 3). The highest peak season was during the middle of the year (May – August). Average fishing efforts (number of hooks) for 2013 to 2017 was 309,788 hooks. Low fishing efforts were recorded during early of the year normally and early April, due to long holiday to celebrate annual Chinese New year festival, the fishing efforts reduced drastically. During the albacore seasons, the number of fishing efforts increased significantly in particular during the period of May – August.

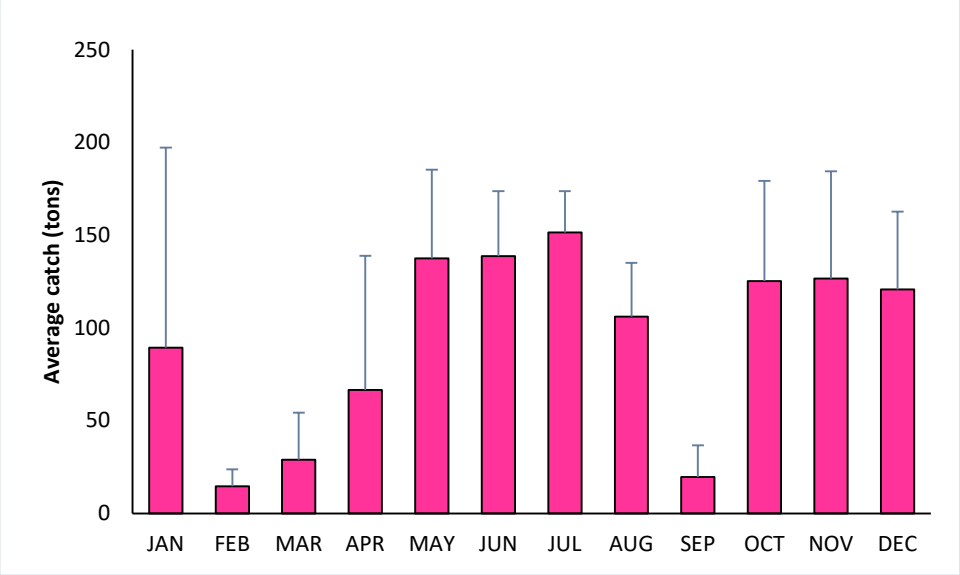

Figure 2: Average monthly catch by Malaysian tuna longliners from 2013-2017

Monthly catches for year 2013

Figure 3 showed the monthly distribution map of albacore catch by Malaysian tuna longline in 2013. In 2013, the highest albacore catch was recorded at latitude 20°S and longitude 45°E with total landing of 287 tonnes followed by catches at latitude 20°S and longitude 50°E with total landing of 147 tonnes. The record of 287 tonnes was from catches in November (54%), October (44%) and December (2%). From the distribution, it is clearly shows that the catch of albacore was targeted in certain month at the certain coordinates. The albacore catches at latitude 30°S to 35°S and longitude from 55°E to 60°E was dominated by catch in May with only 2% catch in June. The albacore catches at latitude 25°S-30°S and longitude at 35°E, 45°E and 50°E was 100% catch in August. Similar trend can be seen at latitude 25°S and longitude 40°E and also at latitude 25°S and longitude 65°E where the catches was totally in July and April, respectively

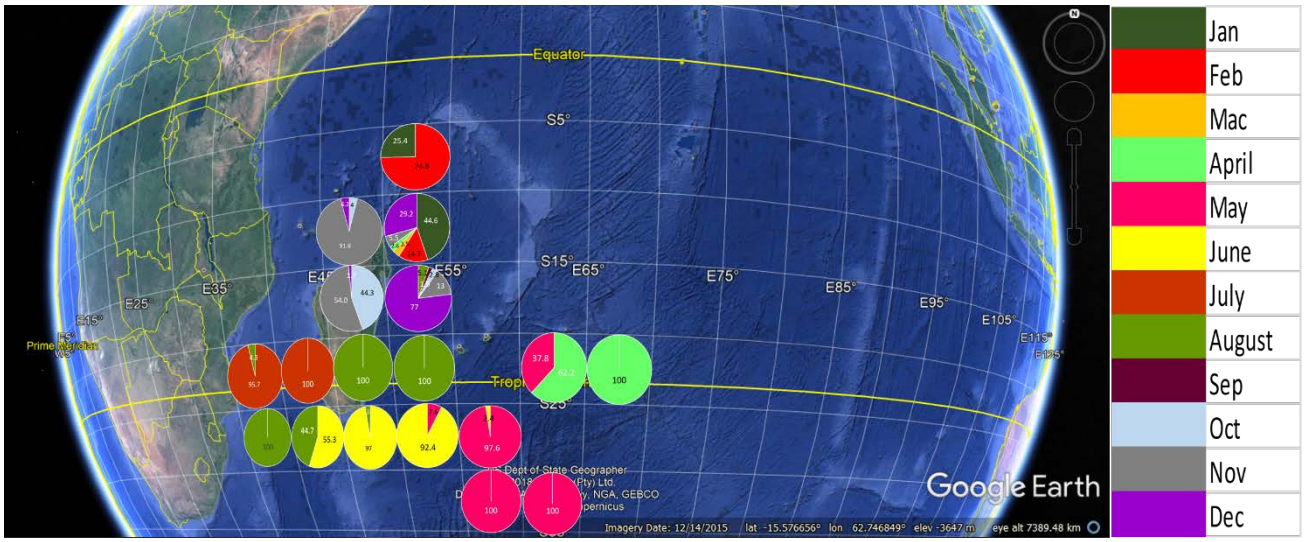

Figure 3: Monthly distribution map of albacore catch by Malaysian tuna longline in 2013

Monthly catches for year 2014

Figure 4 showed the monthly distribution map of albacore catch by Malaysian tuna longline in 2014. In 2014, the highest albacore catch was recorded at latitude 30°S and longitude 50°E with total landing of 111 tonnes followed by catches at latitude 35°S and longitude 55°E with total landing of 86 tonnes. The record of 111 tonnes was from catches in June (58%), July (39%) and May (3%). The highest landing record of 111 tonnes in 2014 was only half of the highest landing record in 2013 which is 287 tonnes. This is due to decreasing fishing effort in 2014. Similar with year 2013, the catch of albacore in 2014 was targeted in certain month at the certain coordinates. In 2014, similar pattern of catches with 2013 can be seen at latitude 35°S and longitude from 50°E to 55°E where 100% albacore catches were caught in May. The albacore catches at coordinates; latitude 30°S and longitude at 35°E and latitude 30°S and longitude 40°E was totally caught in August. Similar trend can be seen at coordinates; latitude 10°S and longitude 45°E, latitude 15°S and longitude 45°E, and latitude 25°S and longitude 50°E where the catches was totally in December, January and June, respectively.

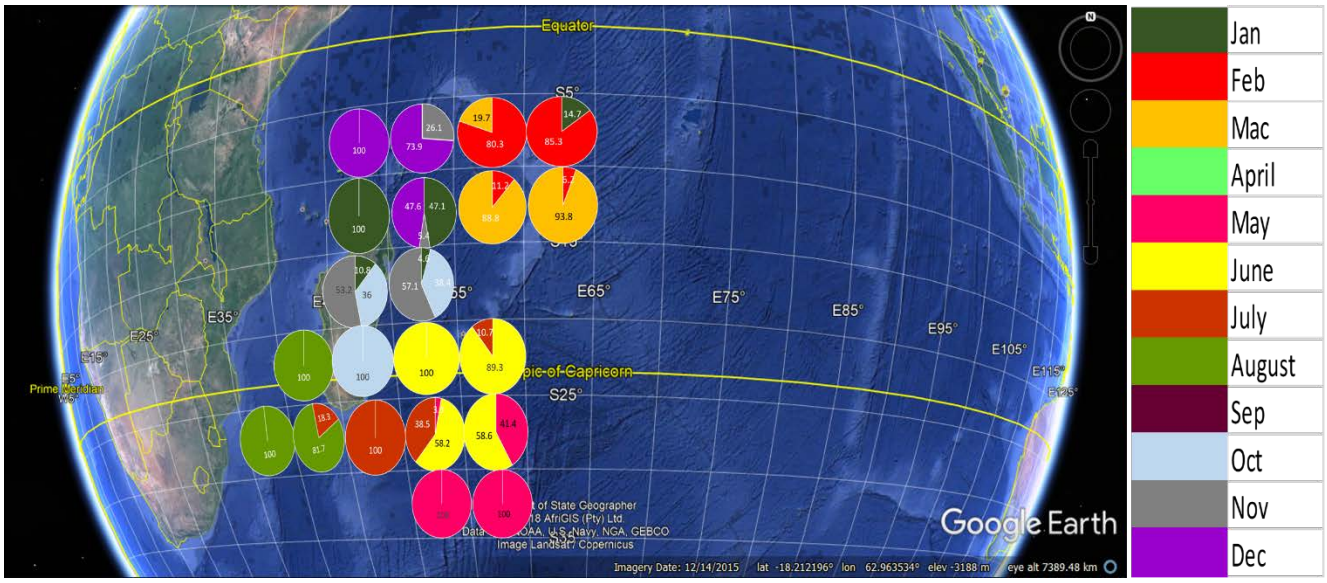

Figure 4: Monthly distribution map of albacore catch by Malaysian tuna longline in 2014

Monthly catches for year 2015

Figure 5 showed the monthly distribution map of albacore catch by Malaysian tuna longline in 2015. In 2015, the highest albacore catch was recorded at latitude 20°S and longitude 45°E with total landing of 292 tonnes followed by catches at latitude 30°S and longitude 40°E with total landing of 174 tonnes. The record of 292 tonnes was from catches in August (51%) and July (49%). The highest landing record of 292 tonnes in 2015 was almost similar with the highest landing record in 2013 which is 287 tonnes. In 2015, similar pattern of catches with 2013 and also 2014 can be seen at latitude 35°S and longitude 55°E where albacore catches were caught mainly in May (98%) with only 2% albacore catches from June. The albacore catches at coordinates; latitude 5°S and longitude at 65°E and latitude 10°S and longitude 55°E was totally caught in August. Similar trend can be seen at coordinates; latitude 15°S and longitude 60°E, latitude 25°S and longitude 50°E, latitude 10°S and longitude 70°E, and latitude 30°S and longitude 35°E where the catches was totally in March, September, February and August, respectively.

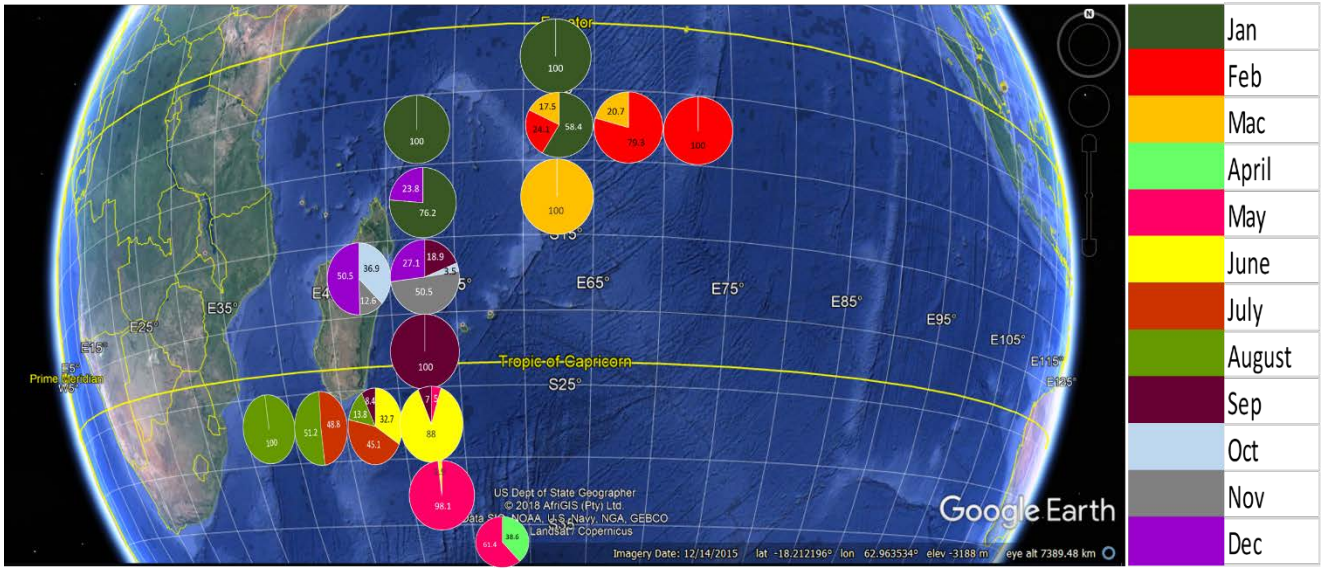

Figure 5: Monthly distribution map of albacore catch by Malaysian tuna longline in 2015

Monthly catches for year 2016

Figure 6 showed the monthly distribution map of albacore catch by Malaysian tuna longline in 2016. Similar with 2015, the highest albacore catches in 2016 was also recorded at latitude 20°S and longitude 45°E with total landing of 212 tonnes followed by catches at latitude 30°S and longitude 45°E with total landing of 172 tonnes. The record of 212 tonnes was from catches in November (67%), October (14%), January (13%) and December (6%). In 2016, similar pattern of catches with 2013, 2014 and 2015 can be seen at latitude 35°S and longitude 55°E where albacore catches were caught primarily in May (94%) with only 4% albacore catches from June. The albacore catches at coordinates; latitude 10°S and longitude at 70°E and latitude 20°S and longitude 40°E was totally caught in December. Similar trend can be seen at coordinates; latitude 15°S and longitude 65°E and latitude 15°S and longitude 45°E where the catches from November.

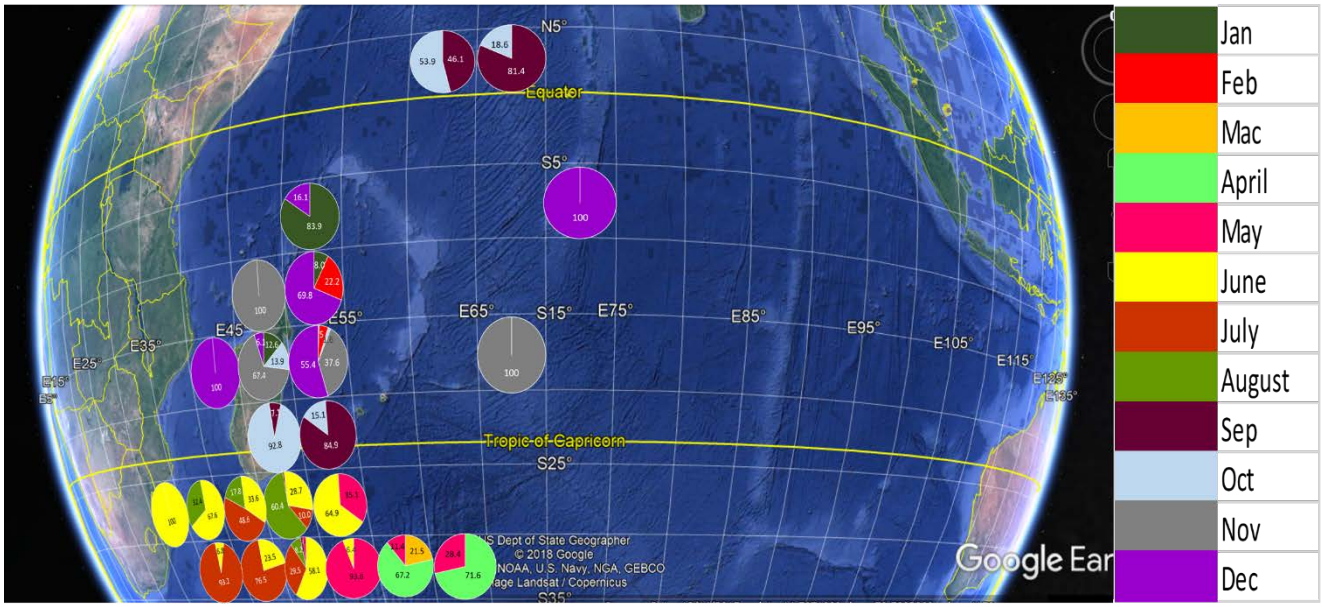

Figure 6: Monthly distribution map of albacore catch by Malaysian tuna longline in 2016

Monthly catches for year 2017

Figure 7 showed the monthly distribution map of albacore catch by Malaysian tuna longline in 2017. In 2017, the highest albacore catches were recorded at latitude 30°S and longitude 40°E with total landing of 290 tonnes followed by catches at latitude 35°S and longitude 55°E with total landing of 247 tonnes. The record of 290 tonnes was from catches in July (54%), August (35%), June (10%) and October (1%). The albacore catches at latitude 0°S and 10°S and longitude from 60°E, 85°-90°E was totally caught in April. Similar trend can be seen at coordinates; latitude 5°S and longitude 75-80°E, latitude 0° -5°S and longitude 20° -25°E where the catches was totally from catches in July and May, respectively.

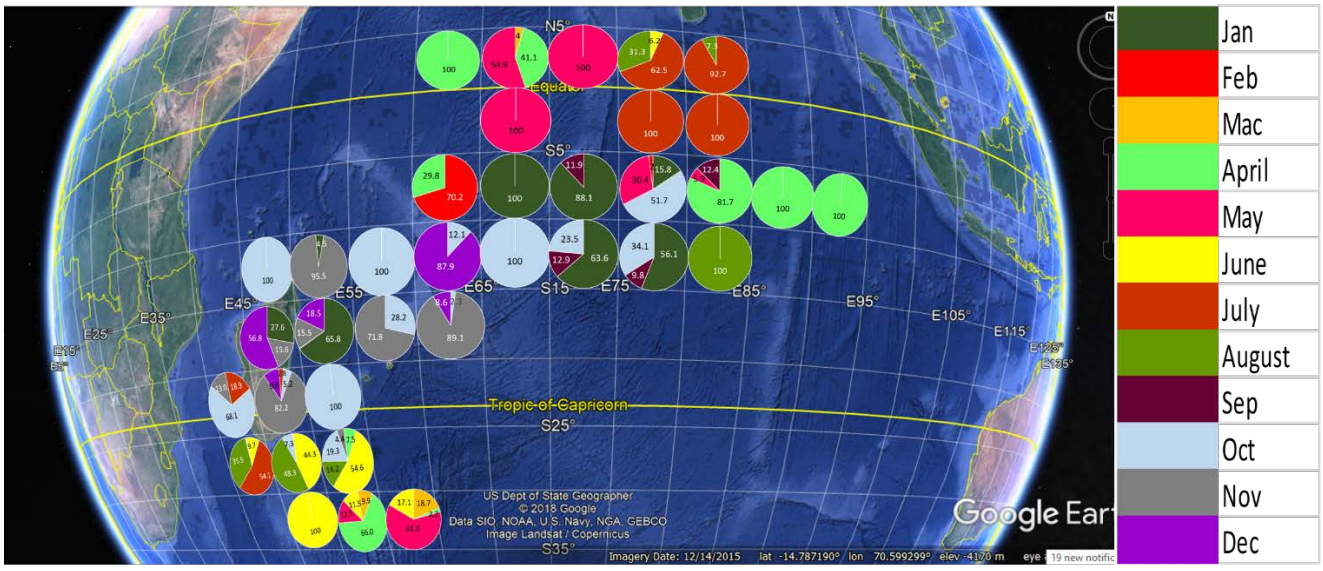

Figure 7: Monthly distribution map of albacore catch by Malaysian tuna longline in 2017

Catch composition

Albacore tuna accounted about 70.2% of the total catches followed by tropical tuna species such as yellowfin tuna (9.5%) and bigeye tuna (4.9%) (Figure 8). Tuna like species such as swordfish and marlin made up 4.9% and 2.4%, respectively. The marlin catches included black marlin, striped marlin and blue marlin which were not break into species. Shark species were not recorded as catch as they were immediately discarded during the hauling period.

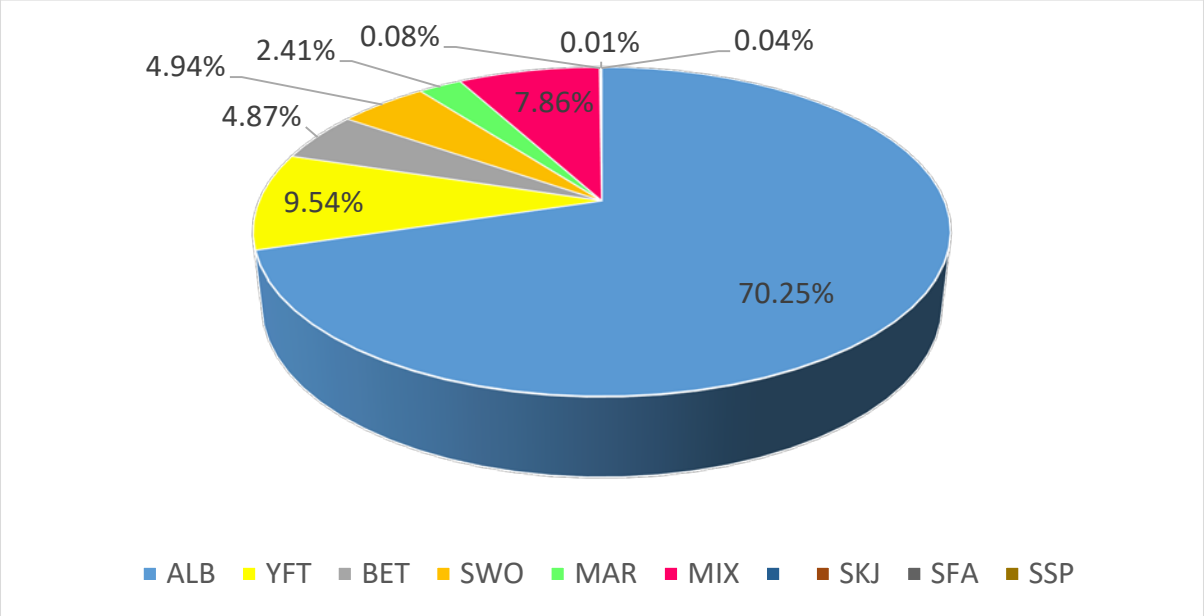

Figure 8: Catch composition by Malaysian tuna longline from 2013-2017

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