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# Status of Albacore Fishing by Malaysian Tuna Longliners

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Malaysian tuna fisheries began with tropical tuna fishing in 2005 to 2011. In 2012, Malaysian tuna longline vessels shifted their operation from tropical tuna to albacore tuna fishing. A total of 5 tuna longline fishing vessels and 1 carrier are currently operating under Malaysian flag and they mainly operated in the southwest of Indian Ocean. In 2015, the total catch of albacore increased significantly by 44% to 1,031 tons from 714 tons in 2014 after recording a drastic dropped from 947 tons in 2013. The fishing efforts in term of number of haul, increased from 909 hauls in 2014 to 1130 hauls in 2015. Peak period of the catches were recorded from May to August with the range of catches from 112 -165 tons/month. For the cpue (tail/100 hooks) of the albacore, the range were from 0.21 – 3.48 and the highest cpues were recorded in May and June 2015. Tuna albacore represented an average of 72% of the total catch by the tuna longliners in term of weight, followed by yellowfin tuna 8.5%. The range of areas that covered by the fishing operation of the Malaysia tuna longliners extended from $10^{o}$ S in the north to $39^{o}$S toward the south and longitude from $40^{o}$ E to $70^{o}$E. All the catches were of the frozen tuna type which were exported countires such as Taiwan and Thailand.

Key words: albacore tuna, Malaysian tuna longlines, cpue, fishing efforts

## Introduction

Malaysian tuna fisheries in the Indian Ocean started in 2003 with 7 tuna longline vessels registered under Malaysian flag. The Malaysian tuna fleet targeted the tropical tuna species and their fishing activities extended from Andaman Sea to the southern part off Sri Langka coast. Starting from 2012 until now, the Malaysian longliners shifted their targeted species to albacore tuna and their main fishing area is in the southwest of Indian Ocean. At present, a total of 5 tuna longline fishing vessels with one carriers are actively fishing under Malaysian flag and they use Port Louis, Mauritius as their operation and administration base. The Port Louis is a strategic location as it is near the main fishing areas for albacore tuna.

The catches from the Malaysian tuna fishing vessels were transhipped into the carrier vessel to be transported back to the Port Louis. The catches were unloaded at the fishing port 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. For Malaysian carrier vessel also provide the service to other tuna fishing vessels, catching albacore mainly from the Taiwan fishing vessels.

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 45-50° 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 2010-2014 was 38,131 tons and the catch in 2014 alone was 40,981 tons which was below MSY level (IOTC, 2015).

## Materials and Methods

The albacore catch data and fishing locations presented in this paper were obtained from logbooks submitted weekly via email to the Department of Fisheries Malaysia (DoFM). Data reporting is a mandatory under Malaysia Fisheries Regulation as part of the requirement in licensing Malaysian-flagged tuna fishing vessels operating the high seas. For fishing efforts analysis, it was expressed in 100 hooks. Normally Malaysian tuna longline

fishing vessels operation using 3000 hooks for each shooting and it took one day to complete one haul. There were no observer on board data for Malaysian tuna vessels as the regional observer scheme (ROS) for Malaysian tuna longline vessel is yet to be implemented due to limited funding. The collection of size data of albacore tuna landed in the fishing port of the Port Louis , it is also not implemented due to the same reason.

**Annual Catches.**

Malaysian tuna longline fleet started fishing albacore tuna from 2012. In 2012 the annual catches was only 316 tons with 5 fishing vessels. 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, the catches in 2015 increased by 44% from 2014 to 1,031 tons, reaching the highest record of catch so far (Figure 1). The catches of albacore tuna in 2015 represented only 2.5% of the total catches of albacore tuna in the Indian Ocean in 2014 (IOTC, 2015).

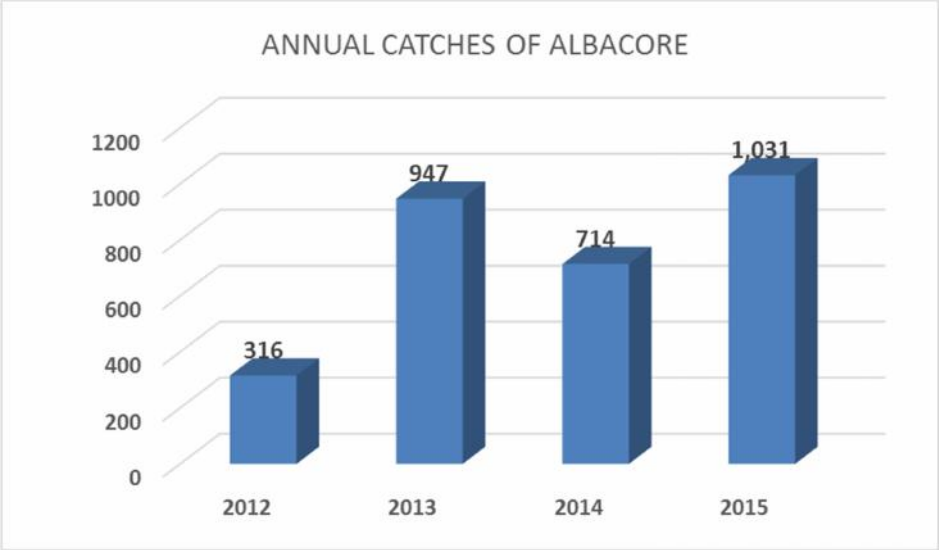



Figure 1: Annual catches of albacore tuna from Malaysian tuna longline fleet from 2012 to 2015.

**Monthly Catches and Efforts**

From 2014 to 2015, catches of albacore tuna by Malaysian tuna fishing vessels ranged from 6.64 – 165.01 tons with the average 92.68 ± 26.57 tons. The monthly catches from 2014 and 2015 indicated that there were two peak seasons of albacore fishing; from May – August and October – January (Figure 2). The highest peak season was during the middle of the year

(May to August). Average fishing efforts ( number of haul) for 2014 to 2015 was 55 ± 34 times. Low fishing efforts were recorded during early of the year normally and during April, due to a long holiday to celebrate annual Chinese New Year festival the fishing effort reduced drastically. During the albacore tuna peak seasons, the number of fishing efforts increased significantly in particular during the period of May to August.

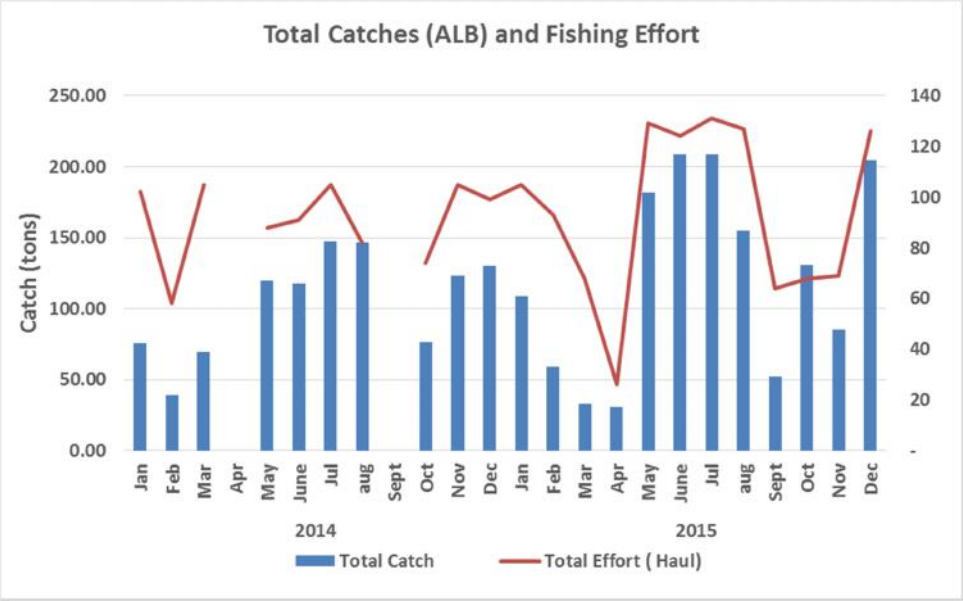



Figure 2: Monthly catches of albacore tuna and fishing efforts by Malaysia tuna longline vessels in 2014-2015.

**Catch Composition**

The catches by the Malaysian tuna longline fleet from 2012 to 2015, on average, albacore tuna accounted 72% out of the total catches followed by tropical tuna species such as yellowfin tuna (8%) and bigeye tuna (4%). Tuna-like species such as marlin and swordfish made up 6% and 2 % respectively (Figure 3). The marlin catches included black marlin, striped marlin and blue marlin which were not break into species. For mixed fish, which included sailfish and other pelagic species formed 8% of the total catches. Shark species were not recorded the catch as they were immediately discarded during the hauling period.

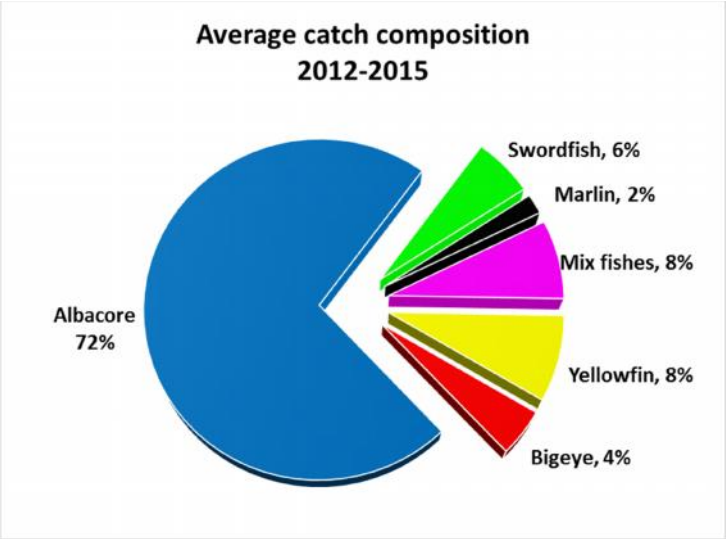



Figure 3: Average catch composition of the Malaysian albacore tuna longlines during a period of 2012 – 2015.

The monthly catch percentages of albacore tuna and other by-catch species ( non-targeted species) during the period of 2014 to 2015 were shown in Figure 4. The percentage of by-catches during early of the year were higher during January to April. In 2015, there was an increase in by-catches in January until April. The change in catch composition between targeted species and by-catches during this period might related to the fishing areas where the longline vessels operated.

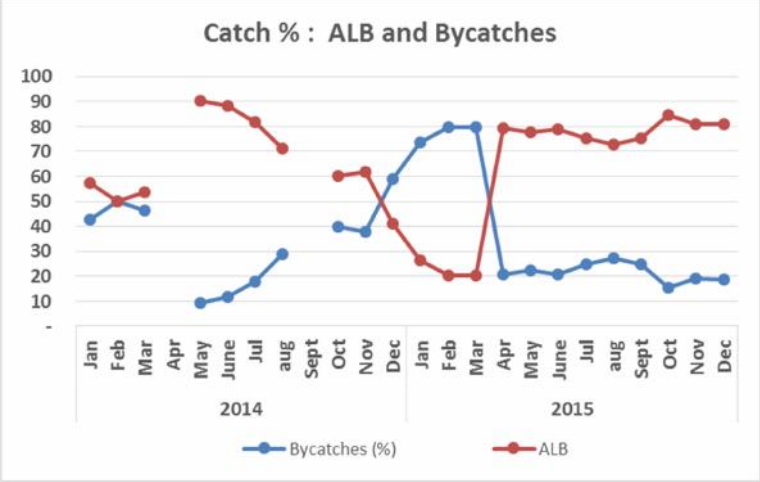



Figure 4: Catch percentage of albacore tuna and by-catches from Malaysian tuna longliners in 2014 and 2015.

**CPUEs of Albacore Tuna By Malaysian Longliners**

The CPUEs of the Malaysian longliners were shown in Figure 5. The curve showed that the CPUEs higher than 2.5 tails/100 hooks were recorded during middle of the year; from May to August. The second peak of CPUEs were recorded during October to December at 1.5 – 2.5 tails/100 hooks. Therefore the peak seasons for albacore tuna occurred during the mid year and in 2015, there were also a sign of peak season during October to December.

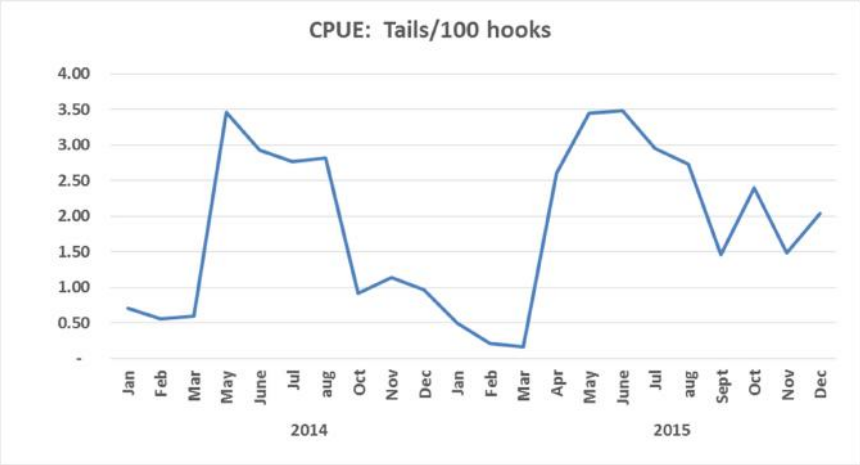
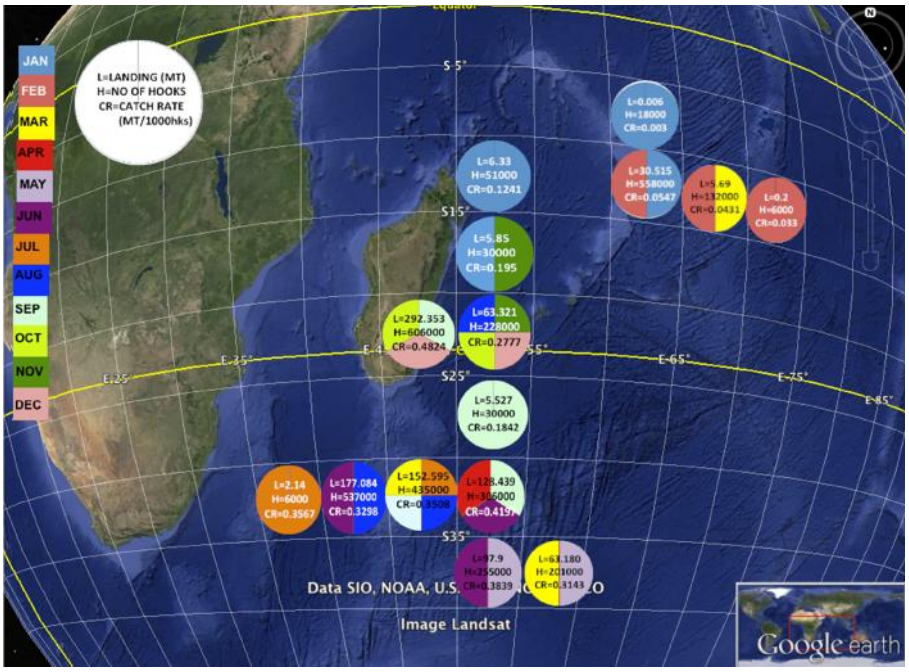



Figure 5: CPUEs of the albacore tuna from the Malaysian tuna longliners during a period of 2014 to 2015.

Low CPUEs during early of the year ( January – April) were observed when the longline vessels fishing in areas above $15^0$ S (Figure 6). During this period, the catches of tropical tuna especially yellowfin tuna formed 38% of the total catches and albacore 20-26% of the catches. During the same period, the catches of swordfish also recorded higher catches between 16-17% of the total catches. From May to end of the year, the catches of yellowfin tuna only between 1 – 5 % and the swordfish from 2 – 11% of the total catches.

During the middle of the year 2015, the fishing vessels operated toward the southern fishing areas beyond $30^0$ S down to $39^0$s and the longitude extended from $35^0$E to $60^0$E (Figure 6). During this period the catch composition of albacore tuna increased reaching 84% out of the total catches. Toward the end of the year from September to December, the fishing vessels moved back the northern part fishing areas toward the east of Madagascar waters.




**Discussion**

In 2015, the highest catches and CPUEs were recorded between May to August. During this period, the CPUEs of the albacore tuna caught by the Malaysia tuna fishing vessels were within 2.5 – 3.5 tail/100 hooks. The monthly fishing efforts also increased during this period indicated that the fishing fleet intensify the fishing operations. Fishing areas also influence the CPUEs at which the areas beyond 30$^{o}$S down to 39$^{o}$S were considered to be the most abundance areas for albacore tuna. Change of catch composition between albacore tuna and other by-catches were also obvious by changing the fishing areas where the fishing areas less than 20$^{o}$S recorded higher percentage of by-catch such as yellowfin tuna, swordfish and marlins (80%). As the fishing areas moved toward the south, the percentage of by-catches caught by the longline fishing vessels decreased to less than 20% while the albacore tuna dominated the catches up to 80% out of the total catches.

According to Nashida & Tanaka. (2008), the area from 5$^{o}$N to 25$^{o}$S is the distribution of area for adult fish and spawning area exist in the area from 10$^{o}$S to 25$^{o}$S while feeding water from 30$^{o}$S to 40$^{o}$S with the high fish school density.

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