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TUNA LONGLINE FISHERY BY THAI LONGLINERS IN THE INDIAN OCEAN DURING 2011 - 2015

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ABSTRACT

This report was based on the data extracted from fishing logsheets by six Thai tuna longliners which declared to Department of Fisheries, Thailand. Data from their logsheets displayed important informationof their fishing operation and effort. During 2011-2015, fishing grounds were mainly in theWestern coast of the Indian Ocean, fishing operations were recorded 2,070 fishing days. The highest total catch was in 2015 with 599.73 tonnes followed by 2014, 2012, 2011 and 2013 respectively (571.91, 470.41, 373.44 and 307.74 tonnes). The highest CPUE was found in 2014 with 13.28 fish/1,000 hooks followed by 2015 and 2012, respectively (12.38 and 10.83 fish/1,000 hooks)

During 2011-2015, the bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*T. albacares*) caught by number and weight were 29,008 fish (1,275.89 tonnes), 13,821 fish (449,28 tonnes) respectively. The average percentage composition by number of the bigeye tuna and yellowfin tuna were 44.44% and 21.18% and by weight 54.92% and 19.34%, respectively. In 2015,bigeye tuna and yellowfin tuna were caught 4,838 fishes (206.57 tons), 3,411 fishes (109.45 tonnes), respectively. The CPUEs of bigeye tuna and yellowfin tuna were 2.70 fish/1,000 hooks (115.48 kg/1,000 hooks) and 1.91 fish/1,000 hooks (61.19 kg/1,000 hooks) ,respectively.

Introduction

Thailand has six Thai tuna longliners. Their operated in the Indian ocean and data was collected from logsheets provided to the Department of Fisheries, Thailand. The data included information related to fishing trips and operations. The trip data was composed of dates and ports of vessel departure and return, number and weight of catch and effort (such as the number of hooks used) by species. The fishing operation included data on the time of the operation, location (latitude and longitude), the retained catch of target species and other information related to the operation. The data were provided by the Siam Tuna Fishery Company and Three Wonderful Company. Logsheets were used to estimate annual catches of the longline fleet.

Total catch of tuna, effort and catch rate were analyzed by Excel and illustrated using Surfer software.

Fishing grounds

The study on tropical tuna (bigeye tuna; *Thunnus obesus* and yellowfin tuna; *Thunnus albacares*) by Thai tuna longline fisheries in the Indian Ocean was base on data collected from logbook between 2011-2015 which included information about fishing operations. The main fishing grounds were around central and southern part of the west Indian Ocean (Figure 2).

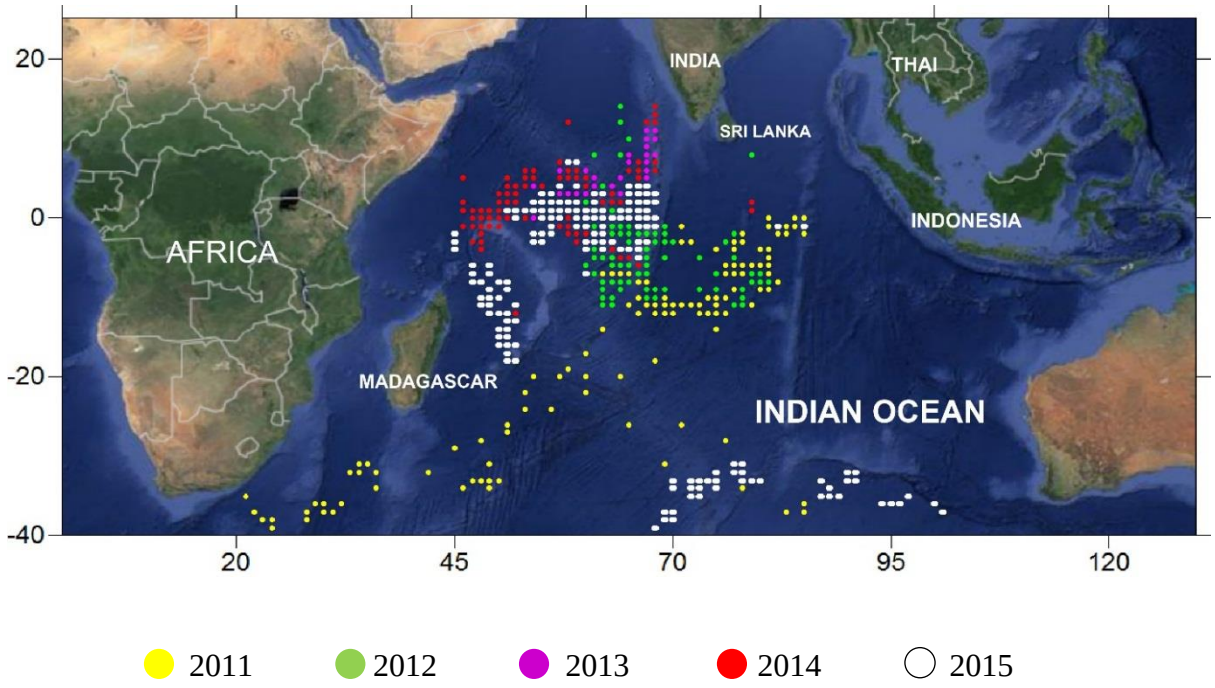


Figure 2 Fishing ground by Thai tuna longliners in the Indian Ocean during 2011-2015

Fishing efforts, catches, percentage compositions and CPUEs between 2011-2015

Fishing efforts during 2011-2015 were shown in table 1. The fishing operations were recorded 2,070 fishing days. In 2015, The highest fishing effort 1,788,800 hooks (563 fishing days).

Annual catches in 2011-2015 were estimated 373.44, 470.41, 307.74, 571.91 and 599.73 tonnes, respectively. The major species caught during 5 years were tuna group, billfish group, shark group and other species group which 1,856.65, 295.31, 138.55 and 32.71 tonnes, respectively. The average percentage composition by weight of tuna group, billfish group, shark group and other species group which 79.92%, 12.71%, 5.96% and 1.41%, respectively. (Figure 3) The CPUE have ranged between 9.13 and 13.28 fish/1,000 hooks, and the average CPUE was 11.39 fish/1,000 hooks. The lowest CPUE was in 2011, and the highest CPUE was in 2014. (Table 1) In 2015, bigeye tuna and yellowfin tuna were 33.44% and 18.25% by weight of the total catch composition.(Figure 4).

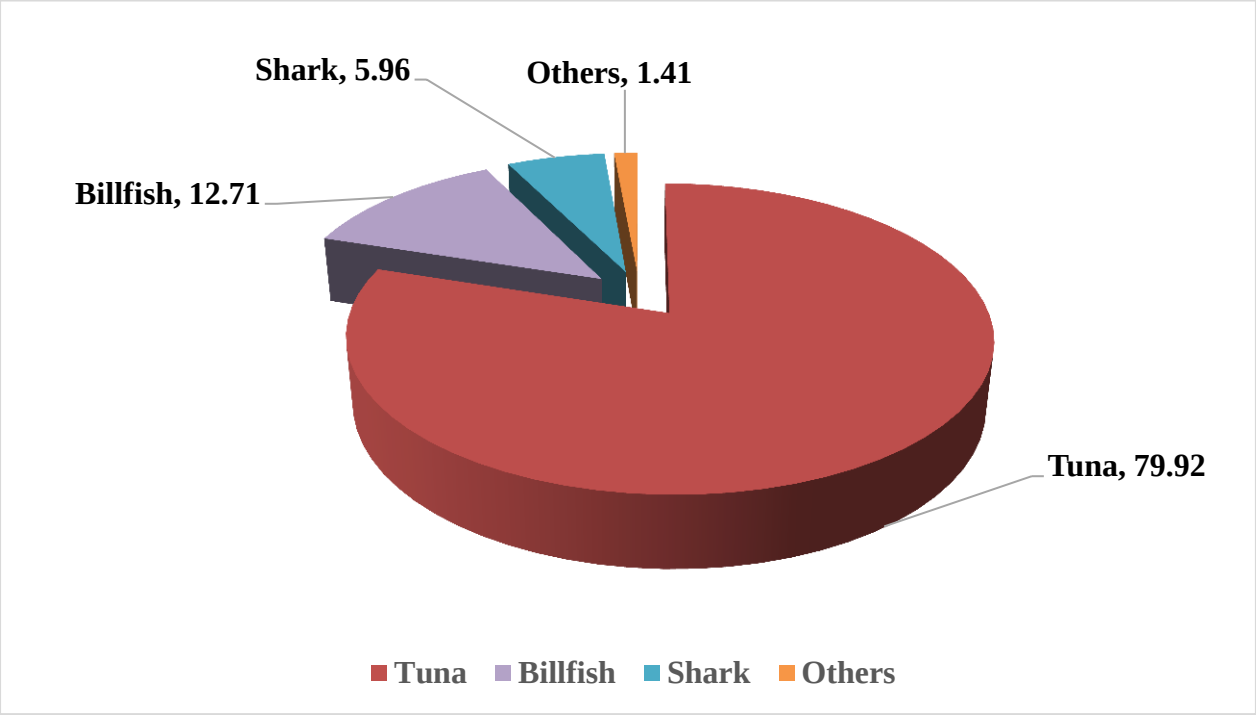


Figure 3 Catch composition (group) by weight during 2011-2015

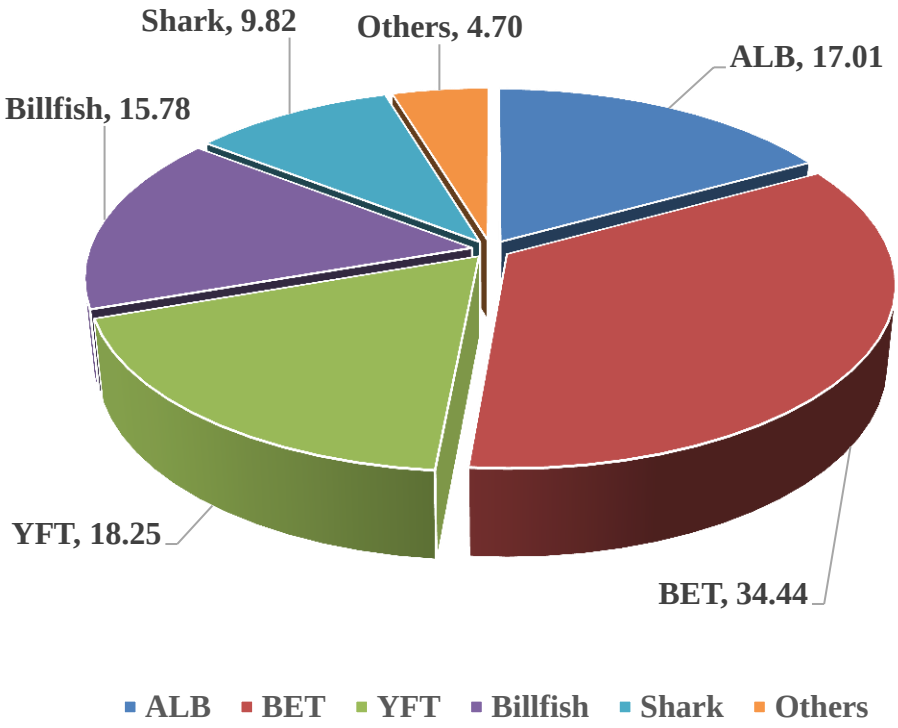


Figure 4 Catch composition by weight in 2015

During 5 years, average CPUE of bigeye tuna by weight was 222.66 kg/1,000 hooks (5.06 fish/1,000 hooks) and yellowfin tuna by weight was 78.41 kg/1,000 hooks (2.41fish/1,000 hooks). The highest CPUE of bigeye tuna was found in 2012 with 315.78 kg/1,000 hooks and the highest CPUE of yellowfin tuna was found in 2014 with 112.25 kg/1,000 hooks. In 2015, average CPUE of bigeye tuna by weight was 115.48 kg/1,000 hooks (2.70 fish/1,000 hooks) and yellowfin tuna by weight was 61.19 kg/1,000 hooks (1.91fish/1,000 hooks). (Table 2)

Table 1 Fishing efforts, annual catches and CPUEs of Thai tuna longliners

Year	Fishing days	Total Number of Hooks	Total number of fish		Total catch by No. and Weight												Total CPUE (per 1,000 hooks)	
					ALB		BET		YFT		Billfish		Sharks		Others			
			No.	Tonnes	No.	Tonnes	No.	Tonnes	No.	Tonnes	No.	Tonnes	No.	Tonnes	No.	Tonnes	By No.	By Weight (kg.)
2011	372	1,049,400	9,583	373.44	353	11.44	5,883	248.48	2,842	92.12	291	15.99	214	5.41			9.13	355.86
2012	388	1,083,600	11,732	470.41	120	2.73	8,021	342.18	2,311	81.92	736	25.05	544	18.53			10.83	434.12
2013	363	704,400	7,157	307.74	61	1.38	4,372	207.78	1,201	41.88	1,312	50.93	211	5.78			10.16	436.88
2014	384	1,103,900	14,663	571.91	725	13.91	5,894	270.87	4,056	123.91	2,264	108.72	1,145	49.95	579	4.54	13.28	518.08
2015	563	1,788,800	22,148	599.73	7,044	102.02	4,838	206.57	3,411	109.45	2,250	94.62	1,835	58.89	2,770	28.17	12.38	335.27
Total	2,070	5,730,100	65,283	2323.23	8,303	131.48	29,008	1,275.89	13,821	449.28	6,853	295.31	3,949	138.55	3,349	32.71	11.39	405.44

Table 2 Fishing efforts, annual catches and CPUE of BET and YFT during 2011-2015

Year	Fishing days	Total Number of Hooks	Total catch		BET		YFT		CPUE of BET (per 1,000 hooks)		CPUE of YFT (per 1,000 hooks)	
			No.	Tonnes	No.	Tonnes	No.	Tonnes	No.	kg.	No.	kg.
2011	372	1,049,400	9583	373.44	5,883	248.48	2,842	92.12	5.61	236.79	2.71	87.78
2012	388	1,083,600	11732	470.41	8,021	342.18	2,311	81.92	7.40	315.78	2.13	75.60
2013	363	704,400	7157	307.74	4,372	207.78	1,201	41.88	6.21	294.98	1.70	59.45
2014	384	1,103,900	14663	571.91	5,894	270.87	4,056	123.91	5.34	245.38	3.67	112.25
2015	563	1,788,800	22148	599.73	4,838	206.57	3,411	109.45	2.70	115.48	1.91	61.19
Total	2,070	5,730,100	65,283	2,323.23	29,008	1,275.89	13,821	449.28	5.06	222.66	2.41	78.41

Catches of bigeye tuna and yellowfin tuna by Zone during 2011-2015

During 2011-2015, Thai tuna longline fisheries were operated in the 1st - 5thzone (R 1-5) following the figure 5. The highest catch of bigeye tuna and yellowfin tuna was in 2nd zone but it was the lowest in 4stzone.

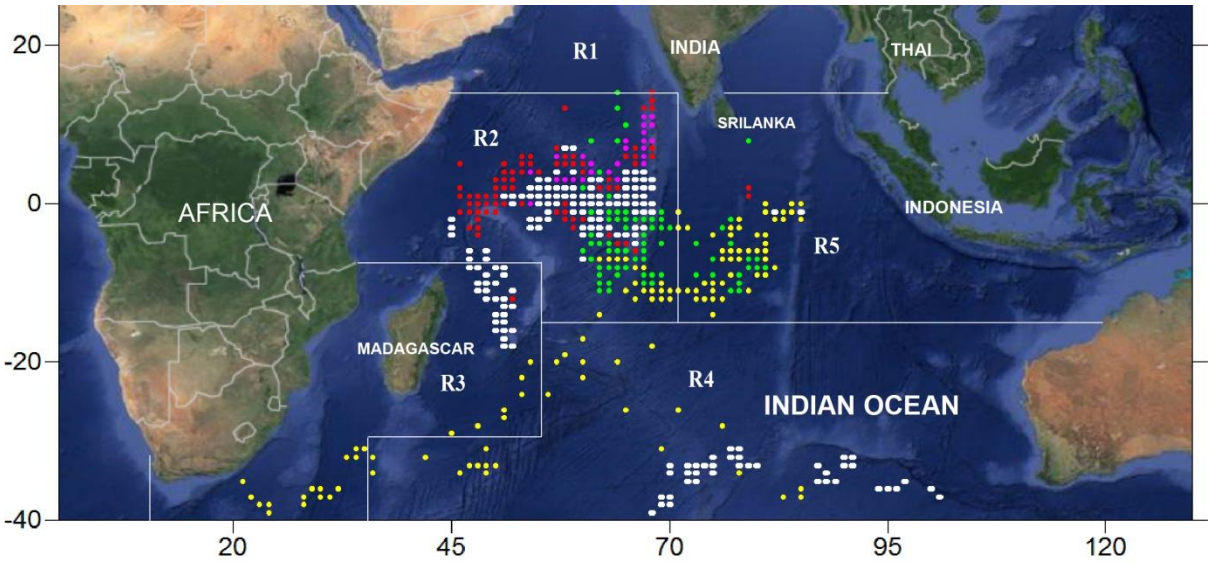
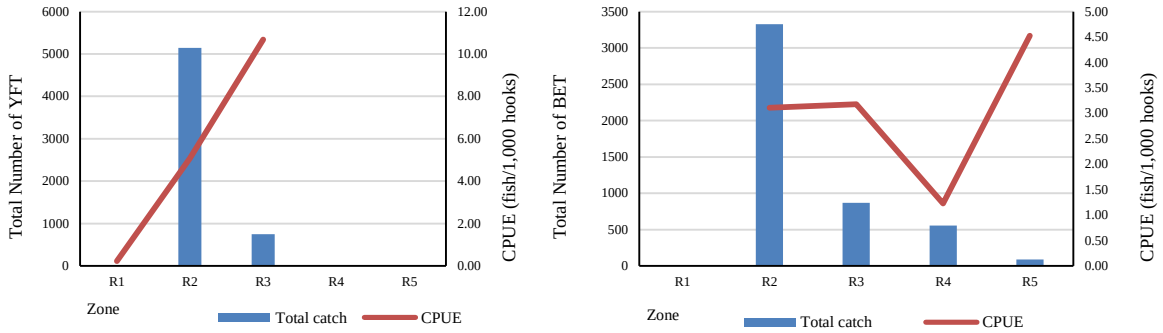


Figure 5 Fishing ground of bigeye tuna and Yellowfin tuna by zone during 2011-2015

Bigeye tuna

Bigeye tuna were caught during 2011-2015 was 29,008 fish, which the catch by number was the highest in 2nd zone (20,467 fish and 917.68 tonnes) and lowest in 4stzone (240 fish and 11.20 tonnes).(Table 3)

In 2014, Thai tuna longline fisheries were operated in 1stzone, 2nd zone and 3rd zone were 5, 5,141 and 748 fish, respectively. The average CPUE of total catch were 5.34 fish/1,000 hooks. In 2015, Thai fishing vessels operated in zone 2nd-5th.The highest fishing effort was found in 2nd zone with 1,069,600 hooks and lowest fishing effort was found in 5th zone with 19,000 hooks. Total catch by zone from 2nd zone-5th zone were 3,329, 868, 555, and 86 fish, respectively. Average CPUE of BET were 2.70 fish/1,000 hooks (Figure 5).



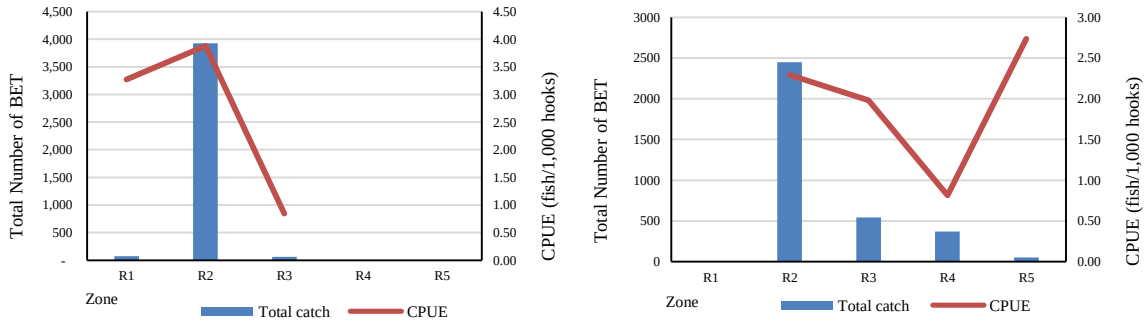
(A)Number and CPUE in 2014 (B) Number and CPUEin 2015

Figure 5 Number and CPUE of Bigeye tuna by thai tuna longliner fisheries in 2014-2015

Yellowfin tuna

During 2011-2015, Yellowfin tuna were caught 13,821 fish. The highest catch was found in 2nd zone (9,421 fish) and lowest catch in 4st zone(87fish). (Table 4)

In 2014, Thai tuna longline fisheries were operated only 1stzone, 2nd zone and 3rd zone. Total catch by zone were 72, 3,925 and 59 fish, respectively. Average CPUE of total catch were 3.67 fish/1,000 hooks. In 2015, Yellowfin were caught in zone 2nd-5th. The highest fishing effort was found 2ndzone with 1,069,600 hooks and lowest fishing effort was found in 5th zone with 19,000 hooks .Total catch by zone from 2nd zone-5th zone were 2,450, 541, 368, and 52 fish, respectively. Average CPUE of YFT were 1.91 fish/1,000 hooks (Figure 6).



(A)Number and CPUE in 2014 (B) Number and CPUE in 2015

Figure 6 Number and CPUE of Yellfin tuna by thai tuna longliner fisheries in 2014-2015

Table 3 Fishing efforts, catches and CPUE of bigeye tuna by zone during 2011-2015

Year	Fishing days	Total Number of Hooks	Catch of BET by Zone (R1-R5)										Total Number of BET	CPUE (fish/1,000 hooks)
			R1		R2		R3		R4		R5			
			No.	tonnes	No.	tonnes	No.	tonnes	No.	tonnes	No.	tonnes		
2011	372	1,049,400	-	-	2,475	109.88	407	17.46	154	7	2,847	113.84	5,883	5.61
2012	388	1,083,600	-	-	7,697	330.28	-	-	-	-	324	11.9	8,021	7.40
2013	363	704,400	86	3.70	4,286	204.09	-	-	-	-	-	-	4,372	6.21
2014	384	1,103,900	5	0.18	5,141	247.44	748	23.25	-	-	-	-	5,894	5.34
2015	563	1,788,800	-	-	3,329	161.73	868	25.99	555	19.12	86	3.91	4,838	2.70
Total	2,070	5,730,100	3,506	165.61	20,467	917.68	1,710	59.83	240	11.20	3,171	125.74	29,008	5.06

Table 4 Fishing efforts, catches and CPUE 0f yellowfin tuna by zone in 2011-2015

Year	Fishing days	Total Number of Hooks	Catch of YFT by Zone (R1-R5)										Total Number of YFT	CPUE (fish/1,000 hooks)
			R1		R2		R3		R4		R5			
			No.	tonnes	No.	tonnes	No.	tonnes	No.	tonnes	No.	tonnes		
2011	372	1,049,400	-	-	1,544	47.10	163	7.64	35	1.49	1,100	36.80	2,842	2.71
2012	388	1,083,600	-	-	2,294	81.25	-	-	-	-	17	0.60	2,311	2.13
2013	363	704,400	84	3.07	1,117	38.81	-	-	-	-	-	-	1,201	1.70
2014	384	1,103,900	72	3.00	3,925	118.81	59	2.10	-	-	-	-	4,056	3.67
2015	563	1,788,800	-	-	2,450	88.00	541	15.03	368	6.99	52	2.13	3,411	1.91
Total	2,070	5,730,100	2,606	94.07	9,421	301.00	590	16.73	87	3.62	1,117	37.40	13,821	2.41