THAI TUNA LONGLINE IN INDIAN OCEAN FROM 2000 TO 2006[1]

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ABSTRACT

Thai tuna longliners were operated in the Indian Ocean from 2000 to 2006; data from their logbooks displayed important information of their fishing operation and effort. Total annual catch were 384.9, 387.0, 93.6, 253.4, 272.4, 280.9 and 414.5 mts, with the value of 2, 1.84, 0.46, 1.16, 1.58, 0.98 and 2.42 million US$ respectively. Fishing grounds were reported in 6 areas, namely Bay of Bengal, west coast of Indonesia, Maldives and Chagos archipelagos, east and south of Seychelles, east coast of Somalia and southern part of the Indian Ocean.

The highest catch rate was found in west coast of Indonesia, followed by Maldives and Chagos archipelagos (1.6 and 1.5 ind/100 hooks). The lowest catch rate was reported in the Bay of Bengal (0.7 ind/100 hooks and 0.026 metric tons/100 hooks) compared to the other fishing grounds. The major catch species were bigeye tuna (T. obesus), yellowfin tuna (Thunnus albacares), albacore tuna (T. alalunga), and swordfish and marlin comprising 36.68, 36.02, 20.41, and 6.89 % of the total catch in 7 years. Catch of bigeye tuna was found in all fishing grounds with the highest catch in southern part of Indian Ocean. Yellowfin tuna occurred in all fishing grounds; however, the highest abundance was found in the east and south of Seychelles while the lowest abundance was found in the Eastern Indian Ocean. Albacore tuna (T. alalunga) occurred dominant in the southern part of Indian Ocean. The composition of sword fish and marine were swordfish (Xiphias gladius), sharks, while billfish comprised blue marlin (Makaira mazara), black marlin (M. indica), striped marlin (Tetrapturus audax) and sailfish (Istiophorus spp).

INTRODUCTION

Tuna fisheries in the Indian Ocean was initiated in 1973 by tuna longliners, tuna purse seiners and pole-and-line vessels operated by the French, Russian, Japanese and Taiwanese. Since 2000, 2 Thai tuna distance longliners (Mook Andaman 028 and 018) have started to operate in the Indian Ocean. Their catches have been landed at Seychelles and Mauritius.

Under these circumstances, updated evaluation of Thai tuna distance longliners data collection, is considered to be important and is reviewed below.

MATERIAL AND METHOD

Data collection was collected from logsheet which provided from Department Of Fisheries, Thailand. The data include information related to fishing trips and fishing operation. The trip data can include details about the vessel to the dates and ports of departure and return, number and weight of catch and effort (such as the number of hook used, hook per basket) by position (latitude and longitude). The operational data includes the data and time of the operation, the location, the retained catch of target

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species and other information relating to the operation. The data have provided from the Siam Tuna Fishery Company. Logsheet used for estimate annual catches of longline fleet while the price of tuna and tuna-like species download from http://www.sydneyfishmarket.com.

Nominal catch and value, catch by species and effort were analyzed and illustrated by Excel, Access and ArchView software. The distribution of catch was plotted on the IOTC fishing zones in the Fig. 1

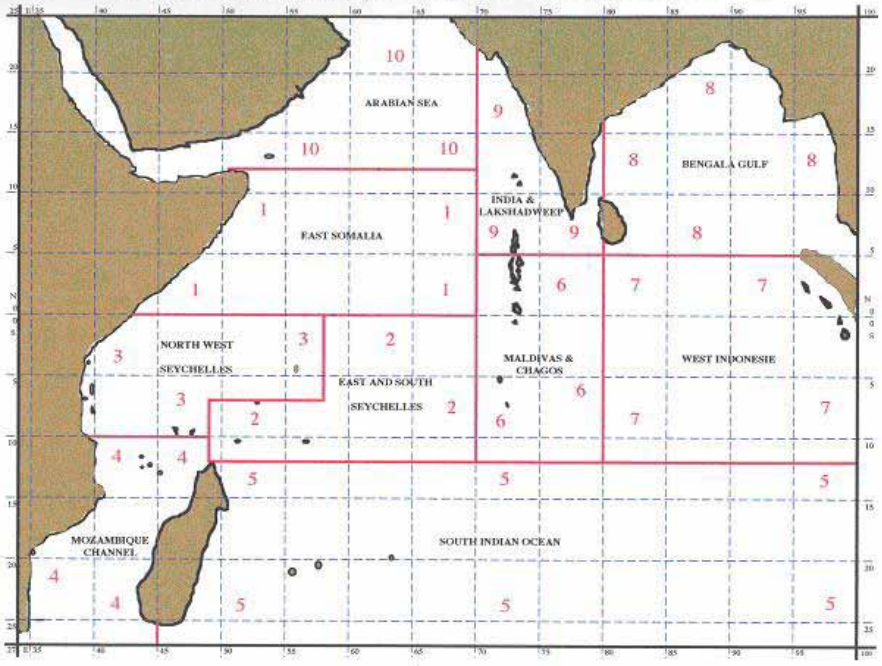


Fig. 1 Indian Ocean fishing zones (Herrera, 1997).

RESULT AND DISCUSSION

Pattern of tuna catch and value

The total catch and value of longliners were estimated to be 382.6 mts and 2.00 million US$ in 2000, and deceased to be the lowest in 2002 (93.2 mts and 0.46 million US$) cause of one of longliner stopped to operate in these year. The catch and value have increased again since 2003 (253.4 mts, 1.16 million US$) until 2006 (414.5 mts and 2.42 million US$) (Table 1 and Fig 2).

Table 1 Total catch (mts) and value (million US$) of Thai longliner from 2000 to 2006.

Year	Albacore	Yellowfin	Bigeye	Swordfish & Billfish	Bluefin tuna	Total Catch	Total Value
2000	2.7	178.2	171.7	30	-	382.6	2.00
2001	6.6	245.4	96	33.2	-	381.2	1.84
2002	-	69.5	18.4	5.3	-	93.2	0.46
2003	63.3	68.4	96.3	25.4	-	253.4	1.16
2004	76.3	103.5	54.5	32.7	-	267	1.58
2005	143.7	19.7	104.4	12.3	0.8	280.9	0.98
2006	130.4	62	219	3.1	-	414.5	2.42
Total	423	746.7	760.3	142	0.8	2072.8	10.45

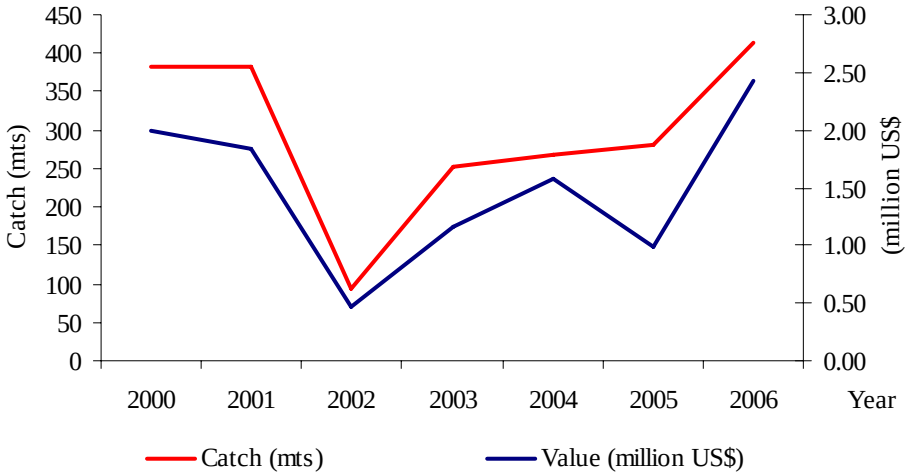


Fig. 2 Total catch and value of Thai tuna longliner during 2000 to 2006.

Species composition and distribution

The major catch species were bigeye tuna (*T. obesus*), yellowfin tuna (*Thunnus albacares*), albacore tuna (*T. alalunga*), and swordfish and marlin comprising 36.68, 36.02, 20.41, and 6.89 % of the total catch in 7 years. Catch of bigeye tuna was found in all fishing grounds with the highest catch in southern part of Indian Ocean. Yellowfin tuna occurred in all fishing grounds; however, the highest abundance was found in the east and south of Seychelles while the lowest abundance was found in the Eastern Indian Ocean. Albacore tuna (*T. alalunga*) occurred dominant in the southern part of Indian Ocean. The composition of sword fish and marine were swordfish (*Xiphias gladius*), sharks, while billfish comprised blue marlin (*Makaira mazara*), black marlin (*M. indica*), striped marlin (*Tetrapturus audax*) and sailfish (*Istiophorus spp.*) (Fig. 3). Fig. 4 showed the catch distribution of Thai tuna longline during 2000 to 2006. The main fishing ground of this gear was the western Indian Ocean.

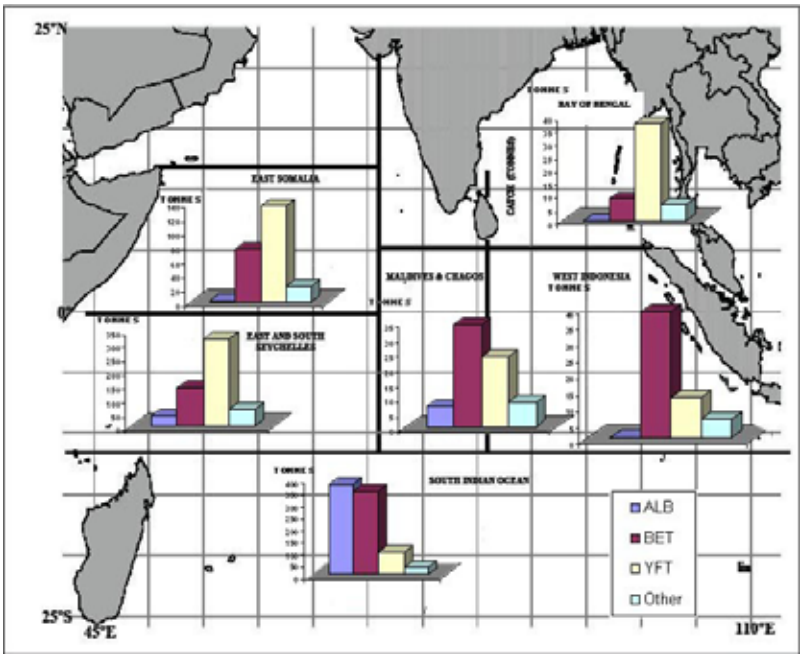
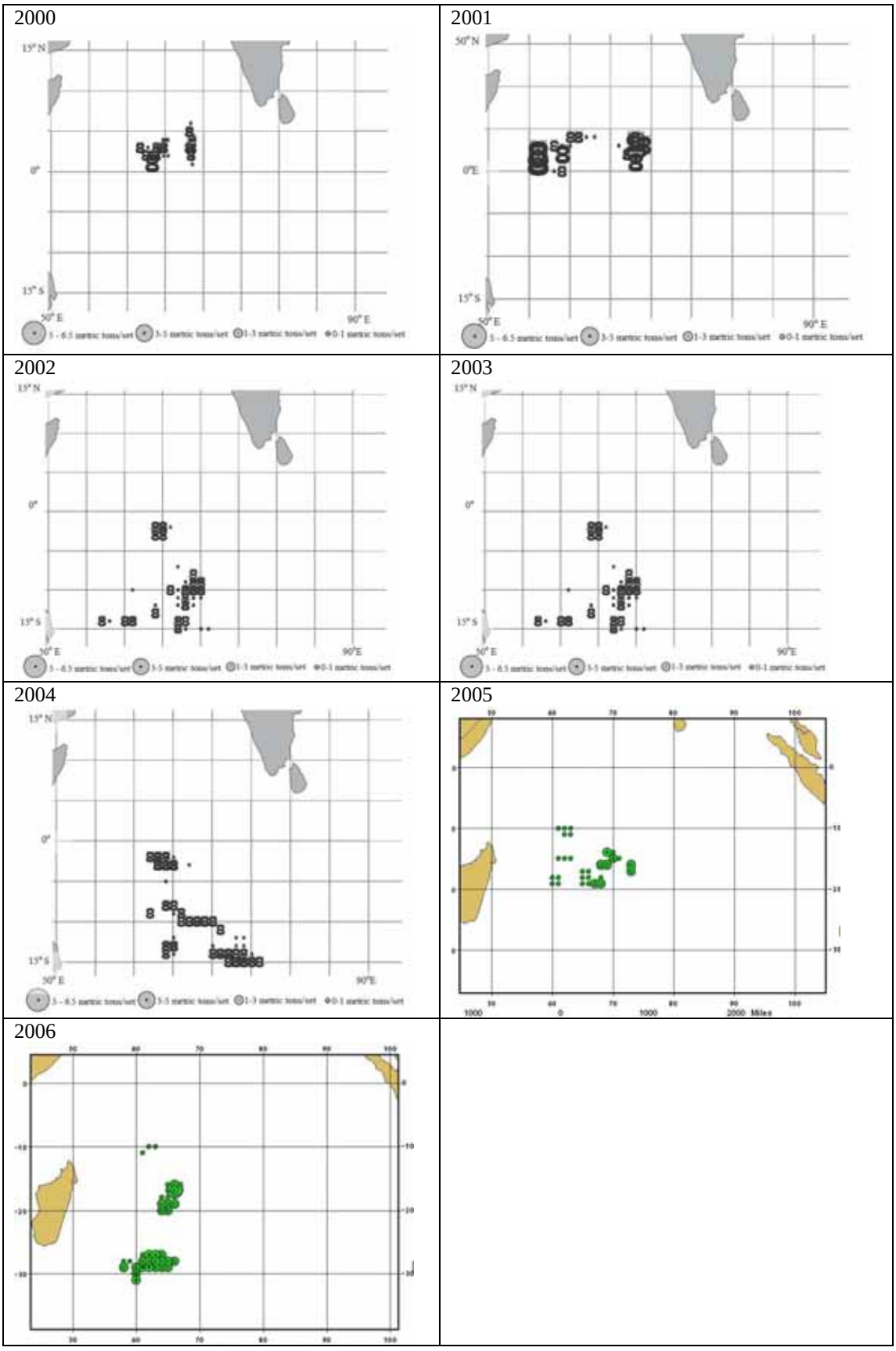


Fig. 3 Catch of major species distributed by fishing zone of Mook Andaman longliners from 2000-2004.



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Fishing Effort and catch rate

Panjarat *et al.* (2005) reported the catch and catch rate of Thai longliner during 2000 to 2004 in table 2. In 2000, The high fishing effort (322 set and 967,978 hooks) and catch (384.9 mts) found in this year, while the catch rate was low (1.2 mts/set) if compared with 2001 (1.5 mts/set) and 2002 (1.7 mts/set). In 2002, one of longliner stopped to fishing. In 2003 and 2004 found the catch and effort increased. Table 3 showed catch rate in each fishing ground. The western of Indonesia occurred the highest catch rate (1.6 fish/ 100 hooks), while the Bay of Bengal occurred the lowest catch rate in number of fish and weight (0.7 fish/ 100 hooks and 0.026 mts/100 hooks). The main fishing ground of this fleet concentrated on fishing in the eastern and southern of Seychelles (470 set, 1,176,200 hooks and 1.4 fish/ 100 hooks), followed by the east coast of Somalia and southern part of the Indian Ocean. Fig. 4 show abundance of major species by fishing ground and year. The productive area of yellowfin in the *east and south of Seychelles* (319.5 mts and 0.79 fish/ 100 hooks) and catch rate found very low in the *southern part of the Indian Ocean* (4.95 mts and 0.04 fish/ 100 hooks). Bigeye found high abundance in the *east and south of Seychelles and west coast of Indonesia, while the lowest catch rate found in the Bay of Bengal. Albacore found abundance in the southern part of the Indian Ocean* (95 mts and 0.96 fish/100 hooks).

Table 2 Fishing effort and annual catch rate of Mook Andaman Longliners (Panjarat *et al.*, 2005)

Year	Total number of sets	Total number of hooks	Total number of fish	Total catch (tons)	Catch rate tons/set	Catch rate ind/100 hooks	Catch rate tons/100 hooks
2000	322	967,978	11,793	384.9	1.2	1.2^{c}	0.04
2001	264	819,800	12,235	387.0	1.5	1.5^{ab}	0.05
2002	54	172,800	2,979	93.6	1.7	1.7^{b}	0.05
2003	300	604,000	8,583	253.4	0.8	1.4^{ac}	0.04
2004	231	693,000	7,573	272.4	1.2	1.1^{c}	0.04

Table 3 Fishing effort and catch rate of Mook Andaman Longliners in each fishing ground (Panjarat *et al.*, 2005)

Zone	Total number of sets	Total number of hooks	Total number of fish	Total catch (tons)	Catch rate tons/set	Catch rate ind/100 hooks	Catch rate tons/100 hooks
1	376	1,140,778	14,772	478.4	1.3	1.3	0.042^{ab}
2	470	1,176,200	16,289	568.7	1.2	1.4	0.048^{b}
5	150	393,000	5,511	141.0	0.9	1.4	0.036^{a}
6	60	180,200	2,627	79.2	1.3	1.5	0.044^{b}
7	58	174,000	2,702	72.9	1.3	1.6	0.042^{a}
8	57	193,400	1,262	51.1	0.9	0.7^{a}	0.026^{c}

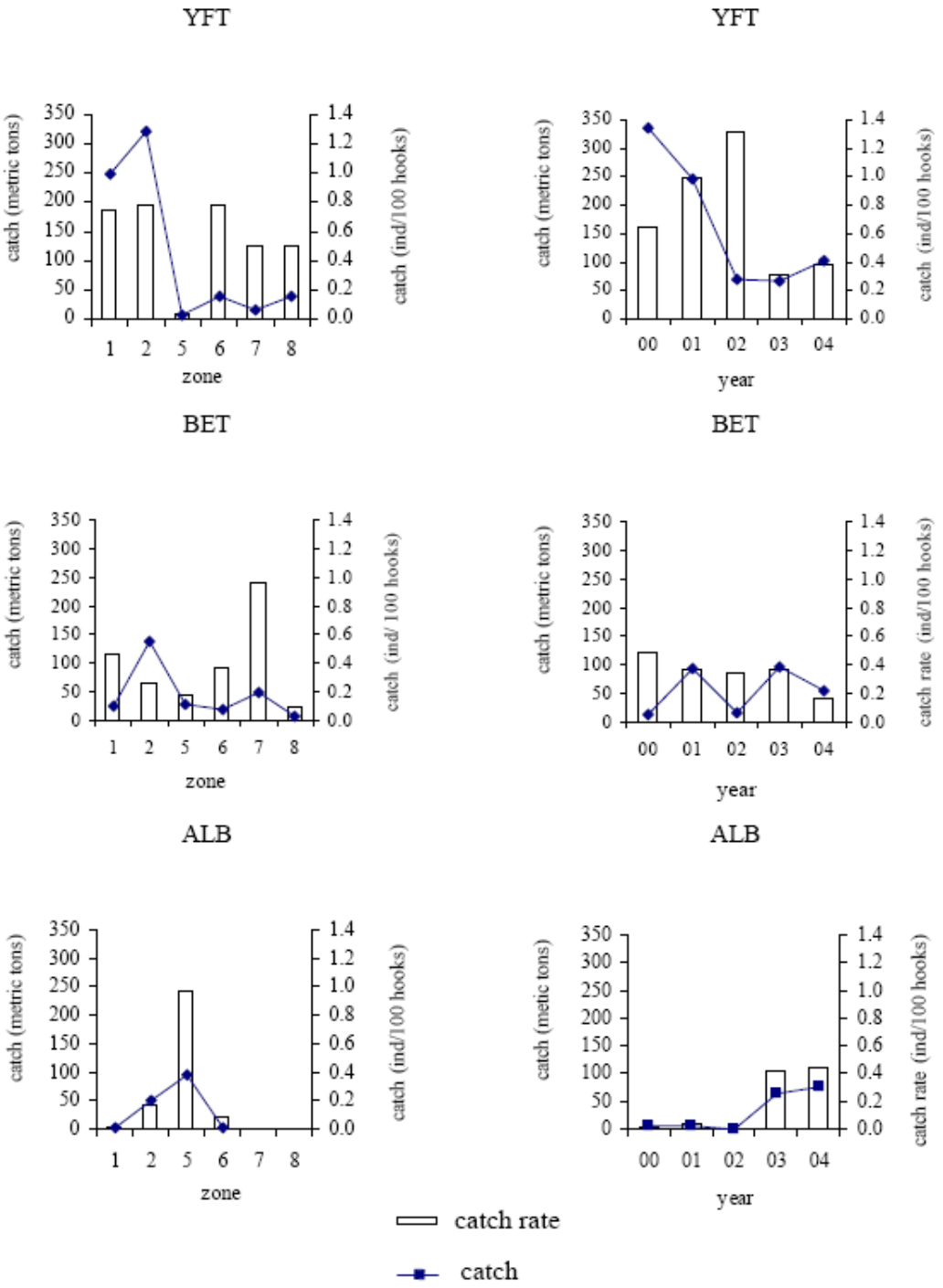

Fig. 4 Comparison of total catch and catch rates by fishing grounds (A) and years (B) of tuna major species of Mook Andaman longliners.

CONCLUSION

Two Thai longliners have operated in the Indian Ocean since 2000 to 2006. Total annual catch and value show higher during 2000-2 than 2003-5, while the highest catch found in the 2005 (catch 384.9, 387.0, 93.6, 253.4, 272.4, 280.9 and 414.5 mts; value 2, 1.84, 0.46, 1.16, 1.58, 0.98 and 2.42 million US$ respectively). The fishing grounds were reported in 6 areas, namely Bay of Bengal, west coast of Indonesia, Maldives and Chagos archipelagos, east and south of Seychelles, east coast of Somalia and southern part of the Indian Ocean.

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REFERENCES

HERRERA, M. A. A. 1997. New Sampling System for French and Spanish Purse-Seine Fleets in the Atlantic and Indian Oceans. Spanish Fisheries Office, Victoria, Republic of Seychelles. 50 pp.

PANJARAT, S., P. NOOTMORN and S. THUMMACHUA. 2005. Tuna fishery by Mook Andaman longliners in the Indian Ocean during 2000-2004. Marine Fisheries Research and Development Bureau, Department of Fisheries, Ministry of Agriculture and Cooperatives. Technical Paper no. 25/2005. (in Thai)