

Thailand National Report

to the Scientific Committee of the Indian Ocean Tuna Commission, 2010

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, for all fleets other than longline [e.g. for a National report submitted to the Secretariat in 2010, final data for the 2009 calendar year must be provided to the Secretariat by 30 June 2010).</p>	<p>Yes 14 June 2011</p>
<p>In accordance with IOTC Resolution 10/02, provisional longline data for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2010, preliminary data for the 2009 calendar year was provided to the Secretariat by 30 June 2010).</p> <p>REMINDER: Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2010, final data for the 2009 calendar year must be provided to the Secretariat by 30 December 2010).</p>	<p>Yes 14 June 2011</p>
<p>If no, please indicate the reason(s) and intended actions:</p>	

EXECUTIVE SUMMARY

Neritic tuna and king mackerel species in the Andaman Sea Coast, Thailand comprise 6 species (*Thunnus tonggol*, *Euthynnus affinis*, *Auxis thazard*, *Katsuwonus pelamis* and *Sarda orientalis*, *Scomberomorus* spp.). These species were caught from purse seine, king mackerel gill net and trawl, while purse seine was the main fishing gear. The trend of neritic tuna catches have been decreasing from 45,083 tons in 1997 to 13,093 metric tons in 1999. The production was quite stable around 17,000 tons during 1999 to 2008. These neritic tuna species are more or less have its production trend similarity.

Three Thai tuna longliners were operated in the Indian Ocean in 2007 and in 2008-2009 only two Thai tuna longliners kept on fishing there. Fishing grounds were mainly in the western coast of Indian Ocean. The total catches were 1,026.15 tons with 1,429 days of

fishing effort. The average catch rate of total catch was the highest at 27.24 number/1,000 hooks in 2007 followed by 16.46 and 14.46 number/ 1,000 hooks in 2008 and 2009. Albacore was the dominant species in 2007 followed by yellowfin tuna and bigeye tuna in 2008 and 2009.

While, tuna purse seine fishery operated by four Thai purse seiners, 227-670 fishing operations was conducted in the Indian Ocean during 2007-2010. Fishing ground was mainly in the western Indian Ocean. Tuna purse seine fishery can be operated throughout the year in both the eastern and western parts of the Indian Ocean with the peak from February - May and September - October. Total catch was 28,688.50 tonnes. It was found that skipjack tuna comprised the highest proportion (64.94%) followed by bigeye tuna (18.83%), yellowfin tuna (13.78%) and bonito (2.44%). The average size of skipjack, yellowfin and bigeye tuna were 50.34 ± 9.87 , 63.32 ± 23.09 and 63.24 ± 16.94 cm., respectively.

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1. BACKGROUND/GENERAL FISHERY INFORMATION

The development of marine fisheries in the past two decades in Thailand led to the currently rank among the top-ten fishing nations in the world. Marine fishery production in 2009 were 1.663 million tons shared about 50.61% of the total fishery production from all fishery sectors which consisted of 60.73% from the Gulf of Thailand and 39.63% from the Andaman Sea Coast. The small tunas and king mackerel were one of the important pelagic species. It had become the main target species for Thai fishermen since 1982 because of the high price offered by the tuna canneries (small tunas) and local consumption (king mackerel).

Thai tuna fishing gears including tuna longliner and tuna purse seine operated in the Indian Ocean from 2007 to 2010. Data collection from their logbooks displayed important information on catch, fishing operation, and effort. During 2007 to 2010, 1,904 days of fishing operation were recorded. Thai tuna longliners composed of three tuna longliners in 2007, but remained only two tuna longliners during 2008 to 2010. Their main fishing ground was located in the Southern part of the Indian Ocean in the area around the East and South coast of Madagascar. Four Thai purse seiners operated 670, 388, 436 and 227 fishing hauls respectively, in the Indian Ocean during 2007 to 2010. Fishing ground of the Thai tuna purse seiners is located in the Western Indian Ocean. Tuna purse seine fishery can be operated throughout the year in both the eastern and western parts of the Indian Ocean with the peak from February to May and September to October.

2. FLEET STRUCTURE

The fishing gears catch neritic tuna and king mackerel namely, purse seine, gill net and trawl. For purse seines along the Andaman Sea Coast of Thailand can be classified into regular purse seines (RPS- that are Thai purse seine (TPS), green purse seine (GPS), fish aggregating device (FAD), light luring purse seine (LPS), tuna purse seine (TUN), and Chinese purse seine (CPS). Among the regular purse seiners, (TUN) boat length is longer than other regular purse seine that is more than 24 meter and the size of net used are also longer ranging 1,200-1,600 meters in length, 120-150 meters in depth, and 9.4 centimeter mesh size and number of crew is range 35-45 persons. Normally, TUN operates during the Northeast monsoon, from November to May in the offshore area. Apart from those months, the TUN boat moves to fish pelagic species in coastal area or offshore area by using the net of mesh size 2.5 centimeter and change the gear to be LPS and TPS.

For Thai fishing fleet to the high sea of the Indian Ocean consist of Tuna longliner and purse seine. In 2007, there are 3 longliners and 6 purse seiners operated in Indian Ocean but one of each fishing gear operated only 6 months. After that the active fishing vessels remained 2 longliners and 4 purse seiners. The number of fishing fleet was shown in table 1.

Table 1. Number of vessels operating in the Indian Ocean by gear type and size of the boats

Year	No. of Longliners	No. of Purse Seiners	No. of Research Vessel ¹ of DOF-Thailand	Size of the Vessels (GT)
2007	3	6	3	From 151 to 1,948
2008	2	4	3	
2009	2	4	3	
2010	2	4	3	
2011	2	4	3	

¹ Can operate tuna longline and purse seine

3. CATCH AND EFFORT

3.1 Catch and effort - neritic tuna

Tables 2a and 2b show the catch and CPUEs of neritic tunas from purse seine and king mackerel gillnet. CPUEs of neritic tunas show decreased trend since 1998 and keep stable from 1999 to 2009. The CPUEs trend from king mackerel gillnet show stable during 1998 to 2003, then CPUEs were reduced during 2004 to 2007 and increased again during 2008 to 2009.

Table 2a. Annual catch and effort of neritic tunas from purse seine in the Andaman Sea from 1998 to 2009

Year	Catch (tons)			CPUE			
	Total	Longtial tuna	Kawakawa	kg/trip	kg/day	kg/haul	kg/hour
1998	34,172	17,057	17,115	790.98	394.25	166.37	79.41
1999	8,114	5,132	2,982	160.45	117.33	58.49	21.56
2000	11,724	4,373	7,351	289.90	226.16	101.80	38.80
2001	8,224	1,012	7,212	191.26	157.79	68.12	29.54
2002	8,487	2,741	5,746	213.08	162.30	69.51	32.97
2003	11,344	3,175	8,169	256.85	178.45	84.29	36.44
2004	11,021	2,827	8,194	281.53	204.78	96.06	50.40
2005	13,137	1,819	11,318	251.92	200.93	78.90	44.75
2006	10,395	2,047	8,348	209.33	160.34	63.83	36.65
2007	11,416	4,948	6,468	303.00	186.06	78.73	43.70
2008	9,845	3,313	6,532	305.03	152.98	62.68	36.30
2009	11,405	4,412	6,993	342.83	177.33	70.89	39.46

Table 2b. Annual catch and effort of neritic tunas from king mackerel gillnet in the Andaman Sea from 1998 to 2009

Year	Catch (tons)			CPUE			
	Total	Longtial tuna	Kawakawa	kg/trip	kg/day	kg/haul	kg/hour
1998	547	542	5	43.42	34.68	27.25	5.11
1999	670	667	3	64.48	61.18	47.20	9.78
2000	488	465	23	62.63	50.81	44.47	7.34
2001	752	714	38	60.25	50.10	42.32	7.20
2002	847	795	52	55.56	44.75	35.05	6.84
2003	812	732	80	36.37	29.13	29.13	4.42
2004	99	37	62	18.67	9.64	6.47	0.98
2005	39	0	39	8.63	5.42	3.55	0.54
2006	43	6	37	16.21	8.20	5.77	0.80
2007	82	26	56	21.13	10.56	7.18	1.00
2008	685	188	497	141.09	79.31	56.33	8.11
2009	441	126	315	138.68	44.59	31.61	4.54

Changing of Neritic Tunas and King Mackerel in the Andaman Sea

Figures 1a - 1c show change of catch by species breakdown from national statistic and gears.

Longtail tuna (*Thunnus tonggol*) catch was varied from 1,726 to 20,035 tons during 1997 to 2009. The trend of catch was decreasing since 1997 (20,035 tons) to 2005 (1,819 tons) and had increased again in 2006 (2,053 tons) to 2009 (4,548 tons). The changing of catch shows in Figure 1a.

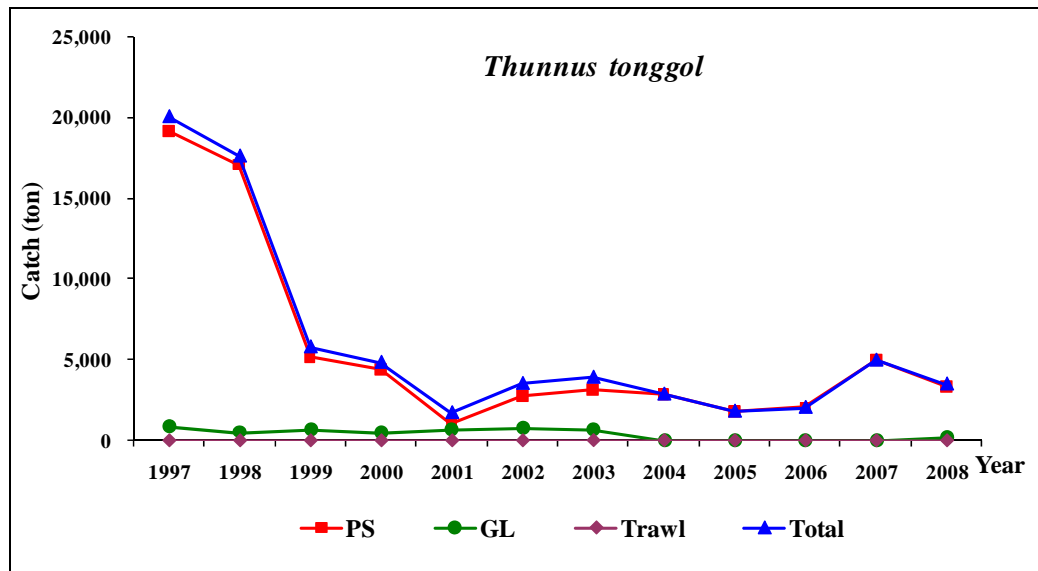


Figure 1a. Change of longtail tuna catch in Andaman Sea, 1997-2009

Kawakawa have been reported in the Thai national statistics as the mix of kawakawa (*Euthynnus affinis*) and frigate tuna (*Auxis thazard* and *A. rochei*). The fishers haven't identify cause of same price categories. The catch was varied from 2,985 to 19,423 tons during 1997 to 2009. The trend of catch was decreasing since 1997 (19,423 metric tons) to 1999 (2,985 tons) and had increased again in 2000 (7,374 tons) to 2005 (11,357 tons). The changing of catch shows in Figure 1b.

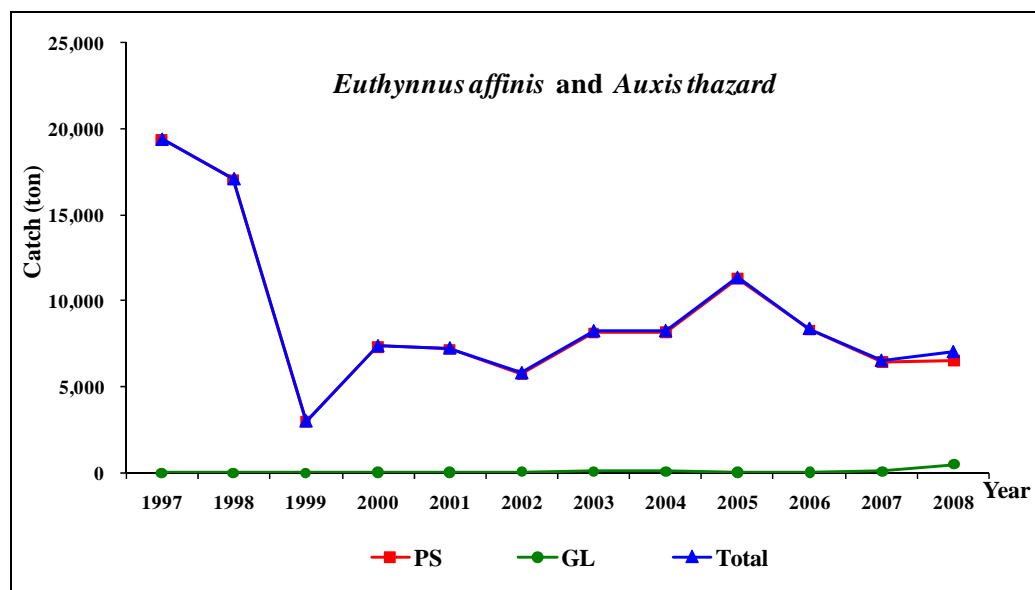


Figure 1b. Change of kawakawa and frigate tuna catch in Andaman Sea, 1997-2008

King mackerel (*Scomberomorus* spp.) was showed the trend of catch in Figure 1c, their catch varied from 4,213 to 7,114 tons during 1997 to 2009, the highest catch found in 2005 caught from trawler.

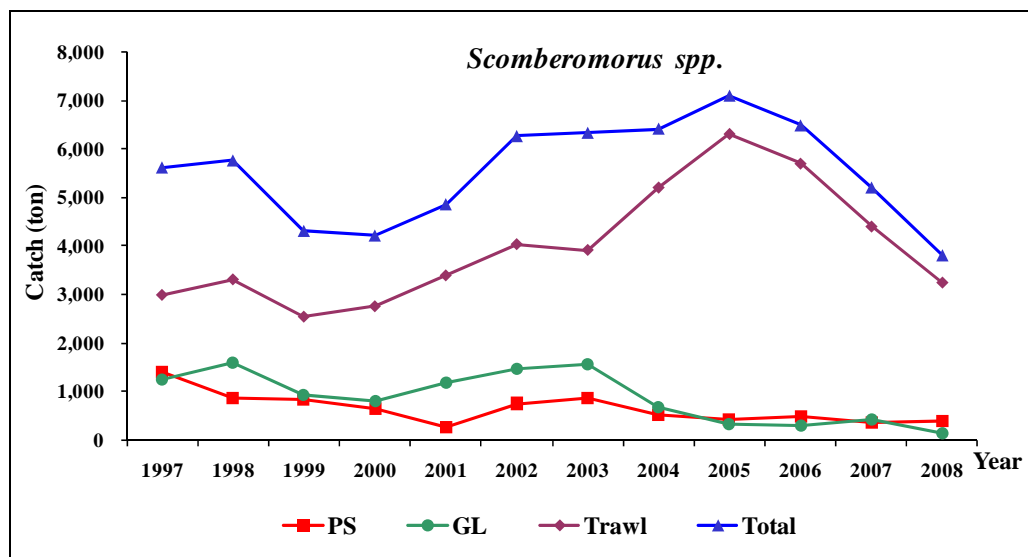


Figure 1c. Change of king mackerel catch in Andaman Sea, 1997-2009

3.2 Catch and effort – tuna longliners

Fishing efforts of tuna longline during 2007 to 2010 are shown in Table 2a. In 2007, fishing effort of Thai tuna longliners was the highest at 1,503,600 hooks for 537 days of fishing. However, it shows the decreasing trend of the catch as the fishing efforts in 2010 was at 1,324,400 hooks for 473 days of fishing.

Table 2a. Catch and effort of tuna longliners operated in the Indian Ocean during 2007 to 2010

Year	Fishing days	No. of Hooks (x 1,000)	Catch in number	Catches weight (tons)							CPUE (tail/1,000 hooks)
				ALB	BET	YFT	SWO	Sharks	Others	Total	
2007	537	1,503.6	15,334	115.07	138.61	111.18	8.23	0.71	87.84	461.64	10.20
2008	417	1,167.6	6,863	22.84	69.74	89.76	59.35	--	27.84	269.53	5.88
2009	477	1,335.6	6,897	23.57	152.07	64.96	54.63	--	--	295.23	5.16
2010	473	1,324.4	18,044	263.41	170.10	93.60	80.58	--	--	607.69	13.62
Total	1,904	5,331.2	47,138	424.89	530.52	359.50	202.79	0.71	115.68	1,634.09	8.84

Remarks: ALB = Albacore, BET = Bigeye tuna, YET = Yellowfin tuna, SWO = Swordfish, Others = Other species.

Annual catches from 2007 to 2010 were estimated to 461.64, 269.53, 295.23 and 607.69 tons, respectively. The major species caught during these four years included albacore (*Thunnus alalunga*), bigeye tuna (*T. obesus*), yellowfin tuna (*T. albacares*) and swordfish (*Xiphias gladius*). Their catches in 2007 were 115.07, 138.61, 111.18 and 8.23 tons, respectively. Those species yield catch decreased from 2008 to 2009 but it increased in 2010, especially for the catch of albacore and bigeye tuna that showed the highest record in 2010 (263.41 and 170.10 tons, respectively).

The CPUEs of Thai tuna longliners from 2007 to 2010 ranged from 5.16 to 13.62 tails/1,000 hooks, with an average CPUE of 8.84 tails/1,000 hooks. The lowest CPUE was 5.16 tails/1,000 hooks in 2009 and highest was 13.62 tails/1,000 hooks in 2010.

Figure 1d and 1e show the historical annual catch for the tuna longliners in the Indian Ocean from 2007 to 2010, by number and weight of catch, respectively.

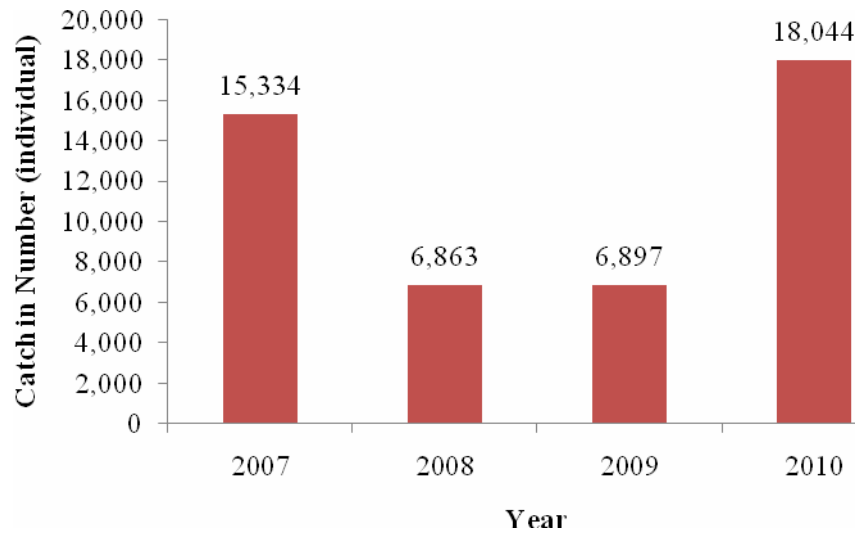


Figure 1d. Historical annual catch of the Thai tuna longliners from 2007 to 2010 operated in the Indian Ocean, by number of the catch (individual)

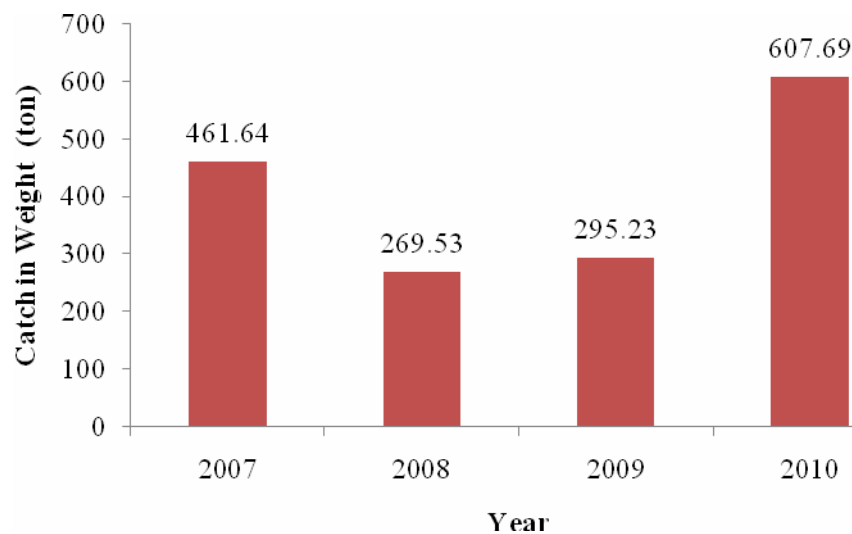


Figure 1e. Historical annual catch of the Thai tuna longliners from 2007 to 2010 operated in the Indian Ocean, by weight of the catch

The information from logbook collection found that three Thai tuna longline vessels operated in the Western Indian Ocean in 2007, while there were only 2 Thai tuna longliners remained in 2008-2010. The main fishing grounds were east coast and south of Madagascar where located southern part of the Indian Ocean (Figure 2a). However, in 2010 their fishing ground was expanded to the middle part of the Indian Ocean (Figure 2b).

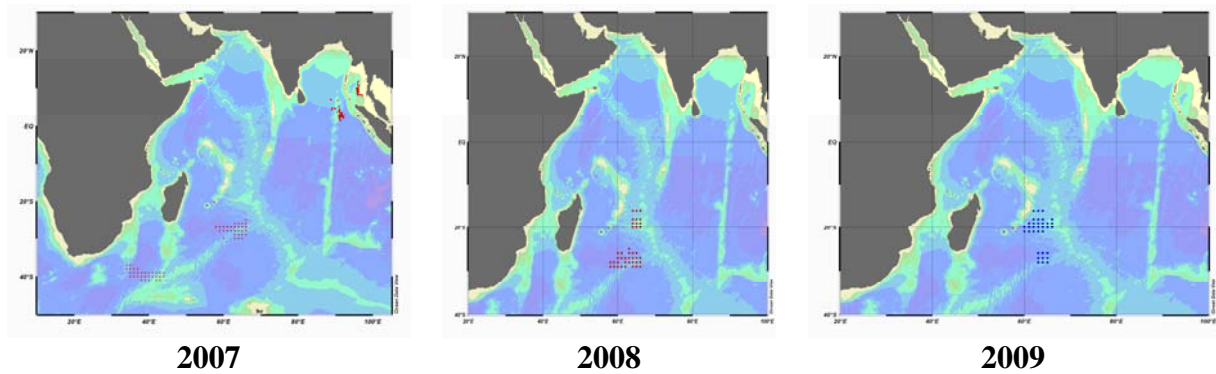


Figure 2a. Map of the distribution of the tuna longliners fishing effort in the Indian Ocean area in 2007, 2008, and 2009

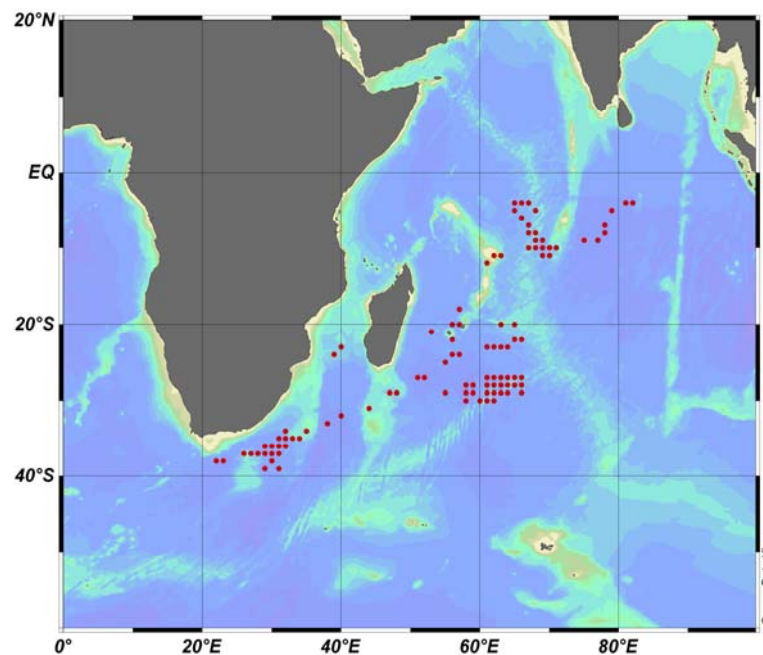


Figure 2b. Map of the distribution of the tuna longliners fishing effort in the Indian Ocean area in 2010

3.3 Catch and effort - tuna purse seiners

Fishing efforts of tuna purse during 2007 to 2010 are shown in Table 2b.

Table 2b. Catch and effort of tuna purse seine operated in the Indian Ocean during 2007 to 2010

year	no. of hauls	Catch by species				Total (tons)
		skipjack	bigeye	yellowfin	bonito	
2007	670	8,428.00	1,724.00	1,250.00	254.00	11,656.00
2008	388	6,138.15	2,297.55	992.50	180.00	9,608.20
2009	436	7,532.00	2,310.00	1,124.00	118.00	11,084.00
2010 (Jan-July)	227	2,369.00	2.00	1,258.00	0	3,629.00

The number of Thai tuna purse seine vessel decreased from 6 to 4 fishing vessels from January to June in 2007. And catch data could be derived only from four fishing vessels. The fishing operation for tuna purse seiners was mainly in the West Indian Ocean from 2007 to 2009 before moving to the East Indian Ocean in 2010 (Figure 2c).

Result from Thai tuna purse seiners monitoring program showed that there was abundant fishing grounds in western Indian Ocean from 2007 to 2009 (Figure 2d), particularly in offshore area of Somalia and in the Southwest of Seychelles. After 2009, the fishing area for the Thai tuna purse seiners was moved to the Eastern part of Indian Ocean in 2010.

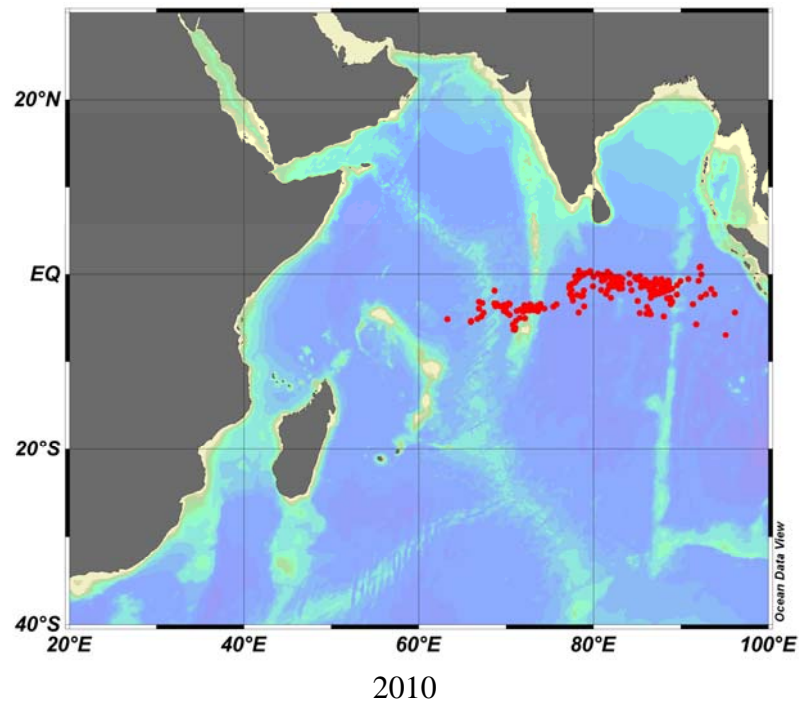


Figure 2c. Fishing areas of the Thai tuna purse seiners in IOTC area of competence from 2007 to 2010.

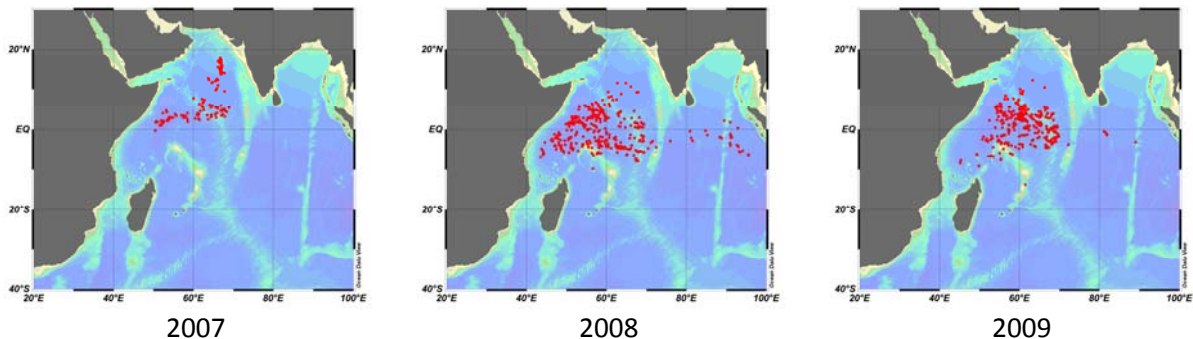


Figure 2d. Fishing areas of the Thai tuna purse seiners in IOTC area of competence from 2007 to 2010

During 2007 to 2009, the yield of tuna caught by Thai purse seine fishing vessel in the Indian Ocean was decreased from 11,656.0 tons in 2007 to 9,608.2 tons in 2008, slightly increased to 11,084.0 tons in the following year. In 2010 Thai tuna purse seines fishing vessels operated in Indian Ocean only six months with total catch of 3,612.0 tons before moving to other areas.

It should be noted that the fishing effort of Thai tuna purse seine was irregular in all year round. However, the analysis on the fishing effort of this fishing gear showed that intensive fishing occurred in February to May and September to October. Trend of fishing effort showed fluctuation during 2007-2010 as showed in figure 2e. For the yield and catch rate, they are always variable. However it can be concluded that the high catch rate hit the peak in two periods of the year, from March to May and from August to September. This trend is similar with the yield as shown in Figure 2e.

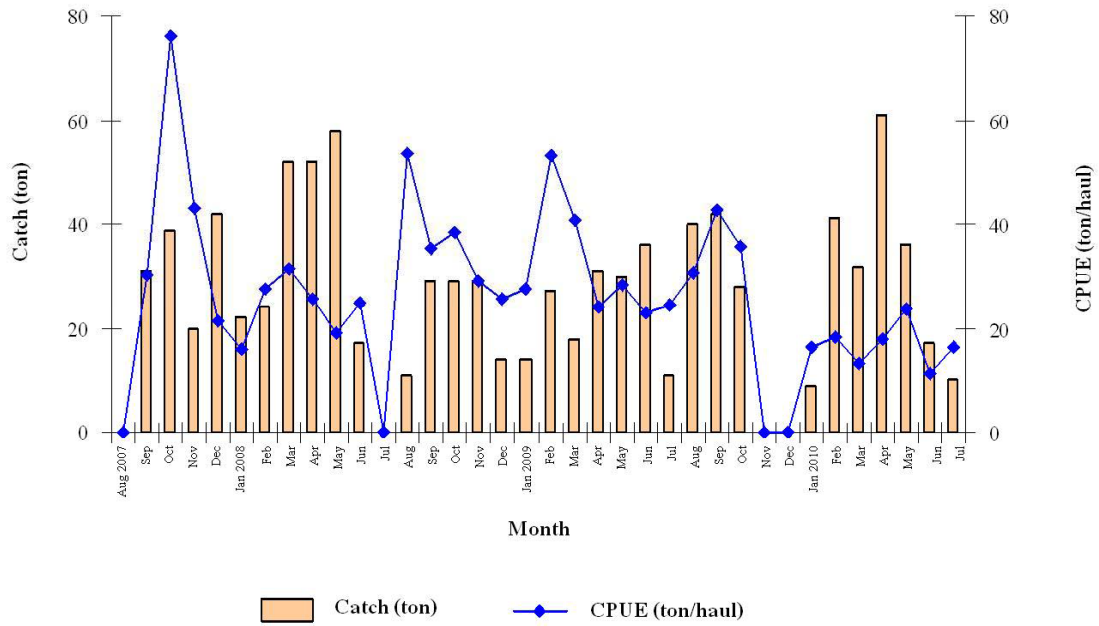


Figure 2e. Fishing effort (no. of hauling) and average catches (CPUE-tons/haul) of tuna by the Thai tuna purse seiners in Indian Ocean during 2007 to 2010.

Taking into consideration on the yield of three major species of tunas (skipjack, yellowfin and bigeye tuna) during 2007-2010, it was found that the main catch was skipjack tuna which had a higher proportion than other two species in the same fishing area. The comparison on catch in each month indicated that the high catch found in August to November while the low catch was obtained from December to January, and June to July (Figure 2f).

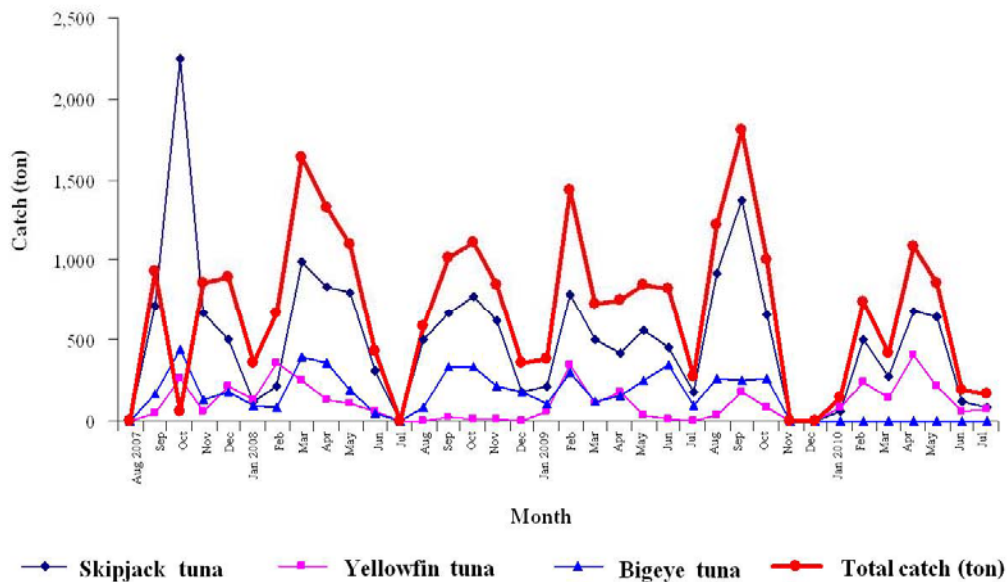


Figure 2f. Fishing effort, month catch of tuna by the Thai Tuna purse seiners in Indian Ocean during 2007 to 2010

Catch and effort - tuna species distribution

In case of Thailand, there is only map of catch distribution by species available in 2007 from Thai tuna purse seine in the Indian Ocean (Figure 3a, b and c).

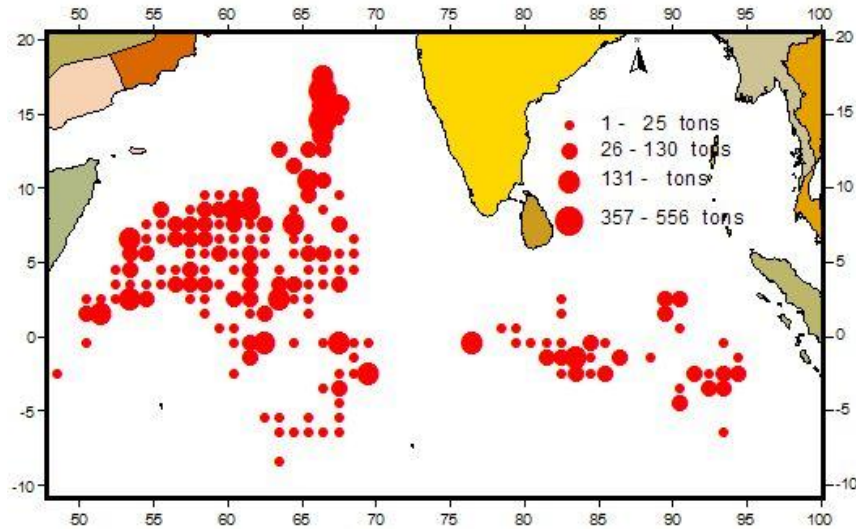


Figure 3a. Map of distribution of fishing catch, by species for the Thai tuna purse seiners, in the Indian Ocean area in 2007 - Skipjack Tuna

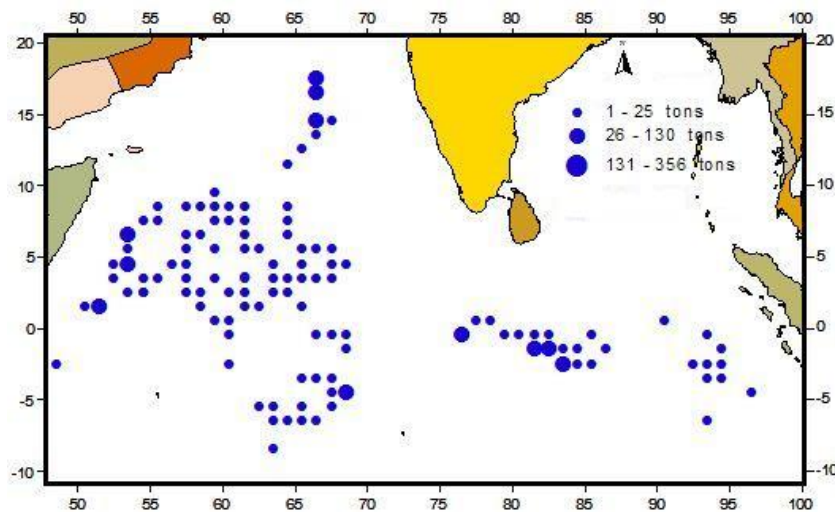


Figure 3b. Map of distribution of fishing catch, by species for the Thai tuna purse seiners, in the Indian Ocean area in 2007 - Yellowfin Tuna.

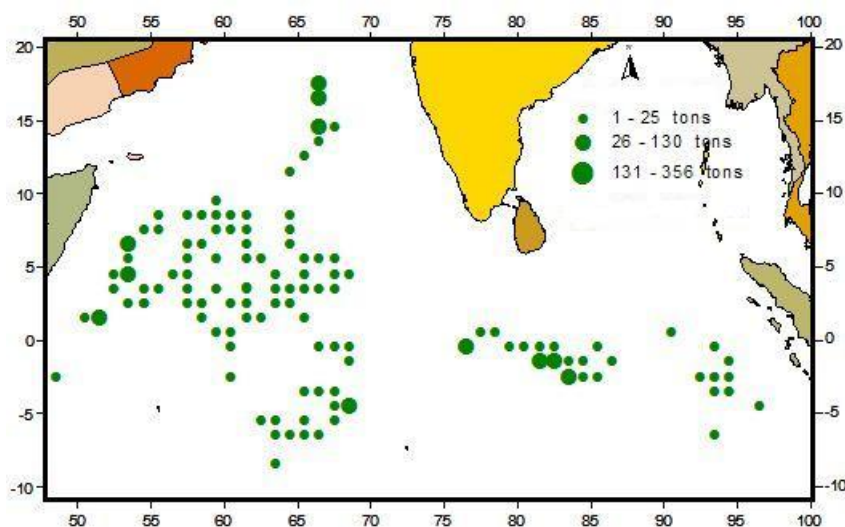


Figure 3c. Map of distribution of fishing catch, by species for the Thai tuna purse seiners, in the Indian Ocean area in 2007 - Bigeye tuna.

4. RECREATIONAL FISHERY

Recreational fishery for tuna and tuna-like species is not a popular fishing game in Thailand, and they are only occasional and seasonal events in Andaman Sea (Indian Ocean).

5. ECOSYSTEM AND BYCATCH ISSUES

Thailand has several measures to reduce the impact of fishing on marine ecology such as 1) prohibited trawler and push netter with engine operated with in 3 kilometers from the shore line 2) mesh size regulation for purse seine to reduce a juvenile from catches, and 3) determination of closed area and season in particular fish species.

Sharks

Referring to the Thai Fisheries Statistics during 1995 to 2007, it was reported that sharks and rays were mainly caught by otter-board trawler and pair trawler where their fishing areas are located in the Thai's EEZ. In addition, there is no record from the Thai tuna long liners and purse seiners on the shark bycatch from their fishing operation in the Indian Ocean. (only 2007 was recorded).

However, there are a numbers of national initiatives related to conservation and management of sharks. It includes: (i) development and endorsement of the National Plan of Actions for Sharks in 2006; (ii) a series of study on shark bycatch using the national research vessels; (iii) development of handbook for sharks species identification and its database system for sharks and rays found in Thailand; and (iv) participation of the staff concerned of Department of Fisheries to the meetings related to sharks/rays conservation and management (e.g. organized by SEAFDEC in September 2011, in Bangkok, Thailand).

Based on the major findings from a study on shark bycatch in the pelagic longline fishing along the Ninety East ridge carried out by the national research vessels in early 2010, it was found that a total of 204 individuals that belong to 17 species were caught. The largest proportion of the catch was mainly tuna, followed by sharks, marlin and swordfish (Table 3).

National Plan of Action for Conservation and Management of Shark DOF, Thailand realize that the study on conservation and management of shark need to be implemented in a regular and long term system harmonized to the International Plan of Action for the Conservation and Management of Shark.

Table 3. Results from the study on bycatch in tuna longline fishing in Indian Ocean carried out by the national research vessel of Department of Fisheries - Thailand, in February 2010

Common name	Scientific name	Individual
<i>Target catch</i>		
Bigeye tuna	<i>Thunnus obesus</i>	21
Skipjack tuna	<i>Katsuwonus pelamis</i>	2
Yellowfin tuna	<i>Thunnus albacores</i>	31
<i>Bycatch species – sharks and rays</i>		
Blacktip shark	<i>C. limbatus</i>	2
Blue shark	<i>Prionace glauca</i>	3
Crocodile shark	<i>Pseudocarcharias kamoharai</i>	2
Pelagic stingray	<i>Pteroplatytrygon violacea</i>	9
Silky shark	<i>Carcharhinus falciformis</i>	3
<i>Bycatch species – others</i>		
Blue marlin	<i>Makaira mazara</i>	2
Dolphinfish	<i>Coryphaena hippurus</i>	2
Escolar	<i>Lepidocybium flavobrunneum</i>	22

Common name	Scientific name	Individual
Great barracuda	<i>Sphyreana barracuda</i>	1
Lancet fish	<i>Alepisaurus ferox</i>	88
Sickel pomfret	<i>Taractichthys steindachneri</i>	6
Snake mackerel	<i>Gempylus serpens</i>	1
Swordfish	<i>Xiphias gladius</i>	3
Wahoo	<i>Acanthocybium solandri</i>	6
Total		204

Seabirds

NONE

Marine Turtles

Thailand is one of the countries that actively involved in the conservation programme of turtles long time ago.

Under Fisheries Act 1974, turtle and marine mammals are not allowed to be fished, disturbed or taken for what ever means without the permission of Fisheries authority. The turtles and marine mammals that are accidentally caught alive during fishing have to be release immediately.

Other ecologically related species

No record available on the number of accidental caught marine animals and whale sharks by Thai fishing vessels.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEM

There are two national agencies collecting, processing, analyzing, and reporting fishery landing data, namely (i) Fisheries Statistics Analysis and Research Group (FSARG); and (ii) Marine Fisheries Research and Development Bureau (MFRDB). Generally, the FSARG is responsible for collecting national fisheries statistics; MFRDB collects mainly data/information as for research-based activities. FSARG is collecting two types of data in collaboration with Provincial Fisheries Offices, namely, (a) marine fisheries statistics based on the sample survey (logbook survey) and (b) marine fisheries statistics at landing sites. Marine fisheries statistics based on the sample survey means that landing of a fishing vessel (distinguished to be sample) is counted on the province where her fishing gear is registered wherever the vessel actually landing her catches. Survey on this type of data is conducted by logbook survey for large to middle-scale fisheries by FSARG started this survey in 1964 (catch by species/species group and fishing effort). Marine fisheries statistics of landing sites means that landing of a fishing vessel is counted on the landing place where she actually unloads her catch. FSARG has been conducting the survey of this type at 37 selected landing sites along Thai coasts since 1974.

6.1 Logsheet data collection and verification

Sampling survey using logbook will be carried out for marine fisheries statistics. For the commercial-scale fishing vessels, FSARG samples vessels at the following sample rate for each fishing gear based on the fishing vessels registration statistics of the year. The sampling rate is decided based on the variation of catches of each fishing gear. Random sampling is employed for selected vessels in principle. The list of vessels sampled in this way for each province is sent to respective Provincial Fisheries Office. The enumerator of the Provincial Fisheries Office visits owners of sampled fishing vessel monthly and fills the datasheet that prepared by FSARG. When the enumerator is not able to obtain sufficient data by the interview survey, he/she collects Fish Tickets (records of fish landing prepared by fish traders

who buy fish from the owner, fish brokers who intermediate fish trade between fishes and fish trader, or Fish Marketing Organization or Fishers' Cooperatives who manages fish landing places) to obtain further information to fill the datasheet. In many cases, only records in Fish Tickets are available later.

For the survey of MFRDB, there are two types of landing statistics survey, including (i) landing survey of Thai vessels, and (ii) landing survey of foreign vessels. Generally, the survey team of MFRDB will visit each landing site once a month and interview fishing master to obtain information such as vessel name, fishing gear, fishing days, total weight and species composition of catch. They collect the pelagic fish sample, including neritic tuna sample from the landing and take measurement of total length/fork length. They collect the fish landing records monthly also from the Fish Market Organization to obtain data on the total number of vessels unloaded their catches and total weight of fish landed by species for each fishing gear. From the landing records, they also obtain data of monthly landed weight of fish by species for each fishing vessel.

At present Thailand have developed and implemented on Catch Certificate Exemption Statement since 1st January 2010 by apply Catch Certificate and Fishing Logbook following Deter and Eliminate Illegal, Unreported and Unregulated Fishing. Then, the system of estimate the total production of neritic tunas and seer fish will be gathering and improve on the percentage of coverage of logbook.

6.2 Vessel monitoring system

Thailand will start and implement the VMS system on artisanal purse seine in 2011. Regarding, the commercial purse seiner and distant longliner have already implemented the VMS system onboard in compliance with the fisheries management authorities.

6.3 Observer programme

The programme/scheme has been postponed, due to the insufficient fund.

6.4 Port sampling programme

Fish species caught by local purse seiner and trawler are classified into 24 and 324 species/groups, respectively by MRFDB. Fish species caught by foreign vessels are classified into species level as species composition of their catch is simple except for sharks which are aggregated as "sharks" whatever species are included. MRFDB obtains data of total weight by species in all surveys. Furthermore, they obtain weight and length data for specimens collected from landed fish. Therefore, size frequency data is available for tuna and tuna-like species. MRFDB obtains number of fishing trips, fishing-days and fishing operations for Thai purse seiners, while number of fishing trips, fishing day, fishing operation and fishing hours for Thai trawlers. For foreign longliner, AFRDEC obtains number of trips and day per trip, while number of trip, day per trip, and operation by fishing ground for foreign purse seiner.

For the landing survey of foreign vessels, it was observed that the commercial tuna purse seine vessels (foreign vessels and a Thai vessel which operated only during 1998-2001) unloaded their catches at Phuket since 1993. In recent years, the number of commercial tuna purse seiners operating in the Eastern Indian Ocean has declined and only one Japanese research vessel "Nippon Maru" is operated there and unloading her catches at Phuket in 2001. Andaman Sea Fisheries Research and Development Center (AFRDEC) have been conducting port sampling and landing survey on those industrial tuna purse seine vessels at Phuket deep-sea port since 1993. The logsheet of AFRDEC's data collection includes information on vessel (name, flag, and registration number), the port of unloading, the vessel's agent in the port of unloading, the dates of unloading, fishing days per trip, and the amount and value of the fish unloaded by species. The logsheet was improved in 1999 to include information

related to fishing trips and fishing operation. The trip data include the dates and ports of departure and return, and the number of net shooting per trip. The operation data include the time, location, and target species for each fishing operation. AFRDEC also collects some specimen from the landed catches and conducts detail biological examination, including measurements of fork length and weight, stomach contents, determination of sex and reproductive stage and otolith sample taking.

For the tuna longline owned by Taiwanese, Chinese and Indonesian, it was recorded that they started to unload their catches at Phuket fishing port in 1994, 1996 and 1999, respectively. AFRDEC has been conducting landing and biological data collection on tuna, tuna-like and by-catch species unloaded by those tuna longline vessels. The data collection includes vessel information (name, flag and registration number), fishing ground, vessel's agent, date of unloading, and amount and value of fish unloaded by species. AFRDEC collects data and related information through interviewing master fishermen, checking records of the agent, Fish Marketing Organization and Custom Office of Phuket. In addition, AFRDEC also issues the "Certificate of Origin" based on those data and information.

6.5. Unloading/Transshipment

The cooperation program between Thai DOF and IOTC-OFCF was finished in December 2006. As the information of catches taken by foreign vessels operating in the Indian Ocean and landed at the fishing port in Thailand is so important not only for Thailand but also for IOTC. Nowadays, Thailand is still continuous collecting data from foreign longliner and purse seiner that landing catch at Phuket Province.

The activities involve collecting the number of landings, catch, vessel operating (no. of trip), weight samples, interviewing, biological samples and other activities such as collection of information of shark, other species, and study age of the fish by using otolith.

In case of fresh tuna longliner, the percentage of data coverage is less than 30 percent and followed all the protocol from the previous cooperation program.

7. NATIONAL RESEARCH PROGRAMME

The following research programs were carried out by DOF – Thailand:-

Table 8. Summary table of national research program

Project title	Period	Countries involved	Budget total	Funding source	Objective	Short description
Study on length frequency distribution of tuna caught by Thai tuna purse seiners in Indian Ocean				DOF-Thailand	To study on the length frequency distribution for monitor the stock size of the catch as precautionary approach for sustainable tuna fisheries in Indian Ocean.	Relationships between length and fork-length of the catch will be studies. This aims to monitor the changes in size of the catch over time series.
Foreign tuna fleets unloading in Phuket	Completed by December 2006			DOF-Thai, IOTC and OFCF	To obtain information on: catch (also shark bycatch), vessel	Information collection on the catches of foreign vessels operating in the

Project title	Period	Countries involved	Budget total	Funding source	Objective	Short description
					operating (no. of trip), weight samples, and biological sampling.	Indian Ocean who landed their catch at the fishing port in Phuket, Thailand, including tuna longline and purse seiner.
Neretic tuna fisheries in Thailand	Completed by October 2006			DOF-Thai, IOTC and OFCF	To enhance the data collection and processing system for neritic tuna fisheries in Indian Ocean.	IOTC and OFCF provided the technical assistance to the DOF Thailand. Collecting data of the neritic tuna fisheries along the Andaman Sea, Thailand.
EU regulation to prevent, deter and eliminate IUU fishing	Since 1 st January 2010			DOF-Thailand	To develop and implement: "Catch Certificate Exemption Statement" by applying EU's Catch Certificate and use of fishing logbook.	DOF will emphasize its work on the suppression of illegal practices which is along the line of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).
Indian Ocean: Swordfish stock structure project				IOSSS project	To study on structure and characteristics of the swordfish (<i>Xiphias gladius</i>) stock in Indian Ocean	Andaman Sea Fisheries Research and Development Center implemented this program in close co-operation with IOSSS.
Neritic tunas resources in Thai Project	To be started in 2012			DOF-Thailand	To study biological and stock assessment of neritic tunas in the Gulf of	Stock assessment of neritic tuna will be carried out using data from at-sea survey

Project title	Period	Countries involved	Budget total	Funding source	Objective	Short description
					Thailand and Andaman Sea.	through research activities, and data from major landing sites of tunas in the Gulf of Thailand and Andaman Sea.

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

At present Thailand have developed and implemented on Catch Certificate Exemption Statement since 1st January 2010 by apply Catch Certificate and Fishing Logbook. DOF has established two certification centers in Bangkok and Songkhla Province, and established the coordination center for certification marine capture by the Commission.

Thailand will be conducting the project “Neritic Tuna Resources in Thai Waters” during 2011 to 2013. The project will study on fisheries biology and stock assessment of neritic tuna in Thai waters. This project will fulfill constrain on up-to-date information and neritic tuna status in the Andaman Sea.

Thailand has implemented the recommendations adopted in the IOTC Scientific Committee including the following actions:-

- Collecting scientific data and information of neritic tunas distributing in the Thai waters.
- Conducting research surveys in the Eastern Indian Ocean to collect scientific data and information of oceanic tunas distributing in the high seas.
- Monitoring fishing operation of Thai tuna fishing vessels operating in the high seas both purse seiners and longliners (include 3-month catch report and port sampling program).
- Collecting information of foreign tuna longline and purse seine vessels operating in the Indian Ocean and unloading their catch in fishing port in Thailand.
- Collecting information and reporting bigeye and swordfish statistical document and re-export certificate.

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