



**THAILAND NATIONAL REPORT
TO THE SCIENTIFIC COMMITTEE OF THE
INDIAN OCEAN TUNA COMMISSION
2022**

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THAILAND National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2022

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 15/02, final scientific data for the previous year was provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline [e.g. for a National Report submitted to the IOTC Secretariat in 2022, final data for the 2021 calendar year must be provided to the Secretariat by 30 June 2022)</p>	<p>YES 30/06/2022</p>
<p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2022, preliminary data for the 2021 calendar year was provided to the IOTC Secretariat by 30 June 2022).</p> <p>REMINDER: Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2022, final data for the 2021 calendar year must be provided to the Secretariat by 30 December 2022).</p>	<p>YES 30/06/2022</p>
<p>If no, please indicate the reason(s) and intended actions:</p> <p>No Thai longline vessels operated in IOTC area of competence since 2016 to present.</p>	



Executive Summary [Mandatory]

Thailand has advance for implementing a comprehensive system to combat IUU fishing. It has taken a reform of legal framework and implementing regulations, the fisheries management limiting the fishing license issuance in compliance with the quantity of aquatic animals, the fleet management putting control over fishing vessels of all sizes and types, the monitoring, control and surveillance through port-in and port-out control since 2015 to present. Thailand has implemented PSM and assigned 26 PSM ports for port entry of foreign vessel. Moreover, for Thai oversea vessels installation of vessel monitoring system (VMS), and especially installation of electronic reporting system (ERS) electronic monitoring system (EM) for oversea fishing fleet, as well as the development of traceability system for catches from Thai-flagged vessel. Thailand has implemented NPOA-Sharks, Thailand: Plan 1, 2020-2024.

In 2021, Thailand had no fishing vessel operated in high sea of IOTC competent. Thailand had only domestic purse seiner fishery in the Andaman Sea, the number of fishing vessel was registered 227 vessels. In 2021, kawakawa (29.06%) and bullet tuna (28.15%) are the main composition, followed by Longtail tuna 20.79%, skipjack tuna 19.63%, narrow-barred spanish mackerel 2.02%, frigate tuna 0.27%, Indo-Pacific sailfish 0.08% and yellowfin tuna 0.0049%. Catch and effort decrease from the 2020 due to the decreasing of fishing vessel and fisher stopped operation due to the increasing of fuel price.

At Present, DOF is launch authorizing Thai-flagged overseas fishing vessels. Currently, there has been applications from begin with Thai-flagged overseas fishing fleet. These vessels operate in SIOFA area and target demersal fish species. No application has been submitted for vessels operating in the IOTC area.

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1. BACKGROUND/GENERAL FISHERY INFORMATION [MANDATORY]

Thailand marine fisheries management is implemented under Royal Ordinance on Fisheries B.E. 2558 (2015) and its revision in B.E. 2560 (2017) through the National Marine Fisheries Management Plan (FMP), that aim to rebuilding and maintaining the fisheries resources at a level commensurate with the MSY. The monitoring, control and surveillance regime are implemented to manage fishing activities at port and at sea through port-in/out control and vessel monitoring system which applied to domestic and oversea fishing vessels. Together with Port State Measure (PSM), catch documentation via fishing logbook and landing declaration for Thai vessels and catch traceability system in downstream industries. Two electronic databases for traceability system have been developed including “Thai Flagged Catch Certification System; TFCC” (for fish caught by Thai-flagged vessels), and “PSM linked and Processing Statement System; PPS” (for imported fish and fishery products). These systems are the full traceability systems for fish and fishery products along the entire supply chain from catch and processing to the export of finished products. In particular, they increase the level of accountability with regard to the actual weight of fish at landing sites and the weight used at processing establishments. These two electronic traceability systems have enabled the competent authority and all involved national authorities to trace, verify and cross-check the origin and legality of fish at a greater speed, efficiency, and accuracy.

In the situation of the COVID-19 pandemic during 2020 - 2021, Thailand has implement on online instead of implement onsite. All interactions with other vessels and persons will be conducted in a manner that seeks to prevent the spread of the COVID-19 to staffs and crews on fishing vessel. The results of the successful operation are accepted by the fishermen.

In 2021, there are only purse seiners operated for neritic tunas in the Andaman Sea, eastern part of Indian Ocean. All of them legally fished in Thai EEZ, targeting small pelagic fishes such as mackerels, sardines, scads, etc. and neritic tunas. Purse seiners usually fished in 10-30 nautical miles from shore at fishing depth range between 20-200 m. Thai purse seine fishery can be categorized into four (4) groups by fishing method i.e., Thai purse seine (TPS), tuna purse seine (TUN), light luring purse seine (LPS), and purse seine with fish aggregating devices (FAD). TPS and TUN have the same fishing method which targeting free-school fishes but different in mesh size used; 2.5 cm for TPS and 10 cm for TUN. LPS use light luring vessels to aggregate fish and occasionally collaborate with FADs. FAD use fish aggregating devices which traditionally made with coconut leave or palm leave, fastened to a bamboo poles, and weight with a concrete block, to aggregate fish. Only anchor fish aggregating devices (AFAD) are used in Thai purse seine fisheries. The vessels have to deployed a AFAD outside 12 nautical miles from shore as embedded in the fishing license.

2. FLEET STRUCTURE [MANDATORY]

2.1 DOMESTIC FISHING FLEET

The number of purse seine vessel in the Andaman Sea was stabled in last 4 years. A total of 227 purse seine vessels operating in the Andaman Sea were reported in 2021 as presented in Table 1.

Table 1: Number of purse seine vessels operating in the IOTC area of competence by size in 2017 – 2021

Year	Size of vessel (GT)				Total
	10.00 -19.99	20.00 - 59.99	60.00 - 149.99	>150	
2017	17	68	166	17	268
2018	6	67	146	19	238
2019	6	66	146	18	236
2020	1	60	147	20	228
2021	1	59	147	20	227

2.2 OVERSEA FISHING FLEET

Thailand had only one (1) purse seine vessel operated in IOTC area of competence during December 2016 – February 2017 which revoked in 2018. Currently, Thailand has three (3) authorized vessels operating in IOTC area of competence; all of them are research vessels. The number of oversea fishing fleet is presented in Table 2.

Table 2: Number of authorized vessels operating in the IOTC area of competence, by gear type and size

Year	Commercial vessels		Research vessels		Remark
	Number of commercial vessels	Size of the vessels (GT)	Number of Research Vessels	Size of the vessels (GT)	
2017	1	199.78	3	1,178 – 1,424	In 2018 - present, Thailand has not any fishing vessels operated outside Thai waters that target tuna and tuna - like species in the IOTC area of competence.
2018	1	199.78	3	1,178 – 1,424	
2019	0	0	3	1,178 – 1,424	
2020	0	0	3	1,178 – 1,424	
2021	0	0	3	1,178 – 1,424	

3. CATCH AND EFFORT (BY SPECIES AND GEAR) [Mandatory]

In 2021, Thailand had 227 purse seiners operating in the Thai water in the Andaman Sea. The catch comprised the neritic tunas, skipjack tuna and yellowfin tuna with the total catch of 20,365 tons. (Table 3). The percentage of catch included kawakawa 29.06%, bullet tuna 28.15%, longtail tuna 20.79%, skipjack tuna 19.63%, narrow-barred spanish mackerel 2.02%, frigate tuna 0.27%, Indo-Pacific sailfish 0.08%, and yellowfin tuna 0.0049%. Catch and effort decrease from the 2020 due to the decreasing of fishing vessel and fisher stopped operation due to the increasing of fuel price.

Table 3. Catch and effort by purse seine vessels and species in the Thai water in the Andaman Sea.

Year	Effort (Day)	Total (tons)	Narrow-barred Spanish mackerel (tons)	Longtail tuna (tons)	Kawa kawa (tons)	Frigate tuna (tons)	Bullet tuna (tons)	Skipjack tuna (tons)	Indo-Pacific sailfish (tons)	Yellow fin tuna (tons)
2017	45,783	12,996	228	4,164	8,604	-	-	-	-	-
2018	35,411	13,864	367	4,798	5,104	635	2,960	-	-	-
2019	36,303	17,450	447	3,162	6,101	864	6,876	-	-	-
2020	39,901	30,176	451	3,415	9,509	977	15,208	605	11	-
2021	38,238	20,365	411	4,234	5,916	56	5,733	3,997	17	1

Note In 2018, Thailand has classified bullet tuna and frigate tuna from kawakawa.

In 2020 addition report 2 species consist of skipjack tuna and Indo-Pacific sailfish.

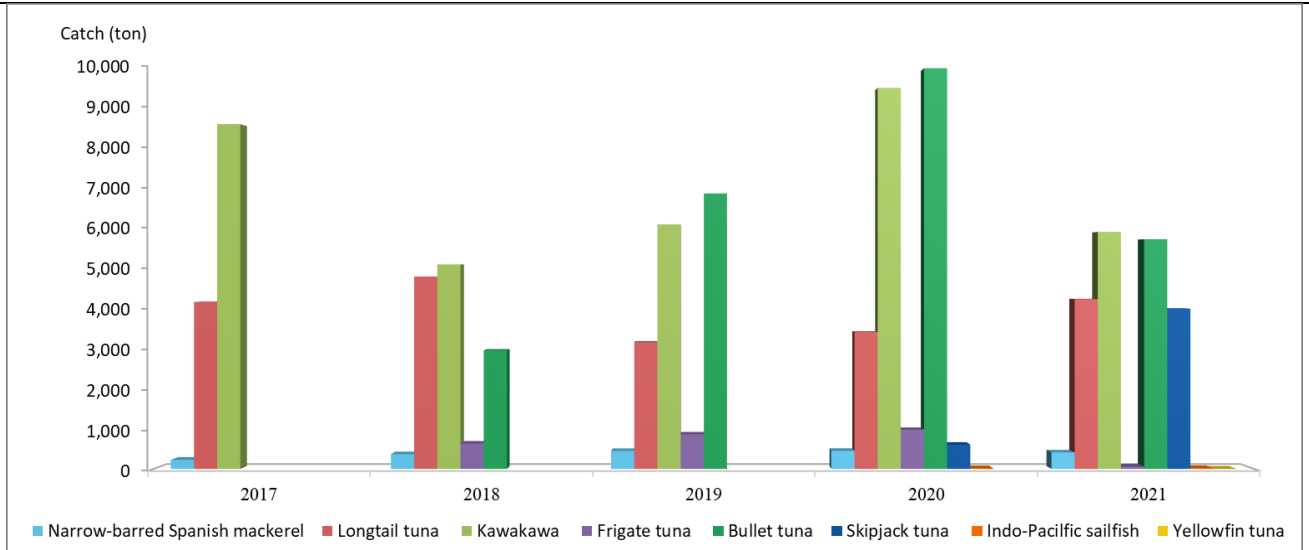


Figure 1. Annual catch of neritic tuna from purse seiner during 2017-2021.

Regarding the fishing area, domestic purse seiners only fished within Thai EEZ, which densely around 12 – 30 nautical miles from shore. The distribution of Thai purse seine fleet by grid is presented in Figure 2 and 3.

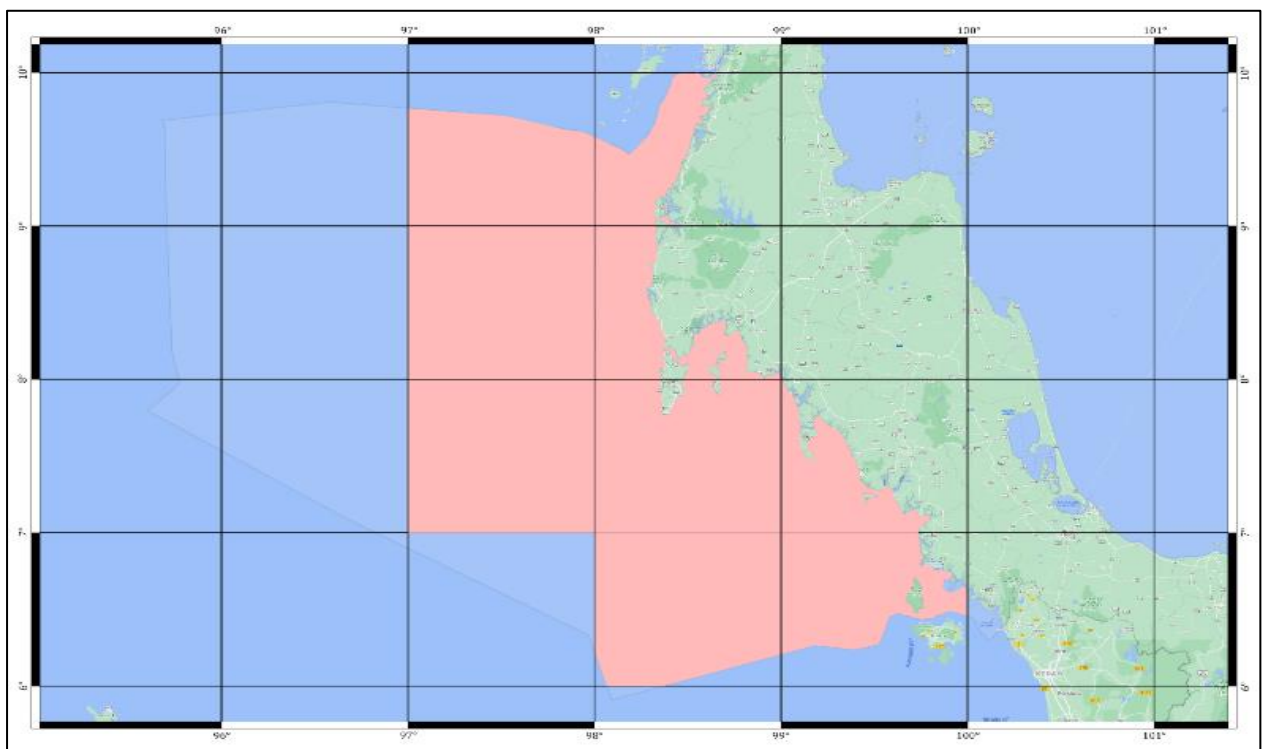


Figure 2. Map of the distribution of catch and fishing effort, by domestic purse seiner operated in the Thai water in the Andaman Sea during 2021.

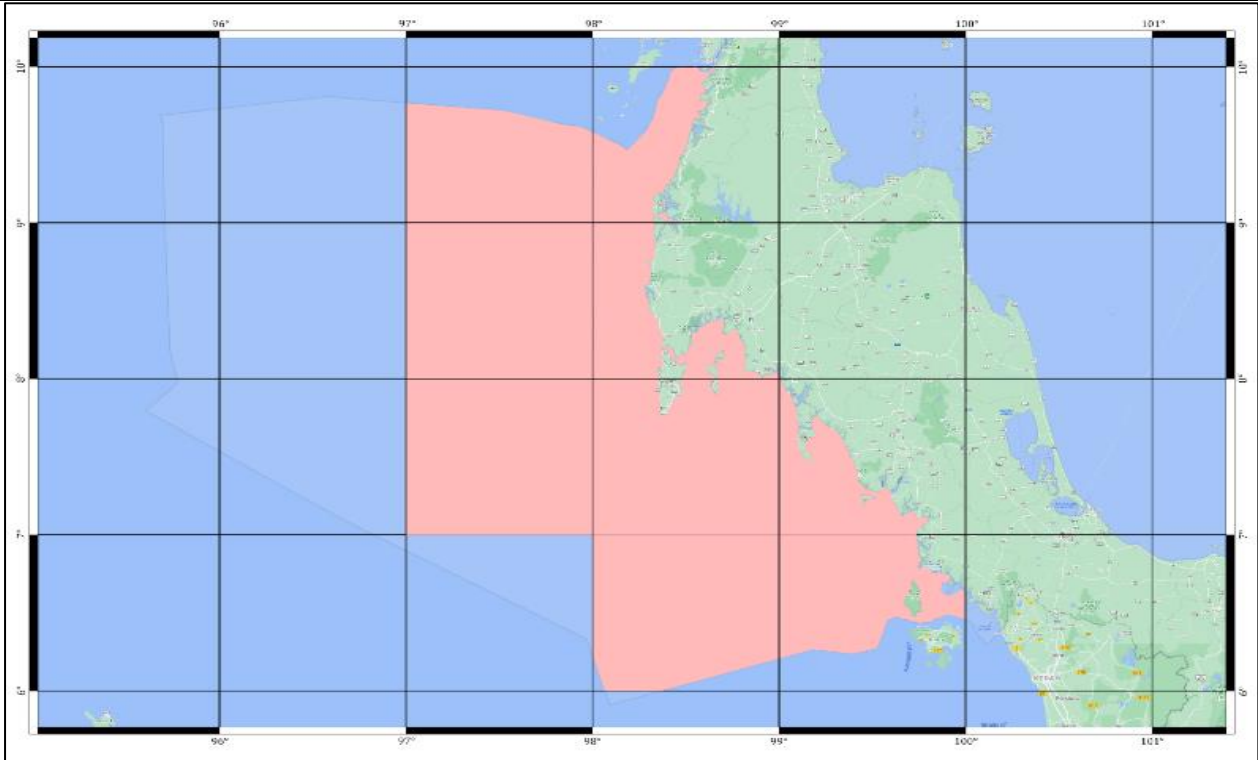


Figure 3. Map of the distribution of catch and fishing effort, by domestic purse seiner operated in the Thai water in the Andaman Sea during 2017 - 2021.

4. **RECREATIONAL FISHERY [Mandatory]**

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 the Andaman Sea.

5. **ECOSYSTEM AND BYCATCH ISSUES [Mandatory]**

Impacts on marine ecosystems and bycatch issues are recognized as a major concern in Thailand's marine fisheries, especially the impact of fisheries on mammals. Thailand has prepared the National Action Plan for Marine Mammal Conservation and Management 2023 – 2027. The objective of the National Action Plan aims to reduce the impact that causes death or severe injury to marine mammals such as Dolphins, Whales, Dugongs, etc. (MM), meanwhile, the National Fisheries Policy Committee chaired by Deputy Prime Minister, has set up 3 Subcommittees regarding the prevention and resolution of fishery impacts on rare marine animals and marine mammals. The subcommittees prepared and compiled relevant fisheries information such as fisheries measures implemented by Thailand, marine mammal resource assessment data, etc. By collecting data and analyzing the subcommittee will be able to plan to reduce MM bycatch from Thailand's fisheries.

5.1 **Sharks [Mandatory]**

Sharks are incidentally caught in purse seine fishery with very low percentage. They are rarely seen in landing catch. The common species found are spot-tail shark (*Carcharhinus sorrah*), and small demersal sharks in Family Hemiscylliidae such as brown banded bambooshark (*Chiloscyllium punctatum*) in case the vessels fished in shallow areas. As sharks are imperative species in marine ecosystem, the concern of shark declining is reflected in country's legislation.

5.1.1. **NPOA sharks [Desirable]**

The first National Plan of Action for Conservation and Management of Sharks of Thailand or NPOA Sharks is implemented in 2020 – 2024, covers 5 years period. The implementation of the plan led by

Department of Fisheries in collaboration with all related government agencies which focus on main actions as follows;

- 1) Study and develop a database on biological information of sharks, ecology, fisheries, and utilization of sharks in Thai waters
- 2) Systematically and regularly assess status and threats on shark resources
- 3) Develop knowledge and enhance capability related to shark management for relevant officers
- 4) Establish shark conservation and management measures and trade regulation on sharks in commensurate with international laws
- 5) Establish and strengthen stakeholder network engaging in shark resource management

5.1.2. Sharks finning regulation [Mandatory]

The Notification of the Department of Fisheries on Requirement and Regulations of Fishing Vessels Operating Outside Thai Water in IOTC Area of Competence (IOTC) B.E. 2565 (2022) has been implemented to regulate shark finning on Thai oversea vessels Clause 13 which regulate on retain of all parts of the shark excepting head, guts and skins, to the point of first landing. For shark preservation in the fresh form, whole body of the shark shall be preserved until the vessel arrives the point of first landing. By using frozen method, prohibit to store shark fins more than 5% of the total weight of sharks onboard until the vessel arrives at the point of first landing. And in case of juveniles and pregnant sharks that are caught, shall release of its.

Moreover, the national legislation, Thailand follows international obligation on shark conservations and always complied with management measures of the RFMOs as its member i.e., the Code of Conduct for Responsible Fisheries (CCRF), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and NPOA of Sharks.

The majority of shark finned products sell in Thailand are from rays and skates which mostly from Thai vessels, while the others are imported from oversea. All domestic shark catches are utilized at land by locals, mainly for fresh consumption and the rests are processed as salted or dried products.

5.1.3. Blue shark [Mandatory]

There is no record of blue shark catch from Thai fishing vessels until now. However, the monitoring of the shark catch is in place as stated in NPOA - shark.

5.2 Seabirds [Mandatory]

All of Thai purse seiners operated in the Andaman Sea recorded no interaction with or catching seabirds in 2021. However, Thailand aware that seabirds are opportunistic feeders and may attracted interaction with purse seine fishery and other vulnerable fishing gears. Thus, the development of national plan of action for minimizing the incidental seabird bycatch (NPOA-seabird) was started in 2022 and currently in drafting process. The proposed NPOA aims to apply to all Thai oversea fishing vessels that fished under regional fisheries management organizations. The mitigations described in the proposed NPOA follows the international seabird mitigation practices.

5.3 Marine Turtles [Mandatory]

Marine turtles are treated as conservational species and be protected by Thai laws. Several measures are implemented to conserve marine turtles and its habitats which followed the FAO Guideline to Reduce Sea Turtle Mortality in Fishing Operation. The followings are some mitigation measures on marine turtles;

1. Royal Ordinance of Fisheries B.E. 2558 (A.D. 2015) and its amendment B.E. 2560 (A.D. 2017) in section 66; Turtle and marine mammals are not allowed to be fished, disturbed or taken onboard, except for rescue purpose. The turtles and marine mammals that are accidentally caught alive have to be release immediately, or if injured they must have emergency treatments before releasing to the sea.
2. Notification of the Department of Fisheries: Rules and regulations of the overseas fishing vessels operating in the responsible area of Indian Ocean Tuna Commission (IOTC) B.E. 2561 (2018) in clause 14; Purse seiners are prohibited to catch marine turtles. Marine turtles have to be discarded if it was caught and record the detail of getting such animals, and in case the turtles were caught from fishing and looks weak or injured, it should be brought up to the vessel and take care until healthy and release

to the sea. And clause 16; longliners must equipped with line cutters and de-hookers for releasing caught marine turtles.

3. Notification of Ministry of Agriculture and Cooperatives, prescribes to install the Turtle Excluder Devices (TED) for shrimp trawler in the fishing area dated 16 September 1996.

4. Wild Animal Preservation and Protection Act B.E. 2562 (2019). Marine turtles are also protected under this regulation.

5. Ministerial Regulation Prescribing Species of Protected Wildlife that May Be Bred in Captivity B.E. 2546 (2003).

5.4 Other ecologically related species (e.g. marine mammals, whale sharks) [Desirable]

No record available on the number of accidentals caught marine animals and whale sharks by Thai fishing vessels in 2021. Under Thai legislation, marine mammals and Whale shark are not allowed to be fished, disturbed or taken for whatever means without the permission of Fisheries authority.

In 2021, Thailand has the implement to surveyed the marine mammals which there are the result as follows;

- 1) A total of 261 dugongs were surveyed
- 2) A total of 3,000 cetaceans were surveyed

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [Mandatory]

6.1. Logsheet data collection and verification (including date commenced and status of implementation)
Data collection of Thai overseas fisheries has been categorized into two themes. The first theme is collecting fishing information and transshipment activities at sea from daily report in electronic format are transmitted to DoF headquarter via satellite system. Another theme is collecting data from landing sites.

For commercial fishing vessels fish within Thai waters, fishing logbooks are collected at landing sites. Catch data in logbook are verified with the actual landing weight at port and we recorded in “Thai-flagged” database system for the purpose of domestic catch traceability system. In 2021, about 7.65% of purse seine vessel trips were monitored, the offloading at port were crosschecked with logbook.

6.2. Vessel Monitoring System (including date commenced and status of implementation)
Since 2015, Thailand has implemented the VMS system on all fishing vessels which larger than 30 gross tonnages. The VMS must be all-time active and transmits signal every 1 hour. Not only the real-time monitored which be able to monitoring via online application but it can also trace navigation data of fishing vessels and use to analyse individual vessel behaviour. Oversea fishing vessels are required to carry the approved spared VMS set. In case the active main VMS is malfunction, the vessels have to inform the Fisheries Monitoring Center (FMC) and can replace the spared VMS if necessary, within twelve hours after informing.

6.3. Observer scheme

Electronic Observer programme

Electronic Monitoring (EM) is a component tool using for monitor the fishing activities, transshipment activities and seaman transfer, that required to install in oversea vessels and transshipment vessels. The CCTV continuously records activities at sea for further analysis. Electronic sensors are attached to fishing gear and transshipment equipment such as winches, cranes and storage compartments. Any use or move of these gears and equipment will trigger camaras to snap a photo and automatically send data to the FMC through satellite.

Human Observer programme

As to comply with the IOTC Resolution 22/04 on a Regional Observer Scheme, DOF requires the authorized fishing vessels undertaking fishing in the IOTC area of competence having the observer onboard as following criteria;

Scientific observer coverage

(a) In case of transshipment at sea in IOTC area of competence, the transshipment can be made only with the large-scale longline tuna fishing vessel and also have regional observer at all time of transshipment.

(b) In case of other fishing vessel that operate in the IOTC area of competence, comply with the minimum observer coverage of 5% as defined by the number of operations/sets.

Transshipment Observer

The Royal ordinance on Fisheries B.E. 2558 and the amendment has the provisions, Section 50 and 51, on fisheries observer requirement. The observers will be qualified and approved by Director General of DOF, Thailand only after having the training based on the FAO Guidelines for Developing an at-Sea Fisheries Observer Programme.

In case vessels require for transshipment at sea in IOTC area of competence, the longline vessels must have transshipment observer 100% of transshipment period.

Now a day, Thailand has five carrier vessels that operated in IOTC area of competence by two activities at port of Maldives and Seychelles; loaded and transhipped that no need the human observer onboard because the Port Authority officers can inspect any activities at port.

6.4. Port sampling programme [Mandatory]

Scientific sampling survey is carried monthly by Marine Fisheries Research and Development Division, Department of Fisheries. Landed fishing vessels are randomly sampled at ports. The fishery data are collected by two methods; 1) interviewing fishing information from captains, captains' assistances, or vessel owners for effort of fishing day, number of hauls, fishing grounds, catch, and other relevant issues, and 2) sampling for catch composition and length of some economic species including interested IOTC species.

In 2021, about 11,241 individuals of interested IOTC species were measured. All measured fishes were sampling from domestic purse seiners which and operated in Thailand's EEZ. The number of individual species are presented in Table 5.

Table 4. Number of vessel trips or vessels active monitored, by species and gear] [Mandatory]

Gears	Andaman Sea	
	Number of vessel trips notified to port in	Number of vessel trips monitored
Purse seine	26,589	1,924

Table 5. Number of individuals measured, by species and gear] [Mandatory]

Species	Code	No. of measured fish
<i>Auxis rochei</i>	BLT	2,619
<i>Auxis Thazard</i>	FRI	1,221
<i>Euthynnus affinis</i>	KAW	5,124
<i>Istiompax indica</i>	BLM	2
<i>Istiophorus platypterus</i>	SFA	43
<i>Katsuwonmus pelamis</i>	SKJ	387
<i>Scomberomorus commerson</i>	COM	296
<i>Scomberomorus guttatus</i>	GUT	274
<i>Thunnus albacares</i>	YFT	188
<i>Thunnus tonggol</i>	LOT	1,087
Total		11,241

6.5. Unloading/Transshipment of flag vessels [including date commenced and status of implementation] [Mandatory]

There are 26 appointed ports for foreign fishing and carrier vessels entry into ports, including 21 ports located in Gulf of Thailand and 5 ports are located in Andaman Sea. Add location of the ports in Andaman Sea. In 2021, there are four (4) unloading activities at port from Taiwanese longline vessels with total weight of 154,092 kg as presented in Table 6 There is no transshipment activities located in the IOTC area.

Table 6. Quantities by species and gear landed in ports located in the IOTC area of competence [Mandatory]

Entry	Port of landing	Vessel Name	Flag	Fishing gear	Unloaded weight species (kg)															
					Albacore	Barracudas	Bigeye tuna	Black marlin	Blue marlin	Dolphin Fish	Black escolar	Striped marlin	Oilfish	Fish other than IOTC species or sharks	I-P Sailfish	Skipjack tuna	Swordfish	Wahoo	Yellow fin tuna	Total weight (Kg)
1	Phuket Fishing Port	SHENG JIN FONG	Taiwan	Longline	-	-	1,230	348	2,782	35	783	185	-	-	2,901	-	24,876	-	617	33,757
2	Phuket Deep Sea port	SRI FU FA NO.999	Taiwan	longline	-	-	1,214	277	4,437	-	515	149	-	-	2531	-	37,833	9	1,036	48,001
3	Phuket Fishing Port	SHENG JIN FONG	Taiwan	Longline	-	-	697	432	3,724	39	530	3,240	-	-	1,047	-	21,024	27	873	31,633
4	Phuket Fishing Port	SRI FU FA NO.999	Taiwan	Longline	-	-	2,521	934	4,876	-	294	3,737	-	-	2,512	-	21,378	-	4,449	40,701

6.6. Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish [Mandatory]

Thailand has been monitoring billfish through logbook and port-in/port-out control. As Billfish are not target species for Thai fishing fleet, the catch was very low. However, Department of fisheries has been monitoring these species via the scientific sampling survey as described in 6.4. The IOTC species identification cards are used as classification guideline in field sampling, to keep identification standardize among several survey teams.

6.7. Gillnet observer coverage and monitoring [Desirable]

Not applicable. Thailand has not gill net vessels that target tuna and tuna – like species operated in IOTC area of competence, only purse seiners are operated in the Andaman Sea.

6.8. Sampling plans for mobulid rays [Mandatory]

Currently Thailand do not have a specific plan for mobulid rays sampling as these species are rarely caught by Thai fishing fleet. The scientific port sampling program as presented in 6.4 is applied for all cartilaginous fish which includes mobulid rays. In addition, mobulid rays are treated as conservational species and be protected under the Act of Conserve and protect wildlife animals.

7. NATIONAL RESEARCH PROGRAMS [Desirable]

In March 2021, Department of Fisheries in cooperate with Oversea Fishery Cooperation Foundation of Japan had translated the IOTC fish species identification cards (tunas and billfishes) into Thai language. It is expected to be used by Thai onboard observers and sampling surveyors that will further enhance the statistical system for fish species identification in Thailand.

7.1. National research programs on blue shark

None.

7.2. National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish

None

7.3. National research programs on sharks

Three (3) research papers of shark resources in Thai waters were published in 2021. The researches relevant to morphological and species identification of sharks in the Andaman Sea, new record of cartilaginous fishes found in Thai waters, and examination of morphological and molecular differences of African angelshark in Northwestern Indian Ocean. Additionally, the national research of Bycatch of Sharks and Rays in Marine Fisheries and Management according to NPOA – sharks of Thailand will be lunch in 2023. The research details are presented in Table 7.

7.4. National research programs on oceanic whitetip sharks

None

7.5. National research programs on marine turtles

Thailand has a system to collect marine turtle egg laying in place. In 2021, the report presented marine turtle egg laying increase totally 500 nets were surveyed in 14 Provinces of Thailand.

7.6. National research programs on thresher sharks

None

Table 7. Summary table of national research programs, including dates.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
Morphological and Genetic Evidence Confirmed Three New Records of Ghost Shark Species (Chimaeriformes) From the Andaman Sea of Thailand (Krajangdara et al, 2021a)	October 2018	Thailand and FAO		FAO (under Nansen project)	To identify specimens of ghost sharks found during expedition based on their morphological characteristics	Three species of ghost sharks (Chimaeriformes) were recorded for the first time from the Andaman Sea of Thailand. Species described as the sicklefin chimaera, <i>Neoharriotta pinnata</i> (Rhinochimaeridae), longspine chimaera, <i>Chimaera</i> aff. <i>macrospina</i> (Chimaeridae) and Philippine chimaera, <i>Hydrolagus</i> cf. <i>deani</i> (Chimaeridae).
New Record of Cartilaginous Fishes Found in Thai Waters and the Adjacent Areas and an Updated Species List in 2019 (Krajangdara, 2019)	2018 - 2019	Thailand and FAO		DoF, Thailand	To update the checklist of cartilaginous fishes found in Thai waters and the adjacent areas.	The checklist of cartilaginous fishes found in Thai Waters and the adjacent areas is updated in 2019, including literature reviews and the one of results of the deep sea survey in the Andaman Sea of Thailand by Dr.Fridtjof Nansen Research Vessel in 2018. Thirteen new record species of cartilaginous fishes were found, comprising 7 sharks, 3 rays and 9 raifishes and Chimaera. The total of 183 species, composed of 86 sharks, 92 rays and 5 Chimaeras in Thai waters and the adjacent area were reported in this paper.
Morphological and Molecular Examination of a Northwestern Indian Ocean Population of the African Angelshark, <i>Squatina</i> cf. <i>africana</i> Regan, 1908 (Chondrichthyes : Squatiniformes : Squatinidae), with Remarks on Intraspecific Variations (Krajangdara et al, 2021b)	2017 - 2020	Thailand			To describe morphological characteristics and explore intraspecific variations in morphology and genetics of the collected samples tentatively identified as <i>Squatina</i> cf. <i>africana</i> .	Fourteen angelshark samples from the northwestern Indian Ocean collected by a Thai trawler in February 2017 were morphologically similar to <i>Squatina africana</i> Regan, 1908 based on several characteristics. However, thorough morphological examination of these samples revealed intraspecific variation, particularly concerning many morphometric measurements and some characters that were different from those of <i>S. africana</i> .
Bycatch of Sharks and Rays in Marine Fisheries and Management according to NPOA-sharks of Thailand	2023 - 2025	Thailand		DoF, Thailand	To examine cartilaginous fish resources and reproductive biology of sharks and rays in Thai waters.	Explore and study on reproductive biology of sharks and rays in Thai waters that support the consecutive NPOA-sharks

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

Thailand is compliant with IOTC resolutions relevant to the Scientific Committee. Table 8 details the resolutions and how they have been implemented.

Table 8. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2021.

Res. No.	Resolution	Scientific requirement	CPC progress
11/04	On a regional observer scheme	Paragraph 9	Thailand submitted and reported number of monitored vessels to IOTC secretariat in accordance with Resolution 11/04.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic vessels and oversea vessels.
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic vessels and oversea vessels.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic vessels and oversea vessels.
13/04	On the conservation of cetaceans	Paragraphs 7–9	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic vessels and oversea vessels. Moreover, Thailand has implemented the National Action Plan for Marine Mammal Conservation and Management 2023 – 2027. The objective of the National Action Plan aims to reduce the impact that causes death or severe injury to marine mammals such as Dolphins, Whales, Dugongs, etc.
13/05	On the conservation of whale sharks (<i>Rhincodon typus</i>)	Paragraphs 7–9	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic vessels and oversea vessels.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations bidding to domestic



Res. No.	Resolution	Scientific requirement	CPC progress
			vessels and oversea vessels. The scientific and management of shark resources are followed the NPOA sharks.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Thailand collected fisheries information from fishing logbook, landing declaration, and the Electronic Report System.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Thailand collected fisheries information in the competence area and submitted the reports to IOTC secretariat in accordance with Resolution 15/02.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations biding to domestic vessels and oversea vessels. The data are submitted to IOTC secretariat in accordance with Resolution 17/05.
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations biding to domestic vessels and oversea vessels. The data are submitted via annual report as required in the Resolution.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations biding to domestic vessels and oversea vessels. The data are submitted to IOTC secretariat in accordance with Resolution 18/05.
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	Thailand follows and submitted via annual report as required in the Resolution. And Thailand has been enforced the law which has designed incidental logbook.
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence	Paragraph 22	All Thailand fleets fully implemented Resolution 19/01.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	Thailand has implemented the regulations on recording fishing activities via fishing logbook which appoint the vessel masters to record interaction of conservative marine species, including cetaceans, whale shark, sea turtles, seabirds, and other conservative IOTC species, during fishing in the logbooks. The regulations biding to domestic vessels and oversea vessels. The data are submitted to IOTC secretariat in accordance with Resolution 19/03.

9. LITERATURE CITED [Mandatory]

Office of the Council of State. 2017. Royal Ordinance on Fisheries B.E.2558 (A.D.2015) and Royal Ordinance on Fisheries (Amendment) B.E. 2560 (2017). Department of Fisheries, Ministry of Agriculture and Cooperatives.

Notification of the Department of Fisheries on Requirement and Regulations of Fishing Vessels Operating Outside Thai Water in IOTC Area of Competence (IOTC) B.E. 2565 (2022).

Thailand National Plan of Action for the Conservation and Management of Shark: Plan 1, 2020 – 2024.

Thailand National Action Plan for Marine Mammal Conservation and Management 2023 – 2027.

Annual Report 2021 of Department of Marine and Coastal Resources.

Marine Fisheries Management Plan of Thailand 2020 – 2022.

Krajangdara, T. 2019. New Record of Cartilaginous Fishes Found in Thai Waters and the Adjacent Areas and an Updated Species List in 2019. Burapha Science Journal vol 24, no. 2, May – August 2019, 599 – 621. <https://science.buu.ac.th/ojs246/index.php/sci/article/view/2597>

Krajangdara, T., Fahmi, D. A. E., Chaorattana, C. & Khudamrongsawat, J. 2021a. Morphological and Genetic Evidence Confirmed Three New Records of Ghost Shark Species (Chimaeriformes) From the Andaman Sea of Thailand. Tropical Nature History vol 21, no 2 (2021) August, 218 – 233. <https://li01.tci-thaijo.org/index.php/tnh/issue/view/17175>

Krajangdara, T., Khudamrongsawat, J., Choarattana, C., Promnum, P. & Weigmann, S. 2021b. Morphological and Molecular Examination of a Northwestern Indian Ocean Population of the African Angelshark, *Squatina cf. africana* Regan, 1908 (Chondrichthyes : Squatiniformes : Squatinidae), with Remarks on Intraspecific Variations. Phuket Marine Biological Center Research Bulletin no 78, 17–30. <https://www.dmcr.go.th/detailLib/5547>