

SC-07-18

**7th Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific
Committee**
21 - 25 March 2022, Online

Annual National Report:

Thailand Reports to the SIOFA Scientific Committee

Please note that National Reports and SC Working Group reports shall be classified as working papers

Relates to agenda item: 03

Working paper Info paper

Delegation of Thailand

Abstract

This report summarizes and updates fishing activities of Thai flagged fishing vessels operated in the SIOFA competent area in 2021, from January – December 2021. There are three fishing vessels operated in the area. Fishing grounds was found between latitude 9.500 to 11.000° S and longitude 60.500 to 62.000° E. The fishing gears used were otter board trawl as the main gear and handline as an alternative. The fishing activities were intensely increased from the previous year. Total number of trawl fishing was 1,003 hauls with 2,922.31 tons of catch and the CPUE of 727.85 kg/hr. Whereas handline fishing was drastically decreased to 52 days of fishing with 38.34 tons of catch and the CPUE of 737.31 kg/day. The trawl catch composition resembled to the previous year, which dominant by round scads, lizardfishes, and threadfin breams, while handline catch was slightly different. Trevallies were found less compared to the previous year in handline catch composition while other demersal fishes, e.g., coral groupers, red snappers, emperor fish, increased due to domestic demand.

The surveillance and monitoring scheme has been implemented to monitoring every activity at sea, along with implementation of onboard observers according to the CMM 2021/02. In 2021, the annual observer coverage of trawl and handline was 100% and 96.15% respectively. The scientific data collection was done by onboard observers as well as observation of incidental bycatch in fishing operation. There was 687.7 kg of non-target species reported as incidental bycatch in 2021, with no seabirds or marine mammals caught. Moreover, the VMEs thresholds and move-on rule were set for Thai vessels in order to prevent the negative effects on bottom habitat. Majority of trawl fishing caught no VMEs, only few numbers of trawling contained VMEs with little amount. There was a total of 710.7 kg of sponges and a total of 21.0 kg of corals reported in 2021.

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1. Description of fisheries

Thai fishing fleet operating in the SIOFA competent area mainly target demersal fish. There are two types of fishing gear authorized by Thailand, i.e., bottom trawl and handline, while trawl is used as a main gear. The fishing area is in the Saya de Malha Bank at the depth of approximately 50-120 m for trawl and 20-30 m for handline. Fishing trips lasted two-three months and went back to Thai ports for landing. The control and surveillance schemes are in place for monitoring activities at sea until getting back to Thai ports.

Fleet Structure

In the past, Thailand had 62 fishing vessels operated in the SIOFA competent area during 2015 – 2017. Due to the Thai fisheries reform in 2015, all oversea fishing vessels were called back to Thailand during 2016 to early 2017 to reset the control and surveillance system of oversea fishery. In 2021, there are three authorized oversea fishing vessels operated in the SIOFA competent area. The number of fishing fleets was shown in Table 1 and catch and effort data by gear were presented in Table 2-9.

Table 1 Fleet composition in the last five years

Year	Otter board trawl		Pair trawl		Trap	
	Number	Size (GT)	Number	Size (GT)	Number	Size (GT)
2017	11	182-721	2	164-397.51	1	199.8
2018	-	-	-	-	-	-
2019	2	230.22-312.73	-	-	-	-
2020	3	230.22-312.73	-	-	-	-
2021	3	230.22-312.73	-	-	-	-

Table 2 Summary table of otter board trawl effort in the last five years

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	719 hauls
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	176 hauls
2020	-	-	-	-	-	-	-	-	464 hauls
2021	-	-	-	-	-	-	-	-	1,003 hauls

Table 3 Summary table of otter board trawl catches (tons) in the last five years

Year	Sub-areas for reporting catch data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	1,617.84
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	358.12
2020	-	-	-	-	-	-	-	-	924.51
2021	-	-	-	-	-	-	-	-	2,922.31

Table 4 Summary table of handline effort in the last five years

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	N/A
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	110 days
2020	-	-	-	-	-	-	-	-	133 days
2021	-	-	-	-	-	-	-	-	52 days

Table 5 Summary table of handline catches (tons) in the last five years

Year	Sub-areas for reporting catch data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	-
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	304.80
2020	-	-	-	-	-	-	-	-	379.39
2021	-	-	-	-	-	-	-	-	38.34

Table 6 Summary table of pair trawl effort in the last five years

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	75 hauls
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-

Table 7 Summary table of pair trawl catches (tons) in the last five years

Year	Sub-areas for reporting catch data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	416.18
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-

Table 8 Summary table of trap effort in the last five years

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	10 sets
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-

Table 9 Summary table of trap catches (tons) in the last five years

Year	Sub-areas for reporting catch data								
	1	2	3.a	3.b	4	5	6	7	8
2017	-	-	-	-	-	-	-	-	8.32
2018	-	-	-	-	-	-	-	-	-
2019	-	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-

2. Catch, effort and CPUE summaries

In 2021, three Thai fishing vessels were operated in the Saya de Malha Bank, between latitude 9.500 to 11.000° S and longitude 60.500 to 62.000° E. (Figure 1). Fishing operations were done all year round. Demersal fishes and mid-water fishes are the target species of trawl fishing, while coral groupers, red snappers, and emperor fish are main target species of handline fishing.

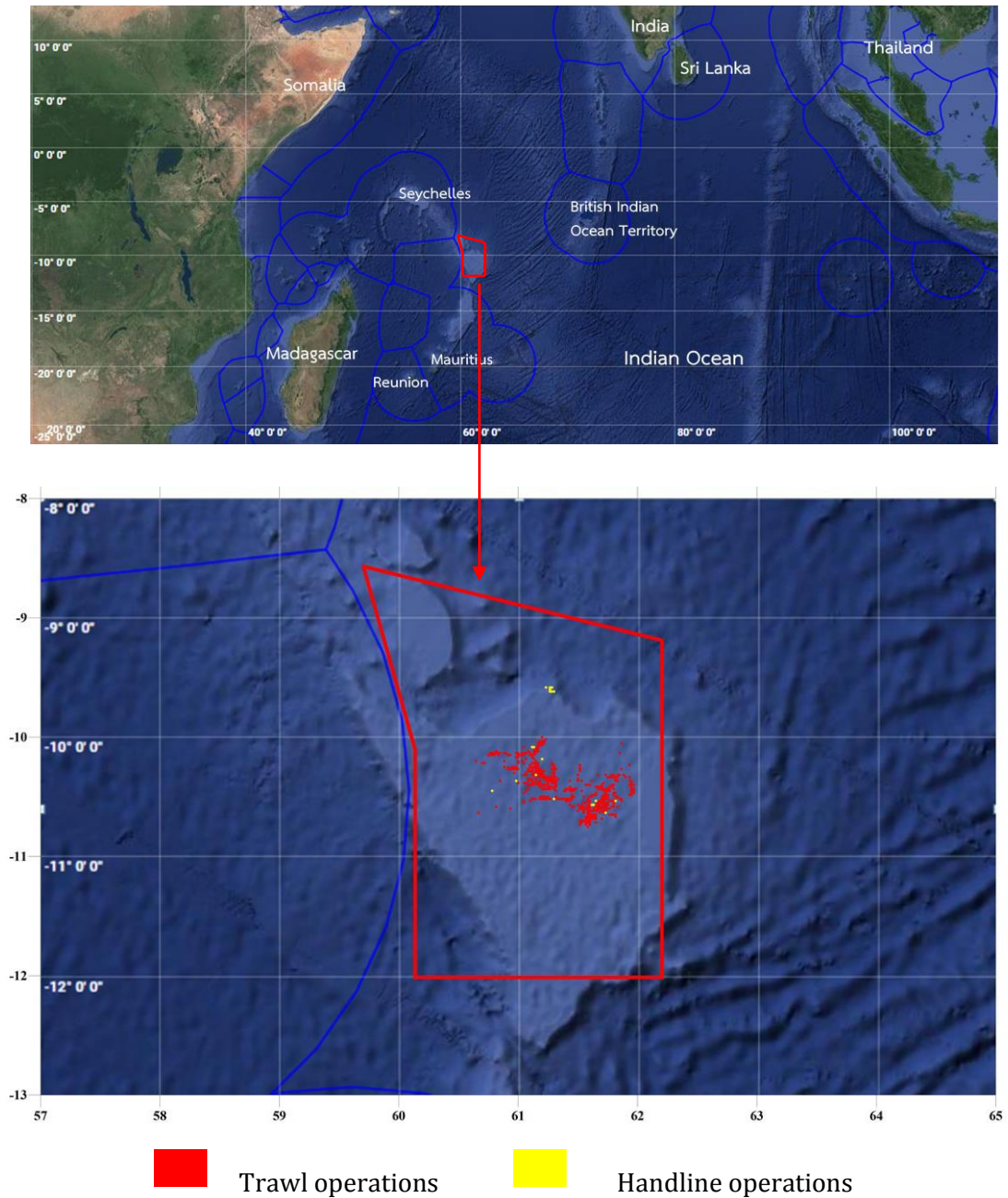


Figure 1 Fishing ground of Thai fishing vessels in the Saya de Malha Bank in 2021

Otter board trawl

In 2021, the total catch and catch rate of otter board trawl from Thai vessels were 2,922.31 tons and 727.85 kg/hr. The main species consisted of round scads (*Decapterus* spp.) accounted for 29.81%, followed by brushtooth lizardfish (*Saurida undosquamis*) of 24.38%, Delagoa threadfin bream (*Nemipterus bipunctatus*) of 12.59%, goatfishes (*Upeneus* spp.) of 12.22%, bigeye scad (*Selar crumenophthalmus*) of 7.10%, and bigeye barracuda (*Sphyraena forsteri*) of 4.26% respectively (Figure 2). The catch composition resembles to the previous year.

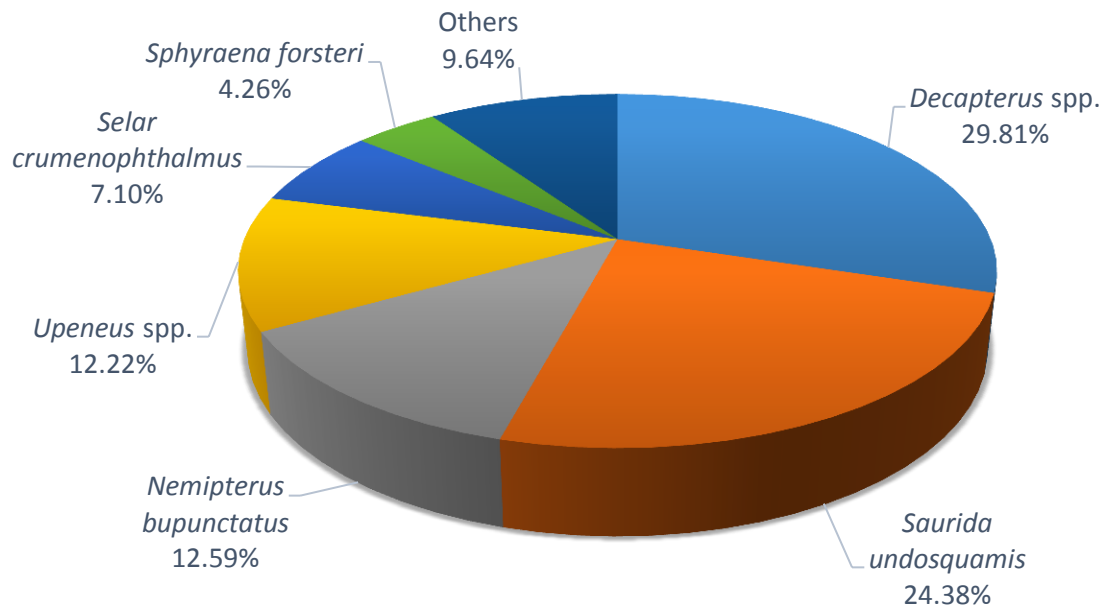


Figure 2 Catch composition of otter board trawl in the Saya de Malha Bank in 2021

Handline

Handline catch of Thai vessels in 2021 was 38.34 tons and catch rate was 737.31 kg/day. Handline targeted high value species that consist of trevallies (*Carangoides* spp.) accounted for 58.25%, followed by groupers (Serranids) of 9.74%, emperor fish (*Lethrinus* spp.) of 9.15%, red snappers (*Lutjanus* spp.) of 7.91%, and green jobfish (*Aprion virescens*) of 2.73% respectively (Figure 3).

The species composition was slightly different from the previous year because the vessels changed their target species from trevallies, which was mainly caught in 2020, to other high value fishes, e.g., coral groupers, groupers, which have higher domestic demand.

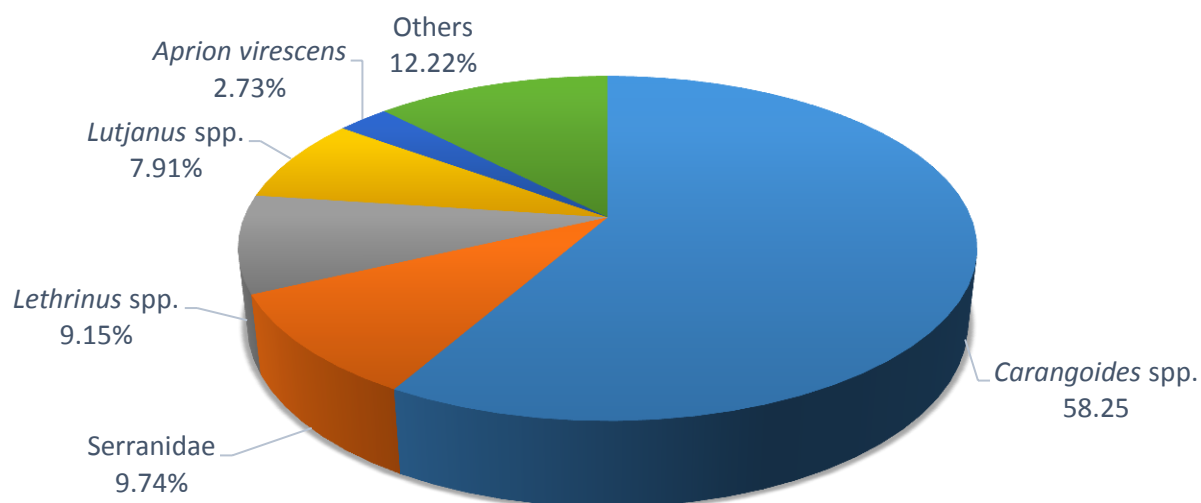


Figure 3 Catch composition of handline in the Saya de Malha Bank in 2021

Table 10 Catch (kg) by species for main target species from otter board trawl (R-retained and D-discarded)

Year	<i>Decapterus</i> spp.		<i>Saurida</i> spp.		<i>Nemipterus</i> spp.		<i>Upeneus</i> spp.		<i>Sphyræna</i> spp.		Others		Total	
	R	D	R	D	R	D	R	D	R	D	R	D	R	D
2019	111,168	400	98,492	0	50,616	0	28,216	0	19,610	0	50,018	19,745	358,120	20,145
2020	236,534	6,350*	132,731	0	117,546	0	89,098	0	67,286	0	281,317	24,193	924,512	30,543
2021	871,060	841	712,557	0	367,903	0	356,965	430	124,554	0	489,273	61,212	2,922,312	62,483

Note * Most of *Decapterus* spp. are kept as bait fish for handline

Table 11 Catch (kg) by species for main target species from handline (R-retained and D-discarded)

Year	<i>Carangoides</i> spp.		<i>Gnathanodon speciosus</i>		Serranidae**		<i>Aprion virescens</i>		<i>Lutjanus</i> spp.		Others		Total	
	R	D	R	D	R	D	R	D	R	D	R	D	R	D
2019	228,660	0	25,130	0	18,394	0	9,552	0	8,602	0	14,461	159	304,799	159
2020	341,911	0	0	0	5,813	0	2,919	0	17,294	0	11,457	10	379,394	10
2021	22,958	0	0	0	3,838	0	1,076	0	3,117	0	7,351	15	38,340	15

Note ** main species are *Plectropomus* spp. and *Epinephelus* spp.

3. Biological sampling and length of catches

The scientific sampling of trawl and handline were in placed in order to determine catch composition and length of target species. The fish size data was obtained from onboard observers of the fishing vessels in January - December 2021. In this report, the lengths of ten (10) target species were measured with 0.5 cm class interval, minimum and maximum length were reported and average length were analysed. The result is presented in Table 14, and size distribution is presented in Figure 4-13.

Table 12 Length of some economic species caught in 2021

Species	Gear	Length type	Minimum	Maximum	Mean \pm SD
<i>Saurida undosquamis</i>	Trawl	TL	5.25	51.75	28.26 \pm 8.12
<i>Nemipterus bipunctatus</i>	Trawl	TL	4.75	33.25	18.90 \pm 3.45
<i>Decapterus russelli</i>	Trawl	TL	10.25	30.75	18.68 \pm 1.96
<i>Decapterus macrosoma</i>	Trawl	TL	14.75	30.75	20.33 \pm 2.64
<i>Selar crumenophthalmus</i>	Trawl	TL	13.25	44.25	23.89 \pm 2.91
<i>Carangoides fulvoguttatus</i>	Handline	FL	29.75	92.25	62.90 \pm 12.29
<i>Lutjanus bohar</i>	Handline	TL	41.25	78.25	52.83 \pm 7.03
<i>Lutjanus sebae</i>	Handline	TL	33.25	82.25	53.01 \pm 11.24
<i>Aprion virescens</i>	Handline	TL	47.25	98.25	69.79 \pm 11.79
<i>Plectropomus punctatus</i>	Handline	TL	39.25	78.25	55.93 \pm 7.25

Note: TL = Total length, FL = Fork length

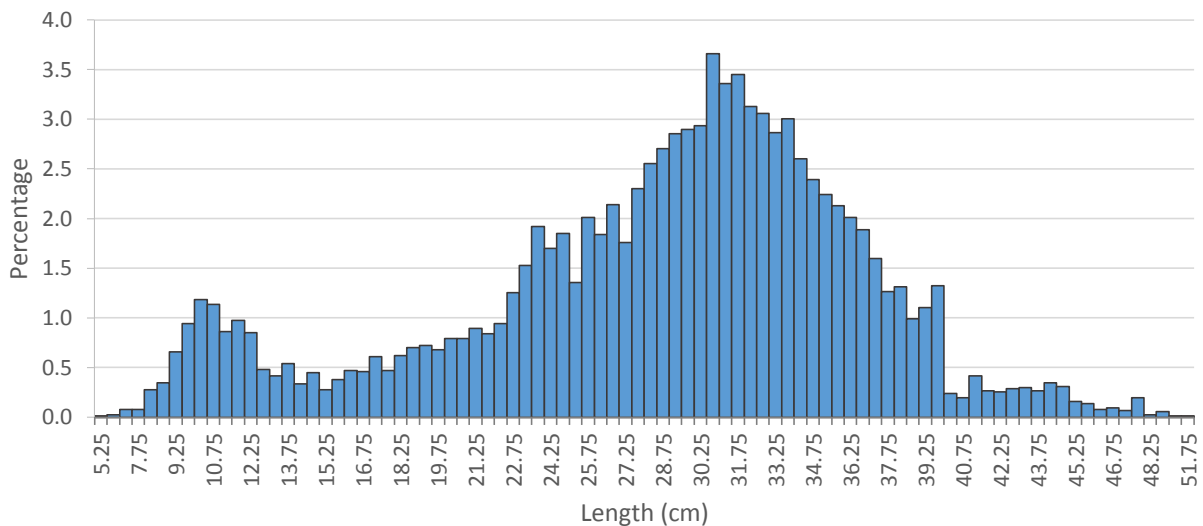


Figure 4 Size distribution of *Saurida undosquamis* caught by otter board trawl in 2021

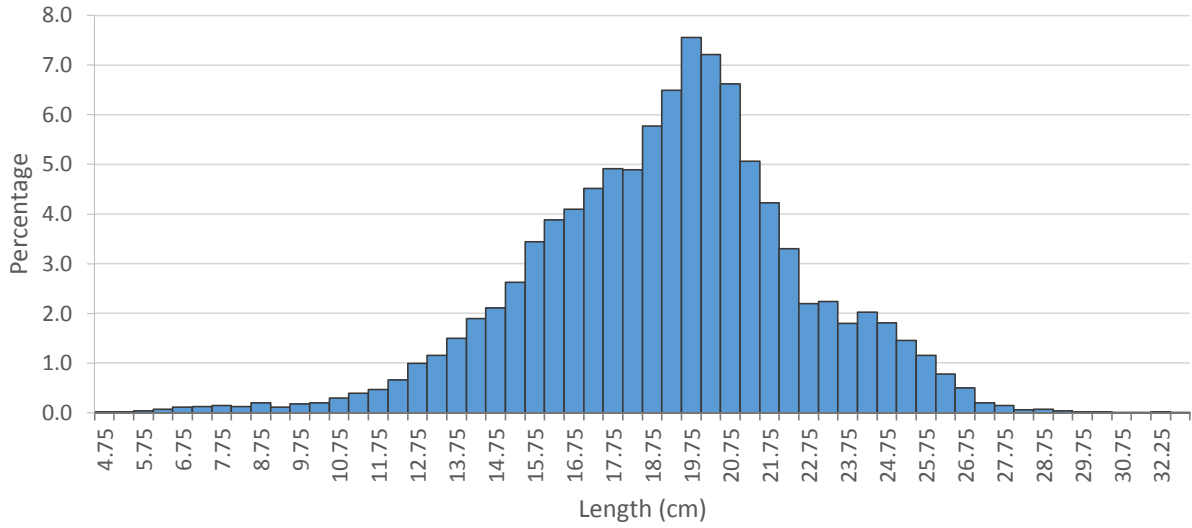


Figure 5 Size distribution of *Nemipterus bipunctatus* caught by otter board trawl in 2021

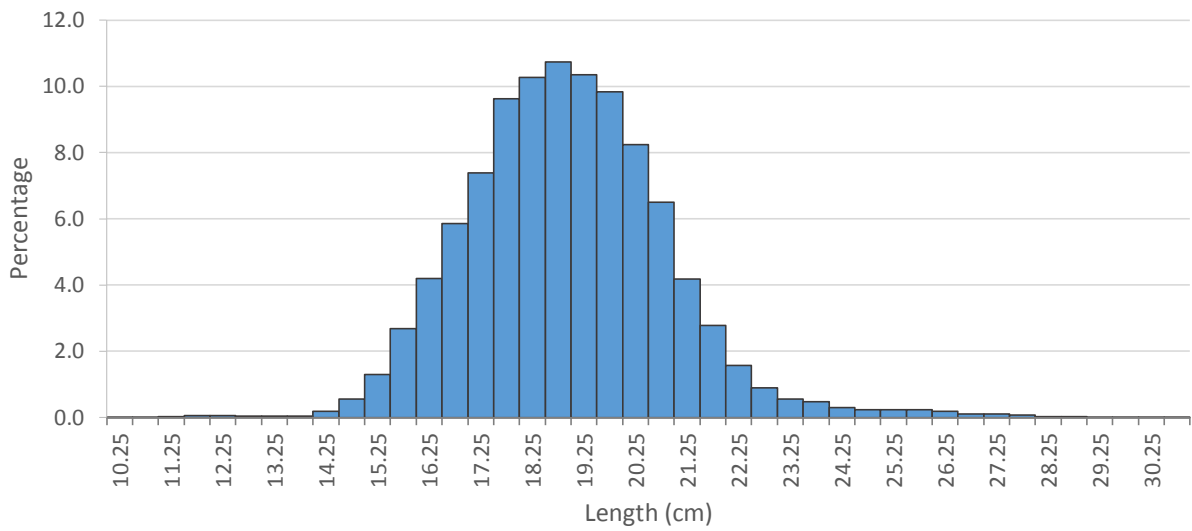


Figure 6 Size distribution of *Decapterus russelli* caught by otter board trawl in 2021

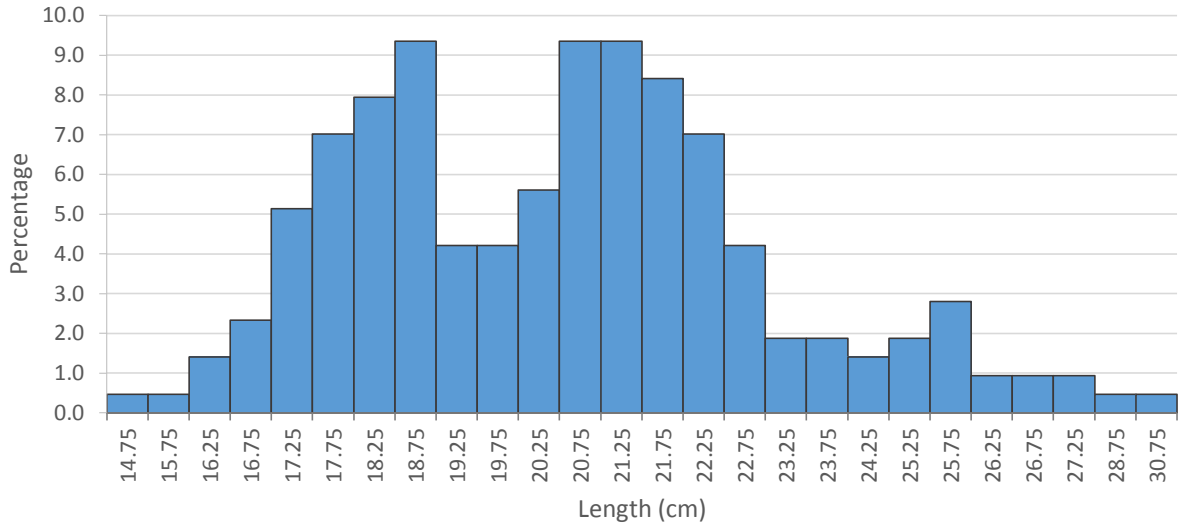


Figure 7 Size distribution of *Decapterus macrostoma* caught by otter board trawl in 2021

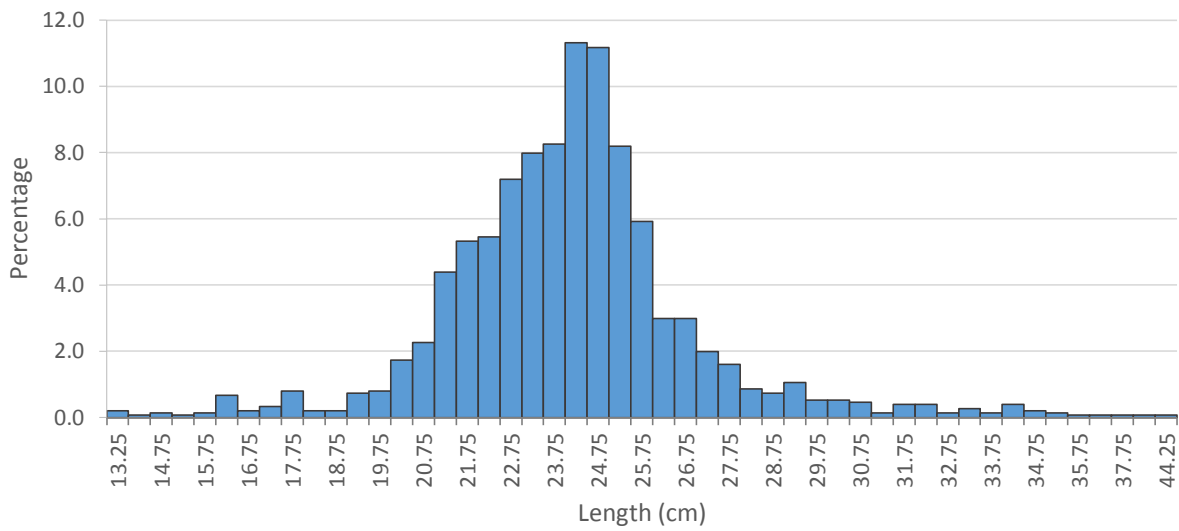


Figure 8 Size distribution of *Selar crumenophthalmus* caught by otter board trawl in 2021

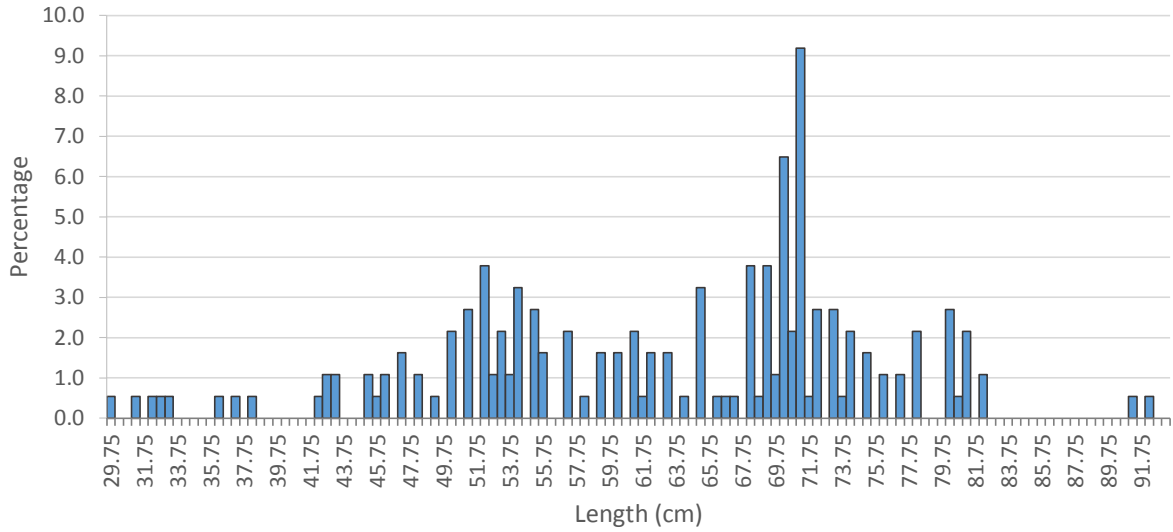


Figure 9 Size distribution of *Carangoides fulvoguttatus* caught by handline in 2021

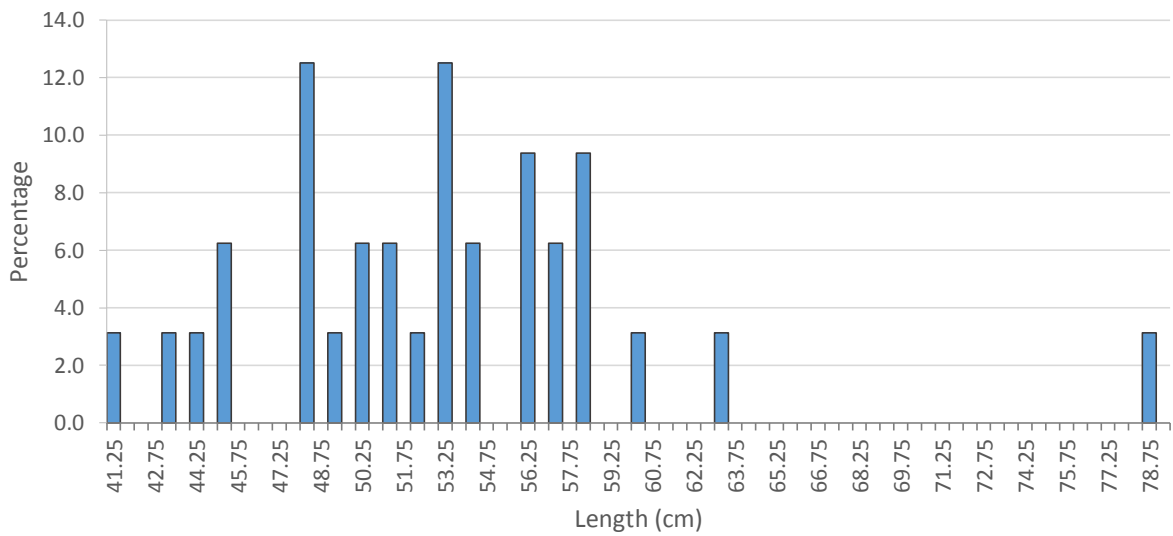


Figure 10 Size distribution of *Lutjanus bohar* caught by handline in 2021

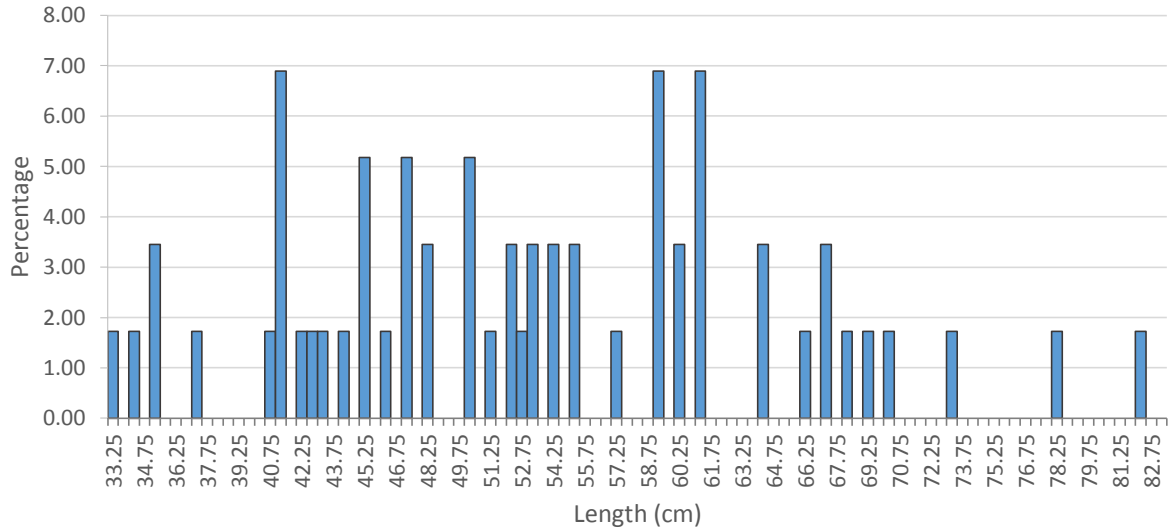


Figure 11 Size distribution of *Lutjanus sebae* caught by handline in 2021

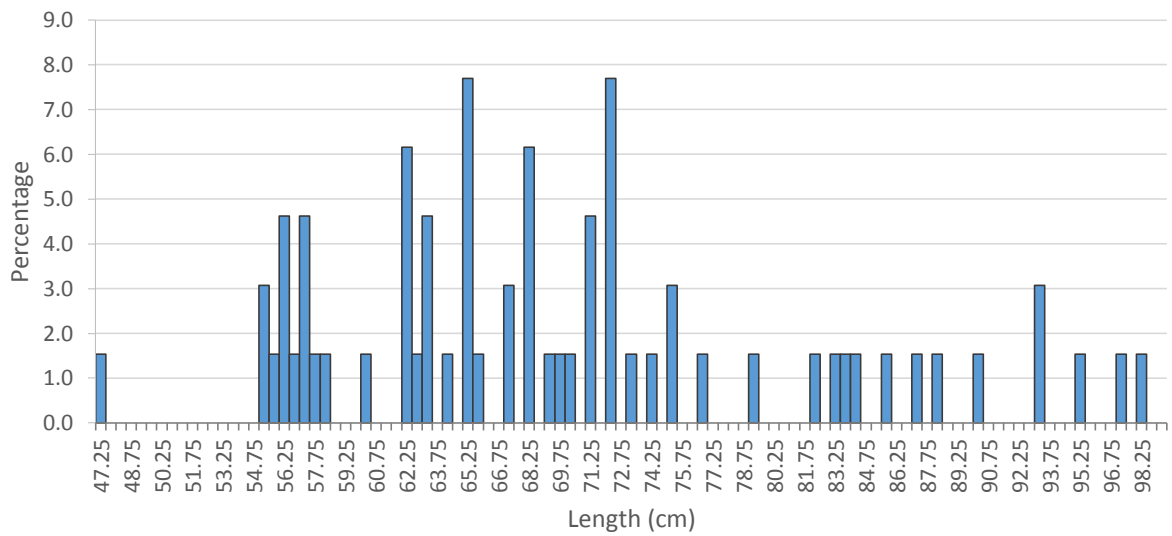


Figure 12 Size distribution of *Aprion virescens* caught by handline in 2021

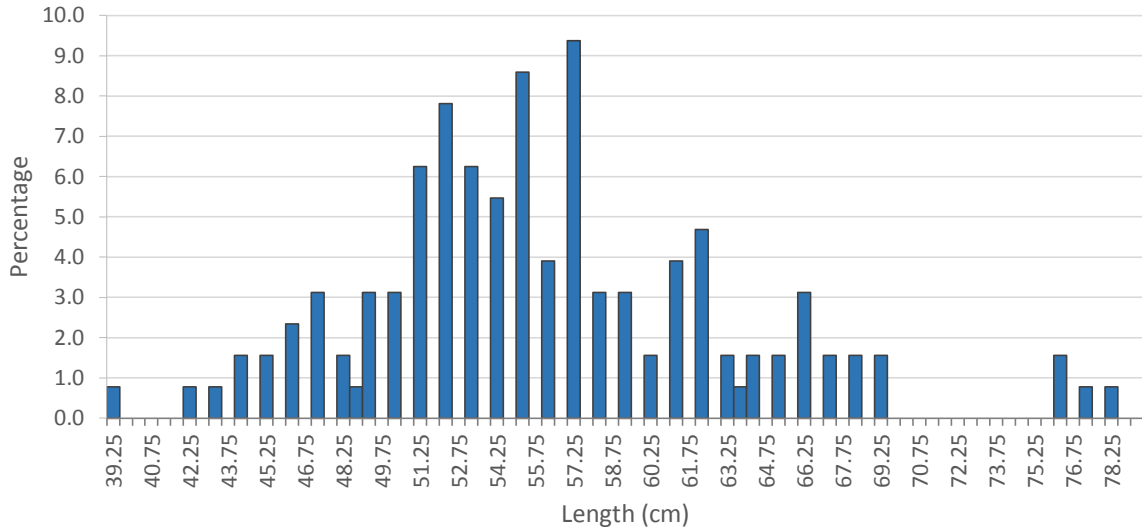


Figure 13 Size distribution of *Plectropomus punctatus* caught by handline in 2021

4. VME Thresholds

Thailand has set the regulations for Thai fishing vessels when detect corals or sponges including other VMEs in the area which are likely to be a vulnerable ecosystem. These include stop fishing when catching living corals or sponges more than the defined benchmarks and take actions following the rules which classified by gear type as follows;

Trawl

Stop fishing when catching more than 60 kg of living corals or 300 kg of sponges per one time of operation and move away from the previous position at least 2 nm measuring from one side of its trawling direction.

Longline

Stop fishing when catching living corals or sponges more than 10 units* per 1,000 hooks or per mainline of 1,200 meters, whichever is the shorter and move away from the previous position more than 1 nm from the center of deployed direction of the longlines. (*unit of corals and sponge means either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container)

Fish trap

Stop fishing when catching living corals or sponges more than thresholds to be assigned by SIOFA secretariat and move away from the previous position more than 1 nm from the radius or midpoint of mainline*. (*mainline length of 1,200 meters)

Other bottom fishing gear

Stop fishing when catching living corals or sponges more than thresholds to be assigned and move away a radius of one (1) nautical mile from the midpoint of the operation.

In addition, onboard observers are required to record and report species and quantities of coral and other marine organisms derived from each fishery and area. The data will be used to analyse the abundance and diversity of benthic marine organisms. This for further define VMEs in the SIOFA area.

Table 13 Threshold levels for encounters with VMEs and move-on protocols

Gear/fishery	Threshold (kgs)	Move-on protocols
Trawls	corals > 60 kg sponges > 300 kg	move at least 2 nautical miles
Longlines	corals or sponges > 10 units per 1,000 hooks or per mainline of 1,200 meters, whichever is the shorter	move at least 1 nautical mile
Traps	corals or sponges > more than thresholds to be assigned by SIOFA secretariat	move at least 1 nautical mile
Other bottom fishing gears	corals or sponges > more than thresholds to be assigned by SIOFA secretariat	move at least 1 nautical mile

Table 14 VME taxa bycatch quantities per gear from logbooks data in 2019-2021

Year			Trawl	Handline
2019	Taxa	Total effort	176 hauls	110 days
		sponges	590 kg	0
		corals	6.5 kg	27.5 kg
2020	Taxa	Total effort	464 hauls	133 days
		sponges	308 kg	0
		corals	0.02 kg	10 kg
2021	Taxa	Total effort	1,003 hauls	52 days
		sponges	710.7 kg	0
		corals	21 kg	0

5. Fisheries data collection and research activities

5.1 Data report during their fishing / transshipment activity outside Thai waters

Fishing information from logbook and e-logbook

Fisheries data are collected from logbook and e-logbook which provided by the Department of Fisheries (DOF), Thailand. The data include information related to fishing trips and fishing operation. The trip data include details about the vessel to the dates and ports of departure and return, number and weight of catch and effort, and fishing position (latitude and longitude). The operational data include the date and time of the operation, fishing position, retained of target species and other information relating to the operation. The master of the fishing vessel shall record every fishing operation in the fishing logbook and send a copy when landing at Thai port. The master must report the e-fishing logbook to the authority via an application on a daily basis as required by law. Data from logbook are used to estimate annual catches, nominal catch by species and effort which are analyzed by Excel. Currently, e-logbook system is available only for bottom trawl.

Transshipment activities

The oversea fishing vessels must send a request and report any transshipment activities with designated timeframe via the electronic reporting system (ERS). With the request function in the application, the fishing master can request for transshipment and landing activities. The responses from the authorities, whether authorize or not authorize, will be electronically sent to the vessel via the application. With the report function, the fishing master can declare their activities following those of authorizations which include transshipment declaration. However, there was no transshipment activity in 2021.

Daily report from onboard observers

Onboard observers are assigned to report daily activities to DOF via application. The report includes information about fishing operations, fish catch, details of fish released and discarded, as well as the details of fishing gears and fishing support equipment.

5.2 Onboard data collection

Onboard observers are also assigned to collect scientific data including fishing effort data, catch, length and some biological data of target species. For trawl, the mixed species sampling is used to determine catch composition and length of some target species is measured in 0.5 cm class interval. For handline, caught fish are randomly sampled to measure length and weight individually. In addition, the observers are requested to observe incidental bycatch and VMEs in any fishing operations, identify the species and record the biological data of found species such as sex, weight, length, etc. then report to DOF as regular procedure.

5.3 Data collection from landing site

Port inspector will inspect the documentation and physical checks on board for port in –port out permission and the video recorded by the EM will be inspected by port inspector prior to authorize to unloading. Besides, the Thai authorities will also carry out the catch landing inspection when porting in for reliability and accuracy of information on landed fish before entering the supply chain. During this process, catch weight is verified with landing declaration documents, such as fishing logbook, fishing gears and Marine Catch Transshipment Document (MCTD) in the case of transshipments.

6. Description of data verification mechanisms

Data collection on Thai overseas fisheries has been categorized into two themes. The first theme is information collection from daily report while the vessels have fishing activity /transshipment activity outside Thai waters. The information are transmitted via satellite system. Secondly, data collection from landing sites are in consistent with the data recorded in the Thai-flagged database system. These data are submitted to SIOFA secretariat to monitor and analyze the status of fisheries resources for sustainable management in long term.

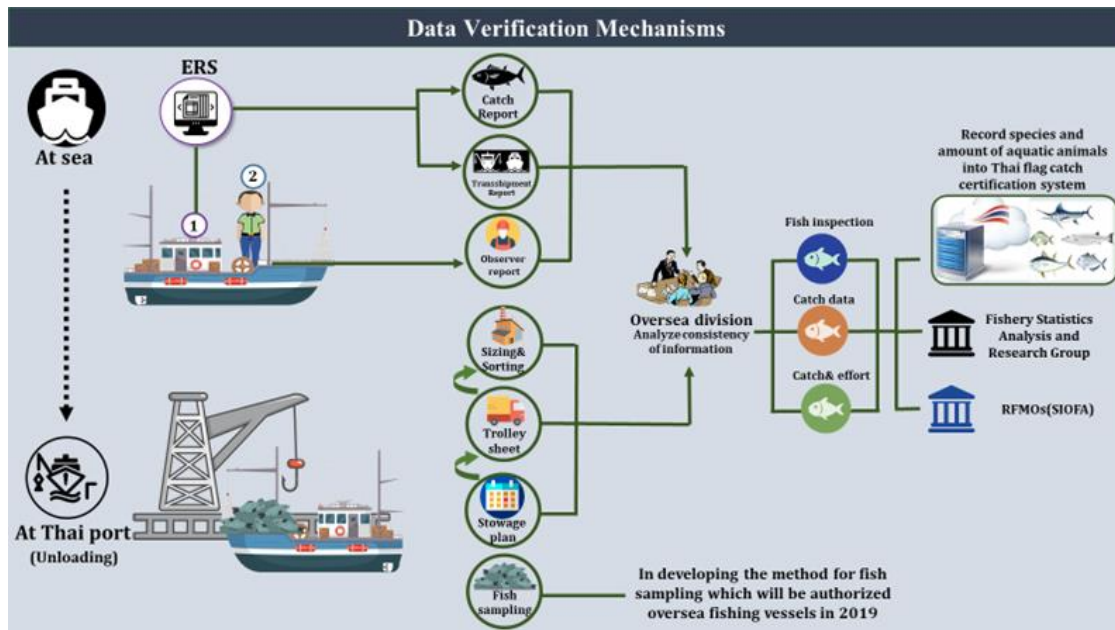


Figure 14 Data verification mechanism for Thai-flagged overseas fishing vessel

The improved activities related to achieve the effective MCS and data verification mechanism

6.1 Port Out Controls

At Port in – Port out Control Centers (PIPOs), it is important to note that the Thai authorities have set clear targets for port in and port out inspections, i.e. documentation and physical checks of vessels and labor. This is carried out by PIPO officers and inspectors of relevant competent authorities.

6.2 Vessel Monitoring System (VMS)

The VMS of fishing vessels must be active all-time and transmit signals every one hours. The real-time system can be monitored by online application and navigation data of fishing vessel can be traced back to analyze behavior of fishing vessel. For overseas fishing vessel, a spare VMS set is available in case the main VMS signal is lost.

6.3 Electronic Reporting System (ERS) and Electronic Monitoring System (EM) installation.

A new electronic surveillance system has been developed, comprising of two main components: Electronic Reporting System (ERS) and Electronic Monitoring System (EM).

6.4 Onboard observer coverage for fishing vessel

- Vessels using trawl gear must have onboard observer coverage for the entire duration of the trip (100% coverage).
- Vessels using any other bottom fishing gear types must have onboard observer for 20% of operation in any calendar year.
- 100% transshipment observer coverage.

7. Summary of observer program

Thailand has 4th batch of observers. There are totally 98 observers. The training course for observer contained 11 modules of essential fisheries observer principle based on the FAO Guidelines for Developing an at-Sea Fisheries Observer Program. These included the Basic Training of Seaman, Fisheries Management, Legal and Policy Framework, Health and Safety, Code of Conduct for Observers, Fishing Vessels and Gears, Data Collection, Recording Forms and Documents, Navigation, Radio Communication and Shipboard Training.

Notification of the Department of Fisheries related to onboard observer.

- Vessels using trawl gear must have onboard observer coverage for the entire duration of the trip (100% coverage).
- Vessels using any other bottom fishing gear types must have onboard observer for 20% of operation in any calendar year.
- 100% transshipment observer coverage.

Duties of observer

- Observe and collect biological information, including catch composition sampling of the transhipped aquatic animal, and other activities such as sorting, processing, or observe several parts onboard the vessel, fish hold, wheel house and technology of fishing gears.
- Record biological information or data related to the conduct of the conservation and management measures in the format defined by the Department of Fisheries, composition, number of bycatch or discard, type of fishing gear, mesh size, fishing logbook, transshipment, etc. as well as co-signing in the transshipment report by observer, fishing vessel and transshipment vessel

Table 15 Observer program design and coverage summary in 2021

Fishing gears	Trip coverage (%)	Total no of sets/hauls	No of sets/hauls covered	Within set/haul coverage (%)	Incidental bycatch (bird, mammal), observation coverage (%/haul)
Trawl	100%	1,003 hauls	Covered 1,003 hauls, 296 samplings	100% observed, 29.51% sampling	100%
Handline	20%	52 days	52 fishing days, 41 samplings	96.15% observed, 78.85% sampling	96.15%

Table 16 Reporting of observed bycatch from otter board trawl in 2021

bycatch	Trawl	Handline
seabird	0	0
mammal	0	0
<i>Alopias superciliosus</i>	4 kg (1 individual)	0
<i>Alopias</i> spp.	4 kg (1 individual)	0
<i>Thunnus albacares</i>	0	10 kg (1 individual)
<i>Auxis thazard</i>	5 kg (10 individuals)	0
<i>Euthynnus affinis</i>	19 kg (4 individuals)	0
<i>Rhina ancylostoma</i>	245 kg (7 individuals)	0
<i>Hexanchus nakamurai</i>	3 kg (2 individuals)	0
<i>Mobula</i> spp.	15 kg (1 individual)	0
<i>Galeocerdo cuvier</i>	46 kg (10 individuals)	0
<i>Sphyrna lewini</i>	48.70 kg (14 individuals)	0
<i>Sphyrna zygaena</i>	6 kg (3 individuals)	0
<i>Sphyrna</i> spp.	322 kg (84 individuals)	0

8. Relevant social and economic information

Fishing activities of Thai fleet were shifted a lot as the entrepreneurs adapt to the sudden changes of COVID-19 pandemic. In regular circumstances, Thai vessels targeted demersal fishes, e.g., lizardfish and goatfish, from trawl for surimi production and large high-valued fishes from handline for domestic consumption and export. All demersal fishes were domestically utilized by Thai factories for surimi products while handline fishes, e.g., trevallies and groupers were filleted and sold to restaurants in Thailand and Malaysia. The lock-down situation in 2021 that vastly affected to Thailand economy especially tourism caused the entrepreneurs could not run their business like in the past. Therefore, the entrepreneurs adapted to the situation by targeted more demersal fishes for surimi to compensate fillets that do not have market demand in this period. That reflects in trawl catch which was highly increased and handline catch sharply dropped.