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# National Annual Report: Thailand Reports to the SIOFA Scientific Committee

*Relates to agenda item: 03* Working paper ☒ Info paper ☐

Delegation of Thailand

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## Abstract

The report includes the fisheries information during 2015-2017 of the 62 vessels with the 58 available logbooks. The fishing gears were trawling nets and portable traps. There was total effort of *9*,455 fishing set. The highest input fishing effort was in 2016 of the total 4,560 sets. The total catch during 2015-2017 was 35,916.67 tons. The dominant catch species comprised round scad (*Decapterus* spp.) 29.78%, lizard fish (*Saurida* spp.) 25.66%, threadfin bream (*Nemipterus* spp.) 11.62%, goat fish (*Parupeneus* spp.) 5.59%, bigeye scad (*Selar* spp.) 4.79% and Indian mackerel (*Rastrelliger* spp.) 4.29%. The highest catch was in 2015 with the amount of 23,118.05 tons. Based on the observer data and report, the average sizes of two dominant species of fish including lizardfish (*Saurida undosquamis*) and round scad (*Decapterus russelli*) are larger than their sizes at maturity. They found no ETP species, coral or sponge. However, logbook template of that period of fishing was not corresponding to all required or necessary data for analysis. For example, the starting and ending time of operation were not indicated.The logbook template had been updated to meet the requirement for scientific purposes. In addition to the human observer, the deriving information from VMS ERS and EMS will enhance the data collection for scientific purposes. Additionally, 100% coverage of transshipment observers and landing inspection will verify against to the information from logbook and relating documents. The authorized vessels are prohibited to fish within the BPA area and the *"*move on*"* rule must be applied when catch coral or sponge over the determined amount of benchmark. The benchmarks are categorized based on the gears types. Therefore, Thailand has improved the MSC and data verification mechanism.

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## 1. Description of Fisheries

During 2015 – 2017, there were 76 fishing vessels had been authorized by Department of Fisheries, Thailand to fish in high-sea. From the total 76 individual vessels, most of them used single-gear which was trawling net, composed with 1 paired trawl and 73 otter board trawls. There was only 1 vessel used multi-gear which were trawling net, purse seine and trap.

There were only 57 authorized vessels that were active and had fishing operations in the Western Indian Ocean in 2015 and increased to 61 vessels in 2016. For latest fishing period in 2017 (January to February), there were 14 vessels operated in the above mentioned area. (Table 1). All of these vessels had fishing ground in the SIOFA area between latitude 9 to 12 degree South and longitude 60 to 62 degree East or in the sub-area of 'North of 20º' (Annex I).

**Table 1: Number of Thai fishing vessels operated in the SIOFA area (North of 20º) during 2015-2017**

| Gear type | Size (Gross Tonnage) | Number of authorized vessel (2015-2017) | Number of active vessel (2017-2015) | Number of active vessel by year | | |
|---|---|---|---|---|---|---|
| | | | | 2015 | 2016 | 2017 |
| **Single-gear** | | | | | | |
| Pair trawl | 164[a] | 1 | 1 | - | 1 | 1 |
| | 398[a] | 1 | 1 | 1 | 1 | 1 |
| Otter board trawl | 100 – 200 | 18 | 12 | 11 | 12 | 3 |
| | 201 – 300 | 27 | 22 | 19 | 21 | 5 |
| | 301 – 400 | 18 | 15 | 15 | 15 | 2 |
| | 401 – 500 | 4 | 4 | 4 | 4 | - |
| | 501 – 600 | 2 | 2 | 2 | 2 | - |
| | 601 – 700 | 1 | 1 | 1 | 1 | - |
| | 701 – 800 | 2 | 2 | 2 | 2 | 1 |
| | 801 – 900 | - | - | - | - | - |
| | 901 – 1,000 | - | - | - | - | - |
| | 1,001 – 1,100 | - | - | - | - | - |
| | 1,101 – 1,200 | 1 | 1 | 1 | 1 | - |
| **Multi-gear** | | | | | | |
| Otter board trawl | 200 | 1 | 1 | 1 | - | - |
| Purse Seine | | | | - | 1 | 1 |
| Trap | | | | - | | |
| **Total** | | **76** | **62** | **57** | **61** | **14** |
| **Total Gross tonnage** | | **23,409.20** | **20,219.00** | **19,094.95** | **19,976.95** | **4,012.10** |

**Remark***:* [a] pair trawl vessels

According to VMS data check, it was found that there were 62 individual vessels operated in 'North of 20º'during 2015-2017. However, the data and information in this report were derived from fishing logbook of 58 vessels which are the same information as Historical Data Report. The data shows that fishing effort of Thai fleet was highest in 2016, while the most quantity of catch was in 2015 (Table 2).

**Table 2: Total effort and catches by year, gear-type, and area**

| Year | Effort (fishing set) | | | Catch (Tonnes) | | |
|---|---|---|---|---|---|---|
| | Gear type | | Area (North of 20º) | Gear type | | Area (North of 20º) |
| | bottom trawl | trap | | bottom trawl | trap | |
| 2015 | 4,090 | - | 4,090 | 23,118.05 | - | 23,118.05 |
| 2016 | 4,552 | 8 | 4,560 | 10,753.71 | 2.53 | 10,756.24 |
| 2017 | 795 | 10 | 805 | 2,034.02 | 8.35 | 2,042.37 |
| **Total** | **9,437** | **18** | **9,455** | **35,905.79** | **10.88** | **35,916.67** |

During 2015-2017, Thailand has amended the fisheries law for several sections in order to improve the monitoring, control and surveillance measures (MCS). These included port-in/port-out control, vessel monitoring system (VMS), reporting of fishing logbook, observer and other electronic tools for MCS.

In February 2017, Thai fishing vessels were called to return to Thai port by the Department of Fisheries in order to manage the fishing fleet to comply with the international regulations. After Thailand has ratified to be a member of SIOFA, Department of Fisheries has issued measures and the regulations for Thai overseas fishing vessels which wish to operate in SIOFA area to reflect the SIOFA CMMs before allow them to fish in high-seas again.

## 2. Effort and Catch Summaries

### 2.1 Trends of fishing effort by gear type during 2015-2017

Total Fishing effort of Thai fleet during 2015-2017 was 9,455 set, which was from bottom trawl 9,437 set and portable trap 18 set. Thai trawler exerted the highest fishing effort in 2016 (4,552 set), while the lowest effort presented in 2017. The fishing effort significantly decreased because of the notification of DOF concerning calling fishing vessels return to Thai port in February 2017.

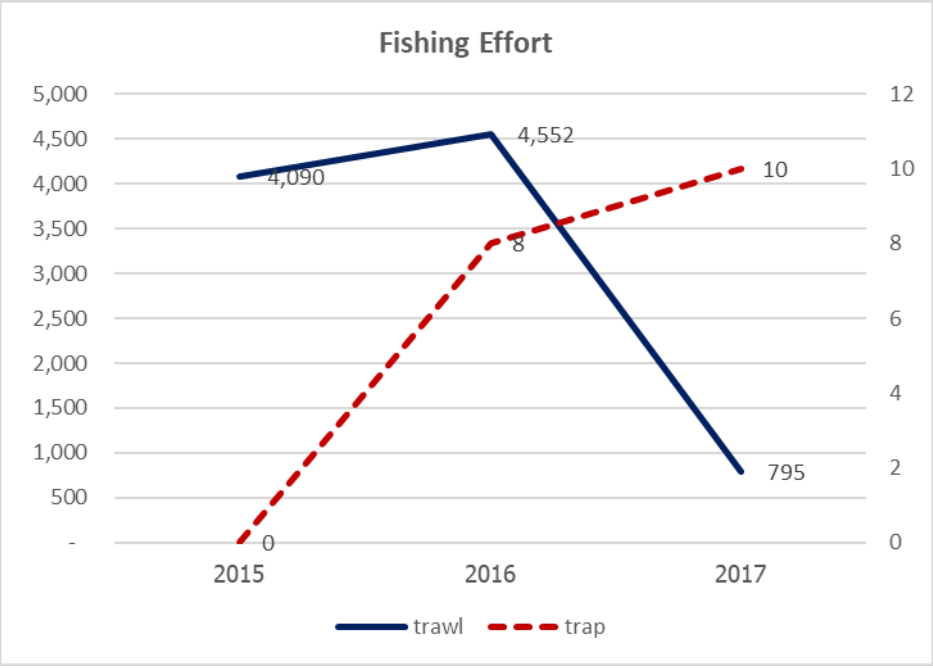



**Figure 1 Trends of fishing effort**

## 2.2 Trends of catch by main target species during 2015-2017

During the years 2015-2017, the total catch by numbers was 35,916.66 tons. The major species caught were round scad (*Decapterus* spp.) 29.78%, lizard fish (*Saurida* spp.) 25.66%, threadfin bream (*Nemipterus* spp.) 11.62%, goat fish (*Parupeneus* spp.) 5.59%, bigeye scad (*Selar* spp.) 4.79% and indian mackerel (*Rastrelliger* spp.) 4.29%. The list of miscellaneous fish *see* Annex II.

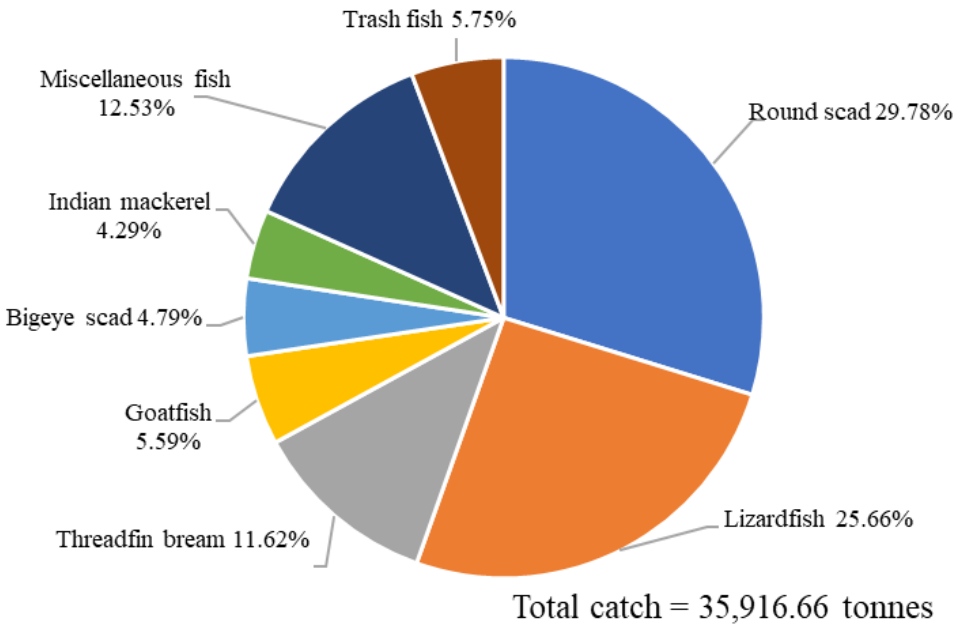
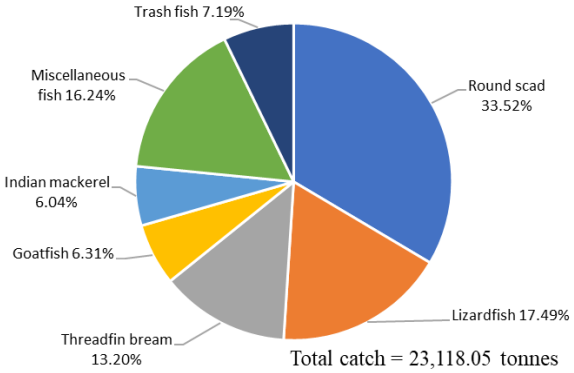
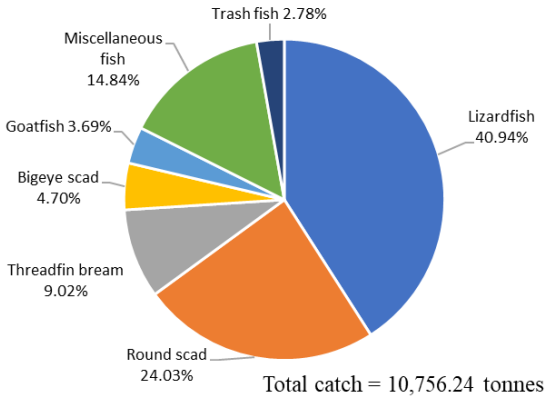



**Figure 2 Species composition of catch from Thai fleet during 2015-2017**

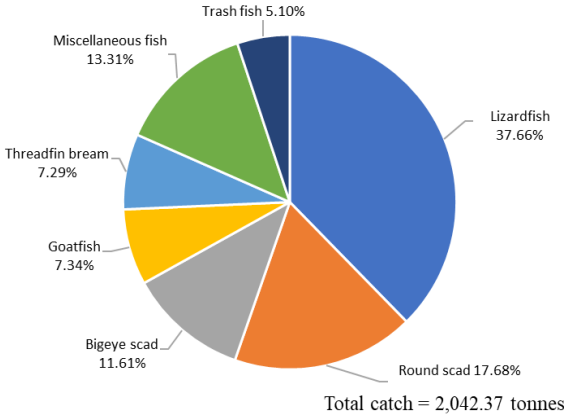
The most quantity of catch was in 2015 which was 23,118.05 tonnes, round scad were the most species caught (Figure 3A). The catch weight in 2016 was 10,756.24 tonnes and decreased to 2,042.37 tonnes, because there were 2 months of fishing period in 2017. Lizard fish was the most species caught of the previous two years (Figure 3B and 3C).




(A) Species composition of catch in 2015




(B) Species composition of catch in 2016




(C) Species composition of catch in 2017

**Figure 3 Species composition of catch in 2015 - 2017**

## 3. Fisheries data collection and research activities

In the past, scientific data was derived from fishing logbook. The old format of the logbook did not cover all of necessary information for scientific analysis such as start/end time of set, start/end location. Some of scientific data (such as size frequency) was received from observer which regulate to cover 5% of fishing effort.

Currently, Department of Fisheries has designed the new format of fishing logbook for fishermen to complete the data which includes start/end time of set, start/end location etc. (Annex III). Moreover, Thailand defines the minimum requirement to authorize overseas fishing vessel including; the installation of the VMS, Electronic Reporting System (ERS) and Electronic Monitoring System (EMS). The information derived from these compliance monitoring tools will be either used for scientific purpose. Also, the vessels are required to have 100% coverage of observer onboard for bottom trawl or 20% coverage for other bottom fishing gear, thus this expected to result the data set of bottom impact assessment e.g. stock density, biomass, abundance, species diversity and variability (Table 3).

**Table 3 The data collecting tools and information to be collected.**

| Data collection Methods | Scientific Information to be collected | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Oceanography/ Environmental data | Species composition of catch | Species of bottom sea animals (Coral, Sponges, Sea fan etc.) | Coverage of trawling area | Bycatch /Incidental catch | Discard species | Releasing species | Fish size frequency |
| Human Observer | √ | √ | √ | √ | √ | √ | √ | √ |
| Logbook | | √ | √ | √ | √ | √ | √ | |
| Species Labeling | | √ | | | √ | | | |
| VMS/ERS | | √ | √ | √ | √ | √ | √ | |
| EM in identification of species* | | √ | √ | | | √ | √ | |

Remark* pilot work

## 4. VME Thresholds

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

**Trawler**

Stop fishing when catch living corals more than 60 kg or 700 kg of sponges per one time of operation and move at least 2 nautical miles from that area. Then, report catch of living coral or sponge to DOF, Thailand within 24 hours.

**Longliner**

Stop fishing when catch living corals or sponges more than 10 kg per 1,000 hooks or per 1,200 meters of longline and move at least 1 nautical mile from the center of the line Segment. Then, report catch of living coral or sponge to DOF, Thailand within 24 hours.

**Fish Trap Vessel**

Stop fishing when catch living corals or sponges more than 10 kg and move at least 1 nautical mile from that area. Then, report catch of living coral or sponge to DOF, Thailand within 24 hours.

In addition, observers onboard 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 analyze the abundance and diversity of benthic marine organisms. This for further define VMEs in the SIOFA area.

Although SIOFA does not define the VMEs or closure area but Thailand has a regulation for prohibit entering to BPAs as defined by SIODFA which are meaningful bathomes by monitoring through VMS. The forbidden fishing areas are as *Table* 4.

**Table 4 The forbidden fishing areas regulated in Thai fisheries law**

| Area | Lat (N) | Long (W) | Lat (S) | Long (E) |
|---|---|---|---|---|
| Gulden Draak | 28° 00′ | 98° 00′ | 29° 00′ | 99° 00′ |
| Rusky | 31° 32′ | 94° 55′ | 31° 30′ | 95° 00′ |
| Fools Flat | 31° 30′ | 94° 40′ | 31° 40′ | 95° 00′ |
| East Broken Ridge | 32° 50′ | 100° 50′ | 33° 25′ | 101° 40′ |
| Mid Indian Ridge | 13° 00′ | 64° 00′ | 15° 50′ | 68° 00′ |
| Atlantis Bank | 32° 00′ | 57° 00′ | 32° 50′ | 58° 00′ |
| Bridle | 38° 03′ | 49° 00′ | 38° 45′ | 50° 00′ |
| Walters Shoal | 33° 00′ | 43° 10′ | 33° 20′ | 44° 10′ |
| Coral | 41° 00′ | 42° 00′ | 41° 40′ | 44° 00′ |
| South Indian Ridge (North) | 44° 00′ | 40° 878′ | 44° 00′ | 46° 544′ |
| South Indian Ridge (South) | 45° 00′ | 42° 124′ | 45° 00′ | 45° 711′ |

However, there is no any record from fishing logbook or observer report that these fishing activities neither encountered with Endangered, Threatened or Protected (ETP) species or marine mammals, corals or sponges.

## 5. Biological sampling and length/age composition of catches

The data of fish sizes was derived from observers on board of fishing vessels which operated during June 2016 to February 2017. The data collection was designed including measuring the total length of major economic fish that classified to species level. For this report, the two major species, lizardfish (*Saurida undosquamis*) and round scad (*Decapterus russelli*) are analysed as representatives of demersal fish and pelagic fish species, respectively.

**Lizardfish (*Saurida undosquamis*)**

The average length of lizardfish is 29.92 cm., which 94.37% of fish is larger than the length at first maturity (19.8 cm) and 5.63% of them is smaller than the length at first maturity (FishBase, 2017), *see* Figure 4.

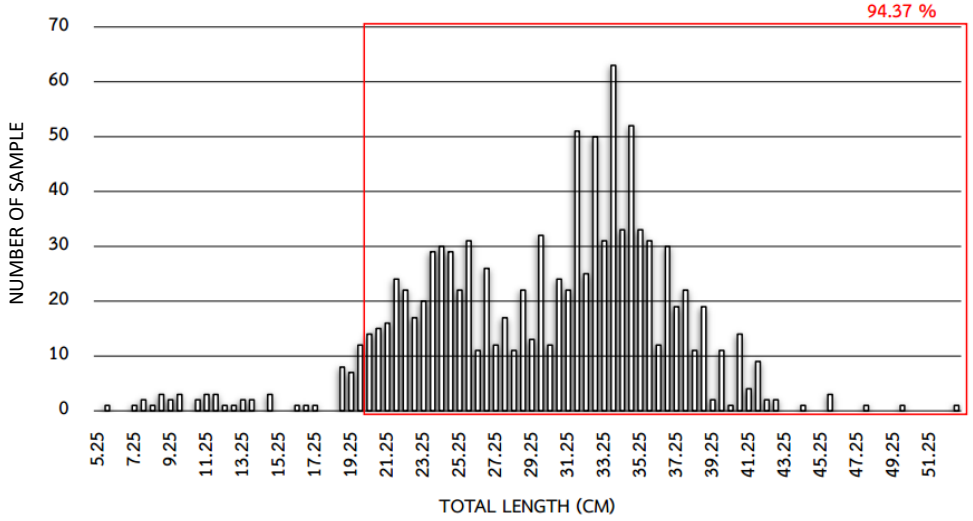



**Figure 4 Size distribution of Lizardfish (*Saurida undosquamis*)**

**Round scad (*Decapterus russelli*)**

The average length of round scad is 18.02 cm., which 85.79% of fish is longer than the length at first maturity (16.1 cm.) and 14.21% of them is smaller than the length at first maturity (FishBase, 2017), *see* Figure 5.

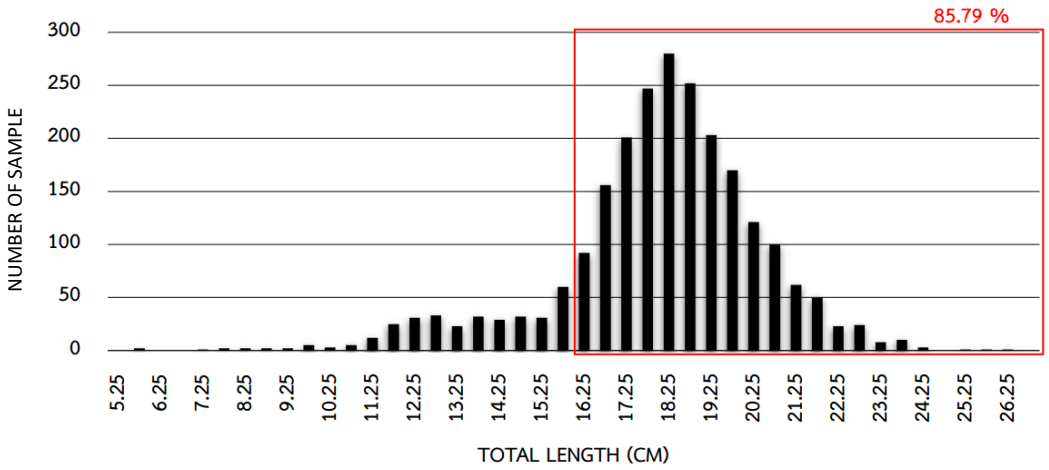



**Figure 5 Size distribution of Round scad (*Decapterus russelli*)**

## 6. Description of data verification mechanisms

After Thailand became a member of SIOFA since 21st May 2017, Department of Fisheries, the competent authority of Thailand amended and issued the regulations for Thai overseas fishing vessels operating in SIOFA area to reflect the SIOFA CMMs. In addition, the protocol to control the oversea fisheries and transhipment has been established. The principle of the control is to effectively monitoring of vessel before port out, during operating at sea or in foreign ports and until the vessel return to the ports of Thailand.

To achieve the effective MCS and data verification mechanism, Thailand determines minimum requirements of the authorized oversea fishing vessels and carrier that firstly include the installations of the Vessel Monitoring System (VMS), Electronic Reporting System (ERS) and Electronic Monitoring System (EMS). These remote electronic monitoring systems operate on a continuous basis and allow to following the activities of vessels from port to port. Secondly, it is the compulsory that the vessels are required to submit their transshipment or transfer plan before port out as well as the submission of logbook, request and declaration of transshipments of fish or transfer of fuel and supplies via the ERS. These overseas vessels will be authorized to port-out and port-in only at the designated ports. Apart from the record of fishing set that need to report via an ERS on a daily basis, the fishing master are required to record the fisheries information in the provided paper bound logbook that designed by the Department of Fisheries. In addition to those mentioned ERS and EMS as an electronic observer, the fishing vessels are required to placing onboard of human observer. Observers have a duty to observer and record the data and information for the scientific and compliance purposes. The coverage of observer onboard is based on the relevant fishing gear and activity as well as the relevant RFMOs (Table 5 and Figure 6)

**Table 5 Minimum requirement for Thai oversea fishing vessels and carriers**

| VMS | Transshipment plan | Port-out & Port-in at Designated Port | Paper Logbook | E-Reporting System | | | E- Monitoring System | | Human Observer |
|---|---|---|---|---|---|---|---|---|---|
| | | | | E-logbook | Activities Request | Activities Declaration | CCTV | Crane/winch equipped with sensors | |
| √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |

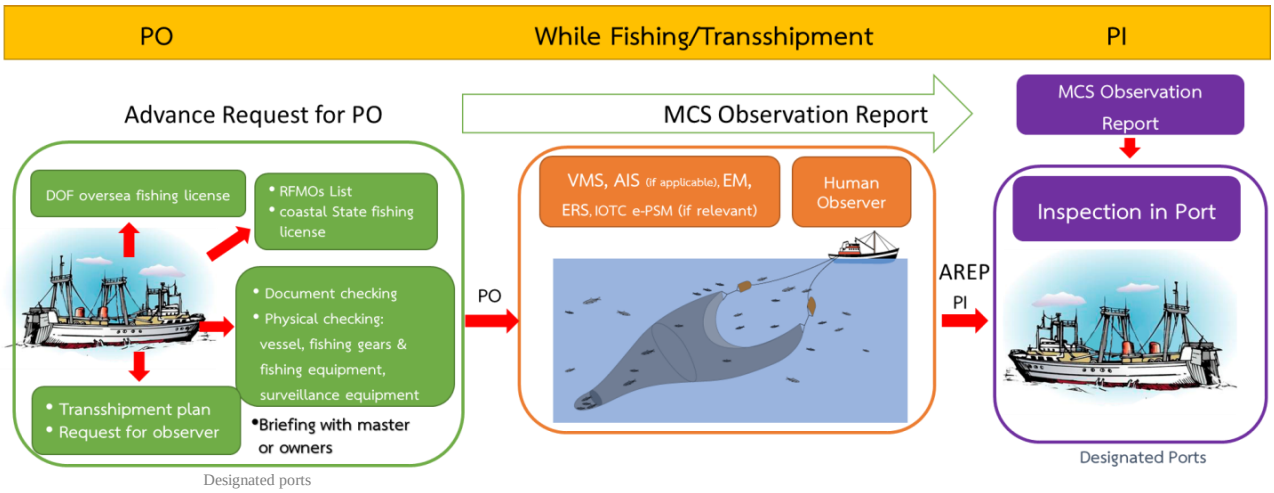



**Figure 6 Protocol to Control the Oversea Fisheries and Transshipment**

## 6.1 Port-Out and Port-In Controlling Center

It is important to recall that the Thai authority have set a clear inspections process to control the oversea fishing vessel and carriers when request the port-in and port-out activity . The inspection includes documentation and physical checks of vessels and labor . The inspection carried out by oversea PIPO co-team that are the inspectors from relevant competent authorities including Immigration Office, Department of Labor Protection and Welfare, Customs, Marine Department and Department of Fisheries.

**Port-out Inspection:** The vessels are checked for compliance with all relevant licensing and authorization requirements before being allowed to port out. The approved transhipment plan is required to present to the inspector. The monitoring equipment, VMS ERS and EM will be checked to confirm that they are work properly. With regard fisheries, the fishing equipment, fishing gear types and configurations will be checked for conformance to the authorization and licenses. To port out, The vessel using trawl must have an observer onboard while the vessels using other types of gears may have an observer onboard otherwise they are required to present the approved plan of placing observer to meet the requirement of 20% coverage. As regards labour, the qualifications of master and officers will be checked. The corresponding of the crew with the crew lists as well as their willingness to be onboard is either checked. The conditions

of safety, sanitary and welfare will be examined by the officers from the Department of Labor Protection and Welfare.

**Port-in Inspection:** Apart from documentation and physical checks for port-in authorization, the vessel will be inspected based on the MCS observation report that include the instruction for inspection in particular event of the vessel to ensure their compliance as well as the video recorded by the EM will be inspected by port inspector prior to authorize to unloading of fish . Fishing logbook, transhipment declaration or marine catch transhipment document (MCTD) or landing declaration documents will be verified against the landed fish either species or amount.

### 6.2 Vessel Monitoring System (VMS)

A vessel monitoring system (VMS) is a tool of fisheries surveillance, the equipment installed onboard provides information on the position of the vessels and implied activities. This is an effective tool not only to prevent and deter Illegal, Unreported and Unregulated fishing, but also to benefit the monitoring of fishing crews in Thai fishing vessels while operating in high seas. Thailand implemented the VMS system on all fishing vessels size over than 30 gross ton since 2015 whether operating within or outside the Thai EEZ. The VMS of fishing vessels must be all-time active whether at sea or in port. This system allows the real-time monitoring as well as tracing back path of fishing vessels in order to analysis behaviour of the subjected vessel.

As the overseas vessels are authorized to be at sea for a year. It is an option that the oversea fishing vessels may carry a spared set of approved VMS. In case of the malfunction of the VMS, the spared VMS set must be switched on immediately. In case the malfunction of the VMS cannot be fixed within 12 hr. (for carrier vessel) and within 90 days (for fishing vessels), the vessel must be call to port immediately and while malfunctioning of the VMS, the positions of the vessel must be reported to the FMC at least every 1 hr. and 4 hr., for carrier vessel and for fishing vessels, respectively.

### 6.3 Electronic Observer

The electronic observer system comprises 2 main components: Electronic Reporting System (ERS) and Electronic Monitoring System (EMS)

**6.3.1 Electronic Reporting System (ERS):** ERS is an electronic component that includes the request function and report function. With the request function in the application, the fishing master can request for transshipment, transfer, loading 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 transhipment declaration, transfer declaration, loading and landing declaration. The included important function of the ERS is the electronic logbook. The application has the logbook component that the fishing masters of the vessel can record their fishing activity once per set/shot/operation, and the master must report the authority via an application on a daily basis as required by law. Therefore, this ERS will provide the accumulated information of the fishing vessel for the better monitoring and control by the authority as well as for scientific analysis.

**6.3.2 Electronic Monitoring System (EMS):** Firstly, the component includes a CCTV that equipped to the vessel to continuously records the video of the activities on fishing operation, transshipment and transfers during a whole period of the trip. Secondly, winches, cranes and doors of the fish storage compartment are equipped with electronic sensors. Any move of these equipment, the photo snapshot will be automatically taken and send through satellite to the Fisheries Monitoring Center (FMC), Department of Fisheries. In addition to the

automatic sensor snapshots, the manual photo snapshot is an available function. This EM is the additional components to VMS. So, the video and photos will be accompanied with the footage information that synchronized and derived from the vessel monitoring system (VMS). The signal transmitting from winch means the start and end of the fishing operation which accordingly indicate the fishing effort. So, the activities can be either real-time monitored or passive examined from the recording videos.

### 6.4 Human Observer

As to comply with SIOFA CMM 2017/02 for the Collection, Reporting, Verification and Exchange of Data relating to fishing activities in the Agreement Area, DOF requires the authorized fishing vessels operating fishing in the Agreement Area having the observer onboard as following criteria.

#### 6.4.1 Onboard observer coverage

(a) using trawl gear must has onboard observer coverage for the duration of the trip (100% coverage).

(b) using any other bottom fishing gear types must have onboard observer for 20% coverage in any fishing gear.

#### 6.4.2 Transshipment Observer coverage

In case that the vessels request to transshipment at sea, the vessels must have national transshipment observer for 100% coverage of the transshipment period.

The Royal Ordinance on Fisheries B.E. 2558 (2015) and amendment has the provisions on fisheries observer requirement, Section 50 and 51. Observers have a duty to observer and record the data and information for the scientific and compliance purposes. The observers will be qualified and approved by DOF Director General only after obtaining the observer training based on the FAO Guidelines for Developing an at-Sea Fisheries Observer Program. The training course included the onboard training that particularly emphasized the learning on trawl configuration which is the major fishing gear of Thai fleet as well as the species identification multi-species situation. Currently, there are 22 qualified observers for SIOFA vessels. The DOF also hold a training course for debriefers or training for the trainer course. Debriefers are the ones who in charge the briefing session for observers before their deployment as well as debriefing session when they return. The briefing and debriefing will ensure the quality of the collecting data and information as well as to improve observer capacity and performance

### 6.5 Catch Labeling

It is required that all catch retained onboard shall be identified by a clearly legible label or stamp. The label or stamp on each box, carton, container, bag or block of frozen fishery resources or fishery resource products derived from fishing, shall indicate the species (e.g. group of species name/ common name/ scientific name/ FAO 3-Alpha code/codes as defined by the Scientific Committee), presentation, production date, and vessel identification number of the catching vessel. These should be consistency to the record in the electronic logbook and paper bound logbook.

# 7. Summary of observer and port sampling programs

## 7.1 Observers on Board

Observer's main tasks are to observe fishing activities, collect data and specimen as required, and submit data and a summary report to the Department of Fisheries. In addition, in the implication of compliance, the presence of the observer helps to prevent illegal practices on board.

The training course for observer contained 11 (eleven) 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.

The first batch of observers (20 persons) completed their training in December 2015. The Department of Fisheries have been preparing operating manuals and report forms, and formulating necessary rules and regulations to ensure the effectiveness of the observer program. The process is being expedited so that the observers can begin working on board selected vessels operating in the high seas or the Indian Ocean, tentatively in early 2016. The second training course for observers had been completed in April 2016. There were 12 (twelve) persons who have been qualified for development and working on scientific data collection in high seas. The third batch of observers completed their training in September 2017. There were 10 (ten) persons who have been qualified as an observer for working on scientific data collection in SIOFA area.

In December 2017, DOF had submitted the approved list of 22 (twenty- two) national observers who had completed the 2nd and 3rd training of observer onboard and qualified for working as an observer on scientific data collection in SIOFA area.

## 7.2 Port sampling programs

**Port-in Inspection:** Apart from documentation and physical checks for port-in authorization, the vessel will be inspected based on the MCS observation report that include the instruction for inspection in particular event of the vessel to ensure their compliance. Inthis regard, the video recorded by the EMS of particular events will be inspected by port inspector prior to authorize to unloading of fish.

**Unloading inspection**: The unloading of the fish will be monitored until finish. The fish unloaded were sampling to identify species. The deriving Fishing logbook (electronic logbook and paper bound logbook), transshipment declaration or marine catch transshipment document (MCTD) or landing declaration documents will be verified against the landed fish either species or amount.

# 8. Relevant social and economic information

## 8.1 Overview

Marine fisheries are important both socially and economically for Thailand. Fish are very important to the food security and self-sufficiency of Thailand. Based on a recent survey (2017), a total number of 10,563 active Thai fishing vessels caught 1.32 million tonnes in 2015 within Thai EEZ. This catch supports livelihoods, incomes and employment for fishermen and employed in supporting industries (e.g. fish processing industry, ship building industry, canned

and frozen fisheries product factories, fish meal factories). For rural Thailand, fish constitutes a generally affordable source of protein, contributing significantly to dietary health and food security, particularly the more than 2,500 villages of artisanal fishing communities along the coasts. Thailand is also a major seafood producer and exporter. In 2015, exports total 1.68 million tonnes, valued at USD 6,122 million and imports total 1.63 million tonnes valued at USD 2,654 million (DOF, 2017).

## 8.2 Cost and Benefit on Observer Onboard

Thai fleet are mostly the trawlers of the sizes between 100-400 GRT. These overseas vessels are required by national regulation to be equipped with the VMS and electronic observer. However, this equipment is costly. Apart from the first payment for equipping between 20,000-27,000 USD, it also needs a monthly payment for the airtime operation of between 170-1,600 USD, depending on the package size of data choosing by fishers. Moreover, to comply **SIOFA CMM 2017/02**, the vessels authorized to operate in the SIOFA area of competent are required to placing observer onboard for 100% coverage for trawler. It is another additional cost for fisheries in SIOFA area. Before became a member of SIOFA, Thailand required all overseas vessels to placing observer for only 5% of operations which was comply to the **IOTC Resolution 11/04** *on a Regional Observer Scheme*. The payment for observer was approximately 125 USD/days. It is a very high rate when applied to SIOFA vessels as the values of multispecies of demersal fish caught by bottom trawling nets are much lower than tunas. Previously, it was not too difficult for fishers to afford on the additional cost for placing observers for 5% coverage. However, when the 100% coverage has been required, this cost factor has affected fishers to decide whether they continue their trawling fishery. The negotiation between fishers and group of observer took place many times with the Department of Fisheries as the meditator, but there were no agreed the rate of payment. Lastly, by the end of February, 2018, the Department of Fisheries decided to seek for only the qualified observers who are willing to work with the payment of approximately 70 USD/Day with the intention to reduce the cost of the vessel and maintain fishing operation in SIOFA area accordingly.

With the long term perspective, after effective and stability of an electronic observer, the Department of Fisheries, Thailand, proposes to complement the human observer with the electronic observer, based on the SIOFA CMM 2017/01 Para. 33 (a), 33 (b) and 33 (c). Thus, this might reduce the cost for fishers in a long term basis. In this regards, Thailand submitted the working paper to the Scientific Committee to consideration the observer coverage and recommend the proportion of the complementary of an electronic observer to the human observer.

# 9. Annex

## Annex I – Sub-area for report catch and effort data

**Table 1 Sub-area for report catch and effort data**[1]

| | Area | Lats NS | | Longs E | |
|---|---|---|---|---|---|
| 1 | Mozambique Ridge | S 20º | S 36º | - | 40º |
| 2 | Madagascar Ridge | S 20º | S 36º | 40º | 49º |
| 3a | Northern SW Indian Ridge | S 20º | S 36º | 49º | 65º |
| 3b | Southern SW Indian Ridge | S 36º | S 45º | 30º | 65º |
| 6 | Mid-Indian Ridge | S 20º | S 45º | 65º | 80º |
| 4 | Ninety Degree East Ridge | S 20º | S 36º | 80º | 90º |
| 5 | Broken Ridge | S 25º | S 36º | 90º | 105º |
| 7 | SE Indian Ocean | S 20º | S 55º | 80º | 120º |
| 8 | North of 20º | N 10º | S 20º | - | 80º |

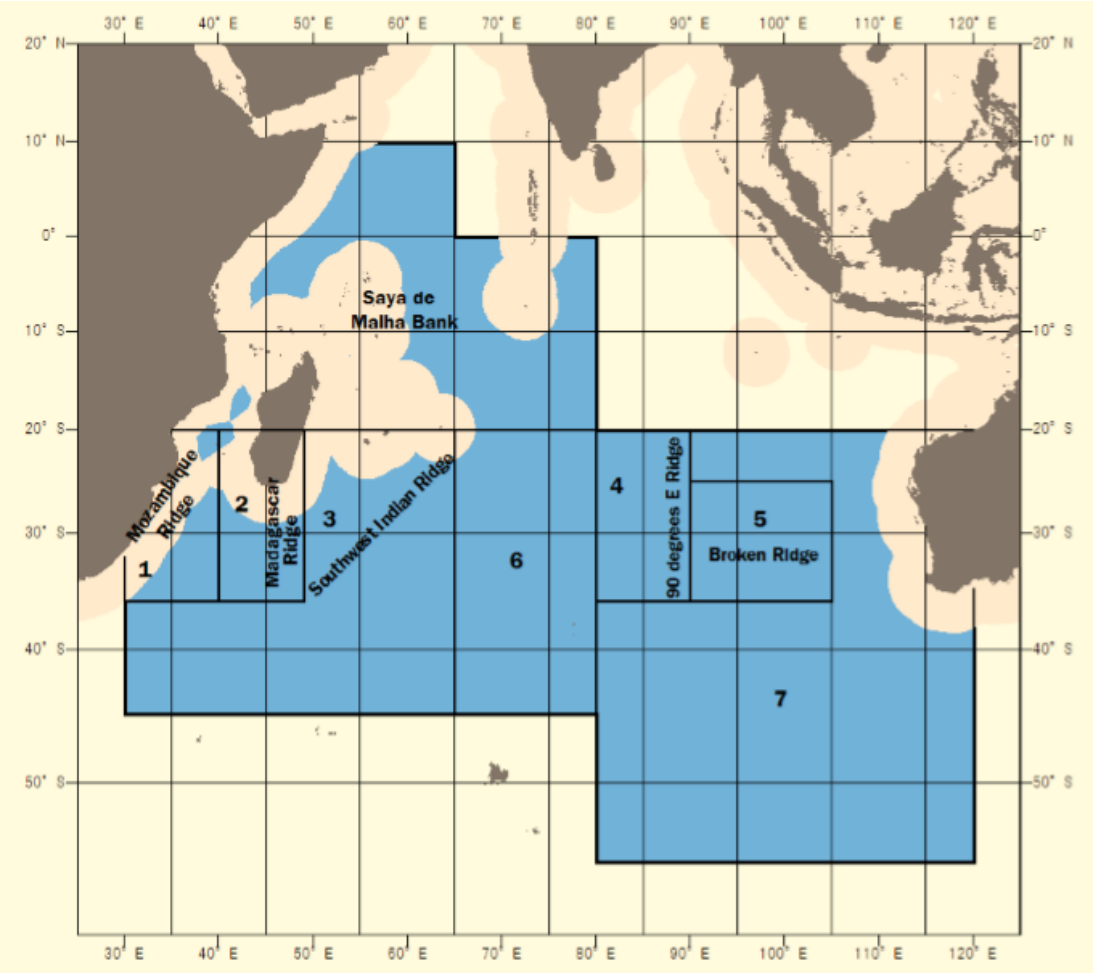



**Figure 1 Sub-area for report catch and effort data**

[1] Source for Table 1 and Figure 1: FAO Fisheries Report No. 677: report of the "SECOND AD HOC MEETING ON MANAGEMENT OF DEEPWATER FISHERIES RESOURCES OF THE SOUTHERN INDIAN OCEAN" held in Fremantle 20 -22 May 2002

## Annex II – List of common name and scientific name of fish

| No. | Common name | Scientific name |
|---|---|---|
| 1 | Round scad | *Decapterus* spp. |
| 2 | Lizardfish | *Saurida* spp. |
| 3 | Threadfin bream | *Nemipterus* spp. |
| 4 | Goatfish | *Parupeneus* spp. |
| 5 | Indian mackerel | *Rastrelliger* spp. |
| 6 | Bigeye scad | *Selar* spp. |
| 7 | Purplespot bigeye | *Priacanthus* spp. |
| 8 | Golden trevally | *Gnathanodon speciosus* |
| 9 | Snapper | *Lutjanus* spp. |
| 10 | Cuttlefish | *Sepia* spp. |
| 11 | Grouper | *Epinephelus* spp. |
| 12 | Emperor | *Lethrinus* spp. |
| 13 | Yellowtail scad | *Carangoides* spp. |
| 14 | Barracuda | *Sphyraena* spp. |
| 15 | Croaker | *Larimichthys polyactis* |
| 16 | Squid | *Uroteuthis* spp. |
| 17 | Sweetlip | *Diagramma picta* |
| 18 | Longfin mojarra | *Pentaprion longimanus* |
| 19 | Flathead lobster | *Oratosquilla* ssp. |
| 20 | Black-banded trevally | *Seriolina nigrofasciata* |
| 21 | False trevally/ Milkfish/ Whitefish/ Butterfish | *Lactarius* spp. |
| 22 | Batfish | *Platax* spp. |
| 23 | Rainbow runner | *Elagatis bipinnulata* |
| 24 | Parrotfish | *Scarinae* spp. |
| 25 | Yellow goatfish | *Upeneus* spp. |
| 26 | Yellow stripe trevally | *Selaroides leptolepis* |
| 27 | Lancetfish | *Acanthurus* spp. |
| 28 | Bartail flathead | *Platycephalus indicus* |
| 29 | Yellowtail fusilier | *Caesio cuning* |
| 30 | Triggerfish | *Aluterus monoceros* |
| 31 | Cornetfish/ Trumpetfish | *Fistularia* spp./ *Aulostomus* spp. |
| 32 | Blue-gray snapper/ Green jobfish | *Aprion virescens* |
| 33 | Fusiliers | *Pterocaesio* spp. |
| 34 | halfbeaks/ garfish/ ballyhoos | *Hemiramphus* spp. |
| 35 | Crab | *Portunus* spp. |
| 36 | Prawn | *Penaeus* spp. |
| 37 | Redcoat<br>Red-coat Squirrelfish<br>Red Striped Squirrelfish<br>Russet Squirrelfish<br>Scarlet-tailed Squirrel-fish | *Sargocentron rubrum* |

## Annex III – Fishing logbook for trawler

FISHING LOGBOOK OVERSEA FISHERY TRAWLERS

แผ่นที่..... เล่มที่ THA....

| | | | |
|---|---|---|---|
| Date reported<br>วันที่รายงาน | Name of captain<br>ชื่อผู้ควบคุมเรือ | | |
| Reporting person Name/ชื่อ,Position/ตำแหน่<br>ชื่อผู้รายงาน | Phone/โทรศัพท์ | Signature for Captain certify only<br>(ลงนามเฉพาะผู้ควบคุมเรือเท่านั้น) | |
| Departure date<br>วันที่ออกทำการประมง | Departure port (Country)<br>ท่าเทียบเรือที่ออก(ระบุประเทศ) | | |
| Arrival date<br>วันที่กลับเข้าท่าเทียบเรือ | Arrival port/In port (Country)<br>ท่าเทียบเรือที่จอด/จุดจอด(ระบุประเทศ) | | |

| | | |
|---|---|---|
| Name of vessel/ชื่อเรือประมง | | |
| Vessel size | Gross tonnage/ น้ำหนักบรรทุก | tons/ตันกรอส |
| ขนาดเรือ | Length overall/ ความยาวตลอดลำ | meter/เมตร |
| IMO number/หมายเลข IMO | | |
| RFMOs number/หมายเลข RFMOs | | |
| Call sign/นามเรียกขาน | | |
| Vessel registration number/หมายเลขทะเบียนเรือไทย | | |
| Type of trawlers/<br>ชนิดอวนลาก | ( ) Otter board/แผ่นตะเข่ ( ) Beam/คานถ่าง<br>( ) Pair/ลากคู่ Use with Vessel name ใช้คู่กับเรือ..... | |

| | |
|---|---|
| Type of weight/รูปแบบการเก็บรักษา | |
| ( ) Whole/สัตว์น้ำเก็บทั้งตัว | |
| Fishing ground(FAO code)/ พื้นที่ทำการประมง | |
| ( ) 51 ( ) 57 ( ) 58 ( ) 71 ( ) อื่นๆ..... | |
| Position of transshipment,landing/พื้นที่ขนถ่าย,รับสัตว์น้ำ | |
| Lat/แลต | |
| Long/ลอง | |
| Port/ท่าเทียบเรือ | |
| Country/ประเทศ | |

| Gear configulation/คุณลักษณะของเครื่องมืออวนลาก | | | |
|---|---|---|---|
| Cod end mesh size/ขนาดตาอวนก้นถุง | millimetre/มิลลิเมตร | Net opening/ปากอวนเปิด | meter/เมตร |
| Net height /อวนยกสูง | meter/เมตร | Total net lost ปริมาณอวนที่สูญหายขณะทำประมง | net/ผืน |

| Netting Material ลักษณะเนื้ออวน | Remark หมายเหตุ |
|---|---|
| ( ) Nylon braid/เชือกไนล่อนแบบด้ายถัก | |
| ( ) Nylon monofilament/เชือกไนล่อนแบบเส้น | |

| Date of set<br>วันที่ทำการประมง | Net ID หมายเลขอวน | Start fishing/การปล่อยอวนลาก | | | | Finish fishing/การกู้อวน | | | | Time of hualing (HH:MM)<br>เวลาในการลาก (ชั่วโมง:นาที) | Catch by species weight (Kg) ปริมาณการจับโดยชนิด (หน่วย:กก.) | | | | | | | | | | | | | | | | Incidental bycatch สัตว์น้ำอนุรักษ์ | | | | | Discard(Kg) สัตว์น้ำทิ้ง(กก.) | | Total (Kg) รวม (กก.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Time Start set (UTC)<br>เวลาที่ปล่อยอวนลาก | Latitude<br>ละติจูด<br>Degree<br>องศาN/S<br>เหนือ/ใต้ | Longitude<br>ลองจิจูด<br>Degree<br>องศาE/W<br>ออก/ตก | Bottom Depth of start fishing<br>ความลึกน้ำขณะเริ่มลาก | Time End set (HH:MM)<br>เวลาที่กู้อวนลาก(ชั่วโมง:นาที) | Latitude<br>ละติจูด<br>Degree<br>องศาN/S<br>เหนือ/ใต้ | Longitude<br>ลองจิจูด<br>Degree<br>องศาE/W<br>ออก/ตก | Bottom Depth of finish fishing<br>ความลึกน้ำขณะลากเสร็จ | | | | | | | | | | | | | | | | | Species ชนิดสัตว์น้ำ | No. Dead จำนวน (ตาย) | No. Alive จำนวน (มีชีวิต) | No. Injured จำนวน (บาดเจ็บ) | Weight (Kg) น้ำหนัก (กก.) | Species ชนิดสัตว์น้ำ | Weight (Kg) น้ำหนัก(กก.) | |
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