# National Report

# Preliminary Investigation to Estimate the Abandon, Lost, and Discard Gillnet and Traps (pots) along the Coast of Thailand

## (Phang Nga and Krabi Province)


**Training Department**

**Southeast Asian Fisheries Development Center**



**February 2022**

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## Preparation of this Document

Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) has been recognized as significant component of marine litter and has serious impacts on habitats, fish stocks and other marine species. Since 1989, FAO with and partners has recognized the issues on the ALDFG and the instruments to reduce ALDFG in global and recommend by the FAO Committee on Fisheries (COFI) to develop Voluntary Guideline on the Marking of Fishing Gear that will be submit to the 33rd COFI Meeting in July 2018.

SEAFDEC Training Department initiated the ALDFG research studies to collect information and support SEAFDEC Member Countries to estimate abundance of fishing gear loss. To obtain baseline information of the ALDFG from the gillnets, traps (or pots). FAO kindly provided technical and financial assistance, includes the FAO Fishing Gear Loss Questionnaires which were designed to enquire information of gillnets and traps from the fishers. SEAFDEC/TD in collaboration with the Department of Fisheries (DOF) Thailand conducted three survey trials from April 2021 to January 2022 along the coast of Andaman Sea, Thailand (Phang Nga and Krabi Province). The survey and research methodology could be further verified and undertaken to obtain information for the management action to reduce ALDFG in the future.

**Suggested citation**

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**Executive Summary**

Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) is widely recognized as a significant component of marine litter and has serious impacts on habitats, fish stocks and other marine species. The Southeast Asian regional concern on the marine debris includes ALDFG has been raised in SEAFDEC Meetings. Therefore, SEAFDEC Training Department conducted a preliminary investigation to estimate loss of gillnet and traps (pots) along the Coast of Thailand with support from FAO. One hundred and sixty (160) questionnaires were collected from 3 surveys conducted in Phang Nga and Krabi Province, Andaman Sea, Thailand. Results show that estimated total trap loss is 5,154 traps/year with an associated economic loss of 64,805.08 USD/year. Estimated loss of gillnets is 458.50 units/year with an estimated associated economic loss of 13,467.14 USD/year. The main cause of the gillnet loss is nets becoming snagged on an obstruction, and the main cause of the trap (pot) loss is conflict with other gears. Researchers recommend expanding the survey to all coastal province of Thailand, both in the Gulf of Thailand and Andaman Sea, as well as to apply to both small scale and commercial scale fisheries. The result could provide guidance for the development of management actions to reduce levels of ALDFG in the future.

**ACKNOWLEDGEMENT**

Authors would like to extend sincere appreciation to local fishers and local fisheries officers of Krabi and Phangna Province, on their kind sharing their experience and opinions to respond the questionnaires during survey to estimate levels of ALDFG in Thailand Gillnet and Trap Fisheries. Authors also express sincere gratitude to FAO experts Prof. Dr. Pingguo He, Mr. Jonathan J. Langsley, Dr. Haraldur Einarsson, for their technical supports, enhancing capacity of SEAFDEC Fishing gear technologists, and allow SEAFDEC to apply the questionnaire to trial during the survey. In addition, FAO also kindly provide funding support to SEAFDEC Training Department to conduct the surveys along the coastal of Gulf of Thailand and Andaman Sea. The success of survey come from well supporting from senior official and researchers of Marine Fisheries Research and Development Division and officers of Provincial Fisheries Office, Department of Fisheries, Thailand.

Finally, authors would like to express appreciation to Ms. Malinee Smitrithree, SEAFDEC Secretary General on her supporting the surveys and collaboration between FAO and SEAFDEC on the combating ALDFG in Southeast Asia.

# National Report
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## 1. Introduction

Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG)[1] is widely recognized as significant component of marine litter and has serious impacts on habitats, fish stocks and other marine species. ALDFG may result in reduced profits for a fishery when it continues to fish, known as "ghost fishing[2]" or "ghost gear". Ghost fishing is one problem resulting from ALDFG that has received increasing international attention over the past decade. Ghost fishing mortality is infrequently accounted for in fisheries management, potentially compromising the accuracy of population and stock assessment models and efficacy of harvest strategies. Ghost fishing by ALDFG removes both target and non-target species. These include species of seabirds, sea turtles, marine mammals, and elasmobranchs, some of which are endangered, threatened and (ETP) protected. Mortalities from ghost fishing by ALDFG are also a source of wastage and reduce the sustainable production of fishery resources and economic opportunities for the marine capture sector. Social welfare issues are also raised over ghost fishing mortality of megafauna included endangered, threatened, and protected species. ALDFG may result in reduced profits when it continues to fish and is often linked to Illegal, Unreported and Unregulated (IUU) fishing as those engaging in such activities are more prone to discard or abandon their fishing gear at sea.

[1] FAO (2019) described the Abandon Lost Discards and Otherwise Fishing Gear (ALDFG), i.e.

a) "Abandoned fishing gear" means fishing gear over which that operator/owner has control and that could be retrieved by owner/operator, but that is deliberately left at sea due to force majeure or other unforeseen reasons.

b) "Lost fishing gear" means fishing gear over which the owner/operator has accidentally lost control and that cannot be located and/or retrieved by the owner/operator.

c) "Discarded fishing gear" means fishing gear that is released at sea without any attempt for further control or recovery by the owner/operator.

[2] GESAMP (2021) describe the terms "ghost gear" or "ghost fishing gear" are also often used synonymously with ALDFG but are more nuanced terms related to the impacts arising from ALDFG. Ghost gear is defined as ALDFG that has "the ability … to continue fishing after all control of that gear is lost by the fisherman". Therefore, ALDFG without any potential to continue catching fish or other animals would not be called ghost gear. ALDFG can comprise a variety of forms, from full to partial gear types and/or components including: a complete gear item of any type with the full complement of gear components (e.g. a complete gillnet with leadline, corkline, netting and marker buoys); a portion of a gear item with one or more of the gear components present (e.g. a piece of netting with or without a portion of the leadline attached); or a piece or portion of one component of a fishing gear type (e.g. a small fragment of netting, a section of rope from a variety of gears, or a marker buoy).

Since 1989, FAO and partners have recognized the issues related to ALDFG and the need for international instruments to address these issues. In response to a recommendation by the FAO Committee on Fisheries (COFI), Voluntary Guidelines on the Marking of Fishing Gear (VGMFG) were submitted to the 33rd COFI Meeting in July 2018. The VGFMG were endorsed and subsequently published in 2019 (FAO, 2019).

The Southeast Asian regional concern on the ALDFG and Marking of Fishing Gear was addressed in the Report of the 40th Meeting of the Program Committee Southeast Asian Fisheries Development Center, held in November 2017 at Bangkok Thailand[3] and the Regional Technical Consultation (RTC) on International Fisheries-related Issues[4] organized by SEAFDEC in 2018. It was also reported at the 51st Meeting of the Council of the SEAFDEC, organized in 2019[5] In addition, the "Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030"6 which were adopted ASEAN Senior Officials and Ministers in 2020.

He (1997) reports the fishing gear, pots and gillnets, can become lost under various conditions and the lost gears continue to fish for a period. The rate and magnitude of gear loss varies with gear type and region. Pot loss rate in north America is believed within 5-30% annually. He recommended that research studies should be started by estimating abundance of fishing gear loss by survey.

Therefore, SEAFDEC Training Department (TD) conducted the preliminary investigation to estimate loss of gillnet and traps (pots) along the Coast of Thailand as the pilot study to develop the questionnaires for using in Southeast Asia region in 2020. To develop a research study in harmonizing with the international concern, SEAFDEC has been supported both technical and financial by FAO to conduct the project "Survey to Estimate levels of Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand Gillnet and Trap Fisheries", the project is carried out from April 2021 to January 2022. FAO kindly provided technical support and the FAO Fishing Gear Loss Questionnaires which were designed to enquire information from the fishers about spatial and temporal distributions of gear loss, causes, good practices to avoid fishing gear loss, end of life fishing gear management and their perceptions on ALDFG. The questionnaires were complemented with a User's Manual. The Manual was produced to ensure that the interviewer understands each question and is able to get the desired answer from the interviewee. It will be a significant tool for obtaining ALDFG global information in the future. To obtain

[3] Paragraph 92, The Program Committee Member for Malaysia requested TD to support the conduct of Fishing Gear Specialist Training Program to be held in Malaysia in 2018. In addition, under the project "Improvement of Fisheries Technology and Reduction of the Impact from Fishing," it was suggested that TD should consider including new area of work on "the marking of fishing gear" as this was raised during the Second Sub-regional Technical Consultation between Malaysia and Thailand

[4] The RTC Meeting recommended SEAFDEC to promote the "anti-ghost fishing" campaigns in order to mitigate the impacts of the abandoned or lost gear on the environment recommended SEAFDEC to promote the "anti-ghost fishing" campaigns in order to mitigate the impacts of the abandoned or lost gear on the environment.

[5] The 51st Meeting of the Council of the SEAFDEC address recommendation that marine debris and environmental-friendly fishing gears should be taken into consideration of SEAFDEC's future direction of regional fisheries development.

[6] Resolution No.11 recommends ASEAN Member States and SEAFDEC to increase awareness and support the reduction of impacts of aquatic pollution and marine debris, including abandoned, lost or otherwise discarded fishing gear (ALDFG), and microplastics/microbeads on fisheries and aquaculture.

Plan of Action No.26 recommends ASEAN Member States and SEAFDEC to assess and manage the impacts of aquatic pollution and marine debris, including ALDFG and microplastics/microbeads.

the appropriate questionnaires for ALDFG survey in Southeast Asia, SEAFDEC/TD in collaboration with the Department of Fisheries (DOF) Thailand to conduct three survey trials by using theses questionnaires. At the same time, preliminary research emphasizes to investigate volume of fishing gear loss that possible to generate a ghost fishing (e.g. gillnets, traps or pots) and economic loss from fishing gear are reported. The survey and research methodology could be further verified and undertaken to obtain information for the management action to reduce ALDFG in the future.

## 2. Objective

The objectives of the Preliminary Investigation to Estimate the Abandon, Lost, and Discard Gillnet and Traps (pots) along the Coast of Thailand are as follow:

1. Preliminary study on the Abandoned, Lost or otherwise Discarded Fishing Gear in Thailand (Phang Nga and Krabi Province) Gillnet and Trap Fisheries
2. Estimation on the quantity of gillnet and trap lost in the sea along the coast of Thailand (Phang Nga and Krabi Province)
3. Verification on the FAO Fishing Gear Loss Questionnaires

## 3. Expected Output

1. Report to estimate the quantity and economic loss by fishing gear lost by gillnet and trap lost in the sea along the coast of Thailand (Phang Nga and Krabi Province), causes of loss gear, and common practices of fishers to prevent loss gear.
2. Data for key-in the FAO Fishing Gear Loss database

## 4. Method

The methodology employed to survey Investigation of the Abandon, Lost, and Discard Fishing Gear, i.e., gillnet and trap, in the Thailand is the qualitative research, where the data related to the fishing gear type and construction, and gear loss were gathered by using Rapid Rural Appraisal (RRA), comprising three (3) methods, as follow.

1. Review of secondary data. The review secondary focused on the abandon and lost gear e.g. draft guidelines on the marking of fishing gear, Report on the FAO expert consultation on marking fishing gear, Case study for gear marking in Indonesian small-scale gillnet fisheries.
2. Primary data collection method through in-depth interview. The face-to-face interview using FAO Fishing Gear Loss Questionnaires focused on the details of the fishing gear which had possible impact on marine debris and ghost fishing. Since the targeted fishing gears had already been recognized, some details related to the fishing practices, fishing seasons, fishing grounds and cost of gear were also gathered during the interview with master fishermen, fishermen and fishing boat owners. Data on the cost of fishing gear was collected from fishing gear stores in Rayong Province and from fishing gear owners (Annex 1 and 2).

3. Questionnaires to collect ALDFG from gillnets and traps (pots) have been developed by FAO. Both questionnaires are in the process of verification so that the final version of questionnaires may slightly be different from the version used by SEAFDEC researchers (Annex 4).

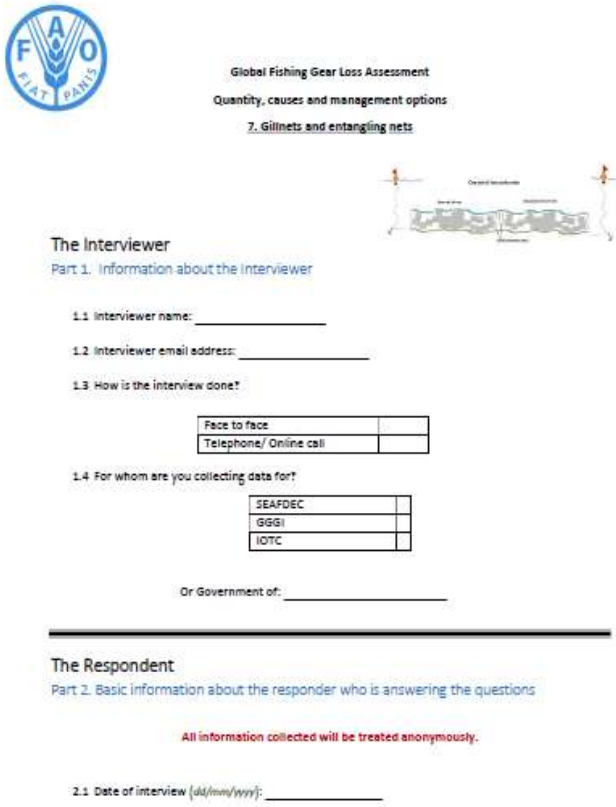
   The FAO Fishing Gear Loss Questionnaires have been designed to enquiry fishers about spatial and temporal distribution of gear loss, causes, good practices to avoid fishing gear loss, end of life fishing gear management and their perceptions on ALDFG.

   Each questionnaire is complemented with a User's Manual (Annex 5). These Manuals have been produced to ensure that the interviewers understand each question and is able to get the desired answers from the interviewee. SEAFDEC researchers used FAO Fishing Gear Loss Questionnaires corresponding to gillnets (Figure 2) and traps (pots) (Figure 3), and associated Manuals to carry out the survey.

**Details of questionnaire**

a. Fishers
b. Fishing gears
c. Fishing operations
d. Fishing gear loss information
e. End-of-life fishing gear and marine plastic waste management
f. Regulation of marking fishing gear
g. Past and future trends

**Figure 1** Face-to-face interview by using FAO Fishing Gear Loss Questionnaires



Global Fishing Gear Loss Assessment

Quantity, causes and management options

7. Gillnets and entangling nets

The Interviewer

Part 1. Information about the interviewer

1.1 Interviewer name: _____

1.2 Interviewer email address: _____

1.3 How is the interview done?

| | |
|---|---|
| Face to face | |
| Telephone/ Online call | |

1.4 For whom are you collecting data for?

| | |
|---|---|
| SEAFDEC | |
| GGGI | |
| IOTC | |

Or Government of: _____

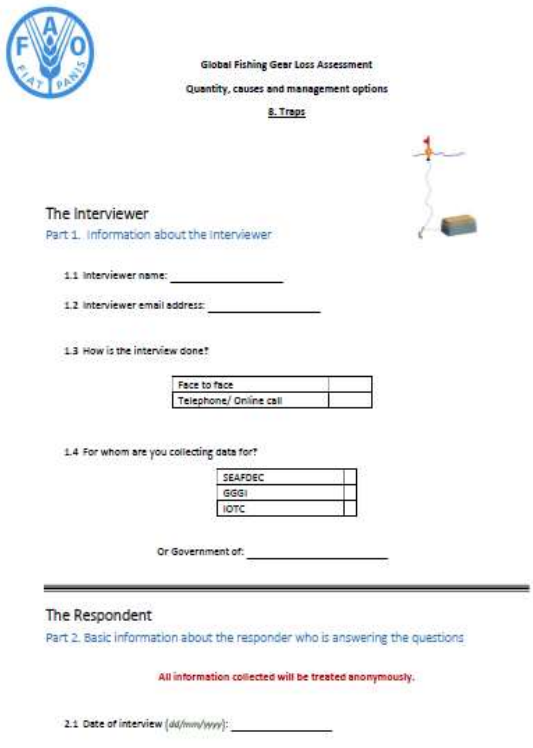
The Respondent

Part 2. Basic information about the responder who is answering the questions

All information collected will be treated anonymously.

2.1 Date of interview (dd/mm/yyyy): _____

**Figure 2** FAO Fishing Gear Loss Questionnaires: Gillnets



Global Fishing Gear Loss Assessment

Quantity, causes and management options

8. Traps

The Interviewer

Part 1. Information about the interviewer

1.1 Interviewer name: _____

1.2 Interviewer email address: _____

1.3 How is the interview done?

| | |
|---|---|
| Face to face | |
| Telephone/ Online call | |

1.4 For whom are you collecting data for?

| | |
|---|---|
| SEAFDEC | |
| GGGI | |
| IOTC | |

Or Government of: _____

The Respondent

Part 2. Basic information about the responder who is answering the questions

All information collected will be treated anonymously.

2.1 Date of interview (dd/mm/yyyy): _____

**Figure 3** FAO Fishing Gear Loss Questionnaires: Traps (Pots)

## 5. Survey Team

The survey team comprised of the fishing gear researchers from SEAFDEC/TD and Department of Fisheries (DOF), Thailand. List of survey team presents in Table 1. During the year 2020-2021 because the national measure to lockdown the local area. Researchers could not participate the survey because they must follow the government measures with 14-day local quarantine measures in Krabi Province, Thailand. In this regard, SEAFDEC/TD staff, *Mr. Santiphong Putsa*, was assigned to be the surveyor to manage and conduct the survey in his hometown, Krabi Province. In addition, he had stayed in his hometown, Krabi Province, since early April 2021. Thus, he had not been any required to undergo local quarantine prior conducting the survey.

The survey has already approved by Director General of Department of Fisheries, Thailand. The survey team of SEAFDEC/TD, hence, coordinated with the Director of the Marine Fisheries Research and Development Division, Director of Phuket Marine Fisheries Research and Development Center, Chief of Krabi Provincial Office. The Pre-ALDFG survey questions (Annex 3) were summarized by *Dr. Watcharapong Chumchuen*. He has been assigned by the Director General of Department of Fisheries, Thailand, to support the survey as DOF focal point. SEAFDEC/TD also invited a researcher, *Mr. Jeerasak Lanmeen*, from the Phuket Marine Fisheries Research and Development Center of the Department of Fisheries, Thailand, to collaborate and support the first and second survey. He served as interviewer and coordinated with local fishers, leader of fishing villages/communities, and local fisheries officers.

**Table 1** Survey team of the ALDFG survey on gillnets and traps (pots) fisheries in Phang Nga and Krabi Province, Thailand

| Role | Name | Organization/agency |
|---|---|---|
| Survey researchers | Mr. Santiphong Putsa | SEAFDEC/TD |
| | Mr. Jeerasak Lanmeen | DOF, Thailand |
| Supporting researchers | Dr. Nopporn Manajit | SEAFDEC/TD |
| | Mr. Nakaret Yasook | SEAFDEC/TD |
| | Mr. Sukchai Anupapboon | SEAFDEC/TD |
| | Dr. Taweekeit Amornpiyakrit | SEAFDEC/TD |
| | Mr. Isara Chanrachkij | SEAFDEC/TD |
| | Mr. Paitoon Puewkhoa | DOF, Thailand |
| | Dr. Watcharapong Chumchuen | DOF, Thailand |

SEAFDEC/TD: Southeast Asian Fisheries Development Center, Training Department
DOF, Thailand: Department of Fisheries, Thailand

To obtain accurate information, the survey team coordinated with the key fisheries stakeholders to inform about the details of the activities/survey and requested to cooperate and provide relevant information. Subsequently, the survey team coordinated with the local fisheries officers/researchers and village leaders to obtain the preliminary information such as on fishing ports and fishing villages to identify the target respondents. Also, the survey team made use of their family relationships and personal networks to communicate with the local fishers.

## 6. Survey Area

Due to the COVID 19 pandemic, SEAFDEC researchers could not conduct surveys throughout the country as proposed in the original plan. All fishing ports and landing sites were restricted to enter, and all provinces imposed the restrictions to enter and requirements for 14-days quarantine in the infection areas. With that, SEAFDEC researchers needed to select the survey areas near their hometown to request the permission for local authority to conduct the survey.

SEAFDEC researcher agreed by DOF Thailand selected 2 provinces along the coast of Andaman Sea, Southern of Thailand, *i.e.* Phang Nga and Krabi Province for ALDFG survey. Survey area and district is shown in Figure 4.

**1st Survey** **2nd Survey** **3rd Survey**

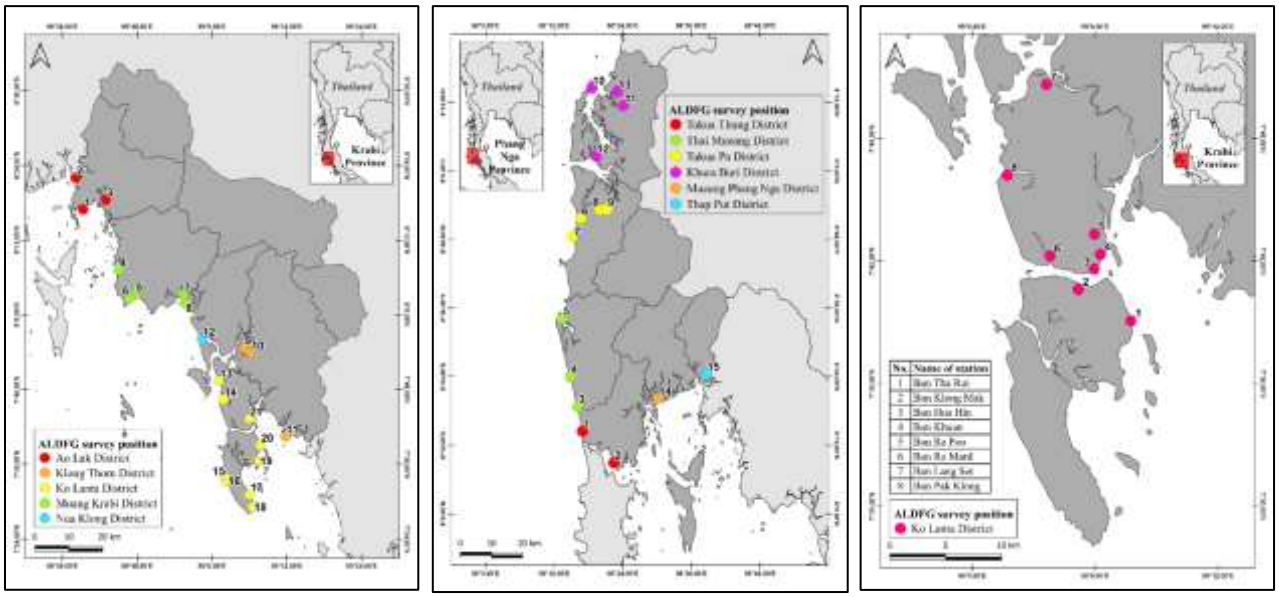



**Figure 4** Survey area in Phang Nga and Krabi Province, Andaman Sea, Thailand (Figured by Siriporn Pangsorn)

## 7. Review the Information on the Fishing Gear Collected in ALDFG Survey

### 7.1. Gillnets

Gillnet is a net wall, with its lower end weighted by sinkers (or heavy net, as in drift gill net) and the upper end raised by floats, is set transversely to the path of migrating fish. Fish trying to make their way through the net wall are entangled in the mesh. In trying to swim through a mesh of netting which is a little smaller than the largest circumference of their body, fish can get stuck or, in other words, "meshed". This can happen at the beginning of the dorsal fin of the fish but mostly it will be behind the opercula and the gills – *i.e.* they are "gilled". These are the so - called "gill nets". Other gear has been constructed to catch fish by entangling. These are the so-called "entangling nets". Gilling and entangling are two different principles of catching, but both can happen in the same fishing gear.

A catching mechanism which is more or less similar to the gill net, is the trammel net with three wall nets, this is also included herein. Although in this case the migrating fish are entangled between two layers of net, and not in the mesh, and a combination of different types of nets are used. (SEAFDEC, 1986) Classification of gillnets fishing gear in Thailand is presented in Table 2.

**Table 2** Classification of gillnets fishing gear in Thailand

| FAO | SEAFDEC | Department of Fisheries Thailand |
|---|---|---|
| 1. Set gillnets (anchored)<br>2. Drift gillnets<br>3. Encircling gillnets<br>4. Fixed gillnets (on stakes)<br>5. Trammel nets<br>6. Combined gillnets-trammel nets<br>7. Gillnets and entangling nets (nei) | 1. Surface gillnet<br>2. Drift gillnet<br>3. Bottom gillnet<br>4. Trammel nets<br>5. Encircling gillnets | 1. Spanish mackerel gillnets<br>2. Sea bass gillnets<br>3. Pomfret gillnets<br>4. Four finger threadfin gillnets<br>5. Indo Pacific mackerel gillnets<br>6. Indian mackerel gillnets<br>7. Dorab drift gillnets<br>8. White sardine gillnets<br>9. Rocky drift gillnets<br>10. Sand whiting gillnets<br>11. Rocky fish set gillnet<br>12. Crab gillnets<br>13. Shrimp trammel nets<br>14. Squid trammel nets<br>15. Lobster gillnets<br>16. Mullet gillnets<br>17. Sardine gillnets<br>18. Indo pacific encircling nets<br>19. Other gillnet |

### 7.1.1. Set Gillnets

Set gillnets category by FAO may be same as surface gillnet and bottom gillnet categorized by SEAFDEC. SEAFDEC (1986) describes the surface gillnet is operated on a small scale, mostly in very shallow waters and inlets. The net is fixed with anchors. The netting is made of either nylon monofilament or nylon multifilament. The mesh size ranges from 40 to 85 mm. Mullet is one of the important target catch. The net is set and suspended on the water surface. Nylon monofilament and nylon multifilament are the main materials for the netting of most bottom gill nets. The specifications such as the mesh-size, the length and height of net, and the hanging ratio, vary for different species of marine animals. In the case of bottom gillnet for blue swimming crab and lobster is widely operated by monofilament mesh-size is about 10-12 cm.

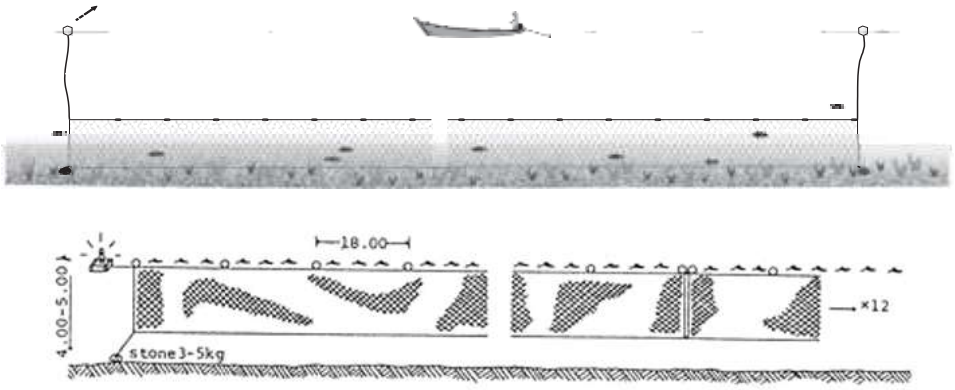



**Figure 5** (Up) Bottom Gillnet (SEAFDEC, 2007),
(Down) Surface Gillnet (SEAFDEC, 1986)

The bottom gill net for whiting fish is comparatively smaller mesh size than other bottom gill nets. Its mesh-size is about 25-30 mm. Bottom gill net for giant queenfish, scad and trevally, has large dimensions; the mesh-size is 90-95 mm so that sometimes when it is operated in shallow waters it intercepts anything swimming between the bottom and the surface of the sea. Mostly set gillnets are nylon monofilament material. Bottom gill nets are operated in shallow coastal waters where the depth ranges between 3 and 40 meters.

**Figure 6** Gillnet fishing boat (Photo by SEAFDEC)

### 7.1.2. Drifting Gillnets

There are various kinds of drift gill nets. Nylon multifilament is most often used as the netting material. Mesh size varies from the smallest 1.6-2.0 cm to catch whiting, 4-5 cm to catch Indo-Pacific mackerel. Mostly set gillnets made from nylon monofilament material.

Some large-scale drift gillnets, especially those for bonito, Spanish mackerel is nylon multifilament material with a width of saran nylon netting attached as sinker along the bottom edge. Mesh size for catching Bonito, Spanish mackerel, and Pomfret is various from 9.8-11.5 cm. Hauling devices are always installed onboard both large scale and small-scale fishing vessel.

**Figure 7** Drift Gillnet (SEAFDEC, 2007)

**Figure 8** (Left) Drift gillnet fishing vessel Commercial Scale (Photo by SEAFDEC)
(Right) Small Scale gillnet fishing vessel(Photo by SEAFDEC)

### 7.1.3. Encircling Gillnets

SEAFDEC (1986) describes the encircling gillnet is a widely operated gear for Indo-Pacific mackerel. Smaller encircling gillnet is used for catching mullet. Both of net is mostly nylon multifilament and monofilament. Mesh size of gillnet for catching Indo-Pacific mackerel is 40-50 mm. Mesh size of gillnet for catching Indo-Pacific mackerel is 35-40 mm.

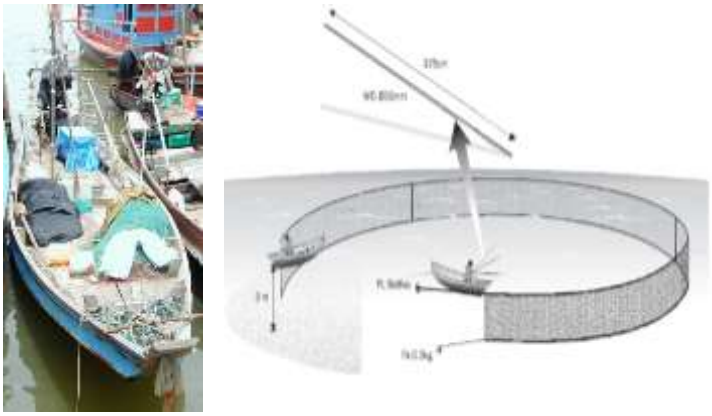


**Figure 9** (Left) Encircling gillnet small-scale fishing vessel (Photo by SEAFDEC),
(Right) Encircling Gillnet (SEAFDEC, 2007)

The encircling gillnets for Indo-Pacific mackerel can be operated in the daytime and at night. In day-time operation the fish school is first encircled by the net, after which the fishermen create commotion and noise by beating the water surface with some implement so as to frighten the fish into the meshes of the net. In night-time operation an electric lamp is used for the same purpose.

### 7.1.4. Trammel Nets

Trammel nets are commonly operated to catch shrimps but there are some trammel nets target for cuttlefish. The netting for trammel nets is in most cases made of nylon multifilament. There are some local variations in the construction of gear; the size of mesh for the inner net is usually from 40 to 45 mm, but for the outer net it ranges from 90 to 260 mm. (SEAFDEC, 1986)

Fishing operation is carried out in either day or nighttime, the net is shot across the tide, and allowed to drift by the tide for one hour before hauling. The water depth of fishing grounds is between 5 and 20 m. (Trammel-net for cuttlefish is set along the coast for 12 hours in the daytime).

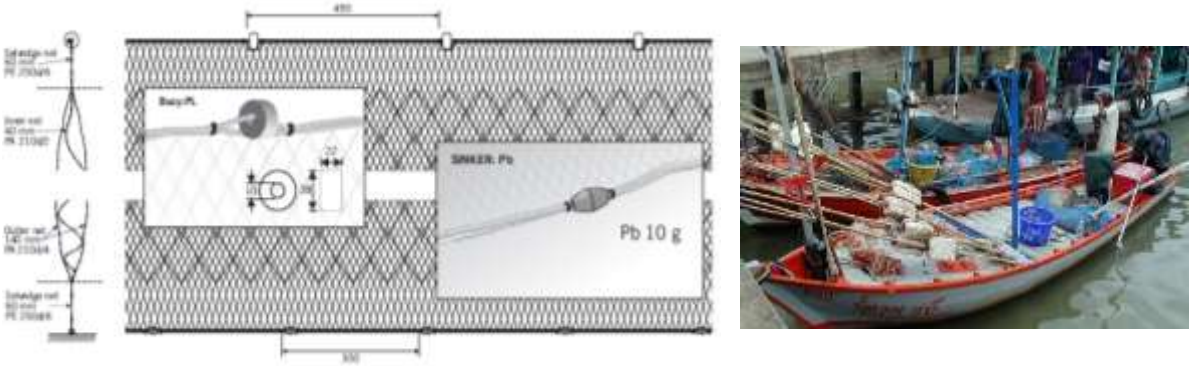



**Figure 10** (Up) Trammel nets design (SEAFDEC, 2007)

(Left) Trammel nets small-scale fishing vessel (Photo by SEAFDEC)

## 7.2. Traps (Pots)

Traps or Pots are simple passive fishing gears that allow fish to enter and then make it hard for them to escape. This is often achieved by: 1) putting chambers in the trap or pot that can be closed once the fish enters; 2) Having a funnel that makes it difficult for the fish to escape. Smaller traps are generally fully covered except for the entrance or entrances, while larger traps that extend above the water level are often left open at the top. People in different parts of the world are not always referring to exactly the same things when they use the words "trap" and "pot". In general, traps are large structures fixed to the shore. Pots are smaller, movable traps, enclosed baskets or boxes that are set from a boat or by hand.

Traps or pots in general make hiding places (habitat traps), including brush traps and octopus pots tubular traps, which are narrow funnels or hoses that stop the fish from getting out backwards; eel tubes fall into this category. Traps that are mechanically closed by the fish, including gravity traps or box traps, bent-rod traps (whipping bough traps), torsion traps and snares; baskets, which are enclosed traps and pots usually with a structure to make escape difficult. They include pots made of wood, wire or plastic, conical and drum-like traps made of netting with hoop and frames (e.g. drum nets) and the box-like traps made with strong frames large open traps or corrals with a part or mechanism to prevent fish from escaping.

Collapsible trap is one of the trap models is the trap (or pot) that can collapse to store and operate many traps by small fishing boat. Target species blue swimming crab. Collapsible traps are still being used in the river and mangrove area. Classification of trap fishing gear and methods in Thailand as appears in Table 3.

**Table 3** Classification of trap fishing gear and methods in Thailand

| FAO | SEAFDEC | Department of Fisheries Thailand |
|---|---|---|
| 1. Stationary uncovered pound nets<br>2. Pots<br>3. Fyke nets<br>4. Stow nets<br>5. Barriers, fences, weirs, etc.<br>6. Aerial traps<br>7. Traps (nei) | 1. Mollusk trap or Squid trap<br>2. Fish Trap<br>3. Crab Trap<br>4. Fyke Nets<br>5. Bamboo stake trap<br>5.1. Shallow waters bamboo stake trap or ebb tide bamboo stake trap<br>5.2. Bamboo stake trap with net operation<br>5.3. Bamboo stake trap with lifting bag net | 1. Traps, Pots<br>2. Fish traps<br>3. Squid traps<br>4. Shrimp traps<br>5. Crab traps<br>6. Ivory shell traps |

This report will apply on classification of gillnets refer to FAO category in Revised International Standard Classification of Fishing Gears (ISSCFG), Rev.1 (2016) (He, 2021) but the explain the detail of fishing gear described by SEAFDEC classification (SEAFDEC, 1986). There are three types of traps (pots) collected in the ALDFG Survey.

### 7.2.1. Mollusk trap (Squid trap)

SEAFDEC (1986) describes mollusk traps as being modified from traditional fish traps and operated for catching squid (Big-fin reef squid). This kind of fishing spread throughout Gulf of Thailand and Andaman Sea both small scale and commercial scale.

The trap shape used for this purpose is semi-cylindrical. The top of the trap is covered with coconut leaves to provide shade. The trap is suspended at one-third of the water depth under the surface. A float with a bamboo pole marking the position is used to suspend the trap in water. This trap is not operated with bait but use white subject e.g. plastic bag similar to squid egg to attract the female squid to spawn inside the trap. The design and construction of squid trap is shown in Figure 11.

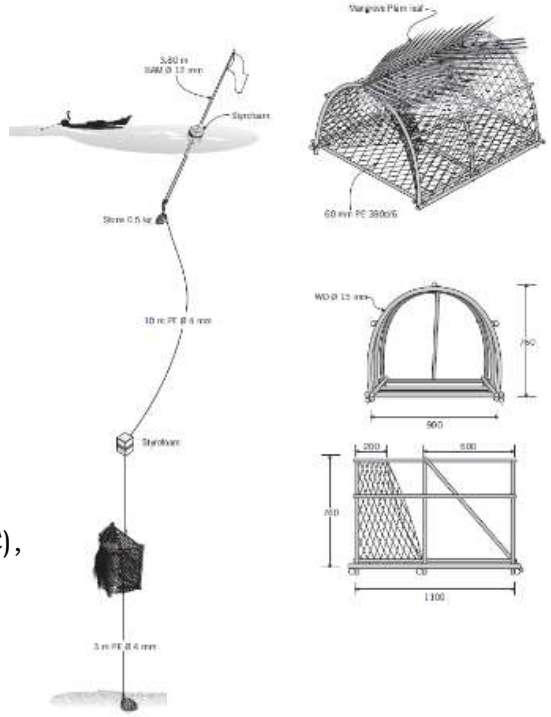


**Figure 11** (Top) Squid trap (Photo by SEAFDEC), (Right) Design of Squid trap (SEAFDEC, 2007)

### 7.2.2. Fish trap

SEAFDEC (2004) reported fish traps or "pots", as they are sometimes called, of various shapes and sizes are operated in Thai coastal waters. According to their shape, three main groups can be distinguished: semi-cylindrical, rectangular and cylindrical traps. The entrance to a trip is usually either funnel-shaped or wedge-shaped. Small traps are about 55 cm long, 27 cm wide and 22 cm in height or diameter. Large traps are about 200 cm long, 100 cm wide and 85 cm high.

Rattan is traditionally the most widely used material for making trap frames. This natural material is not only readily available but is also strong and pliable. This last quality makes it particularly useful for building frames of cylindrical or semi-cylindrical traps. Wood is used for frames of rectangular traps. Bamboo is another commonly used material for traps.

Nowadays, polyethylene netting is the main material for comparatively smaller traps, whereas the mesh of larger ones is made of steel wire. Polyethylene nets with rhomboid mesh have mesh-size of about 4.5-12.01 cm. The wire netting normally has hexagonal mesh shape.

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Rattan is traditionally the most widely used material for making trap frames. This natural material is not only readily available but is also strong and pliable. This last quality makes it particularly useful for building frames of cylindrical or semi-cylindrical traps. Wood is used for frames of rectangular traps. Bamboo is another commonly used material for traps.

Nowadays, polyethylene netting is the main material for comparatively smaller traps, whereas the mesh of larger ones is made of steel wire. Polyethylene nets with rhomboid mesh have mesh-size of about 45-120 cm. The wire netting normally has hexagonal meshes, whose one leg (bar) is about 2.0-2.5 cm long.

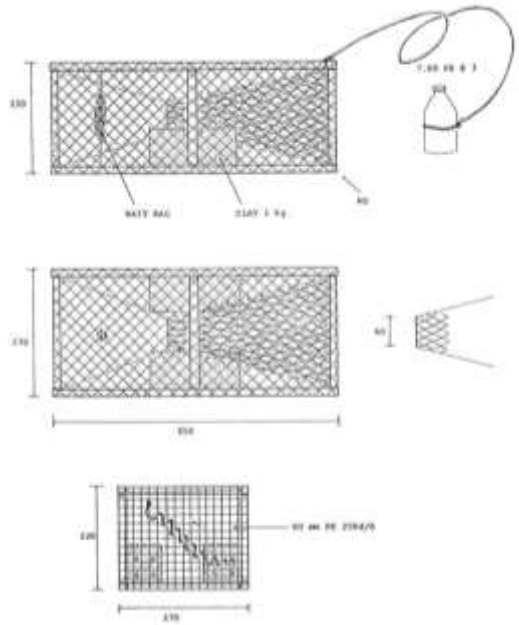


**Figure 12** (Left) Fish trap design (SEAFDEC, 2004),
(Right) Fish trap (Photo by SEAFDEC)

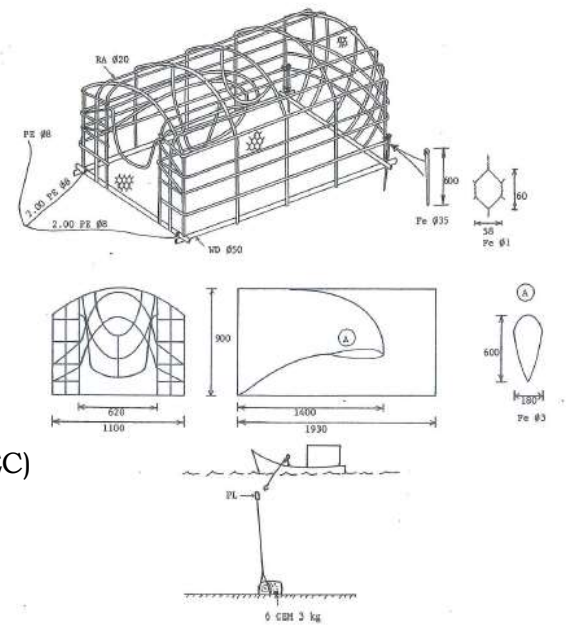


**Figure 13** (Up) Fish trap (Photo by SEAFDEC)
(Left) Fish trap design (SEAFDEC, 2002)

As many as 120 traps can be shot in an operation. Each trap has its individual float and float-line, and each is shot separately from the others. Small-sized traps are usually baited and are hauled daily. Large traps, on the other hand, do not contain any bait and are kept on the bottom for several days continuously. Sometimes the float-line is made shorter than the water depth so that it does not show on the water surface. In this way the trap is more likely to remain in position until its owner returns to look for it. In such a case fisherman must know the exact setting position of their traps, by means of the bearings of objects on land.

The traps which have a short float-line and submerged floats are hauled by using fishers' skill. The hauling method conducted by fishing boat approaches to the place where the trap is set, a fairly long line, about 50 m long and with sinkers attached at both ends, is shot to surround the float-line of the trap. The float of the trap is large enough to be hooked by this surrounding long line, which is used to pull the trap to the surface.

### 7.2.3. Crab-trap

SEAFDEC (2004) reported the crab-trap used widely in Thailand is the collapsible type that used in the sea and mangrove area, target on both swimming crab and muddy crab. This collapsible crab trap is box-shape, made of iron or aluminum frame and cover with dark color net. Trap size is 300 mm X 450 mm X 20 mm with two horizontal entrances at both ends. Fishes are used as bait, fixed at the central of the trap. Some large boats could operate up to 5,000 traps in one haul (time). The fishing grounds are in the sea or mangrove area. Designs and construction of squid trap are shown in Figure 14.

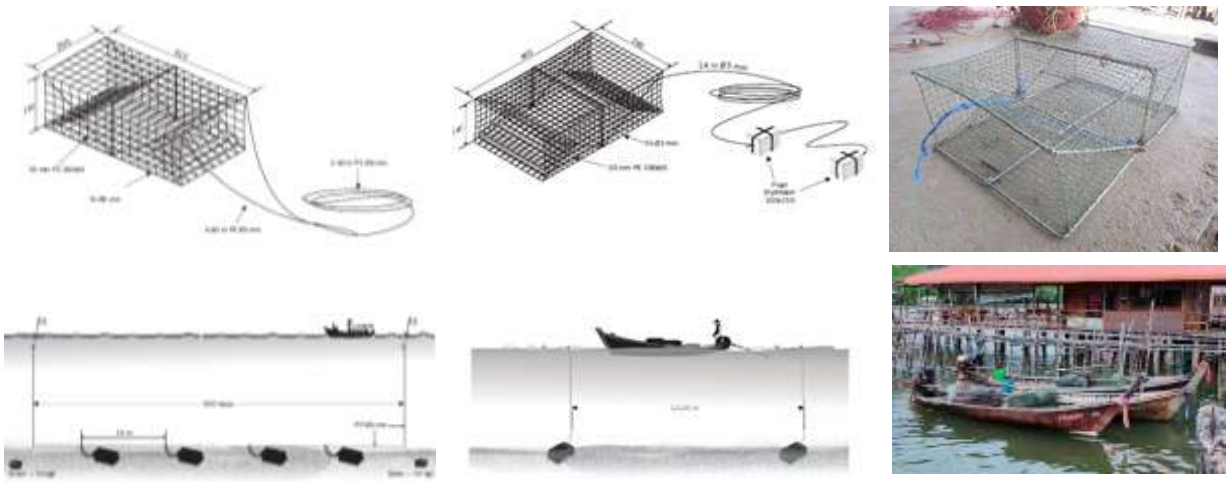


**Figure 14** (Left and Center) Fish trap design (SEAFDEC, 2002),
(Right) Collapsible trap and local fishing boat (Photo by SEAFDEC)

## 8. Survey Result

Due to the COVID 19 pandemic in Thailand, the survey planned in separate short trips, of periods 7-10 days, to reserve the budget for other survey in the other area. However, the COVID 19 outbroke in Thailand all year-round consequent the other survey site beyond Phang Nga and Krabi Province could not be carried out. It also limited the numbers of interviewers that could be conducted at the survey sites. SEAFDEC researchers who are based in in the central part of Thailand cannot support the survey because of provincial regulations which restricted the entering in the survey area, included 14-days quarantine. There were two (2) researchers to conduct the three (3) survey trips.

Total of 160 questionnaires (111 gillnet fishers and 49 trap fishers) from 44 fishing villages in Phang Nga and Krabi Province, Thailand was interviewed during three surveys. Table 4 shows the number of respondents categorized by type of fishing gear.

The 1st ALDFG survey was conducted in Krabi Province, Thailand from 17 to 26 May 2021(10 days). During the survey, a total of 65 fishers (45 gillnet fishers and 20 trap fishers) were interviewed by using the latest version of the FAO Questionnaire on Global Fishing Gear Loss Assessment (Annex 4).

The 2nd ALDFG survey was conducted from June 21 to July 2, 2021 (12 days). Seventy-six (76) completed questionnaires comprise of fifty-one (51) gillnets questionnaires and twenty-five (25) traps questionnaires collected from the survey.

The 3rd ALDFG survey was conducted from 4 to 8 October 2021 (5 days). Nineteen (19) completed questionnaires comprise of fifteen (15) gillnets questionnaires and four (4) traps questionnaires collected from the survey.

**Table 4** Number of respondents of the ALDFG survey on gillnet and trap fisheries in Phang Nga and Krabi Province, Thailand

| Category | Fishing gear | Number of Respondent | | | |
|---|---|---|---|---|---|
| | | 1st Survey | 2nd Survey | 3rd Survey | Total |
| Gillnets and Entangling nets | Set gillnets (anchored) | 20 | 33 | 6 | 59 |
| | Drift gillnets | 10 | 6 | 3 | 19 |
| | Encircling gillnets | 3 | 4 | 0 | 7 |
| | Trammel nets | 12 | 8 | 6 | 26 |
| Traps | Pots | 20 | 25 | 4 | 49 |
| | Total | 65 | 76 | 19 | 160 |

## 8.1. Gillnet

A total of 111 gillnet questionnaires were collected from the survey. The number of set gillnets questionnaires are 64 sets. The number of drift gillnets questionnaires are 17 sets. The number of encircling gillnets questionnaires are 5 sets. The number of trammel nets questionnaires are 25 sets. All questionnaires were collected in Phang Nga and Krabi Province, Southern of Thailand.

### 8.1.1. Fishers

**Question**

a) Respondent age
b) Position on Fishing vessel
c) Fishing experience years
d) Involved in part of this FAO-ALDFG survey (Gillnet)
e) Vessel length
f) Flag state of fishing vessel
g) Landing sites

There were 109 questionnaires collected from gillnet fishers operated by fishing vessel length overall less than 12 m and 2 questionnaires collected from fishers operated by fishing vessel length overall less than 12-14 m. All respondents are male with age from 20-70 years old. Majority of fisher are the age between 50-69 years (47.7%) The youngest age between 20-29 years found minority (0.9%) of the respondents (Table 5 and Figure 15 Left).

All respondents are gillnet skippers or captains with majority experience of fisher is more than 21 years (72.1%) (Table 6 and Figure 15 Right). Their fishing grounds are in Phang Nga and Krabi Province and land their catches in coastal area of in Phang Nga and Krabi Province, Thailand. All of them had never previously taken part in this FAO-ALDFG survey.

**Table 5** Respondent age (gillnet fishers)

| Age | Number |
|---|---|
| < 20 years | 0 |
| 20-29 | 1 |
| 30-39 | 12 |
| 40-49 | 30 |
| 50-59 | 53 |
| 60-69 | 13 |
| > 70 years | 2 |

**Table 6** Gillnet Fishing experience years

| Year | Number |
|---|---|
| 0-4 | 3 |
| 5-20 | 28 |
| > 21 | 80 |

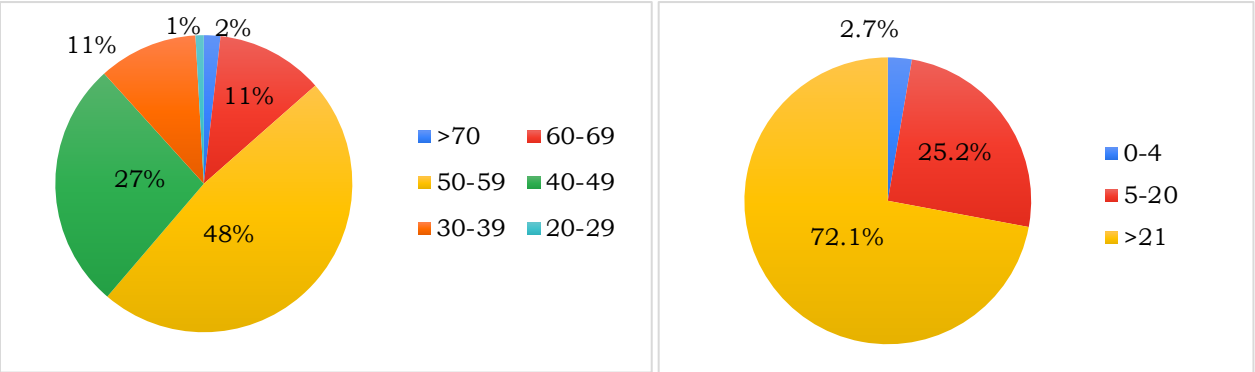



**Figure 15** (Left) Composition in percent of respondent Age (gillnet fisher), (Right) Composition in percent of respondent gillnet fishing experience years

### 8.1.2. Fishing gears

**Question**

a) Type of gillnet

b) The EEZ name or the Sea Name

c) Fishing depth

There are 111 gillnet questionnaires collected from the survey. The number of Set gillnets questionnaires are 64 sets. The number of Drift gillnets questionnaires are 17 sets. The number of encircling gillnets questionnaires are 5 sets. The number of trammel nets questionnaires are 25 sets (Figure 16 Left).

The major target species of gillnet is crustacean that includes crab and shrimp (66 questionnaires) followed by demersal fish (22 questionnaires), pelagic fish (19 questionnaires) and cephalopod (4 questionnaires) (Figure 16 Right). Gillnet fishing ground is around Phang Nga Bay, Andaman Sea, within area of Phang Nga and Krabi Province, Thailand EEZ. Depth of the fishing ground is less than 50 m.

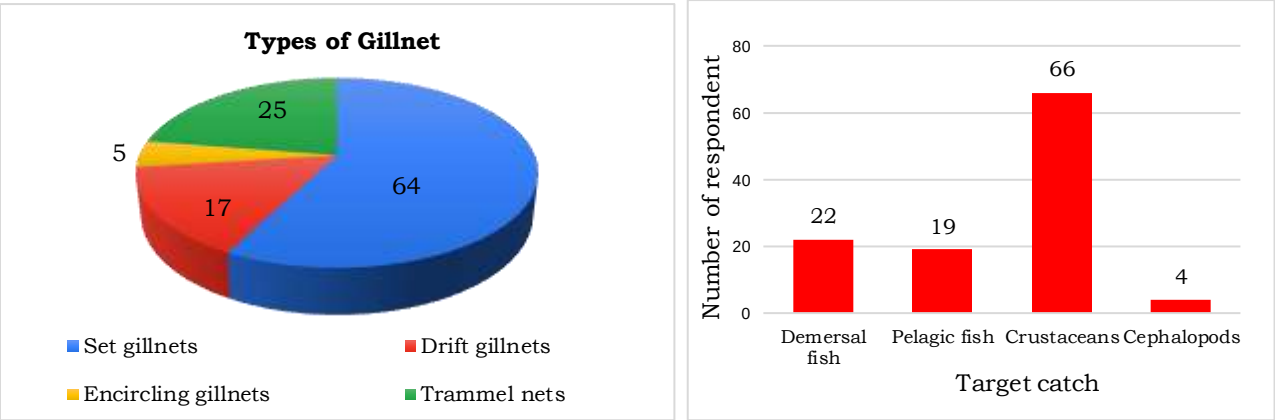



**Figure 16** (Left) Composition in number of interviewed types of gillnets, (Right) Composition in number of targets catch of gillnet

### 8.1.3. Fishing Operations

The total estimate numbers of gillnet fishing trips from 111 fishing vessels operated in a typical year are 18,276 trips/year with minimum number of fishing trips are 20 trips/year (Trammel net), maximum are 360 trips/year (Set gillnet). The average estimated number of fishing trip operated in a typical year are 399 trips/year (Table 7).

**Fishing operation question**

a) Estimate the number of fishing trips
b) Estimate the number of days
c) Estimate the importance of fishing month
d) Estimate of average soak time
e) Number of gillnet use in fishing operation
f) Cost to construct/buy one gillnet unit
g) Estimated weight (kgs) of plastic components
h) Target species group
i) Average total catch
j) Estimated value of catch

**Table 7** Number of gillnets fishing trip/year

| Fishing Trip in one year (trips/year) | Set gillnets | Drift gillnets | Encircling gillnets | Trammel nets | All gillnets |
|---|---|---|---|---|---|
| Total | 9,689 | 2,279 | 2,461 | 3,847 | 18,276 |
| Minimum | 36 | 60 | 51 | 20 | 20 |
| Maximum | 360 | 240 | 2110 | 270 | 2110 |
| Average | 151 | 134 | 492 | 154 | 339 |

The number of gillnet fishing day/trip is between 1-3 days, but majority of fishing vessels operate by 1 day/trip.

There are several respondents operate set gillnet and drifting gillnet more than 1 day/trip (Figure 17)

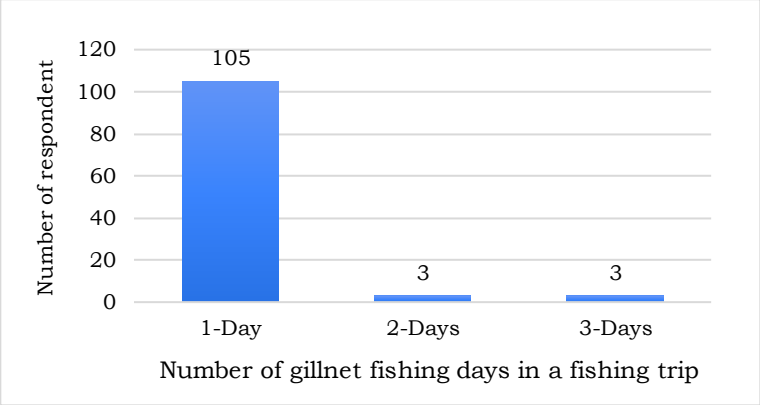



**Figure 17** The number of gillnet fishing day/trip

There are two (2) major gillnet fishing seasons along the coast of Andaman Sea, Southern of Thailand, *i.e.*

1) Northeast monsoon, the period is from November to February (of following year)
2) southwest monsoon, the period of southwest monsoon is from May to October in the same year.

Result from the survey shows that the gillnet fishers conduct the fishing operations throughout the year. Main fishing seasons for gillnet fisheries around Phang Nga Bay of Andaman Sea is from June to December (Southwest Monsoon to mid of Northeast Monson Season). Majority respondents (57.7%) reply to the important fishing month is October although this season always encounter with severe weather and rough sea condition. Therefore, the target catches may be abundant in the end period of Southwest Monsoon season. In addition, the majority of gillnet respondents (36.9%) reply the never fishing in April (Figure 18).

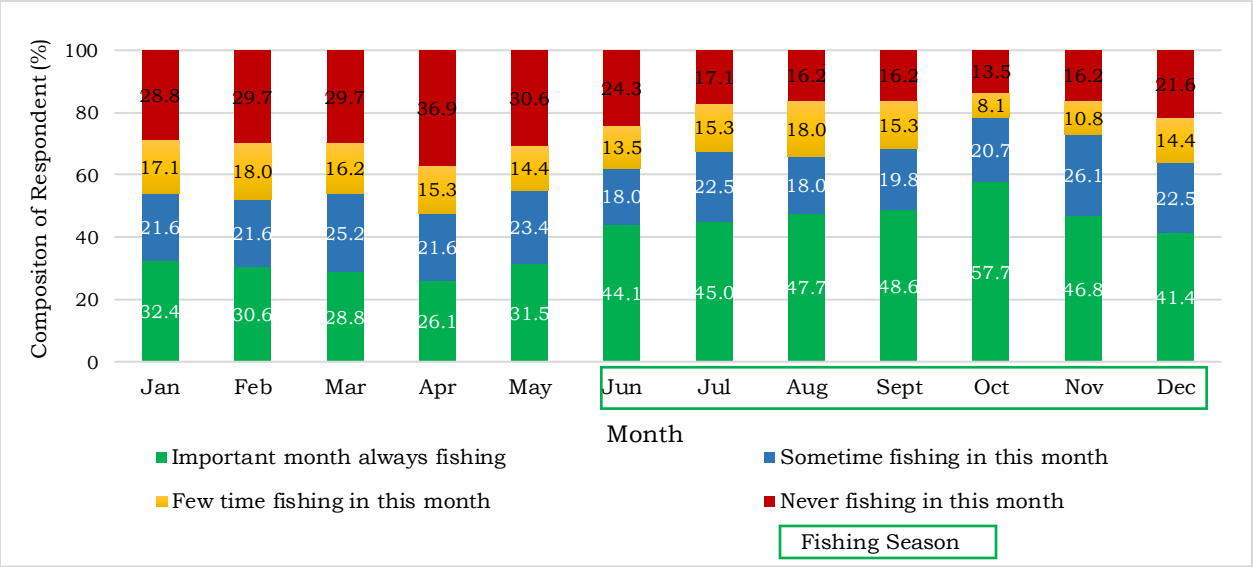



**Figure 18** Frequent of gillnet fishing month over a year in percent

Soaking time of gillnet varies from 10-120 minutes. The soaking time of trammel net always found less than 60 minutes. Encircling net found soaking time between 60-120 minutes however the operations may conduct more than one set in 1-2 hours. Set Gillnet and Drifting Gillnet is operation within 48 hours (Figure 19).

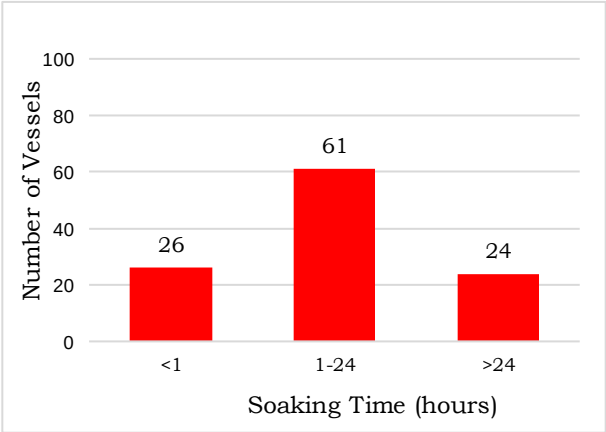
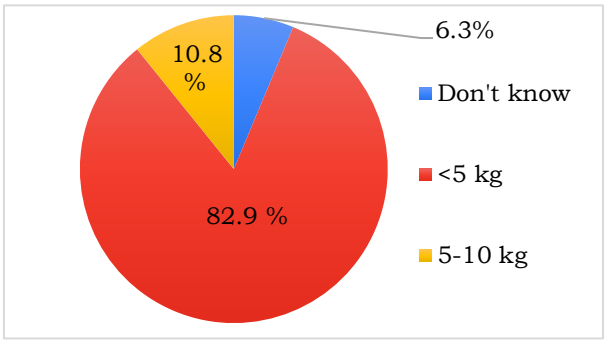



**Figure 19** Estimate of average soaking time of gillnets (hours)

Total number of single gillnets regularly operated at the same time is from 2-120 units. The majority of gillnets (82.9%) reported the estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one gillnet unit is all less than 5 kg (Figure 20).




The estimate cost of construct/purchasing one gillnet unit ranged from 6.45 to 193. 55 US Dollar. The approximate total catch of gillnet landed per trip ranged from 2 to 500 kg/trip with estimated value of catches is range from 6.45 to 3,548.39 USD/trip.

**Figure 20** Composition in percent of respondent to estimated weight (kgs) of plastic components in one gillnet unit

In addition, gillnet fishing in Thailand have not associated with Fish Aggregating Devices (FADs).

### 8.1.4. Fishing gear loss information

**Question**

a) Element of gillnet part lost
b) Estimate Gillnet lost in unit or weight (kg)
c) Estimate frequent of gillnets lost in each month
d) Report of gillnet lost
e) Person or agency to whom the loss is reported
f) Main causes of the gear loss
g) Practices are used to avoid fishing gear loss or damages
h) Fish Aggregating Devices (FADs) in addition to gillnets

Information of gillnet loss is the quantity of gillnets that are lost annually, how, where, when losses may occur when/If fishers lose gillnet panel or parts of it.

Result from the respondents showed gillnets rarely to lost by the one entire set (with all elements). There are 68.5% of respondents of all type of gillnet have never lost by the one entire set (with all elements). The result of interview shows the rare loss of one unit, buoy, and float, found closed in percent of respondents, with 42.3 %, 45.5% and 49.5% respectively.

The highest result of gillnet loss by net cut-offs is very frequently found with 34.2% of respondents. The frequency, sometime of fishing gear loss appears closely by one unit, buoy, and float, with 38.7%, 45.5% and 39.6% respectively (Figure 21)

Estimated total number of gillnet loss from the survey is 458.5 units of lost/year. The highest estimation of gillnet lost, 50 gillnet units/year, was found in trammel nets. The lowest estimation of gillnet lost, 0.15 gillnet units/year.

Refer to the approximate cost to construct/buy one gillnet unit is from 6.45 to 193.55 USD, estimated total economic loss from gillnet loss is 13,467.14 USD/year. The lowest value of economic loss is 4.84 USD/year and highest value is 1,806.40 USD/year.

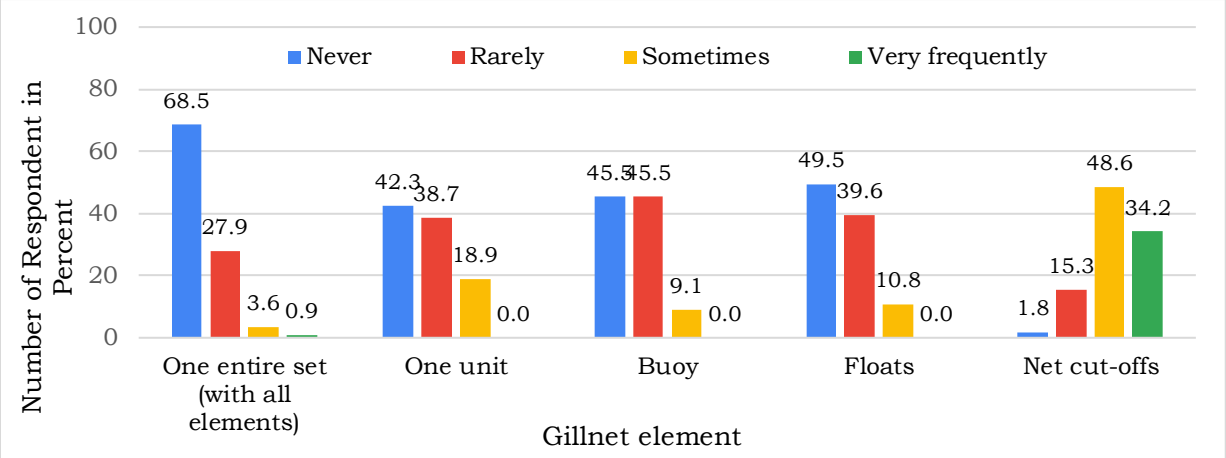



**Figure 21** Frequent of gillnet fishing month over a year (in percent)

The estimated of frequent lost gillnet in each month of one year in percentage found higher in the gillnet fishing season but not clearly distinguish (Figure 22). All gillnet losses have never been reported but fishers always inform nearby vessels.

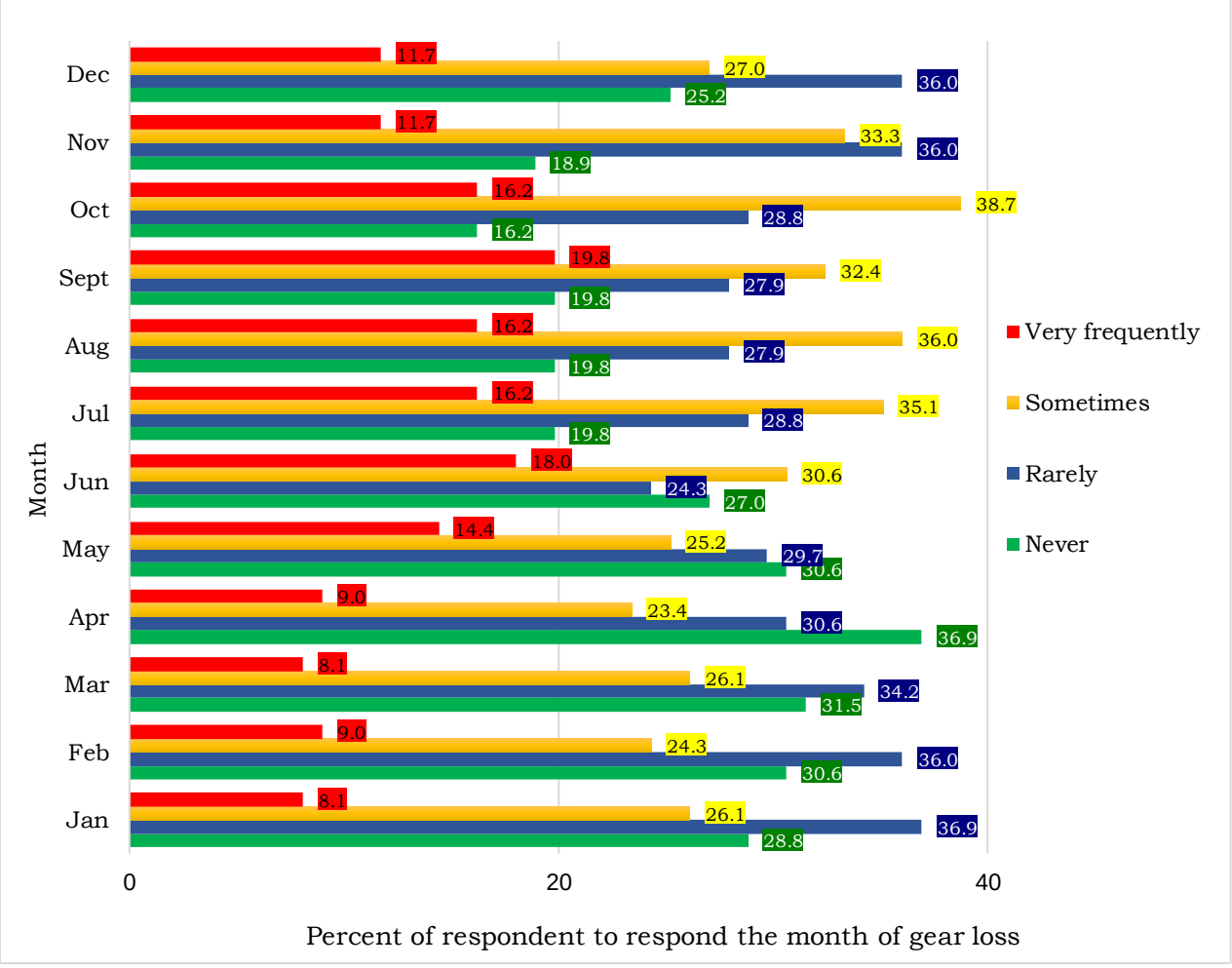



**Figure 22** Frequent gillnets loss in each month of one year (In percent)

The result of questionnaire, number of gillnet respondents and main causes of the gillnet loss are shown in Table 8, 9 and Figure 23.

**Table 8** Number (Percent) of gillnet respondents and main causes of the gillnet loss

| Main causes of the Gear Loss | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 1. Net snagged on an obstruction | 11 (10.0%) | 46 (41.8%) | 53 (48.2%) | 0 (0.0%) | 110 (100%) |
| 2. Poor weather conditions | 61 (55.5%) | 49 (45.5%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |
| 3. Damage or towed away by large animals | 100 (91.7%) | 0 (0.0%) | 1 (0.9%) | 8 (7.3%) | 109 (100%) |
| 4. Drifted out of area that cannot be accessed by the vessel | 104 (94.5%) | 1 (0.9%) | 0 (0.0%) | 5 (4.5%) | 110 (100%) |
| 5. Faulty, old, or damaged gear | 100 (90.9%) | 10 (9.1%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |
| 6. Operator error | 99 (90.8%) | 9 (8.3%) | 2 (1.8%) | 0 (0.0%) | 110 (99.9%) |
| 7. Strong currents | 28 (25.7%) | 65 (59.6%) | 16 (14.7%) | 0 (0.0%) | 109 (100%) |
| 8. Deep water | 105 (95.5%) | 4 (3.6%) | 1 (0.9%) | 0 (0.0%) | 110 (100%) |
| 9. Gear not properly stored onboard | 107 (97.3%) | 3 (2.7%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |
| 10. Conflict with other gear | 63 (57.3%) | 41 (37.3%) | 6 (5.5%) | 0 (0.0%) | 110 (100%) |
| 11. Vandalism, (stolen or destroyed) | 86 (78.2%) | 17 (15.5%) | 7 (6.4%) | 0 (0.0%) | 110 (100%) |
| 12. The surface marking is lost, sunk or malfunctioned | 90 (81.8%) | 20 (11.2%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |
| 13. Gear intentionally discarded overboard | 105 (95.5%) | 4 (3.6%) | 0 (0.0%) | 0 (0.0%) | 109 (100%) |
| 14. Equipment failure | 108 (98.2%) | 1 (0.9%) | 0 (0.0%) | 1 (0.9%) | 110 (100%) |
| 15. High traffic of other vessels | 95 (86.4%) | 15 (13.6%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |
| 16. Lack of communications between fishing vessels | 86 (78.2%) | 24 (21.8%) | 0 (0.0%) | 0 (0.0%) | 110 (100%) |

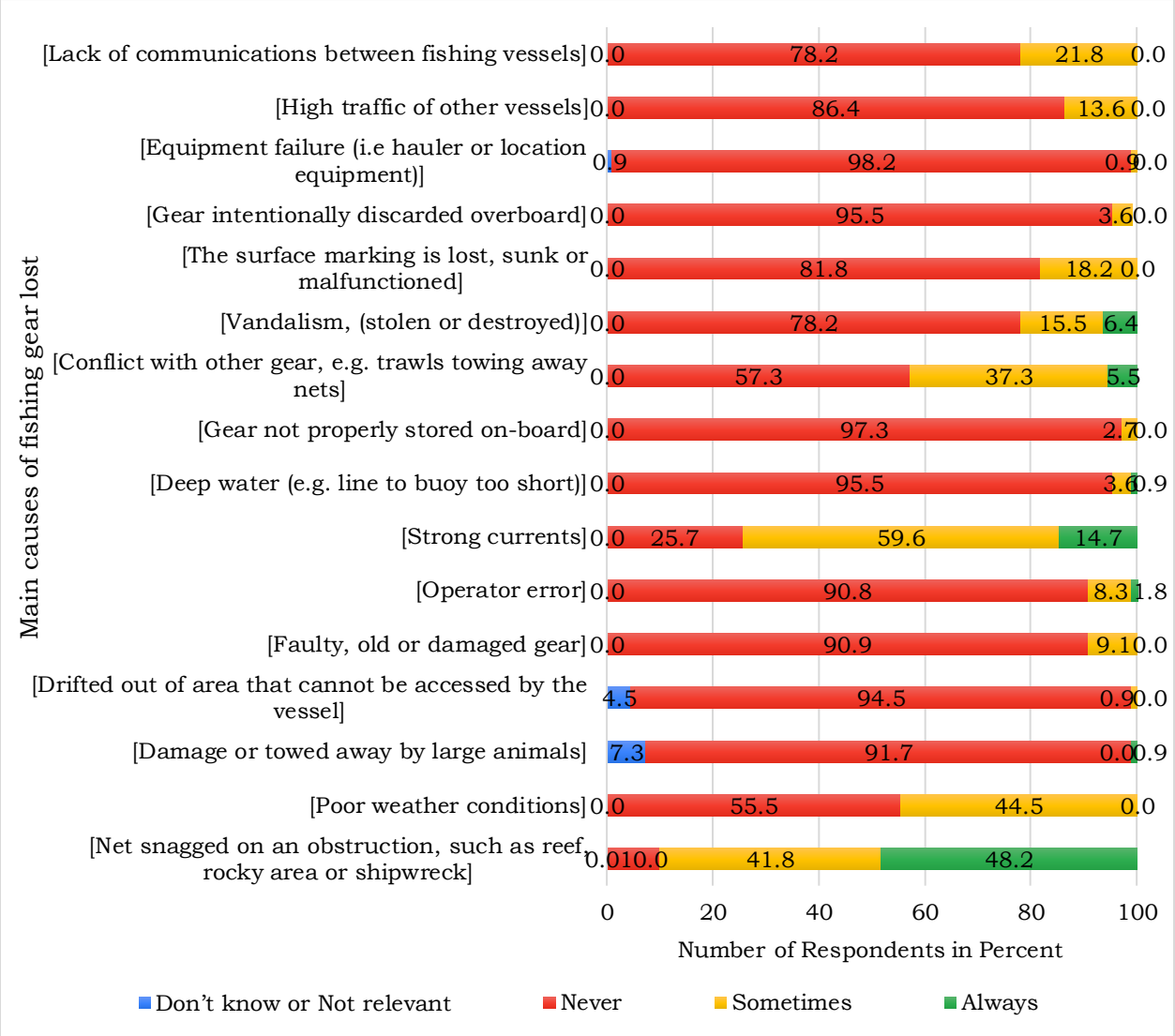



**Figure 23** Estimate frequent main causes of gillnet loss always happened (in percent)

**Table 9** Result from the interview shows that the top 3 causes of gillnet loss; always, sometimes, and never happen

| Result | The Practices used to avoid gillnet loss or damages |
|---|---|
| Always happen | 1) Net snagged on an obstruction (48.2%)<br>2) Strong currents (14.7%)<br>3) Vandalism, (stolen or destroyed) (6.4%) |
| Sometimes happen | 1) Strong currents (59.6%)<br>2) Poor weather conditions (44.5%)<br>3) Net snagged on an obstruction (41.8%) |
| Never happen | 1) Equipment failure (98.2%)<br>2) Gear not properly stored on-board (97.3%)<br>3) Deep water and Gear intentionally discarded overboard (95.5%) |

**Table 10** Practices are used to avoid gillnet loss or damages listed in the FAO Questionnaire

| Seventeen (17) practices are used to avoid gillnet loss or damages |
|---|
| 1) Avoid setting the fishing gear in areas known for snagging.<br>(An easy practice if using good navigation equipment, but not always available) |
| 2) Avoid fishing in poor weather conditions.<br>(Following weather forecast to avoid bad weather) |
| 3) Avoid areas where animals likely to damage the gear<br>(Could be a seasonal or known areas where animals are known to damage gear) |
| 4) Avoid losing drifting gears out of reach (Possible for drifting gears and FAD's) |
| 5) Repair or replace worn fishing gear or parts<br>(Fisher's skills to repair the gears would be needed) |
| 6) Training of crew on gear handling and operation<br>(It can be important to have properly trained crew) |
| 7) Avoid using the fishing gear in areas with strong currents<br>(Knowing when and where the strong current is can avoid gear loss) |
| 8) Know fishing depth and rig accordingly<br>(Fishermen knowledge of the fishing ground important) |
| 9) Securely stow fishing gear on board to with stand bad weather/sea conditions<br>(Could be connected to vessel design and crew skills. Gears may be fell overboard by big seas) |
| 10) Communicate with nearby fishing vessels to avoid conflict.<br>(Could be lack of technology or willingness to communicate with other fishing vessels) |
| 11) Implement measures to avoid vandalism of gear by others.<br>(Good communication may help avoid conflict between fishers using different fishing gears on the same fishing ground) |
| 12) Use good surface marking or electronic devices.<br>(Could be difficult or expensive to have adequate surface Markers) |
| 13) Instruct crew members not to discard fishing gear overboard.<br>(Captain forbidding such practice) |
| 14) Make sure all equipment used with fishing gears is in good condition.<br>(If the equipment is not in good condition it may lead to problems including loss of gear.) |
| 15) Avoid areas of high vessel traffic/shipping lanes.<br>(Avoiding areas of high traffic make may reduce the risk of losing gears) |
| 16) Cooperation with other fishers (Assist each other to retrieve gear) |

Result of questionnaire Number of Respondents and practices are used to avoid gillnet loss or damages are shown in Table 11, 12 and Figure 24.

**Table 11** Number (Percent) of respondents and practices are used to avoid gillnet loss or damages.

| Practices are used to avoid gillnet loss or damages | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | 1 (0.9%) | 49 (44.1%) | 61 (55.0%) | 0 (0.0%) | 111 (100%) |
| 2. Avoid fishing in poor weather conditions | 5 (4.5%) | 23 (20.7%) | 83 (74.8%) | 0 (0.0%) | 111 (100%) |
| 3. Avoid areas where animals likely to damage the gear | 76 (68.5%) | 1 (0.9%) | 1 (0.9%) | 33 (29.7%) | 111 (100%) |
| 4. Avoid losing drifting gears out of reach | 79 (71.2%) | 17 (15.3%) | 9 (8.1%) | 6 (5.4%) | 111 (100%) |
| 5. Repair or replace worn fishing gear or parts | 9 (8.1%) | 55 (49.5%) | 46 (41.4%) | 1 (0.9%) | 111 (100%) |
| 6. Training of crew on gear handling and operation | 19 (17.1%) | 35 (31.5%) | 37 (33.3%) | 20 (18.0%) | 111 (100%) |
| 7. Avoid using the fishing gear in areas with strong currents | 8 (7.2%) | 36 (32.4%) | 67 (60.4%) | 0 (0.0%) | 111 (100%) |
| 8. Know fishing depth and rig accordingly | 9 (8.1%) | 30 (27.0%) | 72 (64.9%) | 0 (0.0%) | 111 (100%) |
| 9. Securely stow fishing gear on board to with stand bad weather/sea conditions | 4 (3.6%) | 17 (15.3%) | 90 (81.1%) | 0 (0.0%) | 111 (100%) |
| 10. Communicate with nearby fishing vessels to avoid conflict | 8 (7.2%) | 78 (70.3%) | 25 (22.5%) | 0 (0.0%) | 111 (100%) |
| 11. Implement measures to avoid vandalism of gear by others | 59 (53.2%) | 18 (16.2%) | 29 (26.1%) | 5 (4.5%) | 111 (100%) |
| 12. Use good surface marking or electronic devices | 30 (27.0%) | 19 (17.1%) | 62 (55.9%) | 0 (0.0%) | 111 (100%) |
| 13. Instruct crew members not to discard fishing gear overboard | 27 (24.3%) | 29 (26.1%) | 33 (29.7%) | 22 (19.8%) | 111 (100%) |
| 14. Make sure all equipment used with fishing gears is in good condition | 1 (0.9%) | 18 (16.2%) | 92 (82.9%) | 0 (0.0%) | 111 (100) |
| 15. Avoid areas of high vessel traffic/shipping lanes | 10 (9.0%) | 48 (43.2%) | 51 (45.9%) | 2 (1.8%) | 111 (100) |
| 16. Cooperation with other fishers | 10 (9.0%) | 76 (68.5%) | 24 (21.6%) | 1 (0.9%) | 111 (100) |

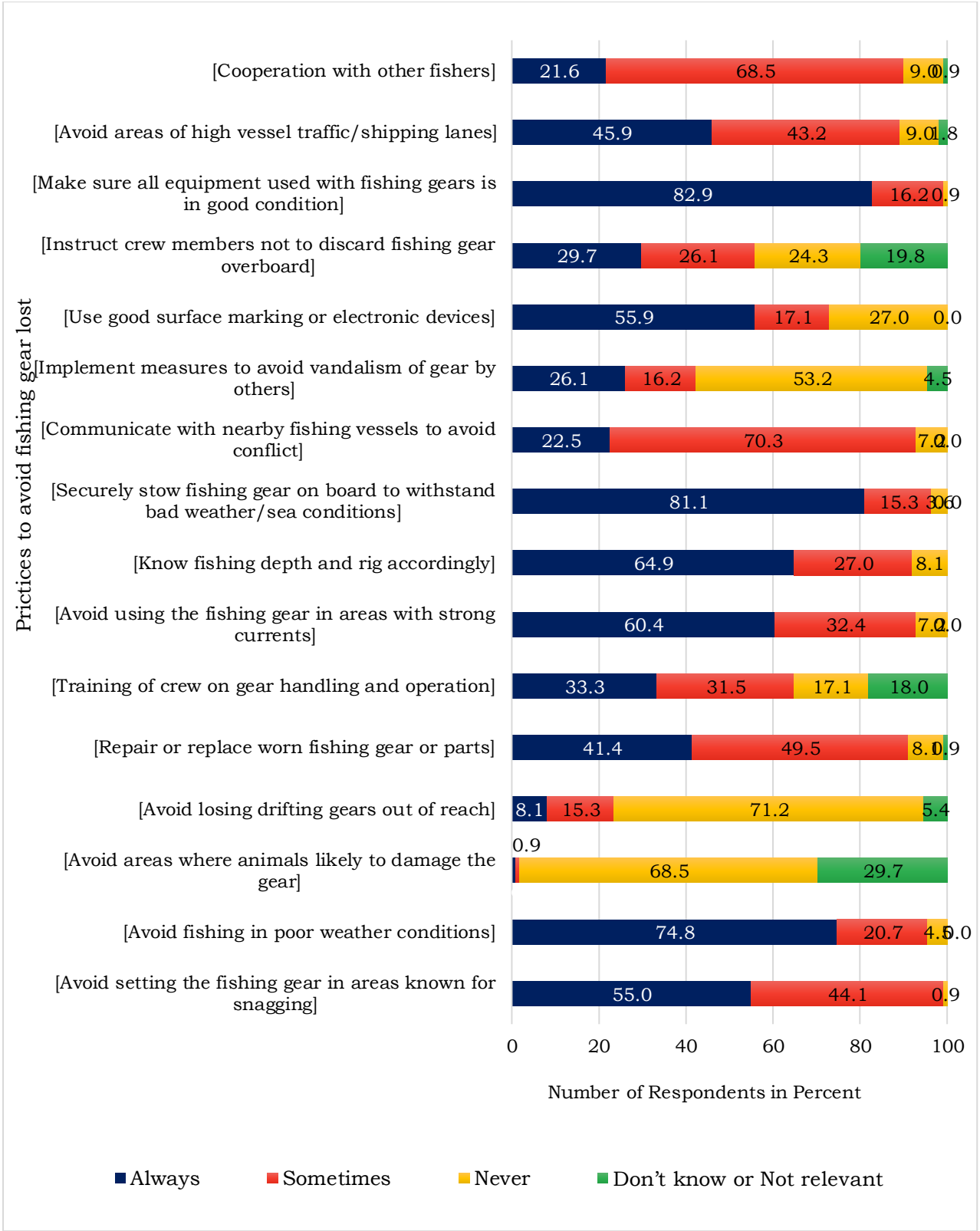



**Figure 24** Estimate frequent practices are used to avoid gillnet loss or damages (in percent)

**Table 12** Result from interview on the elements for avoiding or reducing quantities of Gillnet loss

| Result | The Practices used to avoid gillnet loss or damages |
|---|---|
| Always used | 1) Make sure all equipment used with fishing gears is in good condition (82.9%)<br>2) Securely stow fishing gear on board to with stand bad weather/sea conditions (81.1%)<br>3) Avoid fishing in poor weather conditions (74.8) |
| Sometimes used | 1) Communicate with nearby fishing vessels to avoid conflict (70.3%)<br>2) Cooperation with other fishers (68.5%)<br>3) Repair or replace worn fishing gear or parts (49.5%) |
| Never used | 1) Avoid losing drifting gears out of reach (71.2%)<br>2) Avoid areas where animals likely to damage the gear (68.5%)<br>3) Implement measures to avoid vandalism of gear by others (53.2%) |

### 8.1.5. End-of-life fishing gear and marine plastic waste management

**Question**

a) Damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site.

b) Container on-board of fishing vessel to store off-cuts, damaged or worn fishing gear to dispose on shore.

c) Fishers recover marine plastic waste during fishing trips.

d) Estimate marine plastic waste this could be brought back in a typical fishing trip?

e) Facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials or non-fishing gear plastic waste?

f) A charge to use the facilities.

g) Knowledge of the treatment of end-of-life fishing gear components/materials.

h) Payment for depositing plastic waste.

Regarding the damaged and unwanted plastic parts of fishing gear collected and stored on board, are there brought back to port/landing site? Respondents replied to the highest 80% of respondent always collected, stored, and brought back damaged and unwanted plastic parts of fishing gear to port/landing site.

However, gillnet fishers answered 1.8% have never brought unwanted plastic parts of fishing gear found during fishing back to port/landing site (Figure 25).

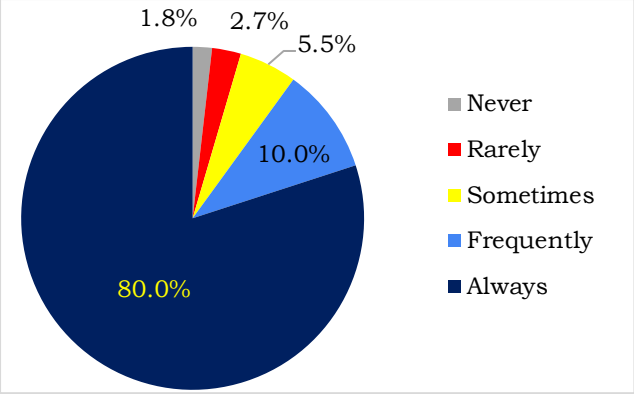



**Figure 25** Estimate gillnet fishers collected, stored, and brought back damaged and unwanted plastic parts of fishing gear to port/landing site (in percent)

The majority, 69% of the gillnet respondents, have not installed specific area/container on-board but they bring back the off-cuts, damaged or worn fishing gear to dispose on shore (Figure 24 Left). There are 77.5% of gillnet respondents estimated marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site less than 1 kg. The remaining 16.2% select the not applicable (Figure 26 Right).

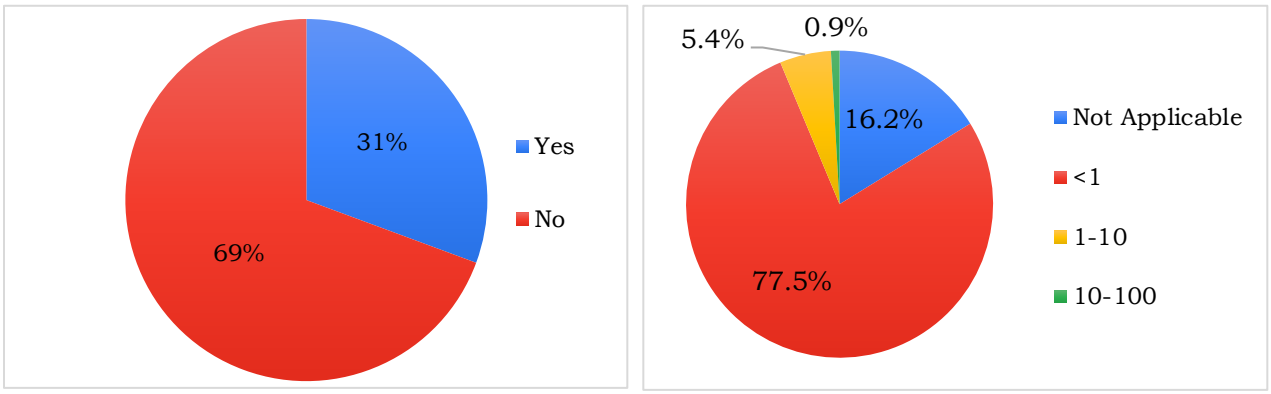



**Figure 26** (Left) Estimate installation of the specific area/container on-board to bring back the off-cuts, damaged or worn fishing gear to dispose on shore (in percent)

(Right) Proportion of estimate weight plastic waste fisher bring back from fishing ground to land

Result of the survey also show that majority of waste (64.0%) is rarely or never associated to gillnet fishing gears (Figure 27)

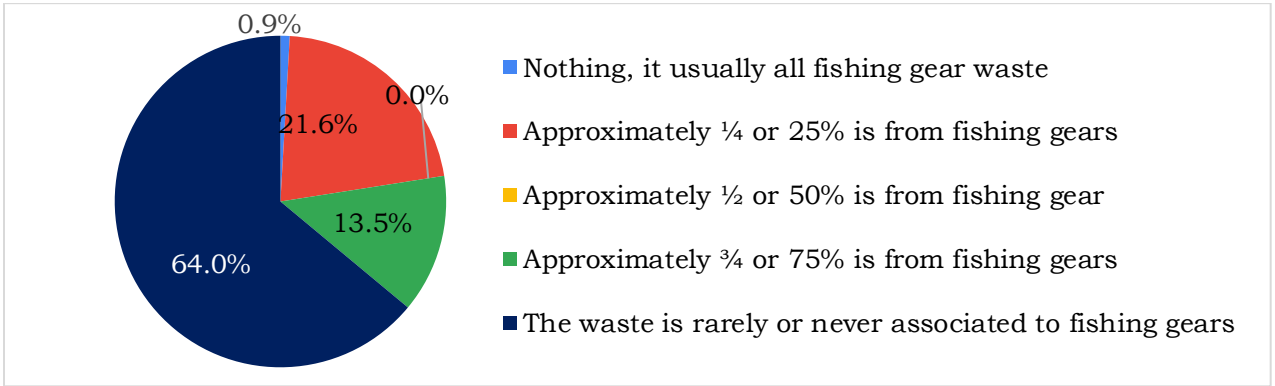



**Figure 27** Installation of the specific area/container on-board to bring back the off-cuts, damaged or worn fishing gear to dispose on shore (in percent)

Consideration on the facilities in or near the vessel's home port/landing site to dispose end-of-life gillnet components/materials, majority of gillnet respondents (70.3%) reply that there are facilities near the vessel's home port/landing site to dispose end-of-life gillnet components/ materials (Figure 28).

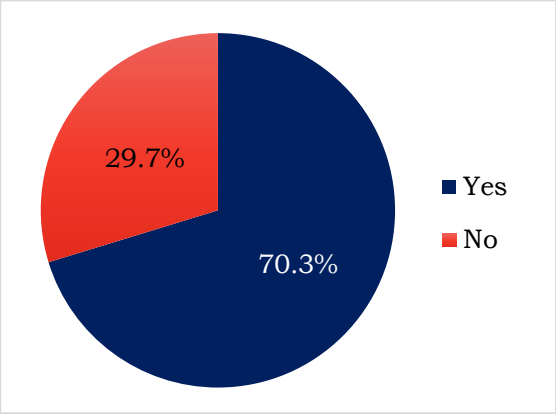
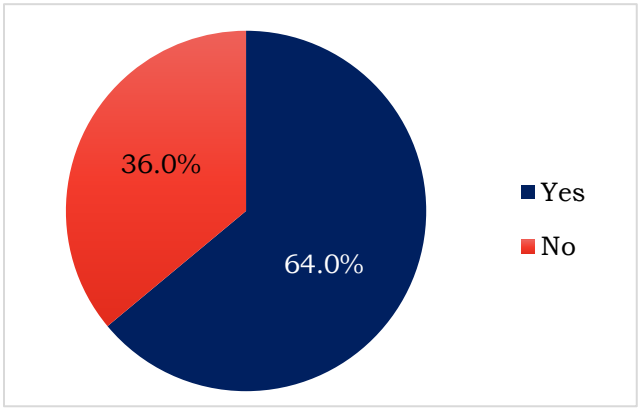



**Figure 28** Facilities in or near the vessel's home port/landing site to dispose end-of-life gillnet components/materials (in percent)

In addition, the majority of gillnet respondents (64.0%) reply that there are facilities near the vessel's home port/landing site to dispose of non-fishing gear plastic waste (Figure 29 Left). Some gillnet fishers must pay for the waste management service. There are 46.1% of the respondent who reply there are facilities to dispose the end-of-life or wasted fishing gear must pay for the waste management service (Figure 29 Right)



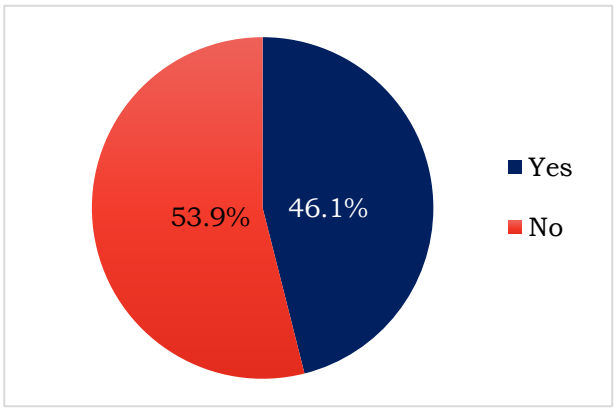
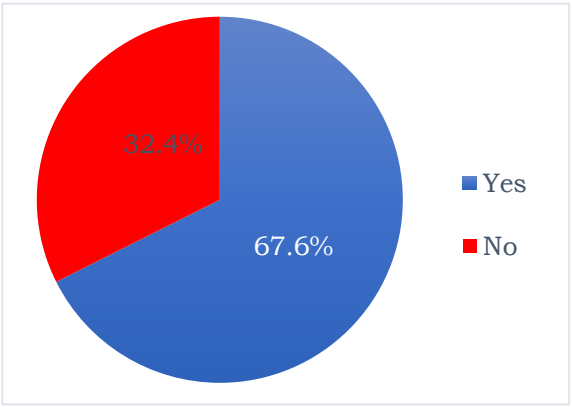




**Figure 29** (Left) Facilities in or near the vessel's home port/landing site to dispose of non-fishing gear plastic waste (in percent),

(Right) Charge to use the facilities to dispose of end-of-life or wasted fishing gear (in percent)




For the non-fishing gear plastic waste, there are 67.6% of respondents reply there are charged to use the facilities to dispose of non-fishing gear plastic waste (Figure 30)

**Figure 30** The charge (in percent) to use the facilities to dispose of non-fishing gear plastic waste

The majority of gillnet respondents (60.6%) do not receive any payments for depositing plastic waste both end-of-life or wasted fishing gear and non-fishing gear plastic waste (Figure 31). There are 39.4% of gillnet fishers received payment for depositing plastic waste both end-of-life or wasted fishing gear and non-fishing gear plastic waste.

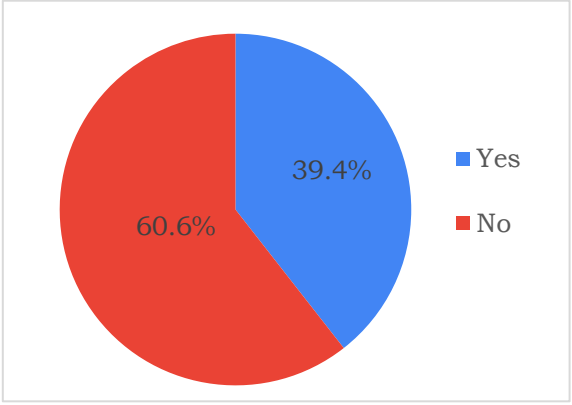



**Figure 31** Receive any payments for depositing plastic waste both end-of-life or wasted fishing gear and non-fishing gear plastic waste (in percent)

Focus on the knowledge of gillnet fisher on the treatment of waste from the sea, majority of gillnet respondents (50.7%) do not know how the waste plastic materials are treated. Similar with the end-of-life or wasted fishing gear, majority of gillnet respondents (49.5%) do not know how the waste plastic materials are treated (Figure 32).

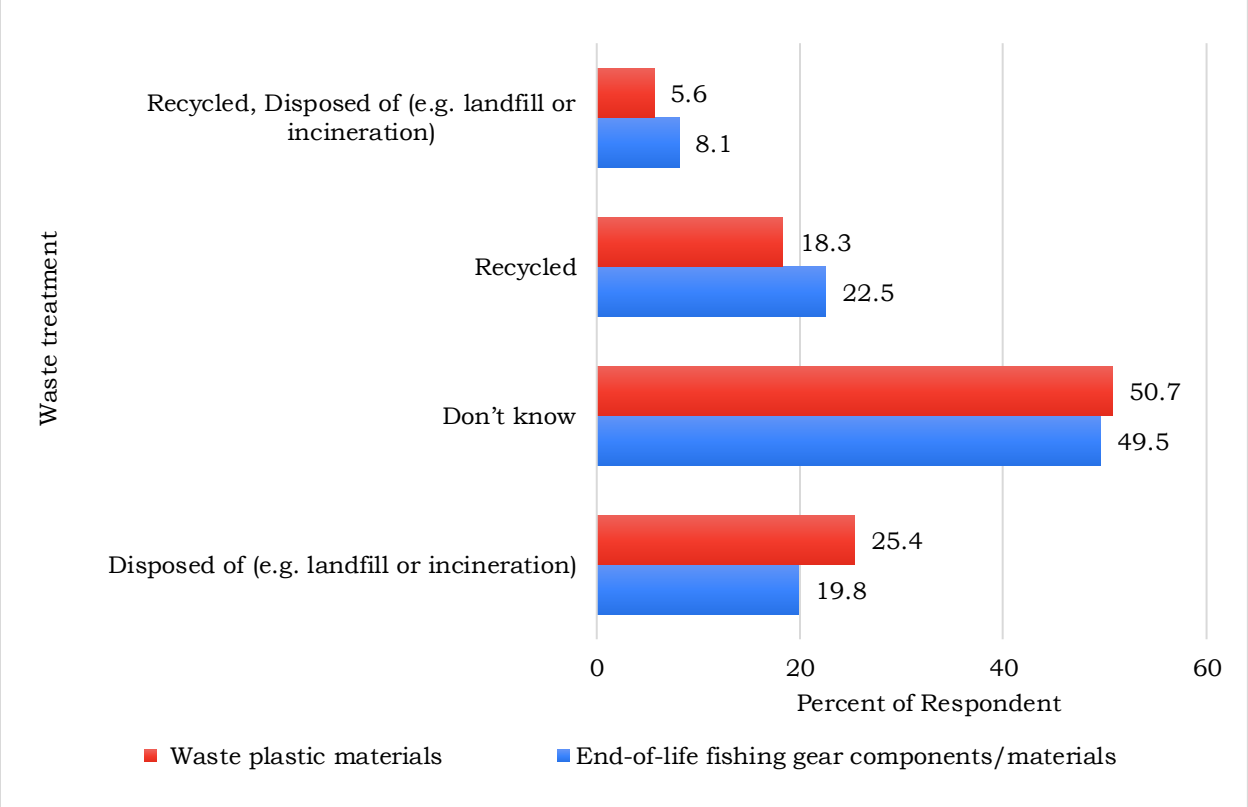



**Figure 32** Knowledge of gillnet respondent on the waste plastic materials treatment

### 8.1.6. Regulation of marking fishing gear

**Question**

a) Laws, regulations, and awareness of marking fishing gears

b) Fishing gear marking.

Results from gillnet respondents showed that they are not aware of any laws or regulations for marking fishing gears in their fishing ground. The majority of respondents (94.59%) answer no aware of any laws or regulations for marking fishing gears and 5.41% of gillnet respondents do not know are there any regulations*. Therefore, none of gillnet fishers apply the gear marking with their traps (Figure 33).

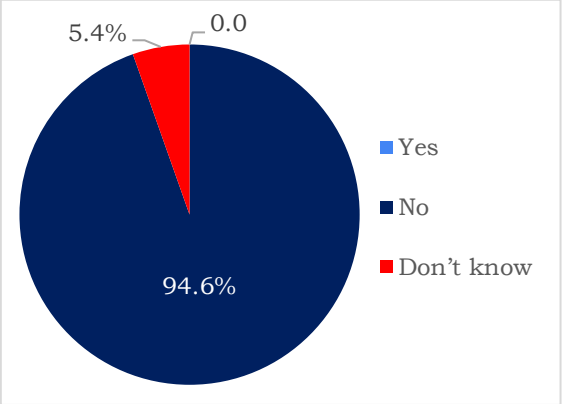



**Figure 33** Gillnet fishers' awareness of any laws or regulations for marking fishing gears in the fishing ground (in percent)

* There is an important error on the question of awareness of any laws or regulations for marking fishing gears in the fisheries where you. Mostly of respondents do not know any existing regulation but interviewer mistake to tick at no. Therefore, the score in this question may not be accurate for reporting.

### 8.1.7. Past and future trends

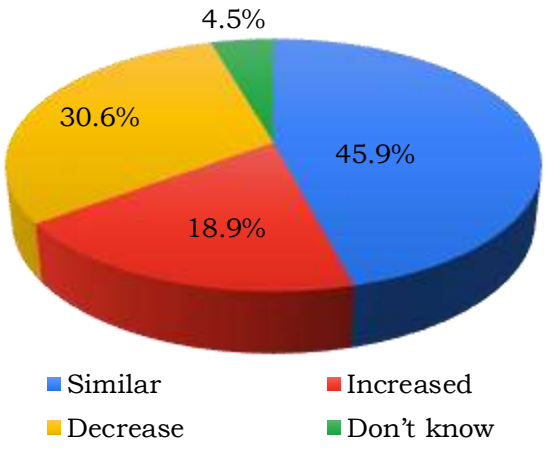
**Question**

a) amount of abandoned, lost or discarded fishing gears increased or decreased compared with 10 years ago?

b) Fishers' opinion on the problem of ALDFG and issue of plastics at sea.

c) Trend of the quantity of ALDFG in the next 5 years

d) Elements for Avoiding or Reducing Quantities of Abandoned, Lost or Otherwise Discarded Fishing Gear




The gillnet respondent to consider the trend of the amount of abandoned, lost or discarded fishing gears from 10 years ago similar with 45.9% (Figure 34).

**Figure 34** Trend of the amount of abandoned, lost, or discarded fishing gears from 5 years ago (in percent)

Consistent with the answer of the fishers' opinion on the quantity of fishing gear loss in this fishery increase or decrease in the next 5 years, Majority of responder (58.6%) consider the quantity of fishing gear loss in this fishery will be similar in the next 5 years (Figure 35).

However, Majority of responder (42.3%) consider the ALDFG and issue of plastics at sea is a real problem (Figure 36).

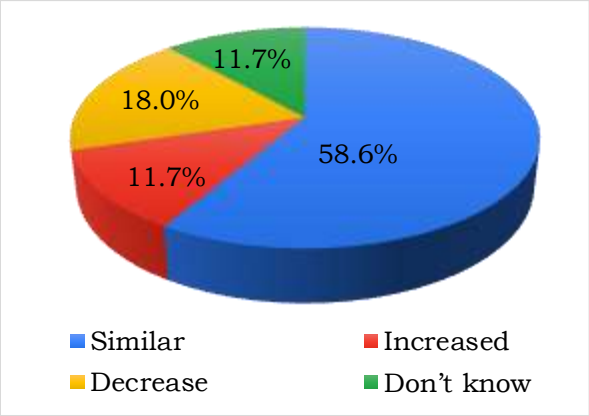



**Figure 35** Opinion of gillnet fishers on the quantity of fishing gear loss in the next 5 years? (in percent)

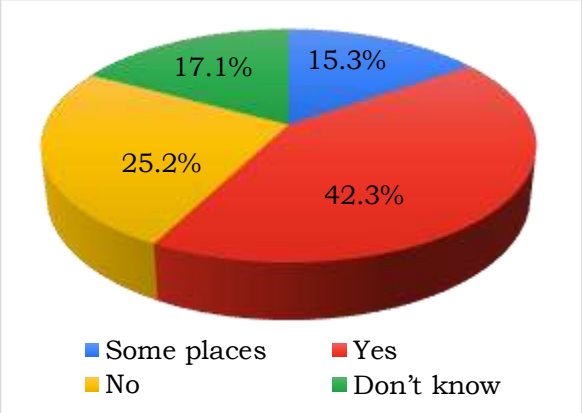



**Figure 36** Opinion of gillnet fishers on the ALDFG and issues of plastics at sea is a real problem (in percent)

There are ten (10) elements listed for asking gillnet fishers to rate how important each of them in their opinion to help avoid or reduce quantities of gillnet losses (Select as appropriate). Ten (10) elements are listed and shown in Table 13.

**Table 13** Elements to help for avoiding or reducing quantities of ALDFG

| Ten (10) elements how to help for avoiding or reducing quantities of ALDFG |
|---|
| 1) Vessel design (Can the vessel design cause contribute to avoiding or reducing ALDFG) |
| 2) Hauling equipment (Can the hauling equipment (if any) contribute to avoiding or reducing ALDFG? Some designs work much better than others, and certain haulers suit certain fisheries better than others) |
| 3) Quality of fishing gear material (Is the quality of material important for avoiding loss of gear?) |
| 4) Fishing gear marking (Is marking of the gear important for avoiding or reducing ALDFG?) |
| 5) Gear location technology (How important is GPS (Global Positioning Systems) or similar location technology to find and set gear on right places?) |
| 6) Communication between vessels (How important is communication for avoiding gear loss, for |
| 7) example avoiding dangerous areas for snagging gears or conflict with other gears?) |
| 8) Accuracy and access to weather forecasting (Could the accuracy or access to accurate weather forecasts help avoid gear losses?) |
| 9) Fisher skills for handling vessel/gear (How competent are the crew, could better training of handling fishing gear help avoid gear losses?) |

10) Knowledge/awareness of negative impacts of ALDFG (How important is fishers' knowledge and understanding of the negative impacts of ALDFG in helping to avoid ALDFG?)
11) Payments for unwanted gears delivered for recycling (How important is receiving some payment for end-of-life-fishing gears in encouraging fishers to deliver gear for recycling?)

The result of the questionnaire, number of gillnet respondents, and elements for avoiding or reducing quantities of gillnet losses are shown in Table 14 and Figure 37.

**Table 14** Percent of respondents and the elements for avoiding or reducing quantities of gillnet loss.

| The elements for avoiding or reducing quantities of gillnet loss | Very important | Important | Not important | Not relevant or Don't Know |
|---|---|---|---|---|
| 1. Vessel design | 4 (3.6%) | 28 (25.2%) | 79 (71.2%) | 0 (0.0%) |
| 2. Hauling equipment | 13 (11.7%) | 26 (23.4%) | 69 (62.2%) | 3 (2.7%) |
| 3. Quality of fishing gear material | 57 (51.4%) | 37 (33.3%) | 17 (15.3%) | 0 (0.0%) |
| 4. Fishing gear marking | 34 (30.6%) | 69 (62.2%) | 7 (6.3%) | 1 (0.9%) |
| 5. Gear location technology | 68 (61.3%) | 31 (27.9%) | 12 (10.8%) | 0 (0.0%) |
| 6. Communication between vessels | 47 (42.3%) | 57 (51.4%) | 7 (6.3%) | 0 (0.0%) |
| 7. Accuracy and access to weather forecasting | 93 (83.8%) | 18 (16.2%) | 0 (0.0%) | 0 (0.0%) |
| 8. Fisher skills for handling vessel/gear | 104 (93.7%) | 7 (6.3%) | 0 (0.0%) | 0 (0.0%) |
| 9. Knowledge/awareness of negative impacts of ALDFG | 25 (22.5%) | 66 (59.5%) | 7 (6.3%) | 13 (11.7%) |
| 10. Payments for unwanted gears delivered for recycling | 108 (97.3%) | 3 (2.7%) | 0 (0.0%) | 0 (0.0%) |

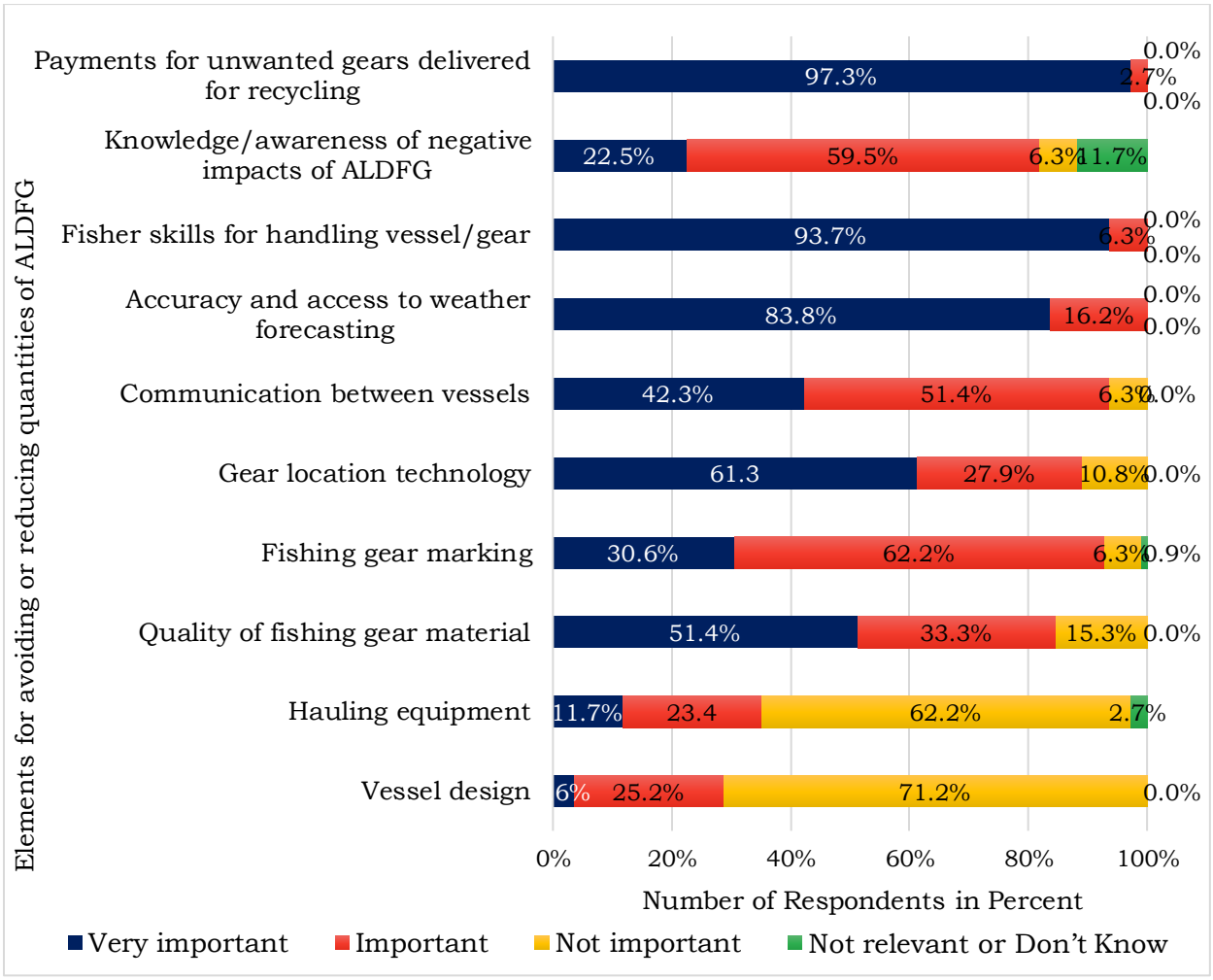



**Figure 37** Number of gillnet respondents in percent and the elements for avoiding or reducing quantities of gillnet losses

The result from interview shows that the top three (3) very important, important, and not important elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded gillnet are summarized in Table 15.

**Table 15** Result from interview on the elements for avoiding or reducing quantities of gillnet losses

| Result | Elements for avoiding or reducing quantities of ALDFG |
|---|---|
| **Very important** | 1) Payments for unwanted gears delivered for recycling (97.3%)<br>2) Fisher skills for handling vessel/gear (93.7%)<br>3) Accuracy and access to weather forecasting (83.8%) |
| **Important elements** | 1) Fishing gear marking (62.2%)<br>2) Knowledge/awareness of negative impacts of ALDFG (59.5%)<br>3) Communication between vessels (51.4%) |
| **Not important** | 1) Vessel design (71.2%)<br>2) Hauling equipment (62.2%)<br>3) Quality of fishing gear material (15.3%) |

### 8.1.8. Suggestion from gillnet fishers about the practices to possibly reduce quantities of gillnet losses

There are additional suggestions from gillnet fishers about the practices to possibly reduce quantities of gillnet losses, as below.

1) Artificial reefs position marking sign needed for noticing the fishers.
2) Consultation with the local fisher's opinion needs for the placement of Artificial reefs in the area.
3) Avoid setting the fishing gear in areas known for snagging e.g. stout-spine murex, old and broken pontoon, lampshade, and etc.
4) Fishing experience is the most important for avoiding or reducing ALDFG.
5) Transferring the experience to the next generation.
6) Raising awareness to fishers about the effect of ALDFG.
7) Negotiation between conflicted fishing gears.
8) Reducing the soaking time.
9) Knowledge of the fishing ground well.
10) Gear location marking technology.
11) Seeking and investigating the thief to understanding for fishing gear ownership.
12) Marine debris removal initiative campaign/program.
13) Always check and obtain the weather forecast information.
14) Always checking, repairing and maintenance for fishing gear in proper and good condition.
15) Put your fishing gear in groups and tell your friends to take care your fishing gear.

### 8.1.9. Conclusion of the survey result to estimate levels of gillnet loss

1) Constructions and designs of gillnet are different between each type of gillnet,
2) Set gillnets, Drift gillnets, Encircling gillnets, Trammel nets. There are not any samples of the Fixed gillnets (on stakes) and Combined gillnets-trammel nets because both of fishing gears are not operated by Thai fishers.
3) Due to major respondents is small scale fishers, all fishing operations both bottom set and surface set (drift gillnets) are conducted in the fishing ground where sea depth less than 50 m.
4) Result from the survey show that estimated total unit of loss gillnet is 458.50 units with estimated economic loss from missing gillnets are 13,467.14 USD/Year.
5) The estimated of frequent loss of gillnet in each month of one year is vary as fishing season.
6) The highest main cause of the gear loss is net snagged on an obstruction. It is consistent with the highest scores of important elements for avoiding or reducing quantities of ALDFG is making sure all equipment used with fishing gears is in good condition.
7) The top two (2) practices are always used to avoid fishing gear loss or damages are 1) the making sure all equipment used with fishing gears is in good condition and 2)

securely stow fishing gear on board to with stand bad weather/sea conditions. Both practices look focus on the responsible of fishers to their fishing gear. Both practices may not effectively mitigate loss from net snagged on an obstruction that is the main cause of the gear loss.

8) The top practice that is sometime used to avoid fishing gear loss or damage is communication with nearby fishing vessels to avoid conflict follow by cooperation with other fishers.

9) The majority of fishing vessels have not installed with a specific area/container on-board, but fishers always bring back the unwanted plastic parts of fishing gear collected and stored on board to port/landing site. It may be because catch sorting and removal from gillnet is conducted onshore not during hauling operation in the sea. As well as majority of fishers operate gillnet daily trip. So that they do not install the specific area/container to store unwanted plastic parts of fishing gear onboard.

10) Results from all responders show that they are not aware of any laws or regulations for marking fishing gear in their fishing ground. Therefore, none of fishers apply the gear marking with their traps.

11) Responders consider the abandoned, lost, or discarded fishing gears is the real issues, but they considered the amount of abandoned, lost or discarded fishing gears similar for 10 years ago (in percent). As well as the trend will be similar for the next 5 years.

12) Consider the answer from respondents on the main causes of the gear loss, practices are used to avoid fishing gear loss or damages and the elements for avoiding or reducing quantities of ALDFG the result can apply for development of management plan for reduction of ALDFG in Krabi and Phangnga Province.

### 8.2. Traps

There are 49 traps questionnaires collected from the survey. The number of fish trap questionnaires are 17 set. The number of crab trap questionnaires are 10 sets, number of cuttlefish trap questionnaires are 22 sets. All questionnaires were collected in Phang Nga and Krabi Province, Southern of Thailand.

#### 8.2.1. Fishers

There are 47 questionnaires collected from small-scale fishers operated by fishing vessel length overall less than 12 m and 2 questionnaires collected from fishers operated by fishing vessel length overall less than 12-14 m. All respondents are male with age from 20-69 years old. Majority of fisher are the age between 50-69 years (n=16 or 59.2%) The youngest age between 20-29 years found minority (n= 1 or 2.0%) of the respondents. All respondents are skipper or captain with majority experience of fishers are more than 21 years (n=31 or 63.3%) (Table 16, 17, and Figure 38 (Left and Right)). All of them have never been taken in part of this FAO-ALDFG survey.

**Question**

a) Respondent age
b) Position on Fishing vessel
c) Fishing experience years
d) Involved in part of this FAO-ALDFG survey (Traps)
e) Vessel length
f) Flag State of fishing vessel
g) Landing sites

All respondents are fishers in Phang Nga and Krabi Province of Thailand. All of them land their catch in coastal area of in Phang Nga and Krabi Province.

**Table 16** Respondent age

| Age | Number |
|---|---|
| < 20 years | 0 |
| 20-29 | 1 |
| 30-39 | 9 |
| 40-49 | 10 |
| 50-59 | 16 |
| 60-69 | 13 |
| > 70 year | 0 |

**Table 17** Fishing experience years

| Year | Number |
|---|---|
| 0-4 | 0 |
| 5-20 | 18 |
| > 21 | 31 |

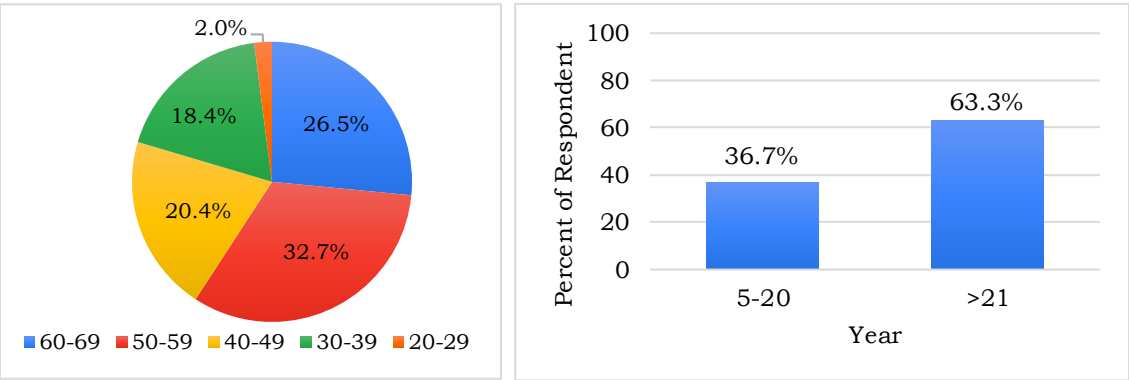



**Figure 38** (Left) Composition in percent of respondent Age (traps/pots fisher), (Right) Composition in percent of respondent traps/pots fishing experience years

### 8.2.2. Fishing gears

Type of trap fishing gear survey in the Krabi and Phangna Province are categorized as pot. There are 3 types of trap (pot) regarding the 3 main targets catches, *i.e.* crab, squid and fish (Figure 39).

Fishing ground is coastal zone of Krabi and Phangna Province, Andaman Sea, Thailand EEZ. All respondents report the depth of fishing ground is less than 50 m. Total estimate number of fishing trip from 49 fishing vessels operated in a typical year is 7,578 trip/year with minimum number of fishing trips are 24 trips trips/year, maximum is 360 trips/year. The average estimate number of fishing trip from 49 fishing vessels operated in a typical year is 155 trips/year. The majority of fishing vessels operate with 1 day/trip. There are two (2) from forty-nine (49) vessels are operated 7 days /trip. Both are squid traps with fishing vessels length overall is 12-24 m.

**Question**

a) Type of gillnet
b) The EEZ name or the Sea Name
c) Fishing depth

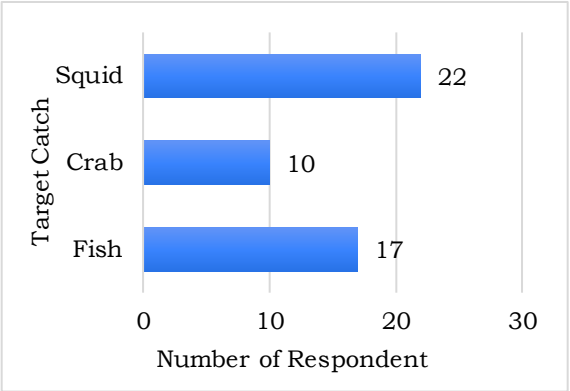



**Figure 39** Composition of target species of traps/pots (Number of respondents)

### 8.2.3. Fishing Operation

The total estimate number of fishing trips from 49 fishing vessels operated in a typical year is 7,578 trip/year with minimum number of fishing trips are 24 trips/year (Fish trap), maximum is 360 trips/year (Squid trap). The average estimate number of fishing trips from 49 fishing vessels operated in a typical year is 155 trips/year (Table 18).

**Question**

a) Estimate the number of fishing trips
b) Estimate the number of days
c) Estimate the importance of fishing month
d) Estimate of average soak time
e) Number of gillnet use in fishing operation
f) Cost to construct/buy one gillnet unit
g) Estimated weight (kgs) of plastic components
h) Target species group
i) Average total catch
j) Estimated value of catch

**Table 18** Number of traps/pots fishing trip in one year (Trips/year)

| Fishing Trip in one year (trips/year) | Fish trap | Crab trap | Squid trap | All trap |
|---|---|---|---|---|
| Total | 1,600 | 1,859 | 3,887 | 7,578 |
| Minimum | 24 | 75 | 70 | 24 |
| Maximum | 240 | 300 | 360 | 360 |
| Average | 107 | 186 | 177 | 155 |

Main fishing seasons for fishery in Andaman Sea is from November to April of the following year (Northeast Monson Season). It is rough sea condition that fishers cannot regularly conduct fishing operation is during the Southwest Monson season from May to October (Figure 40).

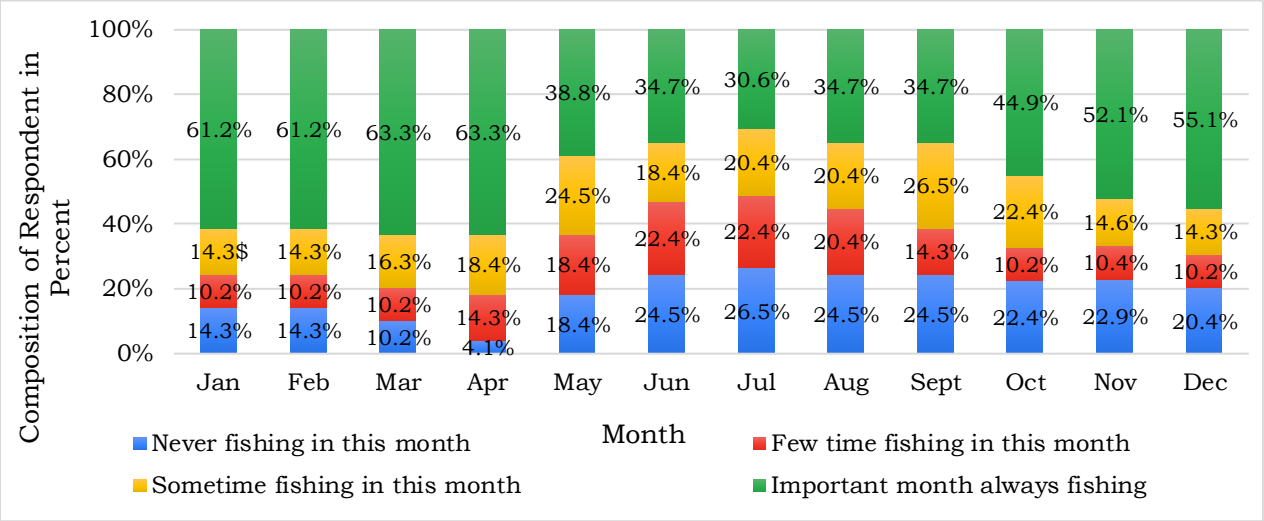



**Figure 40** Composition of traps/pots fishing seasons (in percent)

Soaking time of trap is from 1 hour to 360 hours. Trap for catching fish found the longest soaking time up to 360 hours/ operation. Most of trap operate with soaking time 1 day. However, it varied from 12-360 hours. Crab traps operate with soaking time 1-24 hours. Soaking time of fish trap varies from 1 to 12 hours. Squid trap found 24 hours soaking time regularly (Figure 41).

The number of crab trap units regularly operated is 60-3,000 traps. The number of fish traps regularly operated varies from 3 to 200 traps. The number of cuttlefish traps regularly operated at the same time varies from 30 to 200 traps. Estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one trap unit is all less than 5 kg (Table 19)

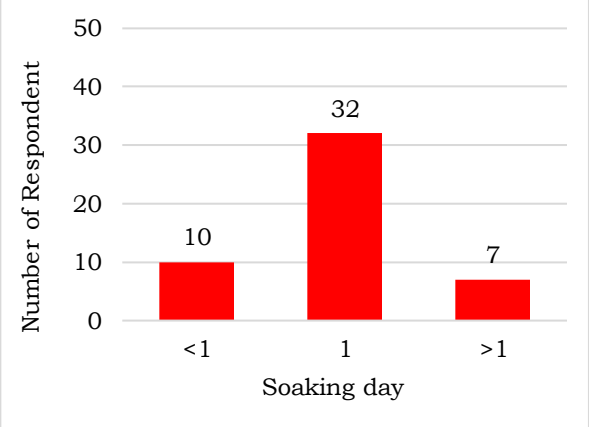



**Figure 41** Number of respondent and soaking day of traps/pots

**Table 19** Number of traps/pots unit in one fishing trip (trap/trip)

| Total Number of trap unit in the operation | Fish trap | Crab trap | Squid trap |
|---|---|---|---|
| Total | 607 | 5,877 | 1,405 |
| Minimum | 3 | 60 | 200 |
| Maximum | 200 | 3,000 | 25 |

The approximate cost to construct/buy one crab trap unit ranged from 1.6 to 3.9 US Dollar. The approximate cost of cuttlefish trap ranged from 3.2 to 12.9 US Dollar. Approximate cost to construct/buy one fish trap ranged from 2.3 to 112.9 US Dollar.

The approximate total catch landed per trip of fish trap is range from 2.5 to 100 kg/trip with estimated value of fish trap is range from 9.7 to 322.6 USD. The approximate total catch landed per trip of crab trap is range from 2 to 150 kg/trip with estimated value of fish trap is range from 8.1-403.2 USD/trip. Approximate total catch landed per trip of cuttlefish trap is range from 5 to 200 kg/trip with estimated value of cuttlefish trap is range from 12.9 to 193.6/trip USD.

***In addition, Trap fishing in Thailand have not associated with Fish Aggregating Devices (FADs)***

### 8.2.4. Gear loss information

information of gear loss is about the quantity of traps/pots that are lost annually, how, where, when losses may occur When/If fishers lose a trap/pot or parts of it.

Figure 42 shows the result from the respondent show trap fishing gear rarely to lost by the one entire set (with all elements). There are 83.7 % of trap have never been lost by the one entire set (with all elements). The similar pattern found by of net cut-offs, with 72.9 % of trap have never been lost by net cut-offs.

Trap loss appear by one unit highest found with 81.6% (from sometime (55.1%) to very frequent (26.5%)) followed by buoy loss with 34.7% (from sometime (20.4%) to very frequent (14.3))

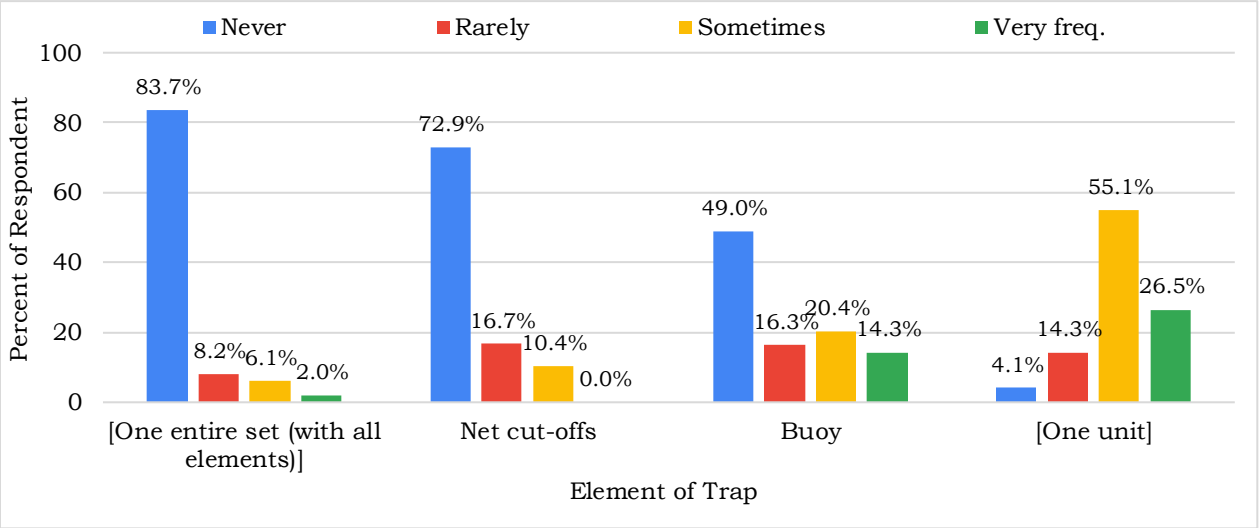



**Figure 42** Comparison of the element of traps/pots loss (in percent)

The total estimated number of trap units lost in one year is 20,154 traps units lost/year with range from 4 to 10,000 traps units lost/year. The highest estimation of trap lost, 10,000 traps units/year found in cuttlefish trap, and lowest is 4 fish traps units/year. The total economic loss from trap loss is 185,705.08 USD/Year. The lowest economic loss from trap loss is 29 USD/Year and highest is 80,600 USD/years.

The estimated of frequent lost traps in each month of one year in percentage found higher in the fishing season but not clearly distinguish (Figure 43). All lost gears have never been reported but they always inform nearby vessels.

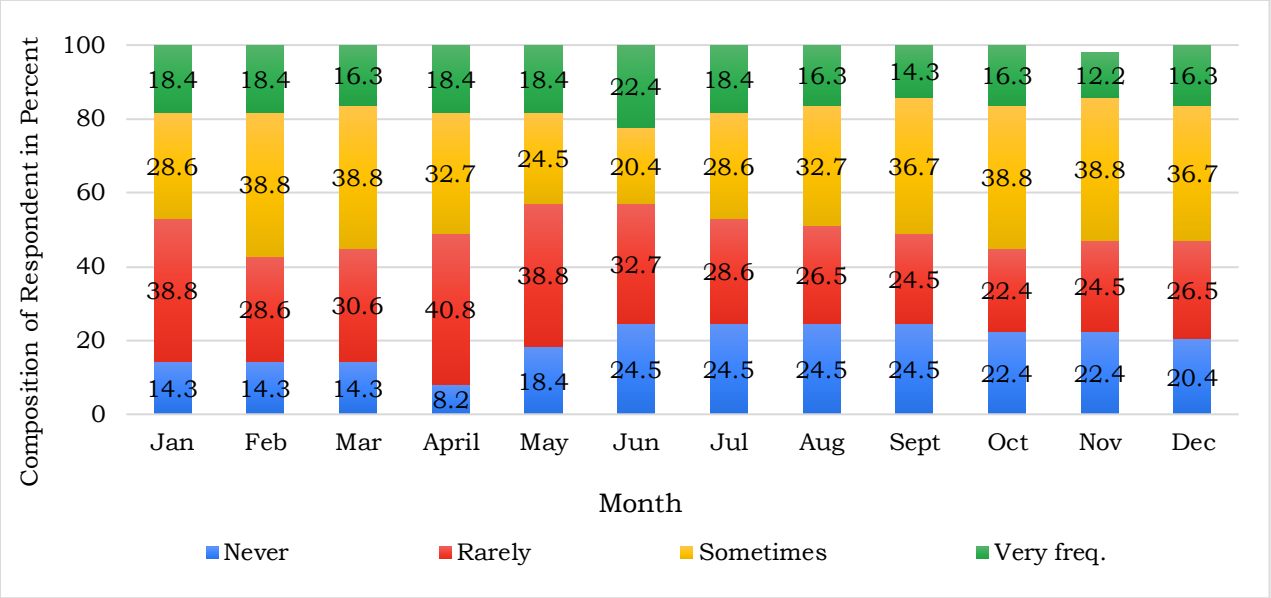



**Figure 43** Estimate frequent lost traps/pots in each month of one year (in percent)

**Table 20** Main causes of traps/pots loss listed in the FAO Questionnaire (Gillnet)

| Seventeen (17) main causes of trap loss questioned to fisher |
|---|
| 1) Net snagged on an obstruction, such as reef or rocky area (Gears used on or near bottom can frequently be snagged) |
| 2) Poor weather conditions (Bad weather can be the main reason for losing gears) |
| 3) Damage or towed away by large animals (Entanglement with large animals may be the reason for losing fishing gears in some regions) |
| 4) Drifted out of area that cannot be accessed by the vessel (Gears not attached to vessel (driftnets or FAD's) can drift away) |
| 5) Faulty, old or damaged gear (This can frequently be the reason for losing gears in some regions) |
| 6) Operator error (Anyone can sometimes make a mistake and that can led to loss of gears) |
| 7) Strong currents (In some fishing grounds strong currents may be a cause of losing gears) |
| 8) Deep water (like buoy too short for depth) (There may be a higher risk of losing gears when working in deep water) |

9) Gear not properly stored on-board (When not properly stowed, gear may be accidently lost over the side of the boat when sailing from or to fishing grounds, especially in rough seas)

10) Conflict with other gear, e.g. trawls towing away (In some regions, fishing gear conflicts may cause loss of gear)

11) Vandalism, (stolen or destroyed)

12) The surface marking is lost, sunk or malfunctioned (In many cases the most common reason for loss of static fishing gears)

13) Gear intentionally discarded overboard (Possibly sometimes the only way to get rid of old fishing gears)

14) Equipment failure (i.e. hauler or location equipment) (All equipment will now and then have failure, possibly leading to gear loss)

15) High traffic of other vessels (Some fishing gears are set near ship lines or traffic areas. This may lead to loss marker buoys or the whole fishing gears)

16) Lack of communications between fishing vessels (When no information's are given between vessels to avoid interaction leading to damages or loss of fishing gears)

17) Others

Result of questionnaire Number of Respondents and main causes of the traps/pots loss show in Table 21, 22 and Figure 44

**Table 21** Number of respondents and main causes of the traps/pots loss

| Main causes of the Gear Loss | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 1. Net snagged on an obstruction | 31 (63.3%) | 16 (32.7%) | 2 (4.1%) | 0 (0.0%) | 49 (100%) |
| 2. Poor weather conditions | 22 (44.9%) | 23 (46.9%) | 4 (8.2%) | 0 (0.0%) | 49 (100%) |
| 3. Damage or towed away by large animals | 44 (89.8%) | 0 (0.0%) | 0 (0.0%) | 5 (10.2%) | 49 (100%) |
| 4. Drifted out of area that cannot be accessed by the vessel | 45 (91.8%) | 2 (4.1%) | 0 (0.0%) | 2 (4.1%) | 49 (100%) |
| 5. Faulty, old, or damaged gear | 22 (44.9%) | 23 (46.9%) | 4 (8.2%) | 0 (0.0%) | 49 (100%) |
| 6. Operator error | 23 (46.9%) | 26 (53.1%) | 0 (0.0%) | 0 (0.0%) | 49 (100%) |
| 7. Strong currents | 18 (36.7%) | 27 (55.1%) | 4 (8.2%) | 0 (0.0%) | 49 (100%) |
| 8. Deep water | 42 (85.7%) | 7 (14.3%) | 0 (0.0%) | 0 (0.0%) | 49 (100%) |
| 9. Gear not properly stored on-board | 43 (87.8%) | 6 (12.2%) | 0 (0.0%) | 0 (0.0%) | 49 (100%) |
| 10. Conflict with other gear | 11 (22.4%) | 19 (38.8%) | 19 (38.8%) | 0 (0.0%) | 49 (100%) |

| Main causes of the Gear Loss | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 11. Vandalism | 22 (44.9%) | 20 (40.8%) | 7 (14.3%) | 0 (0.0%) | 49 (100%) |
| 12. The surface marking is lost, sunk or malfunctioned | 25 (51.0%) | 20 (40.8%) | 4 (8.2%) | 0 (0.0%) | 49 (100%) |
| 13. Gear intentionally discarded overboard | 32 (65.3%) | 15 (30.6%) | 2 (4.1%) | 0 (0.0%) | 49 (100%) |
| 14. Equipment failure | 39 (79.6%) | 9 (18.4%) | 1 (2.0%) | 0 (0.0%) | 49 (100%) |
| 15. High traffic of other vessels | 24 (69.4%) | 10 (20.4%) | 5 (10.2%) | 0 (0.0%) | 49 (100%) |
| 16. Lack of communications between fishing vessels | 30 (61.2%) | 17 (34.7%) | 2 (4.1%) | 0 (0.0%) | 49 (100%) |

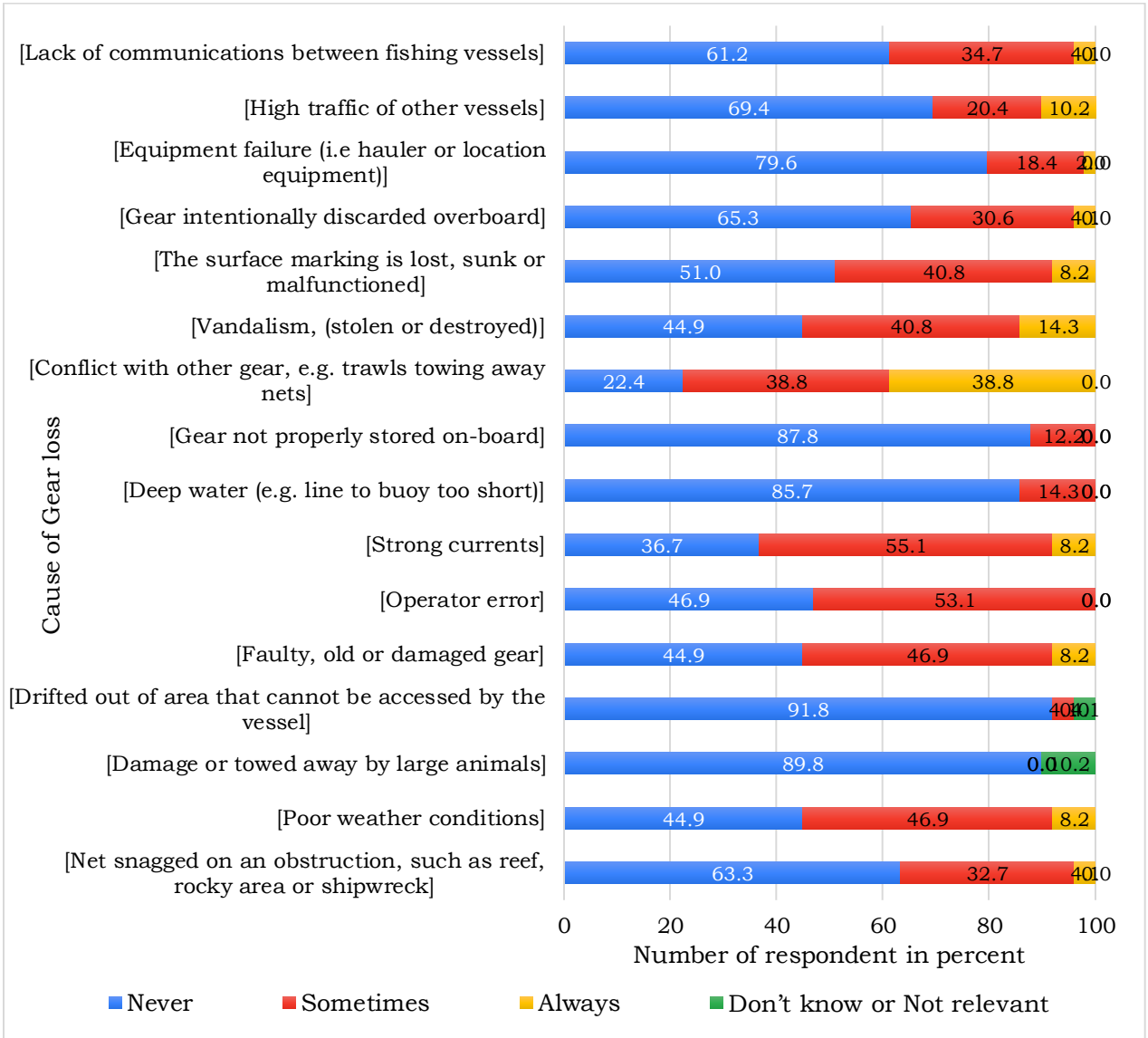



**Figure 44** Composition of the number of respondents (in percent) and main causes of the traps/pots Loss

**Table 22** Result from the interview shows that the top 3 causes of traps/pots loss always, sometimes and never happen

| Result | The Practices used to avoid fishing gear loss or damages |
|---|---|
| Always happen | 1) Conflict with other gear, e.g. trawls towing away (38.8%)<br>2) Vandalism, (stolen or destroyed) (14.3%)<br>3) High traffic of other vessels (10.2%) |
| Sometimes happen | 1) Strong currents (55.1%)<br>2) Operator error (53.1%)<br>3) Poor weather conditions and Faulty, old or damaged gear (46.9%) |
| Never happen | 1) Damage or towed away by large animals<br>2) Drifted out of area that cannot be accessed by the vessel<br>3) Gear not properly stored on-board |

**Table 23** Practices are used to avoid traps/pots loss or damages listed in the FAO Questionnaire

| Seventeen (17) main causes of trap loss questioned to fisher |
|---|
| 1) Avoid setting the fishing gear in areas known for snagging (An easy practice if using good navigation equipment, but not always available) |
| 2) Avoid fishing in poor weather conditions (Following weather forecast to avoid bad weather) |
| 3) Avoid areas where animals likely to damage the gear (Could be a seasonal or known areas where animals are known to damage gear) |
| 4) Avoid losing drifting gears out of reach (Possible for drifting gears and FAD's) |
| 5) Repair or replace worn fishing gear or parts (Fisher's skills to repair the gears would be needed) |
| 6) Training of crew on gear handling and operation (It can be important to have properly trained crew) |
| 7) Avoid using the fishing gear in areas with strong currents (Knowing when and where the strong current is can avoid gear loss) |
| 8) Know fishing depth and rig accordingly (Fishermen knowledge of the fishing ground important) |
| 9) Securely stow fishing gear on board to with stand bad weather/sea conditions (Could be connected to vessel design and crew skills. Gears may be washed overboard by big seas) |
| 10) Communicate with nearby fishing vessels to avoid conflict (Could be lack of technology or willingness to communicate with other fishing vessels) |
| 11) Implement measures to avoid vandalism of gear by others (Good communication may help avoid conflict between fishers using different fishing gears on the same fishing ground) |
| 12) Use good surface marking or electronic devices (Could be difficult or expensive to have adequate surface Markers) |

13) Instruct crew members not to discard fishing gear overboard (Captain forbidding such practice)

14) Make sure all equipment used with fishing gears is in good condition (If the equipment is not in good condition it may lead to problems including loss of gear.)

15) Avoid areas of high vessel traffic/shipping lanes (Avoiding areas of high traffic make may reduce the risk of losing gears)

16) Cooperation with other fishers (Assist each other to retrieve gear)

17) Others

Result of questionnaire Number of Respondents and main causes of the traps/pots loss show in Table 24, 25 and Figure 45

**Table 24** Number (Percent) of respondents and practices are used to avoid traps/pots loss or damages

| Practices are used to avoid fishing gear loss or damages | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | 2 (4.1%) | 17 (34.7%) | 30 (61.2%) | 0 (0.0%) | 49 (100%) |
| 2. Avoid fishing in poor weather conditions | 5 (10.2%) | 19 (38.8%) | 25 (51%) | 0 (0.0%) | 49 (100%) |
| 3. Avoid areas where animals likely to damage the gear | 37 (75.5%) | 0 (0.0%) | 0 (0.0%) | 12 (24.5%) | 49 (100%) |
| 4. Avoid losing drifting gears out of reach | 35 (71.4%) | 10 (20.4%) | 3 (6.1%) | 1 (2.0%) | 49 (100%) |
| 5. Repair or replace worn fishing gear or parts | 2 (4.1%) | 13 (26.5%) | 34 (69.4%) | 0 (0.0%) | 49 (100%) |
| 6. Training of crew on gear handling and operation | 10 (20.4%) | 11 (22.4%) | 13 (26.5%) | 15 (30.6%) | 49 (100%) |
| 7. Avoid using the fishing gear in areas with strong currents | 4 (4.2%) | 17 (34.7%) | 28 (57.1%) | 0 (0.0%) | 49 (100%) |
| 8. Know fishing depth and rig accordingly | 4 (8.2%) | 13 (26.5%) | 32 (65.3%) | 0 (0.0%) | 49 (100%) |
| 9. Securely stow fishing gear on board to with stand bad weather/sea conditions | 1 (2.0%) | 12 (24.5%) | 36 (73.5%) | 0 (0.0%) | 49 (100%) |
| 10. Communicate with nearby fishing vessels to avoid conflict | 1 (2.0%) | 37 (75.5%) | 11 (22.4%) | 0 (0.0%) | 49 (100%) |
| 11. Implement measures to avoid vandalism of gear by others | 21 (42.9%) | 13 (26.5%) | 15 (30.6%) | 0 (0.0%) | 49 (100%) |
| 12. Use good surface marking or electronic devices | 15 (30.6%) | 13 (26.5%) | 20 (40.8%) | 1 (2.0%) | 49 (100%) |

| Practices are used to avoid fishing gear loss or damages | Never | Sometimes | Always | Don't know or not relevant | Total |
|---|---|---|---|---|---|
| 13. Instruct crew members not to discard fishing gear overboard | 12 (24.5%) | 16 (32.7%) | 7 (14.3%) | 14 (28.6%) | 49 (100%) |
| 14. Make sure all equipment used with fishing gears is in good condition | 1 (2.0%) | 6 (2.2%) | 42 (85.7%) | 0 (0.0%) | 49 (100%) |
| 15. Avoid areas of high vessel traffic/shipping lanes | 2 (4.1%) | 22 (44.9%) | 25 (51.0%) | 0 (0.0%) | 49 (100%) |
| 16. Cooperation with other fishers | 5 (10.2%) | 41 (83.7%) | 3 (6.1%) | 0 (0.0%) | 49 (100%) |
| 17. Others | 2 (4.1%) | 17 (34.7%) | 30 (61.2%) | 0 (0.0%) | 49 (100%) |

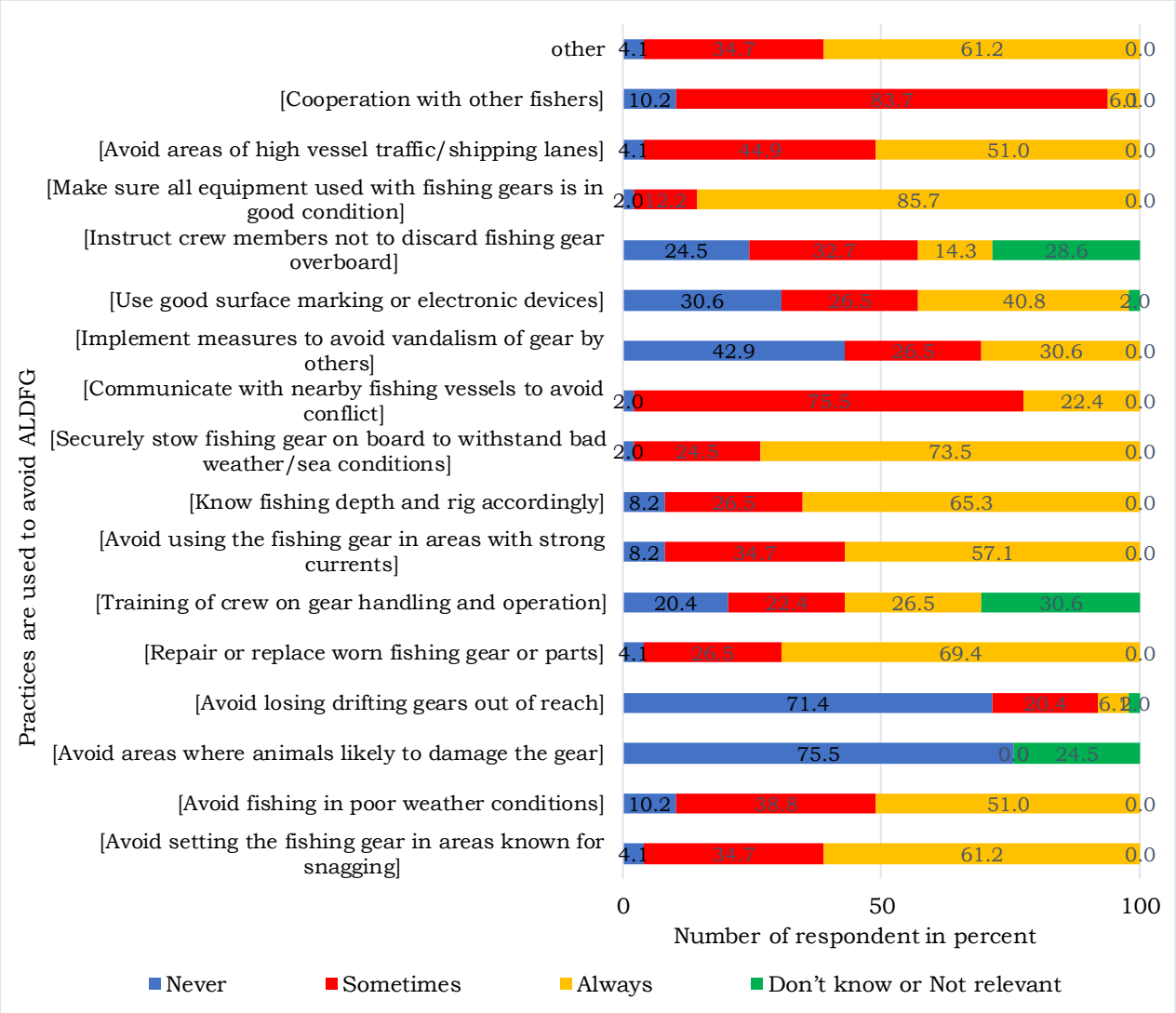



**Figure 45** Estimate frequent practices are used to avoid traps/pots loss or damages (in percent)

**Table 25** Result from interview on the elements for avoiding or reducing quantities of traps/pots

| Result | The Practices used to avoid fishing gear loss or damages |
|---|---|
| **Always used** | 1) Make sure all equipment used with fishing gears is in good condition (85.7%)<br>2) Securely stow fishing gear on board to with stand bad weather/sea conditions (73.5%)<br>3) Repair or replace worn fishing gear or parts (69.4%) |
| **Sometimes used** | 1) Cooperation with other fishers (83.7%)<br>2) Avoid losing drifting gears out of reach (44.9%)<br>3) Avoid areas of high vessel traffic/shipping lanes (38.8%) |
| **Never used** | 1) Avoid areas where animals likely to damage the gear (75.5%)<br>2) Communicate with nearby fishing vessels to avoid conflict (71.4%)<br>3) Implement measures to avoid vandalism of gear by others (42.9%) |

### 8.2.5. End-of-life fishing gear and marine plastic waste management

Regarding to the damaged and unwanted plastic parts of fishing gear collected and stored on board, are there brought back to port/landing site? Respondents reply to the highest Percentage 37% of respondent always collected, stored, and brought back damaged and unwanted plastic parts of fishing gear to port/landing site. However, fisher answer the less number 16% have never brought unwanted plastic parts of fishing gear found during fishing back to port/landing site (Figure 46).

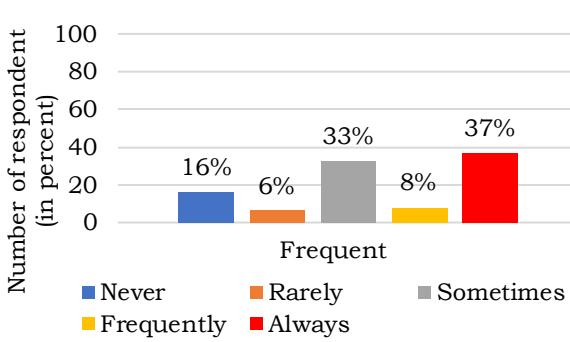
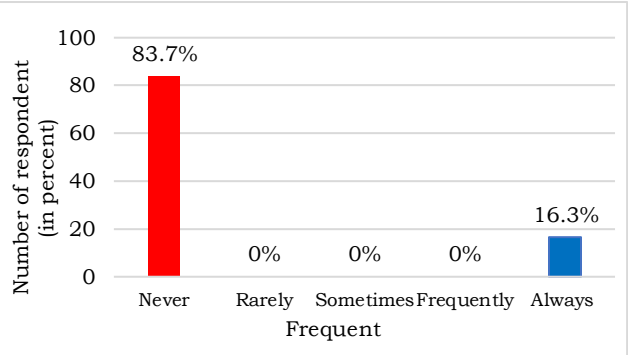
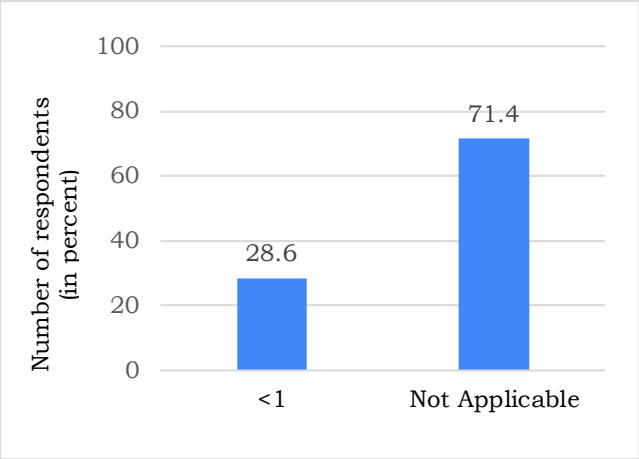



**Figure 46** Estimate fishers collected, stored, and brought back damaged and unwanted plastic parts of fishing gear to port/landing site (in percent)




The majority, 83.7% of the respondents have not installed specific area/container on-board but they bring back the off-cuts, damaged or worn fishing gear to dispose on shore (Figure 47).

**Figure 47** Estimate installation of the specific area/container on-board traps/pots fishing vessels to bring back the off-cuts, damaged or worn fishing gear to shore




There are 28.6% of respondents estimated marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site less than 1 kg. The remain 71.4% select the not applicable (Figure 48).

Result of the survey also show that majority of waste (77.6%) is rarely or never associated with fishing gears (Figure 49).

**Figure 48** Estimated marine plastic waste weight (kg) collected during fishing trips (in percent)

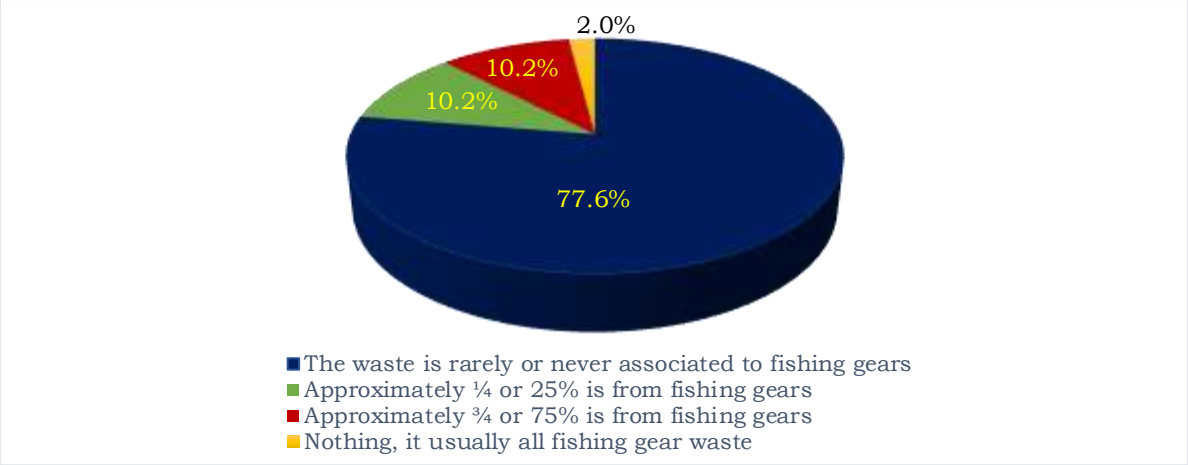



**Figure 49** Estimate Weight of marine plastic waste brought back to port is not associated to fishing gear (in percent)

Considering the facilities in or near the vessel's home port/landing site to dispose end-of-life of traps/pots components/materials, Majority of respondents (65.3%) reply no facilities near the vessel's home port/landing site to dispose waste (Figure 50).

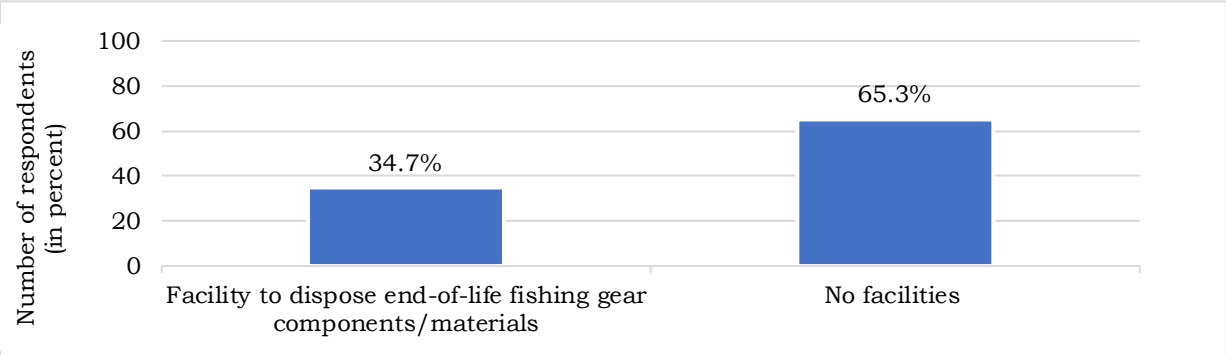



**Figure 50** Facility to dispose end-of-life traps/pots components/material (in percent)

In addition, figure 51 shows 77.3% of the respondents who reply there are facilities to dispose the end-of-life or wasted fishing gear must pay for the waste management service. However, 54.5% of the respondents who reply that there are facilities to dispose the end-of-life or wasted fishing gear receive payment for depositing their plastic waste (Figure 52).

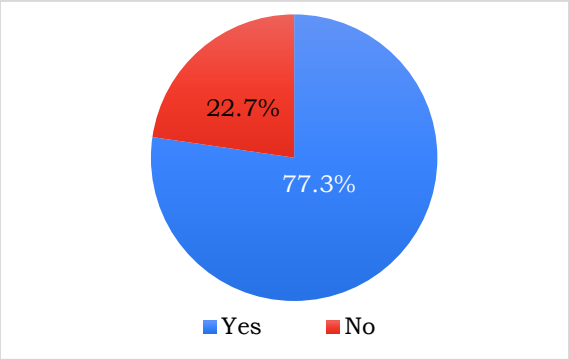



**Figure 51** Payment for the waste management services

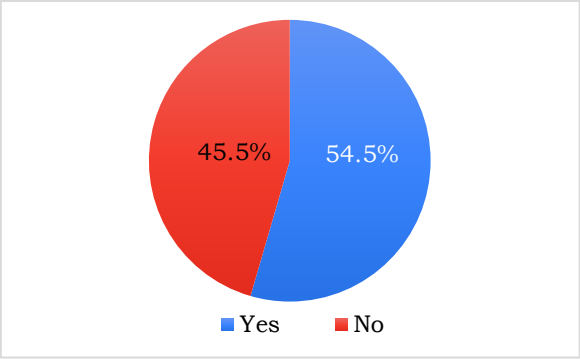



**Figure 52** Receiving the payment for depositing their plastic waste

### 8.2.6. Regulation of marking fishing gear

Results from all responders show that they are not aware of any laws or regulations for marking fishing gear in their fishing ground. Therefore, none of fishers apply the gear marking with their traps.

### 8.2.7. Past and Future trends

The responder considered the trend of the amount of abandoned, lost or discarded fishing gears from 10 years ago similar with 55.1% (Figure 53).

The majority of responder (38.8%) does not think ALDFG and issue of plastics at sea is a real problem (Figure 54). Consequent to their opinion similar in the question of the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years.

The majority of responder (53.1%) consider quantity of fishing gear loss in this fishery to be similar in the next 5 years (Figure 55).

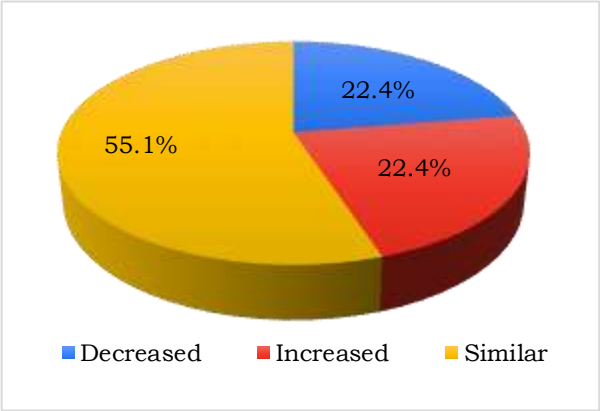



**Figure 53** Trend of the amount of traps/pots loss from 10 years ago (in percent)

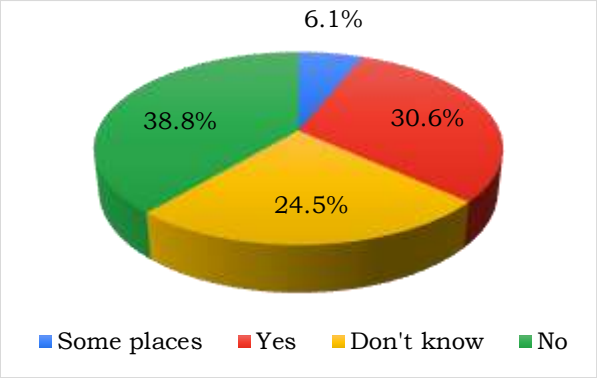



**Figure 54** Fishers' opinion on the issue of plastics at sea a real problem (In percent)

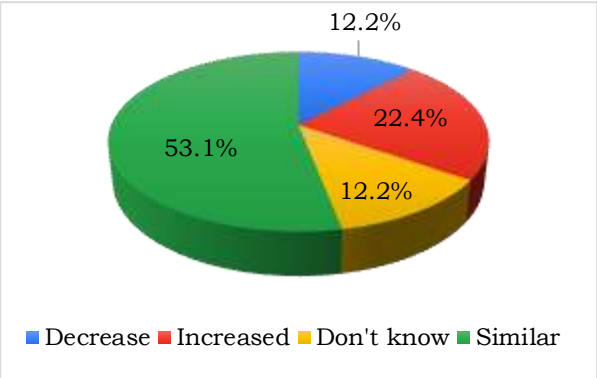



**Figure 55** Fishers' opinion on the quantity of traps/pots loss in this fishery increase or decrease in the next 5 years? (In percent)

There are ten (10) elements listed for asking fishers to rate how important each of them in his/her opinion to help avoid or reducing quantities of abandoned, lost or otherwise discarded fishing gear (Table 26).

**Table 26** Elements to avoid or reduce quantities of traps/pots loss

| Ten (10) elements how to help for avoiding or reducing quantities of ALDFG |
|---|
| 1) Vessel design (Can the vessel design cause contribute to avoiding or reducing ALDFG) |
| 2) Hauling equipment (Can the hauling equipment (if any) contribute to avoiding or reducing ALDFG? Some designs work much better than others, and certain haulers suit certain fisheries better than others) |
| 3) Quality of fishing gear material (Is the quality of material important for avoiding loss of gear?) |
| 4) Fishing gear marking (Is marking of the gear important for avoiding or reducing ALDFG?) |
| 5) Gear location technology (How important is GPS (Global Positioning Systems) or similar location technology to find and set gear on right places?) |
| 6) Communication between vessels (How important is communication for avoiding gear loss, for |
| 7) Accuracy and access to weather forecasting (Could the accuracy or access to accurate weather forecasts help avoid gear losses?) |
| 8) Fisher skills for handling vessel/gear (How competent are the crew, could better training of handling fishing gear help avoid gear losses?) |
| 9) Knowledge/awareness of negative impacts of ALDFG (How important is fishers' knowledge and understanding of the negative impacts of ALDFG in helping to avoid ALDFG?) |
| 10) Payments for unwanted gears delivered for recycling (How important is receiving some payment for end-of-life-fishing gears in encouraging fishers to deliver gear for recycling?) |

Result of questionnaire in number (percent) of respondents and the elements for avoiding or reducing quantities of traps/pots loss shown in Table 27 and Figure 54.

**Table 27** Number (Percent) of respondents and the elements for avoiding or reducing quantities of traps/pots loss

| The elements for avoiding or reducing quantities of ALDFG | Very important | Important | Not important | Not relevant or Don't Know | Total |
|---|---|---|---|---|---|
| 1. Vessel design | 1 (2.0%) | 9 (18.4%) | 39 (79.6%) | 0 (0.0%) | 49 (100%) |
| 2. Hauling equipment | 7 (14.3%) | 16 (32.7%) | 26 (53.1%) | 0 (0.0%) | 49 (100%) |
| 3. Quality of fishing gear material | 25 (51%) | 12 (24.5%) | 12 (24.5%) | 0 (0.0%) | 49 (100%) |
| 4. Fishing gear marking | 13 (14.3%) | 29 (59.2%) | 7 (26.5%) | 0 (0.0%) | 49 (100%) |
| 5. Gear location technology | 21 (42.9%) | 18 (36.7%) | 10 (20.4%) | 0 (0.0%) | 49 (100%) |
| 6. Communication between vessels | 14 (28.6%) | 32 (65.3%) | 3 (6.1%) | 0 (0.0%) | 49 (100%) |
| 7. Accuracy and access to weather forecasting | 43 (87.8%) | 5 (10.2%) | 1 (2.0%) | 0 (0.0%) | 49 (100%) |
| 8. Fisher skills for handling vessel/gear | 44 (89.8%) | 5 (10.2%) | 0 (0.0%) | 0 (0.0%) | 49 (100%) |
| 9. Knowledge/awareness of negative impacts of ALDFG | 8 (16.3%) | 32 (65.3%) | 3 (6.1%) | 6 (12.2%) | 49 (100%) |
| 10. Payments for unwanted gears delivered for recycling | 41 (83.7) | 7 (14.3%) | 1 (2.0%) | 0 (0.0%) | 49 (100%) |

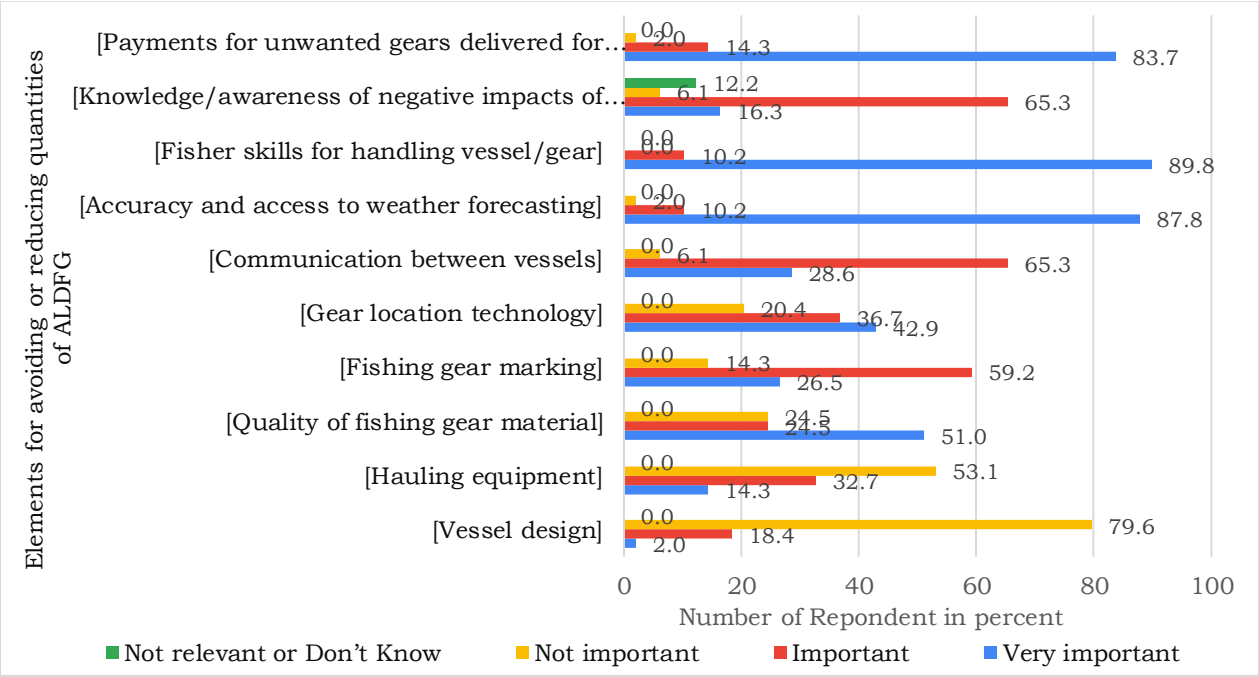



**Figure 56** Number of respondents in percent and the elements for avoiding or reducing quantities of traps/pots losses

Result from the interview shows that the top three (3) very important elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear are shown in the Table 28.

**Table 28** Percent of respondents and the elements for avoiding or reducing quantities of traps/pots loss

| Result | Elements for avoiding or reducing quantities of ALDFG |
|---|---|
| **Very important elements** | 1) Fisher skills for handling vessel/gear (89.8%)<br>2) Accuracy and access to weather forecasting (87.8%)<br>3) Payments for unwanted gears delivered for recycling (83.7%) |
| **Important elements** | 1) There are two (2) elements:<br>1.1) Communication between vessels (65.3%)and<br>1.2) Knowledge/awareness of negative impacts of Trap Loss (65.3%)<br>2) Fishing gear marking (59.2%)<br>3) Gear location technology (36.7%) |
| **Not important elements** | 1) Vessel design (79.6%)<br>2) Hauling equipment (53.1%)<br>3) Quality of fishing gear material (24.5%) |

### 8.2.8. Suggestion from traps/pots fishers about the practices to possibly reduce quantities of traps/pots losses

One of the significant facts collect from this survey show that fisher don't know and less awareness of the negative impacts of ALDFG.

There are additional suggestions from trap fishers about the practices to possibly reduce quantities of ALDFG, as below.

1) Artificial reefs position marking sign needed for noticing the fishers.
2) Communicate with nearby fishing vessels (e.g. trawlers, gillnets,) for its fishing gear location setting to avoiding gear entangling and conflicts.
3) The management of spatial restrictions for recreational fishing and tourism boating
4) Crackdown on thieves.
5) Avoid setting fishing gear in the risk area
6) Improving fishing experiences may reducing the fishing gear loss rates.
7) Diving for setting the trap at the desire position.
8) Avoid setting the fishing gear in the risk area.

### 8.2.9. Conclusion of the survey result to estimate levels of abandoned, lost or otherwise discarded traps/pots

1) The constructions and designs of trap are different among 3 types of trap (pot) regarding the 3 main targets catches, i.e. crab, cuttle fish and fish. It includes the different of setting between individual trap setting and longline style setting (One set with large number unit).
2) Suspected information from the 2 respondents shows the highest loss trap are 5000 and 10,000 traps/year. It seems the error data form the interview.
3) Result from the survey show that total trap loss is 20,154 traps with economic loss from trap loss is 185,705.08 USD/Year. If remove the suspected fish loss information, 5,000 and 10,000 traps/year, total trap loss is 5,154 traps with economic loss from trap loss is 64,805.08 USD/Year.
4) The estimated frequent lost traps in each month of one year is not able to distinguish.
5) The highest main causes of the gear loss are the conflict with other gear. It is consistent with the highest scores of important elements for avoiding or reducing quantities of ALDFG is communication between vessels.
6) The top two (2) practices are always used to avoid fishing gear loss or damage is 1) Making sure all equipment used with fishing gears is in good condition and 2) Securely stow fishing gear on board to with stand bad weather/sea conditions. Both practices look focus on the responsible of fishers to their fishing gear. Both practices may not well mitigate the conflict with other gear that is the main cause of the gear loss.
7) The top practice is sometime used to avoid fishing gear loss or damages is cooperation with other fishers. Enhance coordination and communication among local fishers in fishing ground is the solution to respond the fishing gear loss by the conflict with other gear.
8) Majority of fishing vessels have not installed with a specific area/container on-board, but some fishers always bring back the unwanted plastic parts of fishing gear collected and stored on board to port/landing site. Because of fishing vessel is small-scale, it may not propose to store the installed with a specific area/container to store unwanted plastic parts of fishing gear.
9) Majority of respondents reply no facilities near the vessel's home port/landing site to dispose waste. But they must pay for the waste management service. It reflects to the answer on the elements for avoiding or reducing quantities of ALDFG that the third highest answer is payments for unwanted gears delivered for recycling.
10) Result from all responders show that they are not aware of any laws or regulations for marking fishing gears in their fishing ground. Therefore, none of fishers apply the gear marking with their traps.
11) Responders consider the abandoned, lost or discarded fishing gears is not real issues and the trend will be constant for the next 5 years.
12) Consider the answer from respondents on the main causes of the gear loss, practices are used to avoid fishing gear loss or damages and the elements for avoiding or reducing quantities of ALDFG the result can apply for development of management plan for reduction of ALDFG in Krabi and Phangna Province.

## 9. Recommendation from the survey on ALDFG

1) The study on the loss gear needs to separate according to the constructions, designs, and setting pattern.
2) The survey should be extended to all coastal province of Thailand in order to obtain different and various information.
3) The study on the loss gear should be applied to both small scale and large scale.
4) Both number of gear loss, environmental and resource loss (include ghost gear), and economic loss should be investigated and reported to support management of ALDFG.
5) Estimated number of gear loss and economic loss calculation may for used for the promotion on the management of ALDFG.
6) From the survey we can suggest the coordination and communication among local fishers in fishing ground is the significant solution to reduce conflict and fishing gear loss in Krabi and Phangnga Province.
7) Provincial authorities should support and promote the facilities near the vessel's home port/landing site to dispose of waste.
8) Awareness building to local fisher is one of significant management tool for reduction of ALDFG.
9) The government should prepare for the management of ALDFG. Considering the result of elements for avoiding or reducing quantities of ALDFG, the relevant agencies, include Government, NGO, Academic and local fishers should consider applying some activities to improve ALDFG management (Table 29).

**Table 29** Example activities to reduce the reducing quantities of ALDFG as possible for ALDFG management in Krabi and Phangna Province.

| Target to reduce fishing gear loss | Possible Activities |
|---|---|
| 1. Fisher skills for handling vessel/gear | Provide the training programs for coastal navigation and seamanship |
| 2. Accuracy and access to weather forecasting | Develop safety at sea for fishers include the system to announcement of weather forecasting |
| 3. Payments for unwanted gears delivered for recycling | Public private collaboration to support the end-of-life or wasted fishing gear management service |
| 4. Communication between vessels | Strengthening the Provincial Fisheries Committee and developing the communication platform between small-scale fishers and commercial scale fisher e.g. trawler, purse seiner and etc. |
| 5. Knowledge/awareness of negative impacts of ALDFG | Produce Information Extension and Communication material to provide knowledge and build awareness of negative impacts of ALDFG |
| 6. Fishing gear marking | Extension and education on the marking of fishing gear |
| 7. Gear location technology | Research and development of the Gear location technology appropriate for small-scale fishers |

| Target to reduce fishing gear loss | Possible Activities |
|---|---|
| 8. All equipment used with fishing gears is in good condition | Strengthening the existing monitoring system (Port-in Port-out office) to inspect fishing gears and fishing vessels before departure or occasionally inspection. |

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## 11. Annex

### Annex 1: Summary result of questionnaire

**Gillnets and Entangling Net**

**Part 1: Information about the Interviewer**

1. Number of Respondent: 111
2. Interview method: Face to Face
3. Data Collected: Southeast Asian Fisheries Development Center

**Part 2: Basic information about the responder who is answering the questions**

1. Respondent age:

| Age | Number |
|---|---|
| < 20 year | 0 |
| 20-29 | 1 |
| 30-39 | 12 |
| 40-49 | 30 |
| 50-59 | 53 |
| 60-69 | 13 |
| >70 | 2 |

2. Gender:

| | |
|---|---|
| Female | 0 |
| Male | 111 |

3. Position on respondents' current vessel

| Position | Number |
|---|---|
| Captain/skipper | 111 |
| First mate | 0 |
| Engineer | 0 |
| Chief deckhand | 0 |
| Deckhand | 0 |
| Other | 0 |

4. How many years fishing experience do you have?

| Year | Number |
|---|---|
| 0-4 | 3 |
| 5-20 | 28 |
| > 21 | 80 |

5. Has anybody representing your vessel already taken in part of this FAO-ALDFG survey for this gear type?

| | |
|---|---|
| Yes | 0 |
| No | 111 |

6. Vessel length:

| Length Overall | Number |
|---|---|
| Smaller than 12 m | 109 |
| 12-24 m | 2 |
| More than 24 m | 0 |

7. Flag State of fishing vessel: Thai Flag

8. From which landing site (port/town/city): Krabi and Phangnha Province of Thailand

**Part 3: Gear category in use, main regions and depth zones.**

1. Type of trap:

| Gear | Category Code | Number |
|---|---|---|
| Set gillnets (anchored) | GNS 07.1 | 64 |
| Drift gillnets | GND 07.2 | 17 |
| Encircling gillnets | GNC 07.3 | 5 |
| Fixed gillnets (on stakes) | GNF 07.4 | 0 |
| Trammel nets | GTR 07.5 | 25 |
| Combined gillnets-trammel nets | GTN 07.6 | 0 |

2. In what zone(s) does your current fishing vessel operate:

   Thailand has not classified in Number of Zone

3. What depth ranges does fishing vessel operate.

| Fishing Depth Range | Number of fishing vessel |
|---|---|
| 0-50 m depth | 111 (Always) |
| 51 – 400 m depth | 1 (Sometime) |
| 401 – 1000 m depth | 0 |
| 1000+ m depth | 0 |

**Part 4: Fishing effort, fishing operation and catch**

1. Estimate the number of fishing trips of vessel makes in a typical year:

| Fishing Trip | Number of fishing trips |
|---|---|
| Total number of fishing trips | 18,276 |
| Maximum number of fishing trips | 2,110 |
| Minimum number of fishing trips | 20 |
| Average number of fishing trips | 339 |

2. Estimate the number of days for a typical fishing trip

| Type of Trip | Number of respondents |
|---|---|
| 1 Day/Trip | 105 |
| 2 Days/Trip | 3 |
| 3 Days/Trip | 3 |

3. Fishing effort for each season in a typical year

| Fishing effort / Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Never fishing in this month | 32 | 33 | 33 | 41 | 34 | 27 | 19 | 18 | 18 | 15 | 18 | 24 |
| Few time fishing in this month | 19 | 20 | 18 | 17 | 16 | 15 | 17 | 20 | 17 | 9 | 12 | 16 |
| Sometime fishing in this month | 24 | 24 | 28 | 24 | 26 | 20 | 25 | 20 | 22 | 23 | 29 | 25 |
| Important month always fishing | 36 | 34 | 32 | 29 | 35 | 49 | 50 | 53 | 54 | 64 | 52 | 46 |

4. Estimate of average soak time

| Soak time (hours) | Number of Respondents |
|---|---|
| <1 | 26 |
| 1-24 | 61 |
| >24 | 24 |

5. Number of gillnet (unit) are normally operated at the same time when fishing

| Minimum Number | Maximum Number | Average Number |
|---|---|---|
| 2 | 120 | 23 |

6. Approximate cost to construct/buy one gillnet unit (US Dollar)

| Minimum Cost | Maximum Cost | Average Cost |
|---|---|---|
| 6.45 | 193.55 | 38.08 |

7. Estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one trap unit in use on the vessel?

| Weight | Number of Respondent |
|---|---|
| <5 kg | 92 |
| 5-10 kg | 12 |
| 10-50kg | 0 |
| 50-100 kg | 0 |
| >100 kg | 0 |
| Don't know | 7 |

8. Target species group in your fishery

| Target Catches | Number of Respondent |
|---|---|
| Demersal fish | 22 |
| Pelagic fish | 19 |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | 66 |
| Cephalopods (Octopuses, cuttlefish and squid) | 4 |

9. Estimated total catch landed per trip in kg?

| Minimum Weight (kg) | Maximum Weight (kg) |
|---|---|
| 500 | 2 |

10. Estimated value of catch per trip in US Dollar ?

| Minimum Value | Maximum Value |
|---|---|
| 6.45 | 3,548.39 |

**Part 5:** Gear loss and reporting

1. Number of respondents lost gillnet or parts of it, which one of the following elements are lost

| Frequent Characteristic | Number of vessels | | | | |
|---|---|---|---|---|---|
| | One entire set (with all elements) | One unit (one trap) | Buoys | Floats | Net cut-offs |
| Never | 68.5 | 42.3 | 45.5 | 49.5 | 1.8 |
| Rarely | 27.9 | 38.7 | 45.5 | 39.6 | 15.3 |
| Sometimes | 3.6 | 18.9 | 9.1 | 10.8 | 48.6 |
| Very freq. | 0.9 | 0.0 | 0.0 | 0.0 | 34.2 |

2. Over a typical year estimate how many units of gillnet could be lost?

| Total lost | Minimum | Maximum |
|---|---|---|
| 458.5 | 0.15 | 50 |

3. Fishing effort for each season in a typical year

| Freq. of lost in month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Never | 7 | 7 | 7 | 4 | 9 | 12 | 12 | 12 | 12 | 11 | 11 | 10 |
| Rarely | 19 | 14 | 15 | 20 | 19 | 16 | 14 | 13 | 12 | 11 | 12 | 13 |
| Sometimes | 14 | 19 | 19 | 16 | 12 | 10 | 14 | 16 | 18 | 19 | 19 | 18 |
| Very freq. | 9 | 9 | 8 | 9 | 9 | 11 | 9 | 8 | 7 | 8 | 6 | 8 |

4. Estimate how frequently trap is lost when fishing at each one of the following depth ranges.

| Fishing Depth Range | Freq. | Sometimes | Rarely | Never |
|---|---|---|---|---|
| 0-50 m depth | 111 | 0 | 0 | 0 |
| 51 – 400 m depth | 0 | 0 | 0 | 0 |
| 401 – 1000 m depth | 0 | 0 | 0 | 0 |
| 1000+ m depth | 0 | 0 | 0 | 0 |

5. Are lost traps reported?

| | |
|---|---|
| Lost gillnets are never reported | 107 |
| Lost gillnets are sometime reported | 1 |
| Lost gillnets are always reported | 0 |

*No answer 3

6. If reported, identify the person or agency to whom the loss is reported (Select all relevant)

| | |
|---|---|
| Not Applicable | 27 |
| Nearby vessels | 81 |
| Owner of the vessel | 0 |
| National or local fisheries administration | 0 |
| Coastguard/Navy | 0 |
| Fisherman's Association/Representative | 0 |
| Reported in a logbook or trip report | 0 |
| Other | 0 |

*No answer 3

7. Are you aware of locations where many lost fishing gears can be found?

| | |
|---|---|
| I am not aware of locations where lost fishing gears may be found | 52 |
| I am aware of locations but cannot locate them | 28 |
| I am aware of locations and could identify them | 28 |

8. When vessel loses traps, what are the main causes of the gear loss?

| Main causes of the Gear Loss | Never | Sometimes | Always | Don't know or Not relevant |
|---|---|---|---|---|
| 1. Net snagged on an obstruction | 11 | 46 | 53 | 0 |
| 2. Poor weather conditions | 61 | 49 | 0 | 0 |
| 3. Damage or towed away by large animals | 100 | 0 | 1 | 8 |
| 4. Drifted out of area that cannot be accessed by the vessel | 104 | 1 | 0 | 5 |
| 5. Faulty, old, or damaged gear | 100 | 10 | 0 | 0 |
| 6. Operator error | 99 | 9 | 2 | 0 |
| 7. Strong currents | 28 | 65 | 16 | 0 |
| 8. Deep water | 105 | 4 | 1 | 0 |
| 9. Gear not properly stored on-board | 107 | 3 | 0 | 0 |
| 10. Conflict with other gear | 63 | 41 | 6 | 0 |
| 11. Vandalism | 86 | 17 | 7 | 0 |
| 12. The surface marking is lost, sunk or malfunctioned | 90 | 20 | 0 | 0 |
| 13. Gear intentionally discarded overboard | 105 | 4 | 0 | 0 |
| 14. Equipment failure | 108 | 1 | 0 | 1 |
| 15. High traffic of other vessels | 95 | 15 | 0 | 0 |
| 16. Lack of communications between fishing vessels | 86 | 24 | 0 | 0 |

9. What practices are used to avoid fishing gear loss or damages?

| Practices are used to avoid fishing gear loss or damages | Never | Sometimes | Always | Don't know or Not relevant |
|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | 1 | 49 | 61 | 0 |
| 2. Avoid fishing in poor weather conditions | 5 | 23 | 83 | 0 |
| 3. Avoid areas where animals likely to damage the gear | 76 | 1 | 1 | 33 |
| 4. Avoid losing drifting gears out of reach | 79 | 17 | 9 | 6 |
| 5. Repair or replace worn fishing gear or parts | 9 | 55 | 46 | 1 |
| 6. Training of crew on gear handling and operation | 19 | 35 | 37 | 20 |
| 7. Avoid using the fishing gear in areas with strong currents | 8 | 36 | 67 | 0 |
| 8. Know fishing depth and rig accordingly | 9 | 30 | 72 | 0 |
| 9. Securely stow fishing gear on board to with stand bad weather/sea conditions | 1 | 49 | 61 | 0 |
| 10. Communicate with nearby fishing vessels to avoid conflict | 5 | 23 | 83 | 0 |
| 11. Implement measures to avoid vandalism of gear by others | 76 | 1 | 1 | 33 |
| 12. Use good surface marking or electronic devices | 79 | 17 | 9 | 6 |
| 13. Instruct crew members not to discard fishing gear overboard | 9 | 55 | 46 | 1 |
| 14. Make sure all equipment used with fishing gears is in good condition | 19 | 35 | 37 | 20 |
| 15. Avoid areas of high vessel traffic/shipping lanes | 8 | 36 | 67 | 0 |
| 16. Cooperation with other fishers | 9 | 30 | 72 | 0 |

10. Do you use Fish Aggregating Devices (FADs) in addition to traps?

| | |
|---|---|
| Yes | 0 |
| No | 111 |

**Part 6: End-of-life fishing gear and marine plastic waste management**

1. Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site?

| Never | Rarely | Sometimes | Frequently | Always |
|---|---|---|---|---|
| 2 | 3 | 6 | 11 | 88 |

*No answer 1

2. Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

| | |
|---|---|
| Yes | 37 |
| No | 77 |

3. Does your vessel recover marine plastic waste during fishing trips (e.g. plastic items caught in fishing gear)?

| | |
|---|---|
| Yes | 98 |
| No | 33 |

4. If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in one typical fishing trip?

| | |
|---|---|
| Not Applicable | 18 |
| < 1 kg | 86 |
| 1 – 10 kg | 6 |
| 10 – 100 kg | 1 |
| 100 – 1000kg | 0 |
| 1000 - 10000kg | 0 |
| >10000 kg | 0 |

5. How much of the weight of marine plastic waste (indicated in 6.4) brought back to port is not associated to fishing gear?

| | |
|---|---|
| Nothing, it usually all fishing gear waste | 1 |
| Approximately ¼ or 25% is from fishing gears | 24 |
| Approximately ½ or 50% is from fishing gears | 0 |
| Approximately ¾ or 75% is from fishing gears | 15 |
| The waste is rarely or never associated to fishing gears | 71 |

6. Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials?

| | |
|---|---|
| Yes | 78 |
| No | 33 |

7. If Yes, is there a charge to use the facilities?

| | |
|---|---|
| Yes | 35 |
| No | 41 |

(No answer =2)

8. Do you know how the end-of-life fishing gear components/materials are treated?

| | |
|---|---|
| Disposed of (e.g. landfill or incineration) | 22 |
| Recycled | 25 |
| Recycled, Disposed of (e.g. landfill or incineration) | 9 |
| Don't know | 55 |

**Part 7: Regulation of marking fishing gears**

1. Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

| | |
|---|---|
| Yes | 0 |
| No | 105 |
| Do not know | 6 |

2. Is the fishing gear in use marked in any way?

| | |
|---|---|
| Yes, there are marks | 0 |
| No marks | 111 |

**Part 8: Past and Future trends**

1. In your experience has the amount of abandoned, lost or discarded fishing gears increased or decreased compared with 10 years ago?

| | |
|---|---|
| Decreased | 34 |
| Increased | 21 |
| Similar | 51 |
| Don't know | 5 |

2. Do you think ALDFG and issue of plastics at sea is a real problem?

| | |
|---|---|
| Some places | 17 |
| Yes | 47 |
| Don't know | 28 |
| No | 19 |

3. In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

| | |
|---|---|
| Decrease | 20 |
| Increased | 13 |
| Don't know | 13 |
| Similar | 65 |

4. How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear?

| The elements for avoiding or reducing quantities of ALDFG | Very important | Important | Not important | Not relevant or Don't Know |
|---|---|---|---|---|
| 1. [Vessel design] | 4 | 28 | 79 | 0 |
| 2. [Hauling equipment] | 13 | 26 | 69 | 3 |
| 3. [Quality of fishing gear material] | 57 | 37 | 17 | 0 |
| 4. [Fishing gear marking] | 34 | 69 | 7 | 1 |
| 5. [Gear location technology] | 68 | 31 | 12 | 0 |
| 6. [Communication between vessels] | 47 | 57 | 7 | 0 |
| 7. [Accuracy and access to weather forecasting] | 93 | 18 | 0 | 0 |
| 8. [Fisher skills for handling vessel/gear] | 104 | 7 | 0 | 0 |

| The elements for avoiding or reducing quantities of ALDFG | Very important | Important | Not important | Not relevant or Don't Know |
|---|---|---|---|---|
| 9. [Knowledge/awareness of negative impacts of ALDFG] | 25 | 66 | 7 | 13 |
| 10. [Payments for unwanted gears delivered for recycling] | 108 | 3 | 0 | 0 |

5. Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear?
    1. Artificial reefs position marking sign needed for noticing the fishers.
    2. Consultation with the local fisher's opinion needs for the placement of Artificial reefs in the area
    3. Avoid setting the fishing gear in areas known for snagging e.g. stout-spine murex, old and broken pontoon, lampshade, and etc.
    4. Fishing experience is the most important for avoiding or reducing ALDFG.
    5. Transferring the experience to the next generation.
    6. Raising awareness to fishers about the effect of ALDFG.
    7. Negotiation between conflicted fishing gears.
    8. Reducing the soaking time.
    9. Knowledge of the fishing ground well.
    10. Gear location marking technology.
    11. Seeking and investigating the thief to understand fishing gear ownership.
    12. Marine debris removal initiative campaign/program.
    13. Always check and obtain the weather forecast information.
    14. Always checking, repairing and maintenance for fishing gear in proper and good condition.
    15. Put your fishing gear in groups and tell your friends to take care of your fishing gear.

## Traps (Pots)

**Part 1: Information about the Interviewer**

1. Number of Respondent: 49
2. Interview method: Face to Face
3. Data Collected: Southeast Asian Fisheries Development Center

**Part 2: Basic information about the responder who is answering the questions**

1. Respondent age:

| Age | Number |
|---|---|
| < 20 year | 0 |
| 20-29 | 1 |
| 30-39 | 9 |
| 40-49 | 10 |
| 50-59 | 16 |
| 60-69 | 13 |

2. Gender:

| | |
|---|---|
| Female | 0 |
| Male | 49 |

3. Position on respondents' current vessel

| Position | Number |
|---|---|
| Captain/skipper | 49 |
| First mate | 0 |
| Engineer | 0 |
| Chief deckhand | 0 |
| Deckhand | 0 |
| Other | 0 |

4. How many years fishing experience do you have?

| Year | Number |
|---|---|
| 0-4 | 0 |
| 5-20 | 18 |
| > 21 | 31 |

5. Has anybody representing your vessel already taken in part of this FAO-ALDFG survey for this gear type?

| | |
|---|---|
| Yes | 0 |
| No | 49 |

6. Vessel length:

| Length Overall | Number |
|---|---|
| Smaller than 12 m | 47 |
| 12-24 m | 2 |
| More than 24 m | 0 |

7. Flag State of fishing vessel: Thai Flag

8. From which landing site (port/town/city): Krabi and Phangnha Province of Thailand

**Part 3: Gear category in use, main regions and depth zones.**

1. Type of trap:

| Gear | Category Code | Number |
|---|---|---|
| Stationary uncovered pound nets | FPN 08.1 | 0 |
| Pots | FPO 08.2 | 49 |
| Fyke nets | FYK 08.3 | 0 |
| Stow nets | FSN 08.4 | 0 |
| Barriers, fences, weirs, etc. | FWR 08.5 | 0 |
| Aerial traps | FAR 08.6 | 0 |
| Traps (not specified) | FIX 08.9 | 0 |

2. In what zone(s) does your current fishing vessel operate:
Thailand has not classified in Number of Zone

3. What depth ranges does fishing vessel operate.

| Fishing Depth Range | Number of fishing vessel |
|---|---|
| 0-50 m depth | 49 |
| 51 – 400 m depth | 0 |
| 401 – 1000 m depth | 0 |
| 1000+ m depth | 0 |

**Part 4: Fishing effort, fishing operation and catch**

1. Estimate the number of fishing trips of vessel makes in a typical year:

| Fishing Trip | Number of fishing trips |
|---|---|
| Total number of fishing trips | 7,578 |
| Maximum number of fishing trips | 155 |
| Minimum number of fishing trips | 24 |
| Average number of fishing trips | 360 |

2. Estimate the number of days for a typical fishing trip

| Type of Trip | Number of days |
|---|---|
| 1 Day/Trip | 47 |
| More than one day/trip* | 2 |

* (7 days/trip)

3. Fishing effort for each season in a typical year

| Fishing effort / Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Never fishing in this month | 7 | 7 | 5 | 2 | 9 | 12 | 13 | 12 | 12 | 11 | 11 | 10 |
| Few time fishing in this month | 5 | 5 | 5 | 7 | 9 | 11 | 11 | 10 | 7 | 5 | 5 | 5 |
| Sometime fishing in this month | 7 | 7 | 8 | 9 | 12 | 9 | 10 | 10 | 13 | 11 | 7 | 7 |
| Important month always fishing | 30 | 30 | 31 | 31 | 19 | 17 | 15 | 17 | 17 | 22 | 25 | 27 |

4. Estimate of average soak time

| Soak time | Hours |
|---|---|
| Minimum soak time | 1 |
| Maximum soak time | 360 |
| Mode | 24 |

5. Number of traps are normally operated at the same time when fishing

| Trap | Minimum Number | Maximum Number |
|---|---|---|
| Fish trap | 3 | 300 |
| Crab trap | 60 | 3,000 |
| Squid trap | 25 | 200 |

6. Approximate cost to construct/buy one trap unit

| Trap | Minimum Cost | Maximum Cost |
|---|---|---|
| Fish trap | 2.3 | 112.9 |
| Crab trap | 1.61 | 3.55 |
| Squid trap | 3.2 | 280.0 |

7. Estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one trap unit in use on the vessel?

| Weight | Number of Respondent |
|---|---|
| <5 kg | 49 |
| 5-10 kg | 0 |
| 10-50kg | 0 |
| 50-100 kg | 0 |
| >100 kg | 0 |
| Don't know | 0 |

8. Target species group in your fishery

| Target Catches | Number of Respondent |
|---|---|
| Demersal fish | 22 |
| Pelagic fish | 0 |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | 10 (Crabs) |
| Cephalopods (Octopuses, cuttlefish and squid) | 17 (Cuttlefish) |

9. Average total catch landed per trip in kg?

| Trap | Minimum Weight (kg) | Maximum Weight (kg) |
|---|---|---|
| Fish trap | 2.5 | 100 |
| Crab trap | 2 | 150 |
| Squid trap | 5 | 200 |

10. Average Estimated value of catch per trip in US Dollar ?

| Trap | Minimum Value (kg) | Maximum Value (kg) |
|---|---|---|
| Fish trap | 9.7 | 322.6 |
| Crab trap | 8.12 | 403.23 |
| Squid trap | 12.9 | 193.6 |

**Part 5: Gear loss and reporting**

1. Number of vessels lose a trap/pot or parts of it, which one of the following elements are lost

| Frequent Characteristic | Number of vessels | | | |
|---|---|---|---|---|
| | One entire set (with all elements) | One unit (one trap) | Buoys | Net cut-offs |
| Never | 41 | 2 | 24 | 35 |
| Rarely | 4 | 7 | 8 | 8 |
| Sometimes | 3 | 27 | 10 | 5 |
| Very freq. | 1 | 13 | 7 | 0 |

2. Over a typical year estimate how many traps units could be lost?

| Trap | Minimum | Maximum | Total lost |
|---|---|---|---|
| Fish trap | 4 | 60 | 344 |
| Crab trap | 10 | 300 | 989 |
| Squid trap | 10 | 10,000 | 18,865 |
| All trap | 4 | 10,000 | 20,154 |

3. Fishing effort for each season in a typical year

| Freq. of lost in month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Never | 7 | 7 | 7 | 4 | 9 | 12 | 12 | 12 | 12 | 11 | 11 | 10 |
| Rarely | 19 | 14 | 15 | 20 | 19 | 16 | 14 | 13 | 12 | 11 | 12 | 13 |
| Sometimes | 14 | 19 | 19 | 16 | 12 | 10 | 14 | 16 | 18 | 19 | 19 | 18 |
| Very freq. | 9 | 9 | 8 | 9 | 9 | 11 | 9 | 8 | 7 | 8 | 6 | 8 |

4. Estimate how frequently trap is lost when fishing at each one of the following depth ranges.

| Fishing Depth Range | Freq. | Sometimes | Rarely | Never |
|---|---|---|---|---|
| 0-50 m depth | 49 | 0 | 0 | 0 |
| 51 – 400 m depth | 0 | 0 | 0 | 0 |
| 401 – 1000 m depth | 0 | 0 | 0 | 0 |
| 1000+ m depth | 0 | 0 | 0 | 0 |

5. Are lost traps reported?

| | |
|---|---|
| Lost gillnets are never reported | 49 |
| Lost gillnets are sometime reported | 0 |
| Lost gillnets are always reported | 0 |

6. If reported, identify the person or agency to whom the loss is reported (Select all relevant)

| | |
|---|---|
| Not Applicable | 3 |
| Nearby vessels | 44 |
| Owner of the vessel | 4 |
| National or local fisheries administration | 0 |
| Coastguard/Navy | 0 |
| Fisherman's Association/Representative | 0 |
| Reported in a logbook or trip report | 0 |
| Other | 0 |

7. Are you aware of locations where many lost fishing gears can be found?

| | |
|---|---|
| I am not aware of locations where lost fishing gears may be found | 21 |
| I am aware of locations but cannot locate them | 28 |
| I am aware of locations and could identify them | 0 |

8. When vessel loses traps, what are the main causes of the gear loss?

| Main causes of the Gear Loss | Never | Sometimes | Always | Don't know or Not relevant |
|---|---|---|---|---|
| 1. Net snagged on an obstruction | 31 | 16 | 2 | 0 |
| 2. Poor weather conditions | 22 | 23 | 4 | 0 |
| 3. Damage or towed away by large animals | 44 | 0 | 0 | 5 |
| 4. Drifted out of area that cannot be accessed by the vessel | 45 | 2 | 0 | 2 |
| 5. Faulty, old, or damaged gear | 22 | 23 | 4 | 0 |
| 6. Operator error | 23 | 26 | 0 | 0 |
| 7. Strong currents | 18 | 27 | 4 | 0 |
| 8. Deep water | 42 | 7 | 0 | 0 |
| 9. Gear not properly stored on-board | 43 | 6 | 0 | 0 |
| 10. Conflict with other gear | 11 | 19 | 19 | |
| 11. Vandalism | 22 | 20 | 7 | |
| 12. The surface marking is lost, sunk or malfunctioned | 25 | 20 | 4 | 0 |
| 13. Gear intentionally discarded overboard | 32 | 15 | 2 | 0 |
| 14. Equipment failure | 39 | 9 | 1 | 0 |
| 15. High traffic of other vessels | 24 | 10 | 5 | 0 |
| 16. Lack of communications between fishing vessels | 30 | 17 | 2 | 0 |
| 17. Others | 31 | 16 | 2 | 0 |

9. What practices are used to avoid fishing gear loss or damages?

| Practices are used to avoid fishing gear loss or damages | Never | Sometimes | Always | Don't know or Not relevant |
|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | 2 | 17 | 30 | 0 |
| 2. Avoid fishing in poor weather conditions | 5 | 19 | 25 | 0 |
| 3. Avoid areas where animals likely to damage the gear | 37 | 0 | 0 | 12 |
| 4. Avoid losing drifting gears out of reach | 35 | 10 | 3 | 1 |
| 5. Repair or replace worn fishing gear or parts | 2 | 13 | 34 | 0 |
| 6. Training of crew on gear handling and operation | 10 | 11 | 13 | 15 |
| 7. Avoid using the fishing gear in areas with strong currents | 4 | 17 | 28 | 0 |
| 8. Know fishing depth and rig accordingly | 4 | 13 | 32 | 0 |

| Practices are used to avoid fishing gear loss or damages | Never | Sometimes | Always | Don't know or Not relevant |
|---|---|---|---|---|
| 9. Securely stow fishing gear on board to with stand bad weather/sea conditions | 1 | 12 | 36 | 0 |
| 10. Communicate with nearby fishing vessels to avoid conflict | 1 | 37 | 11 | 0 |
| 11. Implement measures to avoid vandalism of gear by others | 21 | 13 | 15 | 0 |
| 12. Use good surface marking or electronic devices | 15 | 13 | 20 | 1 |
| 13. Instruct crew members not to discard fishing gear overboard | 12 | 16 | 7 | 14 |
| 14. Make sure all equipment used with fishing gears is in good condition | 1 | 6 | 42 | 0 |
| 15. Avoid areas of high vessel traffic/shipping lanes | 2 | 22 | 25 | 0 |
| 16. Cooperation with other fishers | 5 | 41 | 3 | 0 |
| 17. Others | 2 | 17 | 30 | 0 |

10. Do you use Fish Aggregating Devices (FADs) in addition to traps?

| | |
|---|---|
| Yes | 0 |
| No | 49 |

**Part 6: End-of-life fishing gear and marine plastic waste management**

1. Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site?

| Never | Rarely | Sometimes | Frequently | Always |
|---|---|---|---|---|
| 8 | 3 | 16 | 4 | 18 |

2. Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

| | |
|---|---|
| Yes | 8 |
| No | 41 |

3. Does your vessel recover marine plastic waste during fishing trips (e.g. plastic items caught in fishing gear)?

| | |
|---|---|
| Yes | 8 |
| No | 41 |

4. If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in one typical fishing trip?

| | |
|---|---|
| Not Applicable | 35 |
| < 1 kg | 14 |
| 1 – 10 kg | 0 |
| 10 – 100 kg | 0 |
| 100 – 1000kg | 0 |
| 1000 - 10000kg | 0 |
| >10000 kg | 0 |

5. How much of the weight of marine plastic waste (indicated in 6.4) brought back to port is not associated to fishing gear?

| | |
|---|---|
| Nothing, it usually all fishing gear waste | 1 |
| Approximately ¼ or 25% is from fishing gears | 5 |
| Approximately ½ or 50% is from fishing gears | 0 |
| Approximately ¾ or 75% is from fishing gears | 5 |
| The waste is rarely or never associated to fishing gears | 38 |

6. Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials?

| | |
|---|---|
| Yes | 17 |
| No | 30 |

7. If Yes, is there a charge to use the facilities?

| | |
|---|---|
| Yes | 11 |
| No | 5 |

(No answer =1)

8. Do you know how the end-of-life fishing gear components/materials are treated?

| | |
|---|---|
| Disposed of (e.g. landfill or incineration) | 4 |
| Recycled | 9 |
| Recycled, Disposed of (e.g. landfill or incineration) | 1 |
| Don't know | 35 |

**Part 7: Regulation of marking fishing gears**

1. Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

| | |
|---|---|
| Yes | 0 |
| No | 49 |

2. Is the fishing gear in use marked in any way?

| | |
|---|---|
| Yes, there are marks | 0 |
| No marks | 49 |

**Part 8: Past and Future trends**

1. In your experience has the amount of abandoned, lost or discarded fishing gears increased or decreased compared with 10 years ago?

| | |
|---|---|
| Decreased | 11 |
| Increased | 11 |
| Similar | 27 |

2. Do you think ALDFG and issue of plastics at sea is a real problem?

| | |
|---|---|
| Some places | 6.1 |
| Yes | 30.6 |
| Don't know | 24.5 |
| No | 38.8 |

3. In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

| | |
|---|---|
| Decrease | 12.2 |
| Increased | 22.4 |
| Don't know | 12.2 |
| Similar | 53.1 |

4. How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear?

| The elements for avoiding or reducing quantities of ALDFG | Very important | Important | Not important | Not relevant or Don't Know |
|---|---|---|---|---|
| 1. Vessel design | 1 | 9 | 39 | 0 |
| 2. Hauling equipment | 7 | 16 | 26 | 0 |
| 3. Quality of fishing gear material | 25 | 12 | 12 | 0 |
| 4. Fishing gear marking | 13 | 29 | 7 | 0 |
| 5. Gear location technology | 21 | 18 | 10 | 0 |
| 6. Communication between vessels | 14 | 32 | 3 | 0 |
| 7. Accuracy and access to weather forecasting | 43 | 5 | 1 | 0 |
| 8. Fisher skills for handling vessel/gear | 44 | 5 | 0 | 0 |
| 9. Knowledge/awareness of negative impacts of ALDFG | 8 | 32 | 3 | 6 |
| 10. Payments for unwanted gears delivered for recycling | 41 | 7 | 1 | 0 |

5. Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear?
    1. Artificial reefs position marking sign needed for noticing the fishers.
    2. Communicate with nearby fishing vessels (e.g. trawlers, gillnets,) for its fishing gear location setting to avoiding gear entangle and conflicts.
    3. The management of spatial restrictions for recreational fishing and tourism boating
    4. Crackdown on thieves.
    5. Avoid setting fishing gear in the risk area
    6. Improving fishing experiences may reducing the fishing gear loss rates.
    7. Diving for setting the trap at the desire position.
    8. Avoid setting the fishing gear in the risk area.

## Annex 2: Pre-ALDFG survey questions

To estimate how many fishers would need to be interviewed and for the statistical purpose we need estimate for understanding how large the fishery is using each group of fishing gear type. We use the International Standard Statistical Classification of Fishing Gear (ISSCFG, 2016), http://www.fao.org/3/bt988e/bt988e.pdf. We work only with the ten main categories. In many regions not all, or only just a few fishing gears, are used in one or more categories. In those cases leave the cells in the table empty.

We ask for the registered number, or where not available an estimate, of vessels using each category of gear type and an estimated number of fishers.

There may be fishing gears used by fishers without vessels (like traps). In this case an estimate of number of fishermen would suffice to understand how large the fishery is.

Table 1. Fill out where applicable.

| Categories of fishing gear types (See further in the ISSCFG) | | Number of vessels (estimated and/or registered) | Number of fishers using vessels | Number of fishers not using vessels |
|---|---|---|---|---|
| 1. | Surrounding Nets | 961 | N.A. | N.A. |
| 2. | Seine Nets | 0 | N.A. | N.A. |
| 3. | Trawls | 3,305 | N.A. | N.A. |
| 4. | Dredges | 163 | N.A. | N.A. |
| 5. | Lift Nets | 60 | N.A. | N.A. |
| 6. | Falling Gear | 1,872 | N.A. | N.A. |
| 7. | Gillnets and Entangling nets | 751 | N.A. | N.A. |
| 8. | Traps | 784 | N.A. | N.A. |
| 9. | Hooks and lines | 68 | N.A. | N.A. |
| 10. | Miscellaneous gear | 128 | N.A. | N.A. |
| Total | | 8,092 | 60,090 | N.A. |

Note: 1) N.A.: Not available.

2) The vessel numbers are from the licensing authority for commercial marine capture fisheries in Thai waters. The total number of 8,092 is not included 1,927 licensed of luring light vessels (operating for purse seine fishing).

3) Number of fishers using vessels are 60,090 (25,820 Thais and 34,270 foreigners) which cannot be disaggregated into each category of fishing gear types.

4) The total of 128 vessels for miscellaneous gears include 21 red frog crab dillies and 107 pushnet vessels.

We need to know some facts about the fishery like marking the gears and recycling possibilities.

1. Are there any laws/regulation making it mandatory to register if fishing gear is lost?

| | |
|---|---|
| Yes | |
| No | √ |

Any comment: None.

2. Are there any laws/regulation making it mandatory to mark the fishing gear to be track to owner if lost and found?

| | |
|---|---|
| Yes | |
| No | √ |

Any comment: There is only the Thai regulation on fishing gear marking applied to vessels operating outside Thai waters using gillnet, longline, trap, trawl, purse seine or fish aggregating device (FAD). But there is none of any regulation on fishing gear marking for vessels operating in Thai waters.

3. Are there good facilities for derelict or old fishing gear for recycling or disposal within this fishery?

| | |
|---|---|
| None or poor | |
| Some | √ |
| Good | |

Any comment: There are some companies for buying and recycling old fishing nets made of polymer (*e.g.*, gillnets).

**Annex 3: Questionnaire**

# Global Fishing Gear Loss Assessment
# Quantity, causes and management options
## Gillnets and Entangling nets

## The Interviewer

### Part 1. Information about the Interviewer

1.1 Interviewer name: _____

1.2 Interviewer email address: _____

1.3 How is the interview done:

| | |
|---|---|
| Face to face | |
| Telephone/ Online call | |

---

## The Respondent

### Part 2. Basic information about the responder who is answering the questions

**All information collected will be treated anonymously, with respondent contact information only collected for follow-up purposes to clarify any responses, if required.**

2.1 Date of interview (dd/mm/yyyy): _____

2.2 Respondent age:

| | |
|---|---|
| < 20 year | |
| 20 – 29 year | |
| 30 – 39 year | |
| 40 – 49 year | |
| 50 – 59 year | |
| 60 – 69 year | |
| > 70 year | |

2.3 Position on your current vessel (select one):

| | |
|---|---|
| Captain/skipper | |
| First mate | |
| Engineer | |
| Chief deckhand | |
| Deckhand | |
| Other | |

2.4 How many years fishing experience do you have?

| | |
|---|---|
| 0-4 years | |
| 5-20 years | |
| 21+ years | |

2.5 IMO or National registration number (if any):

_____

2.6 Vessel length:

| | |
|---|---|
| 0-12 m | |
| 12-24 m | |
| Over 24 m | |

2.7 Flag State of fishing vessel: _____

2.8 From which port/town/landing site dose the vessel usually working from:

_____

2.9 City/town/port or landing site:_____

2.10 Country: _____

## Gear category and zones

### Part 3. Gear category in use, main regions and depth zones.

3.1 What type of gillnet to you use?

| Tick here | Gear category | Code | Write gear local name |
|---|---|---|---|
| | Set gillnets (anchored) | GNS 07.1 | |
| | Drift gillnets | GND 07.2 | |
| | Encircling gillnets | GNC 07.3 | |
| | Fixed gillnets (on stakes) | GNF 07.4 | |
| | Trammel nets | GTR 07.5 | |
| | Combined gillnets-trammel nets | GTN 07.6 | |

3.2 In what zone(s) does your current fishing vessel operate? Select all relevant.

If working in multiple Zones.

Maximum 100% effort for all zones combined.

**Use the list from Annex 1 and 2[7] to give name to the Fishing Zone name column**

| Zone | Exclusive Economic Zone (EEZ) country name (if applicable) | Sea Name | % of overall effort |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | | Sum to 100% |

3.3 What depth ranges does your vessel operate, what % of overall effort takes place in each depth range? Maximum 100% effort for all depth ranges combined.

| Fishing Depth Range | % of fishing effort |
|---|---|
| 0-50 m depth | |
| 51 – 400 m depth | |
| 401 – 1000 m depth | |
| 1000+ m depth | |
| | Sum to 100% |

[7] To be country/fishery specific, to include national waters and high seas as appropriate

## Fishing gear operation, costs and catches

### Part 4. Fishing effort, fishing operation and catches

4.1 Estimate the number of fishing trips your vessel makes in a typical year:

_____

4.2 Estimate the number of days for a typical fishing trip: _____

4.3 Estimate the % of fishing effort for each season in a typical year. Answer i or ii, as appropriate

i. Mid-latitude four-season regions (to nearest 10%):

| Spring | Summer | Fall/Autumn | Winter |
|---|---|---|---|
| % | % | % | % |

OR

ii. Tropic two-season regions (to nearest 10%):

| Dry | Wet |
|---|---|
| % | % |

4.4 Estimate of average soak time (setting to hauling) of gillnets:

Time in hour's _____ or day's _____

4.5 How many gillnets are normally operated at the same time when actively fishing? Answer i or ii, as appropriate:

i. Fishing with single gillnets:

| | |
|---|---|
| Total number of single units | |

OR

ii. Fishing with Gillnet in sets:

| | |
|---|---|
| Total number of single units in one set | |
| Number of sets | |

4.6 What is the approximate cost to construct/buy one gillnet unit:

| | |
|---|---|
| Amount | |
| Currency | |

4.7 What is the estimated weight (kgs) of plastic components (nets, rope, floats) in one gillnet unit in use on the vessel?

**NOTE: Do not include** metals such has chains, wire, anchors, or wood, bamboo or other natural materials.

Estimated weight plastic components in one gillnet unit:

| | |
|---|---|
| <5 kg | |
| 5-10 kg | |
| 10-50kg | |
| 50-100 kg | |
| >100 kg | |
| Don't know | |

4.8 Target species group in your fishery are (if more than one, list in order of importance, 1 being most important):

| | |
|---|---|
| Demersal fish | |
| Pelagic fish | |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | |
| Cephalopods (Octopuses, cuttlefish and squid) | |

4.9 Average total daily catch in kg?

_____ Kg

4.10 Estimated value of an average day's catch?

| | |
|---|---|
| Amount | |
| Currency | |

4.11 Are any of the following animal groups entangled or caught in the fishing gear or its parts? Select all that apply:

| Animal group | Never | Rarely | Sometimes | Frequently |
|---|---|---|---|---|
| Birds | | | | |
| Large mammals (whales) | | | | |
| Small mammals (dolphins/seals/sea lions etc) | | | | |
| Reptiles (turtles etc) | | | | |

## Gear loss and reporting

### Part 5

5.1 When you lose a gillnet, estimate the proportion of a unit of gillnet that would most commonly be lost?

| | |
|---|---|
| 10% | |
| 20% | |
| 30% | |
| 40% | |
| 50% | |
| 60% | |
| 70% | |
| 80% | |
| 90% | |
| 100% | |

5.2 Over a typical year estimate how many gillnet units could be lost?

_____ Gillnet units lost/year

5.3 Estimate what % of this total annual loss (provided in 5.2) is likely be in a form that could continue to catch (to enmesh, trap or entangle) wildlife (i.e. ghost fishing)?

| | |
|---|---|
| 0% | |
| Less than 25% | |
| Between 25-50% | |
| Between 51-75% | |
| Greater than 75% | |

5.4 In a typical year estimate what % of gillnets would be lost in each season?

Answer i, or ii as appropriate.

i. Mid-latitude four-season regions (to nearest 10%):

| Spring | Summer | Fall/Autumn | Winter |
|---|---|---|---|
| % | % | % | % |

OR

ii. Tropic two-season regions (to nearest 10%):

| Dry | Wet |
|---|---|
| % | % |

5.5 Estimate what % of this annual loss (provided in 5.2) is attributed to each fishing zone identified in part 3, question 3.2 to nearest 10%.

| Fishing Zone | % of gear loss |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| | Sum to 100% |

5.6 Estimate what % of this annual loss (provided in 5.2) is attributed to each depth range identified in part 3, question 3.3 to nearest 10%.

| Fishing Depth Range | % of gear loss |
|---|---|
| 0 - 50 m depth | |
| 51 - 400 m depth | |
| 401 - 1000 m depth | |
| 1000 + m depth | |
| | Sum to 100% |

5.7 Are lost gillnets reported? Select one.

| | |
|---|---|
| Lost gillnets are never reported | |
| Lost gillnets are sometime reported | |
| Lost gillnets are always reported | |

5.8 If reported, identify the person or agency to whom the loss is reported (Select all relevant):

| | |
|---|---|
| 1. Not Applicable | |
| 2. Nearby vessels | |
| 3. Owner of the vessel | |
| 4. National or local fisheries administration | |
| 5. Coastguard/Navy | |
| 6. Fisherman's Association/Representative | |
| 7. Reported in a logbook or trip report | |
| 8. Other | |

5.9 When your vessel loses gillnets, what are the main causes of the gear loss? Only select those causes listed below that are relevant to the gear you are reporting on.

| Causes | Never | Sometimes | Always | Don't know |
|---|---|---|---|---|
| 1. Net snagged on an obstruction, such as reef or rocky area | | | | |
| 1. Poor weather conditions | | | | |
| 2. Damage or towed away by large animals | | | | |
| 3. Drifted out of area that cannot be accessed by the vessel | | | | |
| 4. Faulty, old or damaged gear | | | | |
| 5. Operator error | | | | |
| 6. Strong currents | | | | |
| 7. Deep water | | | | |
| 8. Gear not properly stored on-board | | | | |
| 9. Conflict with other gear, e.g. trawls towing away other gear | | | | |
| 10. Vandalism | | | | |
| 11. The surface marking is lost, sunk or malfunctioned | | | | |
| 12. Gear intentionally discarded overboard | | | | |
| 13. Equipment failure (i.e. hauler or location equipment) | | | | |
| 14. High traffic of others vessels | | | | |
| 15. Others | | | | |

5.10 What practices are used to avoid fishing gear loss or damages?

| Causes | Never | Sometimes | Always | Don't know |
|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | | | | |
| 2. Avoid fishing in poor weather conditions | | | | |
| 3. Avoid areas where animals likely to damage the gear | | | | |
| 4. Avoid losing drifting gears out of reach | | | | |
| 5. Repair or replace worn fishing gear or parts | | | | |
| 6. Training of crew on gear handling and operation | | | | |
| 7. Avoid using the fishing gear in areas with strong currents | | | | |
| 8. Know fishing depth and rig accordingly | | | | |
| 9. Securely stow fishing gear on board to withstand bad weather/sea conditions | | | | |
| 10. Communicate with nearby fishing vessels to avoid conflict | | | | |
| 11. Implement measures to avoid vandalism of gear by others | | | | |
| 12. Use good surface marking or electronic devices | | | | |
| 13. Instruct crew members not to discard fishing gear overboard | | | | |
| 14. Make sure all equipment used with fishing gears is in good condition | | | | |
| 15. Avoid areas of high vessel traffic/shipping lanes | | | | |
| 16. Others | | | | |

## End-of-life fishing gear and marine plastic waste management

### Part 6

6.1 Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site? *Select one of the following*

| | |
|---|---|
| Never | |
| Rarely | |
| Sometimes | |
| Frequently | |
| Always | |

6.2 Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

| | |
|---|---|
| No | |
| Yes | |

6.3 Does your vessel recover marine plastic waste during fishing trips (e.g. plastic items caught in fishing gear)?

| | |
|---|---|
| No | |
| Yes | |

6.4 If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in the last year?

| | |
|---|---|
| Not Applicable | |
| < 1 kg | |
| 1 – 10 kg | |
| 10 – 100 kg | |
| 100 – 1000kg | |
| 1000 - 10000kg | |
| >10000 kg | |

6.4.1 What percentage of the amount of marine plastic waste (indicated in 6.4) brought back to port is not associated to fishing gear?

| | |
|---|---|
| 10% | |
| 20% | |
| 30% | |
| 40% | |
| 50% | |
| 60% | |

| | |
|---|---|
| 70% | |
| 80% | |
| 90% | |
| 100% | |

6.5 Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials? Select no or yes.

| | |
|---|---|
| No | |
| Yes | |

6.5.1 If Yes, is there a charge to use the facilities?

| | |
|---|---|
| No | |
| Yes | |

6.5.2 Do you know how the end-of-life fishing gear components/materials are treated?

| | |
|---|---|
| Don't know | |
| Recycled | |
| Disposed of (e.g. landfill or incineration) | |

6.6 Are there facilities in or near the vessel's home port/landing site to dispose of non-fishing gear plastic waste? Select no or yes.

| | |
|---|---|
| No | |
| Yes | |

6.6.1 If Yes, is there a charge to use the facilities?

| | |
|---|---|
| No | |
| Yes | |

6.6.2 If yes, do you receive any payment for depositing your plastic waste?

| | |
|---|---|
| No | |
| Yes | |

6.6.3 Do you know how the waste plastic materials are treated

| | |
|---|---|
| Don't know | |
| Recycled | |
| Disposed of (e.g. landfill or incineration) | |

## Regulation of marking fishing gears

### Part 7

7.1 Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

| | |
|---|---|
| No | |
| Yes | |

7.2 Is the fishing gear in use marked and traceable to owner or vessel?

| | |
|---|---|
| No marks | |
| Yes, there are marks | |

---

## Past and Future trends

### Part 8

8.1 In your experience has the amount of abandoned, lost or discarded fishing gears increased or decreased compared with 10 years ago?

| | |
|---|---|
| Increased | |
| Similar | |
| Decrease | |
| Don't know | |

8.2 In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

| | |
|---|---|
| Increased | |
| Similar | |
| Decrease | |
| Don't know | |

8.3 How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear (Select as appropriate)

| The elements for avoiding or reducing quantities of ALDFG | Not important | Important | Very important |
|---|---|---|---|
| 1. Vessel design | | | |
| 2. Hauling equipment | | | |
| 3. Quality of fishing gear material | | | |
| 4. Fishing gear marking | | | |
| 5. Gear location technology | | | |
| 6. Communication between vessels | | | |
| 7. Accuracy and access to weather forecasting | | | |
| 8. Fisher skills for handling vessel/gear | | | |
| 9. Knowledge/awareness of negative impacts of ALDFG | | | |
| 10. Payments for unwanted gears delivered for recycling | | | |

8.4 Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear? Please describe

# Global Fishing Gear Loss Assessment
# Quantity, causes and management options

## Traps (Pots)

## The Interviewer

### Part 1. Information about the Interviewer

1.1 Interviewer name: _____

1.2 Interviewer email address: _____

1.3 How is the interview done:

| | |
|---|---|
| Face to face | |
| Telephone/ Online call | |

---

## The Respondent

### Part 2. Basic information about the responder who is answering the questions

**All information collected will be treated anonymously, with respondent contact information only collected for follow-up purposes to clarify any responses, if required.**

2.1 Date of interview (dd/mm/yyyy): _____

2.2 Respondent age:

| | |
|---|---|
| < 20 year | |
| 20 – 29 year | |
| 30 – 39 year | |
| 40 – 49 year | |
| 50 – 59 year | |
| 60 – 69 year | |
| > 70 year | |

2.3 Position on your current vessel (select one):

| | |
|---|---|
| Captain/skipper | |
| First mate | |
| Engineer | |
| Chief deckhand | |
| Deckhand | |
| Other | |

2.4 How many years fishing experience do you have?

| | |
|---|---|
| 0-4 years | |
| 5-20 years | |
| 21+ years | |

2.5 Has anybody representing your vessel already taken in part of this FAO-ALDFG survey for this gear type?

| | |
|---|---|
| No | |
| Yes | |

2.6 Vessel length:

| | |
|---|---|
| 0-12 m | |
| 12-24 m | |
| Over 24 m | |

2.6.1 Vessel gross tonnage. (Optional/if known).
GT of the vessel. _____GT
(Nearest estimate)

2.7 Flag State of fishing vessel: _____

2.8 From which landing site (port/town/city) site dose the vessel usually working from:

2.8.1 City/town/port or landing site:
_____

2.8.2 In what country:
_____

## Gear category and zones

### Part 3. Gear category in use, main regions, and depth zones.

3.1 What type of trap do you use?

| Tick here | Gear category | Code | Write gear local name |
|---|---|---|---|
| | Stationary uncovered pound nets | FPN 08.1 | |
| | Pots | FPO 08.2 | |
| | Fyke nets | FYK 08.3 | |
| | Stow nets | FSN 08.4 | |
| | Barriers, fences, weirs, etc. | FWR 08.5 | |
| | Aerial traps | FAR 08.6 | |
| | Traps (not specified) | FIX 08.9 | |

3.2 In what zone(s) does your current fishing vessel operate?

If working in multiple Zones provide up to a maximum 5 zones, providing the most important Zone number 1 and the second number 2… etc.

Use the list from Annex 1 and 2[8] to give name to the Fishing Zone name column

| Zone | Exclusive Economic Zone (EEZ) country name (if applicable) | Sea Name | National/ Local zone name |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

3.2.1 Level of fishing activity in each zone? This question is optional if only one fishing zone registered

| Zone | Approximately all or 100% fishing activity | Approximately ¾ or 75% fishing activity | Approximately 1/2 or 50% fishing activity | Approximately 1/4 or 25% fishing activity |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |

[8] To be country/fishery specific, to include national waters and high seas as appropriate

3.3 What depth ranges does your vessel operate? Have one year of fishery activity in mind mark one option in each line. Note this is fishing depth! If using fishing gear at surface it is always 0-50 meters even over deep water.

| Fishing Depth Range | Mostly | Often | Sometimes | Never |
|---|---|---|---|---|
| 0 - 50 m depth | | | | |
| 51 - 200 m depth | | | | |
| 201 - 1000 m depth | | | | |
| 1000+ m depth | | | | |

## Fishing gear operation, costs, and catches

### Part 4. Fishing effort, fishing operation and catch

4.1 Estimate the number of fishing trips your vessel makes in a typical year:
_____

4.2 Estimate the number of days for a typical fishing trip:_____

4.3 Estimate the importance of each month for this fishery over one typical year. Choose one option for each month.

| Fishing Month | Important month always fishing | Sometimes fishing in this month | Few time fishing in this month | Never fishing in this month |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| Mars | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |

4.4 Estimate of average soak time (setting to hauling/visit) of traps:
Time in hour's _____ or day's _____

4.5 How many traps are normally operated at the same time when actively fishing? Answer i or ii, as appropriate:

i. Fishing with single traps:

| | |
|---|---|
| Total number of single units | |

Or

ii. Fishing with traps in sets:

| | |
|---|---|
| Total number of single units in one set | |
| Number of sets | |

4.6 What is the approximate cost to construct/buy one trap unit:

| | |
|---|---|
| Amount | |
| Currency | |

4.7 What is the estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one trap unit in use on the vessel?

**NOTE: Do not include** metals such has chains, wire, anchors, or wood, bamboo or other natural materials.

Estimated weight plastic components in one trap unit:

| | |
|---|---|
| <5 kg | |
| 5-10 kg | |
| 10-50kg | |
| 50-100 kg | |
| >100 kg | |
| Don't know | |

4.8 Target species group in your fishery are (if more than one, list in order of importance, 1 being most important):

| | |
|---|---|
| Demersal fish | |
| Pelagic fish | |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | |
| Cephalopods (Octopuses, cuttlefish, and squid) | |
| Benthic (molluscs, echidnoderms etc) | |

4.9 Average total catch landed per trip in kg?

_____ Kg

4.10 Estimated value of an average day's catch?

| | |
|---|---|
| Amount | |
| Currency | |

## Gear loss and reporting

### Part 5

5.1 When/If you lose a trap/pot or parts of it, which one of the following elements are lost?
Please refer to manual for the description (drawings 2 to 6) of each element.

| Gillnet elements | Very frequently | Sometimes | Rarely | Never |
|---|---|---|---|---|
| One entire set (with all elements) | | | | |
| One unit (one trap) | | | | |
| Buoys | | | | |
| Net cut-offs | | | | |

5.2 Over a typical year estimate how many traps units could be lost?

_____ Traps units lost/year

5.3 In a typical year estimate how frequent it is to lose trap in each month of one year?
Choose one option for each month

| Fishing Month | Very frequent | Sometimes | Rarely | Never |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| Mars | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |

5.4 Estimate how frequent of this annual loss (provided in 5.2) is attributed to each fishing zone identified in part 3, question 3.2.
(Only for zones registered before in 3.2).

| Fishing Zone | Very frequent | Sometimes | Rarely | Never |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

5.5 Estimate how frequently trap is lost when fishing at each one of the following depth ranges.
Have one year of fishery activity in mind mark one option in each line.
Note this is fishing depth! Mark at the ranges the gear used at.

| Fishing Depth Range | Very frequently | Sometimes | Rarely | Never |
|---|---|---|---|---|
| 0-50 m depth | | | | |
| 51 – 200 m depth | | | | |
| 201 – 1000 m depth | | | | |
| 1000+ m depth | | | | |

5.6 Are lost traps reported?
Select one.

| | |
|---|---|
| Lost traps are never reported | |
| Lost traps are sometime reported | |
| Lost traps are always reported | |

5.7 If informed or reported, identify the person or agency to whom the loss is reported (*Select all relevant*):

| | |
|---|---|
| 1. Not Applicable | |
| 2. Nearby vessels | |
| 3. Owner of the vessel | |
| 4. National or local fisheries administration | |
| 5. Coastguard/Navy | |
| 6. Fisherman's Association/Representative | |
| 7. Reported in a logbook or trip report | |
| 8. Other | |

5.8 When vessel loses traps, what are the main causes of the gear loss?
Try to answer each line with one of the four chooses

| Causes | Never | Sometimes | Always | Don't know |
|---|---|---|---|---|
| 1. Net snagged on an obstruction, such as reef or rocky area | | | | |
| 2. Poor weather conditions | | | | |
| 3. Damage or towed away by large animals | | | | |
| 4. Drifted out of area that cannot be accessed by the vessel | | | | |
| 5. Faulty, old or damaged gear | | | | |
| 6. Operator error | | | | |
| 7. Strong currents | | | | |
| 8. Deep water (like to short line to buoy) | | | | |
| 9. Gear not properly stored on-board | | | | |
| 10. Conflict with other gear, e.g. trawls towing away other gear | | | | |
| 11. Vandalism, (stolen or destroyed) | | | | |
| 12. The surface marking is lost, sunk or malfunctioned | | | | |
| 13. Gear intentionally discarded overboard | | | | |
| 14. Equipment failure (i.e hauler or location equipment) | | | | |
| 15. High traffic of other vessels | | | | |
| 16. Lack of communications between fishing vessels | | | | |
| 17. Others | | | | |

5.9 What practices are used to avoid fishing gear loss or damages?
Try to answer each line with one of the four chooses

| Causes | Never | Sometimes | Always | Don't know |
|---|---|---|---|---|
| 1. Avoid setting the fishing gear in areas known for snagging | | | | |
| 2. Avoid fishing in poor weather conditions | | | | |
| 3. Avoid areas where animals likely to damage the gear | | | | |
| 4. Avoid losing drifting gears out of reach | | | | |
| 5. Repair or replace worn fishing gear or parts | | | | |
| 6. Training of crew on gear handling and operation | | | | |
| 7. Avoid using the fishing gear in areas with strong currents | | | | |
| 8. Know fishing depth and rig accordingly | | | | |
| 9. Securely stow fishing gear on board to withstand bad weather/sea conditions | | | | |
| 10. Communicate with nearby fishing vessels to avoid conflict | | | | |
| 11. Implement measures to avoid vandalism of gear by others | | | | |
| 12. Use good surface marking or electronic devices | | | | |
| 13. Instruct crew members not to discard fishing gear overboard | | | | |
| 14. Make sure all equipment used with fishing gears is in good condition | | | | |
| 15. Avoid areas of high vessel traffic/shipping lanes | | | | |
| 16. Cooperation with other fishers | | | | |
| 17. Others | | | | |

5.10 Do you use Fish Aggregating Devices (FADs) in addition to traps?

| | |
|---|---|
| No | |
| Yes | |

(NOTE to interviewer: If yes, ask questions about FADs. Refer to the manual)

## End-of-life fishing gear and marine plastic waste management

### Part 6

6.1 Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site? (Select one of the following)

| | |
|---|---|
| Never | |
| Rarely | |
| Sometimes | |
| Frequently | |
| Always | |

6.2 Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

| | |
|---|---|
| No | |
| Yes | |

6.3 Does your vessel recover marine plastic waste during fishing trips (e.g. plastic items caught in fishing gear)?

| | |
|---|---|
| No | |
| Yes | |

6.4 If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in one typical fishing trip?

| | |
|---|---|
| Not Applicable | |
| < 1 kg | |
| 1 – 10 kg | |
| 10 – 100 kg | |
| 100 – 1000kg | |

6.4.1 How much of the weight of marine plastic waste (indicated in 6.4) brought back to port is **not** associated to **fishing gear**?

| | |
|---|---|
| Nothing, it usually all fishing gear waste | |
| Approximately ¼ or 25% is from fishing gears | |
| Approximately ½ or 50% is from fishing gears | |
| Approximately ¾ or 75% is from fishing gears | |
| The waste is rarely or never associated to fishing gears | |

6.5 Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials? Select no or yes.

| | |
|---|---|
| No | |
| Yes | |

6.5.1 If Yes, is there a charge to use the facilities?

| | |
|---|---|
| No | |
| Yes | |

6.5.2 Do you know how the end-of-life fishing gear components/materials are treated?

| | |
|---|---|
| Don't know | |
| Recycled | |
| Disposed of (e.g. landfill or incineration) | |

6.6 Are there facilities in or near the vessel's home port/landing site to dispose of non-fishing gear plastic waste? Select no or yes.

| | |
|---|---|
| No | |
| Yes | |

6.6.1 If Yes, is there a charge to use the facilities?

| | |
|---|---|
| No | |
| Yes | |

6.6.2 If yes, do you receive any payment for depositing your plastic waste?

| | |
|---|---|
| No | |
| Yes | |

6.6.3 Do you know how the waste plastic materials are treated?

| | |
|---|---|
| Don't know | |
| Recycled | |
| Disposed of (e.g. landfill or incineration) | |

## Regulation of marking fishing gears

### Part 7

8.1 Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

| | |
|---|---|
| No | |
| Yes | |

8.2 Is the fishing gear in use marked?

| | |
|---|---|
| No marks | |
| Yes, there are marks | |

8.2.1 If yes, are the marks with name or number traceable to owner or vessel?

| | |
|---|---|
| No | |
| Yes | |

---

## Past and Future trends

### Part 8

8.1 In your experience has the amount of abandoned, lost or discarded fishing gears increased or decreased compared with 10 years ago?

| | |
|---|---|
| Increased | |
| Similar | |
| Decrease | |
| Don't know | |

8.2 Do you think ALDFG and issue of plastics at sea is a real problem?

| | |
|---|---|
| No | |
| Some places | |
| Yes | |
| Don't know | |

8.3 In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

| | |
|---|---|
| Increased | |
| Similar | |
| Decrease | |
| Don't know | |

8.4 How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear (Select as appropriate)

| The elements for avoiding or reducing quantities of ALDFG | Not important | Important | Very important |
|---|---|---|---|
| 1. Vessel design | | | |
| 2. Hauling equipment | | | |
| 3. Quality of fishing gear material | | | |
| 4. Fishing gear marking | | | |
| 5. Gear location technology | | | |
| 6. Communication between vessels | | | |
| 7. Accuracy and access to weather forecasting | | | |
| 8. Fisher skills for handling vessel/gear | | | |
| 9. Knowledge/awareness of negative impacts of ALDFG | | | |
| 10. Payments for unwanted gears delivered for recycling | | | |

8.5 Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear?

Please describe

_____
_____
_____
_____
_____
_____
_____
_____

**Annex 4: User's manual for Global Survey of ALDFG**

# User's manual for Global Survey of ALDFG

## Gillnets and entangling nets

## In general

Have in mind that this survey is a global survey, not all questions will fit to all fisheries reality or regulations. In some cases, the interviewer needs to explain the meaning of the question as it is not anything well known or ever in discussion for the fisherman within the area.

Some knowledge about the fishing gears and how it is operated is required to be able of collecting data for this survey.

Please have in mind to decline answering any questions that might be considered strategically or operationally sensitive, rather than provide misinformation on the subject. Most questions can be skipped if needed but at the same time try not to.

Please avoid leading questions and never suggest answers in open questions. Allowing, in principle, a free flow of unbiased information. This could allow to identify new areas of investigation or new knowledge.

A good practise is to test the quality of a given observation, interviewers would regularly ask, "Why and how do you know this?" Be cautious with answers that are not well supported, an option could be discarding replies not accompanied by a proper line of reasoning. Although fisher´s observations may be clear and concise, the conclusions drawn from them may not be accurate.

The Survey will be spilt into 10 separated questionnaires. Each questionnaire will be based on one type of fishing gear (see table 1).

*Table 1. The survey will be in 10 versions by type of fishing gears*

| | | |
|---|---|---|
| 1. | Surrounding Nets | A few questions will be added to each gear type about FADs if in use |
| 2. | Seine Nets | |
| 3. | Trawls | |
| 4. | Dredges | |
| 5. | Lift Nets | |
| 6. | Falling Gear | |
| 7. | Gillnets and Entangling nets | |
| 8. | Traps | |
| 9. | Hooks and lines | |
| 10. | Miscellaneous gear | |

The interviewee must confirm the main fishing gear that they use, and upon which they are prepared to base their answers. The interviewer will then select the appropriate questionnaire accordingly.

Online questionnaires will be available in all standard UN-languages and it will be possible to enter answers from smartphone or any pc with online connections.

Where not possible to enter answers directly online, paper versions may be used to collect answers and the interviewer later enter the answers into the online questionnaire.

Questionnaires may be developed (pending availability of funding) in other languages where/if required. Where the interviewer speaks both a UN language and the local language, translation should not be necessary.

## Part 1. Information about the interviewer

In the online form will be login and password for each interviewer after registering has been done. Then the questions 1.1 and 1.2. will not be needed.

A registration of to be accepted, the name and contact details of the interview must be known.

### 1.1 Interviewer name:

Enter full name in Latin letters.

### 1.2 Interviewer email address:

Enter a valid email in Latin letters.

### 1.3 How is the interview done?

To collect answers is possible to fill out a paper version or set in responses directly into an online survey (available early 2021). However, we are not asking about that here! We want to know if an interview is done directly to the responder. Or from a distance with the help of a telephone or computer.

Two options are available, in person face to face, or via telephone or online call. It is necessary to confirm which method is used.

## Part 2. Basic information about the responder who is answering the questions

Ensure the interviewee understands all data will be treated anonymously and that data will be aggregated so that it will not be possible to identify answers from individual boats.

Explain to the interviewer that the data collected will contribute to global estimates of abandoned, lost or otherwise discarded fishing gear and related information.

### 2.1 Date of interview (dd/mm/yyyy):

Enter the date the interview is taken in the following format: 05/06/2023

### 2.2 Respondent age:

We want to ask the interviewer to try selecting responders from all age groups if possible, or to the similar profile as the fishery community are at each area. It can always lead to bias in the results if collecting answers from a homogeneous group, like one age group. For some questions, it can as well be interesting to see if there is a different view from separated generations.

(Paper) Choose/mark only one.

(Online) Use dropdown list to choose only one.

Note: It would be good practice by the interviewer to aim at collecting answers from different age groups where possible.

### 2.3 Position on your current vessel (select one):

This question might be unclear to answer for fishers on small scale fishery were few or even only one or two are working on small boat. But then try to help the responder to choose nearest position. Example two person on small boat, one is owner the other assistant, in that case the owner operating on the boat would be the "Captain" and the assistant the "Deckhand"

(Paper) Choose/mark only one.

(Online) Use dropdown list to choose only one.

Note: It would be good practice by the interviewer to aim at collecting answers from different classes of fishermen's where possible.

### 2.4 How many years fishing experience do you have?

This question is important for some questions coming later. There might be different view from short and long-time experience fishers on different matter. If there is a different, we need to look deeper into it to understand why.

(Paper) Choose/mark only one.

(Online) will be dropdown list to choose only one.

### 2.5 Has anybody representing your vessel already taken in part of this FAO-ALDFG survey for this gear type?

A simple No and Yes answer.

The general rule is only asking one employer at every vessel. Therefore, the answer should be "No" and then it is possible to conduct the survey further. If the answer is "Yes", the interviewer must stop and find another responder from a vessel not yet asked.

However, in some cases where we have very few vessels using the fishing gear type, we need to ask two fishers from each vessel. The first one will then give the answer "No" and the second one "Yes". In this case, the interviewer might know better for the second one and can select "yes". This is important to do right for the statistical use later one.

### 2.6 Vessel length:

Almost all countries use some categories over the fishing fleet, many use length or weight, even both. Others use the material the vessel is made of, engine sizes or type of fishery. We need to categories the fishing vessels somehow. The method FAO usually utilities is length of the vessels in three main group. Choose one relevant to the vessel working on.

This will only be used to analyse others question by small, average, and large sizes vessels!

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

#### 2.6.1 Vessel gross tonnage to nearest group. (Optional).

Simply write the registered Gross tonnage of the vessel or if not known the nearest estimate.

### 2.7 Flag State of fishing vessel:

In some cases, a vessel working from any harbour are with flag from other state than working from. Please give the flag state of the fishing vessel, even it is the same as country working from.

(Paper) Write the name of the country the vessel is registered to.

(Online) Use the dropdown list to choose the country the vessel is registered to.

### 2.8 From which landing site (port/town/city) site dose the vessel usually working from:

#### 2.8.1 City/town/port or landing site:

Write the name of landing side as city, town, or port the vessel is from. Use only Latin letters

#### 2.8.2 Country:

The country the landing side is in written in 2.8.1

(Paper) Write the name of the country. Use only Latin letters.

(Online) Use dropdown list to choose the country the vessel is from.

## Part 3. Gear category in use, main regions, and depth zones.

This part concerns important information about the fishing gear in use and where the fishing activity occurs.

### 3.1 What type of gillnet to you use?

A table provides taken the International Standard Statistical Classification of Fishing Gear (ISSCFG) and the abbreviations with numeric codes. Local name for selected gear is useful but optional, don't waste time if not possible. If available this name may be used in the country/region report only.

In case if more than one under type of given fishing gear is in use, for example; Set gillnets are used for more than one target species it can be categories here with writing [target species name]-gillnet, try to spell it out identical for same type of gears.

(Paper) Choose/mark only one gear, if using more than one gear type, then mark the most common one in use. It is optional to provide the gear local name.

(Online) Use the dropdown list to choose only one fishing gear, if more than one, select the most common in use. It is optional to provide the gear local name.

### 3.2 In what zone(s) does your current fishing vessel operate?

Notice that the answers will be used in question 5.5.

Where EEZ name is provided, the Sea Name is not required.

For any vessel working in the high seas (not EEZ) only the Sea name is required.

A full list of EEZ will be given in Annex I, and full list of Sea names to choose from in Annex 2. Please do not use any other names. As you must choose one of those names when enter the names into the online version. The column with National /Local Zone names can be used to give local name of the zone working on even only part of the one or the other columns names.

(Paper) A maximum 5 zones are provided, but in most cases only one or two zones are expected. It is important to have the most important zones in the first lines.

(Online) EEZ or Sea name can be selected from dropdown list. Information about the second most operated zone can be entered if any, if not leave the next line empty.

*Table 2. Example how this table can be filled out.*

| Zone | Exclusive Economic Zone (EEZ) country name (if applicable) | Sea Name | National/ Local zone name |
|---|---|---|---|
| 1 | Thailand EEZ | - | Andaman Sea |
| 2 | | Indian Ocean, Eastern | West of Christmas |
| 3 | | | |
| 4 | | | |
| 5 | | | |

#### 3.2.1 Level of fishing activity in each zone? This question is optional if only one fishing zone registered

This question is optional if only one fishing zone is registered in the question before 3.2 as it is given that the fishing activity will be 100% at that only zone working at.

But if more than one zones hold a fishing activity of the vessel using the fishing gear in request, we would like to know approximately how much each zone is important. This does not need to be exactly, and even fishing activity near 10% can be marked in the lowest group of 25%.

(Paper) Mark one choose each line if registered in question 3.2

(Online) Mark one choose each line if registered in question 3.2

*Table 3. Example of how this table can be marked in line with how it was registered in question 3.2*

| Zone | Approximately all or 100% fishing activity | Approximately ¾ or 75% fishing activity | Approximately 1/2 or 50% fishing activity | Approximately 1/4 or 25% fishing activity |
|---|---|---|---|---|
| 1 | | x | | |
| 2 | | | | x |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |

### 3.3 What depth ranges does your vessel operate? Have one year of fishery activity in mind mark one option in each line. Note this is fishing depth! If using fishing gear at surface it is always 0-50 meters even over deep water.

We are asking for the Fishing depth not bottom depth. When fishing with fishing gears near or at surface it would always be the category 0-50 meters depth even over very deep water.

Have the fishing effort over one-year period in mind.

Note that the information provided here will be used again in question 5.6.

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

*Table 4 Example how this table can be filled out.*

| Fishing Depth Range | Mostly | Often | Sometimes | Never |
|---|---|---|---|---|
| 0-50 m depth | | x | | |
| 51 – 200 m depth | x | | | |
| 201 – 1000 m depth | | | x | |
| 1000+ m depth | | | | x |

## Part 4. Fishing gear operation, costs, and catches

### 4.1 Estimate the number of fishing trips your vessel makes in a typical year:

Please enter the estimated number (does not need to be precise, an approximation is sufficient). A fishing trip may be defined as the number of times vessel leaves the harbour or landing place.

The interviewer can ask if the fisher know how many trips was done last year and use that number.

There is a reason we ask only for average for one year. Many fishers go frequently at sea in a short period (fishing season) and little or never at other time of the year. If we ask for a short period like a month, the answer could easily be biased. (An extreme example; fisherman go 10 times one month but never all other months, it would simply be 10 trips per one year).

### 4.2 Estimate the number of days for a typical fishing trip:

Please enter estimated number (does not need to be exactly, approximation is sufficient) of days of each trip. This may be calculated from leaving harbour or landing place, to returning to harbour or landing place.

### 4.3 Estimate the importance of each month for this fishery over one typical year. Choose one option for each month.

The purpose of this question is to help identify possible correlations between season and gear loss. As the fishing season in the world is very different we ask for each month in four levels, Important, Sometimes, Few times and Never.

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

*Table 5 Example for mid-latitude four-season region*

| Fishing Month | Important month / always fishing at | Sometimes fishing at this month | Few time fishing at this month | Never fishing at this month |
|---|---|---|---|---|
| January | | | x | |
| February | | | x | |
| Mars | | x | | |
| April | | x | | |
| May | x | | | |
| June | x | | | |
| July | x | | | |
| August | | x | | |
| September | | | x | |
| October | | | | x |
| November | | | | x |
| December | | | | x |

### 4.4 Estimate of average soak time (setting to hauling) of gillnets:

With soak time is defined as the period of time the gear is in the water from setting until hauling.

Some fishermen may use gillnets with a short soak time, possibly one hour, others may soak gillnets for days before hauling. It is possible fishers lose more nets when soak time is long but it might not be, that is why we ask.

This does not need to be exact, an approximation is good enough. Provide information either in hours or in days.

Please do not fill out both parts, chose only one.

(Paper) Insert hours or days in whole numbers.

(Online) Use dropdown list for 24 hours or if days chosen a dropdown list providing days.

### 4.5 How many gillnets are normally operated at the same time when actively fishing? Answer i or ii, as appropriate:

Gillnets can be used in two ways, where many gillnets are connected to make one set or where single gillnets, are set one at the time. Therefore we need to choose if answered for single gillnets in use or many in sets.

Interweaver must make sure what method is in use and only enter answer for one of the other.

If the responder is using gillnets as single only choose to answer only:

#### i. Fishing with single gillnets:

Please insert numbers of total use of gillnets at the time (could be 1 or more but always as single set), if the responder say it is variation between periods how many he use, try to give estimate to the near average.

#### ii. Fishing with Gillnet in sets:

Here it is required to fill out two numbers.

First the average number of gillnets joined to form one set.

Secondly the number of sets used, as it could be variations between periods try to choose number near the most common number.

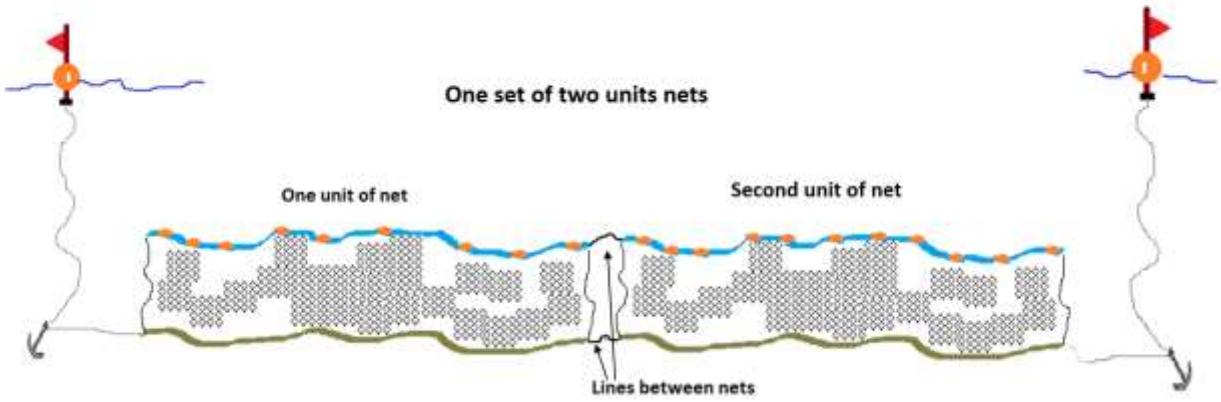


*Figure 1. The figure show example of set gillnet with two units in one set.*

*Table 6 Example of fishing with Gillnet in sets. From above figure, the answer would be like this, 2 units in 1 set.*

| | |
|---|---|
| Total number of single units in one set | 2 |
| Number of sets | 1 |

### 4.6 What is the approximate cost to construct/buy one gillnet unit:

Here we ask simply for estimate on the cost to make one complete unit of gillnet ready for use.

(Paper) Write in the amount of the whole cost of one unit (estimate). In the second field write in the letters used for the currency (example: USD)

(Online) Write in the amount of the whole cost of one unit (estimate). In the second field will be dropdown list with all possibly currency, chose one.

### 4.7 What is the estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one Gillnets unit in use on the vessel?

NOTE: Do not include metals such has chains, wire, anchors, or wood, bamboo or other natural materials. Estimated weight plastic components in one *Gillnets* unit:

This will be difficult to estimate accurately, only an estimation by range as provided is required. Over time the interviewer may gain an understanding of average weights for different gear types and will be able to assist the interviewee with estimation, but be alerted to not make the answer for anyone. Keep in mind that we are only seeking for information about plastic only. Almost all ropes, nets, floats etc are made of plastic material.

Mark the weight group to the nearest estimate.

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

### 4.8 Target species group in your fishery are (if more than one, list in order of importance, 1 being most important):

Simply mark the most important group of the fishery with these gillnets with "1" and the second one "2", if not fished at all leave it empty.

*Table 7 Example for a fixed bottom set fixed gillnet*

| | |
|---|---|
| Demersal fish | 1 |
| Pelagic fish | - |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | 2 |
| Cephalopods (Octopuses, cuttlefish, and squid) | - |

### 4.9 Average total catch landed per trip in kg?

Enter an estimation for average catch from one fishing trip, how much is landed after average trip.

### 4.10 Estimated value of an average day's catch?

Enter an estimation of average catch value for one day. This is to be based on the price received by the fisherman at first sale.

(Paper) Enter the estimated value of one days fishing. In the second field write in the letters used for the currency (example: USD)

(Online) Enter the estimated value of one days fishing. In the second field will be dropdown list with all possibly currency, chose one.

## Part 5 Gear loss and reporting

In this part we seek for information about how much *gillnets* are lost annually, how, where, when it happens. Then we ask if it reported somehow or not.

### 5.1 When/If you lose a gillnet or parts of it, which one of the following elements are lost? Please refer to manual section xxx for the description (drawings?) of each element.

*Table 8. Example how this answer can be answered.*

| Gillnet elements | Very frequently | Sometimes | Rarely | Never |
|---|---|---|---|---|
| One entire set (with all elements) | | | | x |
| One unit | | x | | |
| Buoys | | | x | |
| Floats | | x | | |
| Net cut-offs | x | | | |

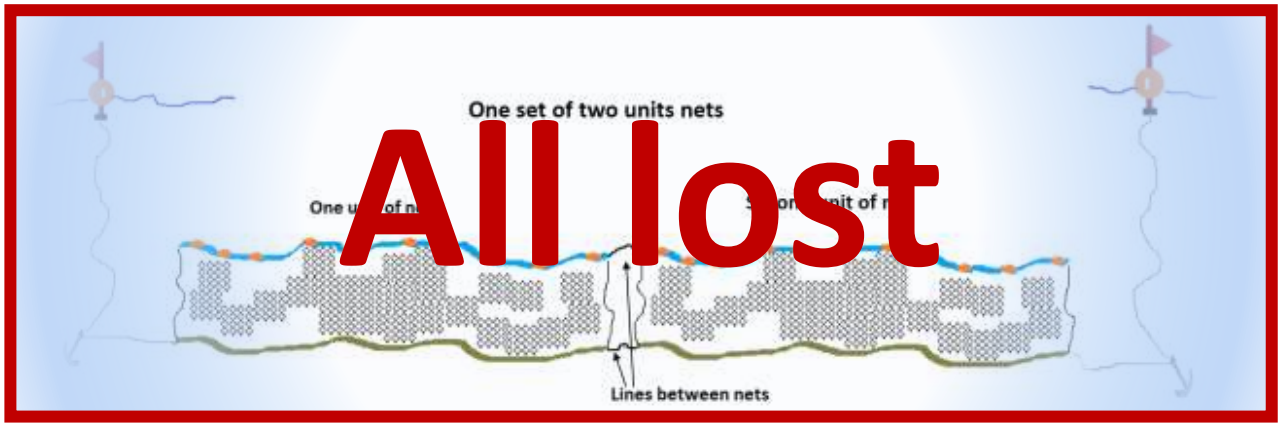


*Figure 2. If all is lost mark how often, from "very frequently, sometimes, rarely or never". In the line "One enter set (with all elements)".*

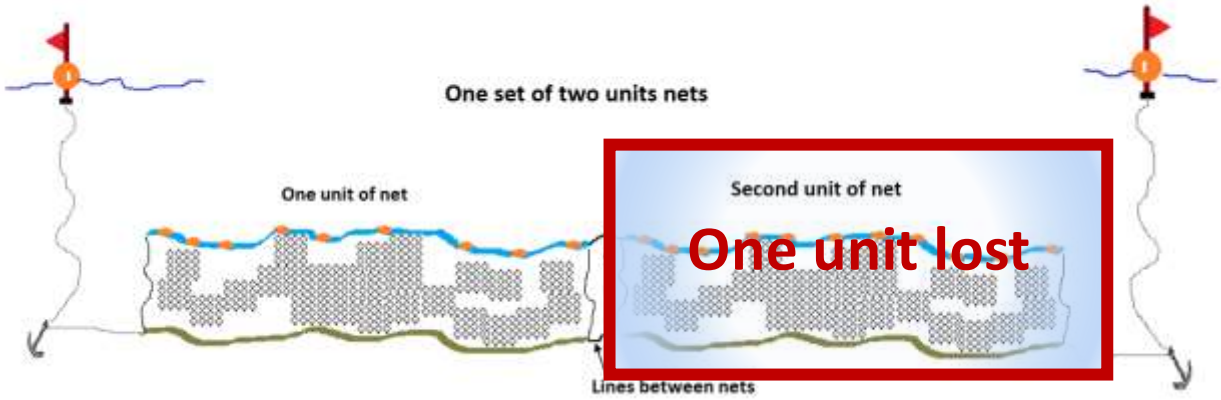


*Figure 3. If one unit is lost mark how often, from "very frequently, sometimes, rarely or never". In the line "One unit".*

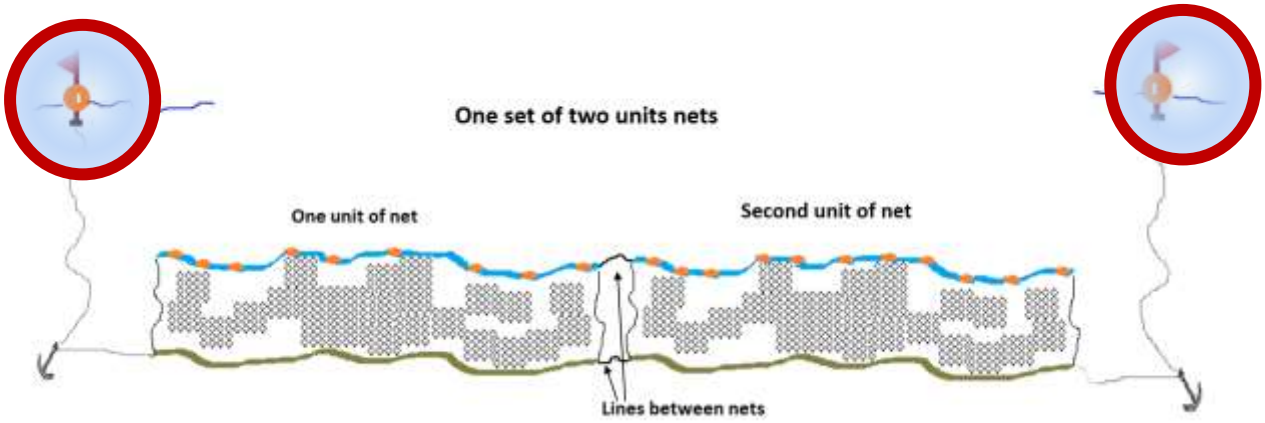


*Figure 4. If the buoys are lost, mark how often, from "very frequently, sometimes, rarely or never". In the line "Buoys".*

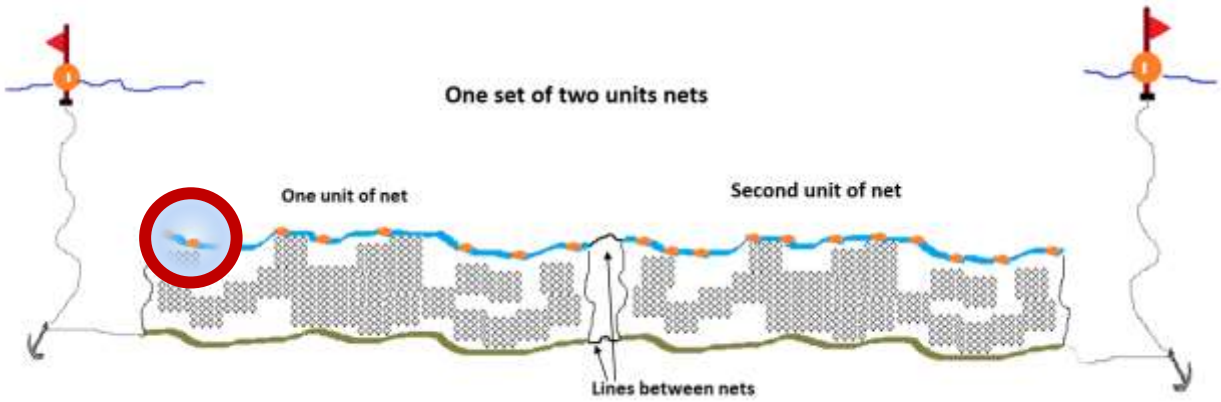


*Figure 5. If any floats are lost, mark how often, from "very frequently, sometimes, rarely or never". In the line "Floats".*

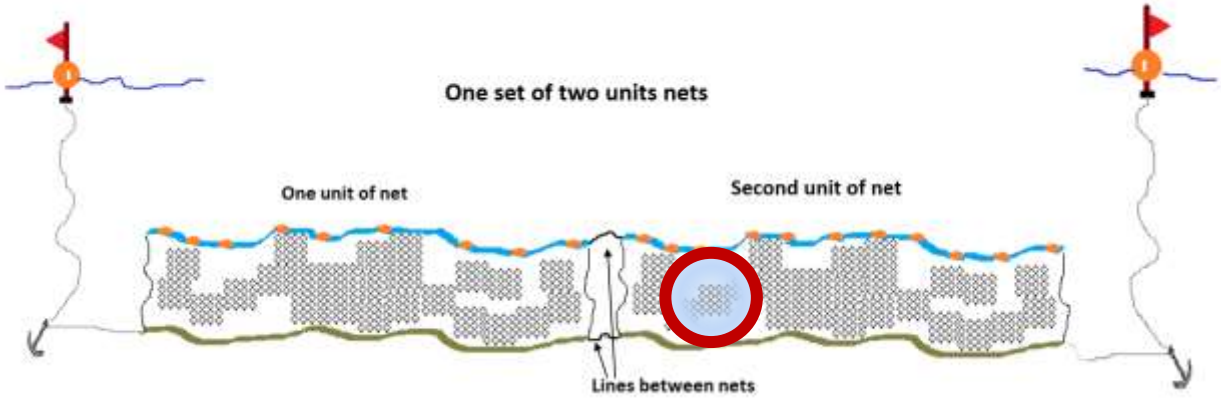


*Figure 6. If any Net cut-offs or part of the net panel are lost, mark how often, from "very frequently, sometimes, rarely or never". In the line "Net cut-offs".*

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

### 5.2 Over a typical year estimate how many gillnet units could be lost?

We are asking for total loss of the fishing gear in last or one year expressed as whole units. For example, if a fisherman has 10 single units in one set and this fisherman lost 10% of net each time it would mean the fisherman lost 1 single unit of total each time. If the same fisherman go 10 time at sea with same results over one year he would lose 1 complete set (10 single units) on average.

Enter the best estimate of loss over one year period expressed in whole units.

### 5.3 In a typical year estimate how frequent it is to lose gillnets in each month of one year?
Choose one option for each month

Even if rarely fishing in any month it could give higher frequent of loss of gillnets for whatever reason.

The months marked as never fished in question 4.3 can be skipped here.

*Table 9. Example how this table could be filled out regarding to fishing month answered in question 4.3 no fishery is done in October to December.*

| Fishing Month | Very frequent | Sometimes | Rarely | Never |
|---|---|---|---|---|
| January | x | | | |
| February | x | | | |
| Mars | x | | | |
| April | x | | | |
| May | | x | | |
| June | | | x | |
| July | | | x | |
| August | | x | | |
| September | | x | | |
| October | | | | |
| November | | | | |
| December | | | | |

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

### 5.4 Estimate how frequent of this annual loss (provided in 5.2) is attributed to each fishing zone identified in part 3, question 3.2. (Only for zones registered before in 3.2)

For this question the interviewer must refer to the answers provided in question 3.2. If only one zone was registered in question 3.2 the answer need only be done in one line (1). If more Zone was put in the question 3.2 please answer in same line as the zone the answer is for.

(Paper) Mark one choose each line, for each zone registered in question 3.2, skip the others lines.

(Online) Mark one choose each line, for each zone registered in question 3.2, skip the others lines.

5.5 Estimate how frequently gillnet is lost when fishing at each one of the following depth ranges.

Have one year of fishery activity in mind mark one option in each line.

Note this is fishing depth! Mark at the ranges the gear used at.

For this question the interviewer must refer to the answers provided in question3.3 and 5.2. If some depth ranges are never fished at (marked in 3.3) the line can be skipped here. If responder register never losing any gear in 5.2 the whole question can be skipped.

Fishers are often fishing in different depth ranges. Remember this is a fishing depth not bottom depth! A fishing gears used at the surface over very deep water would be in the group 0-50m. The objective of this question is to gain an understanding if water depth may be a contributing factor to quantities of ALDFG.

(Paper) Mark one choose each line, for each depth ranges registered in question 3.3, skip the others lines.

(Online) Mark one choose each line, for each depth ranges registered in question 3.3, skip the others lines.

5.6 Are lost gillnets reported?
Select one.

In many countries there are no systems in place for registering lost gear, even if regulated it might not be practised.

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

5.7 If informed or reported, identify the person or agency to whom the loss is reported (*Select all relevant*):

If the answer in 5.6 was “never reported” this question can be skipped or mark “Not Applicable “. If “sometime reported” or “always reported” this question should be answered.

If there are difficult to find correct answer as it looks like missing a relevant option, choose the “Other”. It is possible to explain in the question 8.5 what “others” mean, but not needed.

(Paper) select all relevant.

(Online) use the drop-down list to select all relevant.

5.8 When vessel loses gillnets, what are the main causes of the gear loss?

Here are actually 16 options to choose “never, sometime, always or don’t know”. Try to avoid choosing “don’t know” but it might be needed now and then. If the option given is not relevant for the fishing gear in use then the line can be left empty.

(Paper) select one answer for each possible cause listed.

(Online) Choose/mark one selection in each line.

| Causes | *Possible examples/explanations* |
|---|---|
| Net snagged on an obstruction, such as reef or rocky area | Gears used on or near bottom can frequently be snagged |
| Poor weather conditions | Bad weather is in some cases the main reason for losing gears |
| Damage or towed away by large animals | Entanglement with large animals may be the reason for losing fishing gears in some regions |
| Drifted out of area that cannot be accessed by the vessel | Gears not attached to vessel (driftnets or FAD's) can drift away |
| Faulty, old or damaged gear | This can frequently be the reason for losing gears in some regions |
| Operator error | Everyone can sometimes make a mistake and that can led to loss of gears |
| Strong currents | In some fishing grounds strong currents may be a cause of losing gears |
| Deep water (like to short line to buoy) | there may be a higher risk of losing gears when working in deep water |
| Gear not properly stored on-board | When not properly stowed, gear may be lost when sailing from or to fishing grounds, especially in rough seas |
| Conflict with other gear, e.g. trawls towing away other gear | In some regions, fishing gear conflicts may cause loss of gear |
| Vandalism, (stolen or destroyed) | May be a problem in some regions |
| The surface marking is lost, sunk or malfunctioned | In many cases the most common reason for loss of static fishing gears. |
| Gear intentionally discarded overboard | Possibly sometimes the only way to get rid of old fishing gears. Ensure that answers are treated anonymously. |
| Equipment failure (i.e hauler or location equipment) | All equipment will now and then have failure, possibly leading to gear loss. |
| High traffic of other vessels | Some fishing gears are set near ship lines or traffic areas. This may lead to loss marker buoys or the whole fishing gears |
| Lack of communications between fishing vessels | When no information's are given between vessels to avoid interaction leading to damages or loss of fishing gears. |
| Others | Other reasons may be entered in question 8.5 |

### 5.9 What practices are used to avoid fishing gear loss or damages?

Here are actually 16 options to choose "never, sometime, always or don't know". Try to avoid choosing "don't know" but it might be needed now and then. If the option given is not relevant for the fishing gear in use then the line can be left empty.

(Paper) select one answer for each possible good practice listed.

(Online) Choose/mark one selection in each line.

| Examples of possible good practices | Possible examples/explanations |
|---|---|
| Avoid setting the fishing gear in areas known for snagging | An easy practise if using good navigation equipment, but not always available. |
| Avoid fishing in poor weather conditions | Following weather forecast to avoid bad weather. |
| Avoid areas where animals likely to damage the gear | Could be a seasonal or known areas. |
| Avoid losing drifting gears out of reach | Possible for drifting gears and FAD's |
| Repair or replace worn fishing gear or parts | Fishers skills to repair the gears would be needed |
| Training of crew on gear handling and operation | It can be important to have properly trained crew |
| Avoid using the fishing gear in areas with strong currents | Knowing when and where the strong current are can avoid gear loss. |
| Know fishing depth and rig accordingly | Fishermen knowledge of the fishing ground important. |
| Securely stow fishing gear on board to withstand bad weather/sea conditions | Could be connected to vessel design and crew skills. Gears may be washed overboard by big seas |
| Communicate with nearby fishing vessels to avoid conflict | Could be lack of technology or willingness to communicate with other fishing vessels |
| Implement measures to avoid vandalism of gear by others | Good communication may help avoid conflict between fishers using different fishing gears on the same fishing ground. |
| Use good surface marking or electronic devices | Could be difficult or expensive to have adequate surface markers. |
| Instruct crew members not to discard fishing gear overboard | Captain forbidding such practice. |
| Make sure all equipment used with fishing gears is in good condition | If the equipment is not in good condition it may lead to problems including loss of gear. |
| Avoid areas of high vessel traffic/shipping lanes | Avoiding areas of high traffic make may reduce the risk of losing gears. |
| Cooperation with other fishers | Assist each other to retrieve gear |
| Others | Other answers may be provided in question 8.5 |

### 5.10 Do you use Fish Aggregating Devices (FADs) in addition to gillnets?

It is not common to use FADs with other fishing gears then Purse Seine but there are some examples for it. Only ask the extra FADs questions if responders say "Yes" with this question, if "No" then skip the FAD's questions.

In almost all cases for gillnet fishery the answer here will be No! However, ask! We want to be sure!

In case the responder answer "Yes", then ask the added questions for FADs (only 7 if all are answered).

## Part 6 End-of-life fishing gear and marine plastic waste management

This part is to collect information about how much and how the end of end-of-life of fishing gears are collected and processed. Make sure the fishers know we are only asking about synthetic material like plastic, we are not interested in any organic, meatal, or discarded fish.

### 6.1 Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site?

Make it clear to the interviewee that we are only asking for plastic parts, not any other material. Most components of the fishing gears are made of plastic, like nets, ropes, floats etc.

(Paper) Select only one.

(Online) use dropdown list to select only one.

### 6.2 Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

(Paper) select “no” or “yes”.

(Online) use dropdown list to select “no” or “yes”.

### 6.3 Does your vessel recover marine plastic waste during fishing trips (e.g. Plastic items caught in fishing gear)?

Make it clear to the interviewee that we are asking for any plastic items other than from fishing gears being used by the interviewee. This could be fishing gears belonging to other fishers, or any non-fishing gear plastic waste.

(Paper) select “no” or “yes”.

(Online) use dropdown list to select “no” or “yes”.

### 6.4 If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in one typical fishing trip?

Marine plastic can be of many kind like plastic bag, plastic can, or anything made of plastic, even part of others fishing gears.

The fishers can be asked how much believed was brought to land in last trip, was it a typical quantity or is it usually more or less?

This is only a rough estimate to gain some idea how much plastic waste in total may be brought back to land.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.4.1 How much of the weight of marine plastic waste (indicated in 6.4) brought back to port is not associated to fishing gear?

This is only a rough estimate to gain some idea how much non fishing gear plastic waste may be brought back to land.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.5 Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials? Select "no" or "yes"

In many cases, anywhere in the world there are no facilities to discard old fishing gears in the harbour, or near the landing site and therefore gears are just accumulating near in the port/landing site. The objective of this question is to gain an understanding regarding the availability of facilities to dispose end-of-life fishing gears.

(Paper) select only "no" or "yes".

(Online) use dropdown list to choose "no" or "yes".

### 6.6 If Yes, is there a charge to use the facilities?

If the answer in 6.5 is "no" this question can be skipped.

Charges to dispose of used gears may encourage discarding at sea or using informal means of disposal on land.

(Paper) select only "no" or "yes".

(Online) use dropdown list to select "no" or "yes".

### 6.6.1 Do you know how the end-of-life fishing gear components/materials are treated?

If the answer in 6.5 is "no" this question can be skipped.

The objective of this question is to gain some insight regarding what proportion of unwanted fishing gear brought back to land is destined for recycling compared to being 'disposed of'.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.7 Are there facilities in or near the vessel's home port/landing site to dispose of non-fishing gear plastic waste? Select no or yes.

The objective of this question is to understand if separate facilities plastic waste facilities exist for fishing gear and other plastic waste.

(Paper) select only "no" or "yes".

(Online) use dropdown list to choose "no" or "yes".

### 6.7.1 If yes, is there a charge to use the facilities?

If the answer in 6.6 is "no" this question can be skipped.

The objective of this question is to understand if it costs fishers to dispose of plastic waste.

(Paper) select only “no” or “yes”.

(Online) use dropdown list to choose “no” or “yes”.

### 6.7.2 If yes, do you receive any payment for depositing your plastic waste?

If the answer in 6.6 is “no” this question can be skipped.

The objective of this question is to understand if it fishers receive payment for disposing of plastic waste.

(Paper) select only “no” or “yes”.

(Online) use dropdown list to choose “no” or “yes”.

### 6.7.3 Do you know how the waste plastic materials are treated?

If the answer in 6.6 is “no” this question can be skipped.

The objective of this question is to gain some insight regarding what proportion of non-fishing gear plastic waste brought back to land is destined for recycling compared to being ‘disposed of’.

(Paper) Please choose/mark only one.

(Online) will be dropdown list to choose only one.

## Part 7. Regulation of marking fishing gear

### 7.1 Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

This is a simple yes and no question. We are not asking the fishers if there is any regulations only if he know about that there are any. It might be or not. We will have information’s from the authorities about if any regulation occurs or not. This is to understand levels of awareness where regulation exists!

The answers could hitting one of following boxes:

| | | |
|---|---|---|
| Yes | The responder knows there are regulations at it is right | The responder thinks there are regulations but there are none |
| No | The responder thinks there are no regulations, but it is | The responder knows there are no regulations, and it is right |
| | There are regulations | There are no regulations |

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

### 7.2 Is the fishing gear in use marked?

Many fishers mark the gears even if it is not regulated others might not mark them even regulated. The objective of this question is to understand to what extent gear marking is used and if the gear marking allows the gear to be traceable to the owner or vessel.

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

#### 7.2.1 If yes, are the marks with name or number to be traceable to owner or vessel?

In some cases, fishers mark the gear so they know own gear, but no others would know the mark, or it will give the possible to trace it back to the owner or vessel. If the mark has number, name or anything making it possible to find the owner if anyone find it, the answer here would be YES. If the gear is marked but other than the owner / fisher them self would not be able to know who own the gear the answer is NO.

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

## Part 8 Past and Future trends

This last part are questions where responders answer from his own feeling about how this matter have developed last years and what would be important to avoiding or reducing of ALDFG.

### 8.1 In your experience has the amount of abandoned, lost, or discarded fishing gears increased or decreased compared with 10 years ago?

Ask the responder to consider during the last 10 years if they have noticed any increase or decrease in the amount of ALDFG during this period.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 8.2 Do you think ALDFG and issue of plastics at sea is a real problem?

Ask the responder what he/she think about this problem, is it a real problem or not?

(Paper) select only one.

(Online) use dropdown list to select only one.

### 8.3 In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

Ask the responder to think about the fishery/fisheries they are familiar with and consider if during the next 5 years they may expect an increase or decrease in the amount of ALDFG.

### 8.4 How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear (Select as appropriate).

Ask the interviewee to rate how important each of the 10 elements listed are in his/her opinion to avoiding or reducing ALDFG.

(Paper) Choose/mark one selection in each line.

(Online) Choose/mark one selection in each line.

| The elements | Further explanations |
|---|---|
| Vessel design | Can the vessel design cause lesser or more ALDFG, like secured space for fishing gears or make the operating with fishing gear more secured at sea. |
| Hauling equipment | Can the hauling equipment (if any) increase or decrease ALDFG |
| Quality of fishing gear material | Is the material important |
| Fishing gear marking | Is it marking of the gear important to avoid or reducing ALDFG |
| Gear location technology | GPS or similar theology to find and set gear on right places |
| Communication between vessels | For avoiding dangerous areas for snagging gears or cross over others gears |
| Accuracy and access to weather forecasting | Could the accuracy or access to weather forecast be better? |
| Fisher skills for handling vessel/gear | How is the crew, could better training of handling make things better |
| Knowledge/awareness of negative impacts of ALDFG | Possible this is just not any issues for the fishers as don't know the negative impacts of ALDFG |
| Payments for unwanted gears delivered for recycling | If getting some grands for deliver end-of-life-fishing-gears would it be important |

### 8.5 Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear?

This can be left blank; it is optional to write here. If there is any information that the interviewee wishes to share this can be included here.

Try to have the text very short, for example in bullet point form. Please provide in English where possible.

# User's manual for Global Survey of ALDFG

## Traps (Pots)

## In general

Have in mind that this survey is a global survey, not all questions will fit to all fisheries reality or regulations. In some cases, the interviewer needs to explain the meaning of the question as it is not anything well known or ever in discussion for the fisherman within the area.

Some knowledge about the fishing gears and how it is operated is required to be able of collecting data for this survey.

Please have in mind to decline answering any questions that might be considered strategically or operationally sensitive, rather than provide misinformation on the subject. Most questions can be skipped if needed but at the same time try not to.

Please avoid leading questions and never suggest answers in open questions. Allowing, in principle, a free flow of unbiased information. This could allow to identify new areas of investigation or new knowledge.

A good practise is to test the quality of a given observation, interviewers would regularly ask, "Why and how do you know this?" Be cautious with answers that are not well supported, an option could be discarding replies not accompanied by a proper line of reasoning. Although fisher´s observations may be clear and concise, the conclusions drawn from them may not be accurate.

The Survey will be spilt into 10 separated questionnaires. Each questionnaire will be based on one type of fishing gear (see table 1).

*Table 1. The survey will be in 10 versions by type of fishing gears*

| | | |
|---|---|---|
| 1. | Surrounding Nets | A few questions will be added to each gear type about FADs if in use |
| 2. | Seine Nets | |
| 3. | Trawls | |
| 4. | Dredges | |
| 5. | Lift Nets | |
| 6. | Falling Gear | |
| 7. | Gillnets and Entangling nets | |
| 8. | Traps | |
| 9. | Hooks and lines | |
| 10. | Miscellaneous gear | |

The interviewee must confirm the main fishing gear that they use, and upon which they are prepared to base their answers. The interviewer will then select the appropriate questionnaire accordingly.

Online questionnaires will be available in all standard UN-languages and it will be possible to enter answers from smartphone or any pc with online connections.

Where not possible to enter answers directly online, paper versions may be used to collect answers and the interviewer later enter the answers into the online questionnaire.

Questionnaires may be developed (pending availability of funding) in other languages where/if required. Where the interviewer speaks both a UN language and the local language, translation should not be necessary.

## Part 1. Information about the interviewer

In the online form will be login and password for each interviewer after registering has been done. Then the questions 1.1 and 1.2. will not be needed.

A registration of to be accepted, the name and contact details of the interview must be known.

### 1.1 Interviewer name:

Enter full name in Latin letters.

### 1.2 Interviewer email address:

Enter a valid email in Latin letters.

### 1.3 How is the interview done?

To collect answers is possible to fill out a paper version or set in responses directly into an online survey (available early 2021). However, we are not asking about that here! We want to know if an interview is done directly to the responder. Or from a distance with the help of a telephone or computer.

Two options are available, in person face to face, or via telephone or online call. It is necessary to confirm which method is used.

## Part 2. Basic information about the responder who is answering the questions

Ensure the interviewee understands all data will be treated anonymously and that data will be aggregated so that it will not be possible to identify answers from individual boats.

Explain to the interviewer that the data collected will contribute to global estimates of abandoned, lost or otherwise discarded fishing gear and related information.

### 2.1 Date of interview (dd/mm/yyyy):

Enter the date the interview is taken in the following format: 05/06/2023

### 2.2 Respondent age:

We want to ask the interviewer to try selecting responders from all age groups if possible, or to the similar profile as the fishery community are at each area. It can always lead to bias in the results if collecting answers from a homogeneous group, like one age group. For some questions, it can as well be interesting to see if there is a different view from separated generations.

(Paper) Choose/mark only one.

(Online) Use dropdown list to choose only one.

Note: It would be good practice by the interviewer to aim at collecting answers from different age groups where possible.

### 2.3 Position on your current vessel (select one):

This question might be unclear to answer for fishers on small scale fishery were few or even only one or two are working on small boat. But then try to help the responder to choose nearest position. Example two person on small boat, one is owner the other assistant, in that case the owner operating on the boat would be the "Captain" and the assistant the "Deckhand"

(Paper) Choose/mark only one.

(Online) Use dropdown list to choose only one.

Note: It would be good practice by the interviewer to aim at collecting answers from different classes of fishermen's where possible.

### 2.4 How many years fishing experience do you have?

This question is important for some questions coming later. There might be different view from short and long-time experience fishers on different matter. If there is a different, we need to look deeper into it to understand why.

(Paper) Choose/mark only one.

(Online) will be dropdown list to choose only one.

### 2.5 Please provide the vessels name or identity. (It can be IMO number, National registration number or another identification number (if any)):

This is only for statistical use and verification of all data provided and will never been shared out of FAO! It is important if more than one employer is asked at any vessel to know (for statistical use). If possible write down the letters "IMO" and then the number (example: IMO 1234567) or if any national registration letters or numbers then use them, Latin letters appropriate if possible.

Keep in mind that if more than one employer on board is answering the number/name must be identical within the vessel for both persons for easy track down.

This vessel Identity is only used for the purpose of analysing the data identifying individual vessels will never been published or shown to anyone outside FAO.

### 2.6 Vessel length:

Almost all countries use some categories over the fishing fleet, many use length or weight, even both. Others use the material the vessel is made of, engine sizes or type of fishery. We need to categories the fishing vessels somehow. The method FAO usually utilities is length of the vessels in three main group. Choose one relevant to the vessel working on.

This will only be used to analyse others question by small, average, and large sizes vessels!

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

### 2.6.1 Vessel gross tonnage to nearest group. (Optional).

### 2.7 Flag State of fishing vessel:

In some cases, a vessel working from any harbour are with flag from other state than working from. Please give the flag state of the fishing vessel, even it is the same as country working from.

(Paper) Write the name of the country the vessel is registered to.

(Online) Use the dropdown list to choose the country the vessel is registered to.

### 2.8 From which landing site (port/town/city) site dose the vessel usually working from:

### 2.8.1 City/town/port or landing site:

Write the name of landing side as city, town, or port the vessel is from. Use only Latin letters

### 2.8.2 Country:

The country the landing side is in written in 2.8.1

(Paper) Write the name of the country. Use only Latin letters.

(Online) Use dropdown list to choose the country the vessel is from.

## Part 3. Gear category in use, main regions, and depth zones.

This part concerns important information about the fishing gear in use and where the fishing activity occurs.

### 3.1 What type of trap to you use?

A table provides taken the International Standard Statistical Classification of Fishing Gear (ISSCFG) and the abbreviations with numeric codes. Local name for selected gear is useful but optional, don't waste time if not possible. If available this name may be used in the country/region report only.

In case if more than one under type of given fishing gear is in use, for example; Pots are used for more than one target species it can be categories here with writing [target species name]-pot, try to spell it out identical for same type of gears.

(Paper) Choose/mark only one gear, if using more than one gear type, then mark the most common one in use. It is optional to provide the gear local name.

(Online) Use the dropdown list to choose only one fishing gear, if more than one, select the most common in use. It is optional to provide the gear local name.

### 3.2 In what zone(s) does your current fishing vessel operate?

Notice that the answers will be used in question 5.5.

Where EEZ name is provided, the Sea Name is not required.

For any vessel working in the high seas (not EEZ) only the Sea name is required.

A full list of EEZ will be given in Annex I, and full list of Sea names to choose from in

Annex 2. Please do not use any other names. As you must choose one of those names when enter the names into the online version. The column with National /Local Zone names can be used to give local name of the zone working on even only part of the one or the other columns names.

(Paper) A maximum 5 zones are provided, but in most cases only one or two zones are expected. It is important to have the most important zones in the first lines.

(Online) EEZ or Sea name can be selected from dropdown list. Information about the second most operated zone can be entered if any, if not leave the next line empty.

*Table 10. Example how this table can be filled out.*

| Zone | Exclusive Economic Zone (EEZ) country name (if applicable) | Sea Name | National/ Local zone name |
|---|---|---|---|
| 1 | Thailand EEZ | - | Andaman Sea |
| 2 | | Indian Ocean, Eastern | West of Christmas |
| 3 | | | |
| 4 | | | |
| 5 | | | |

### 3.2.1 Level of fishing activity in each zone? This question is optional if only one fishing zone registered

This question is optional if only one fishing zone is registered in the question before 3.2 as it is given that the fishing activity will be 100% at that only zone working at.

But if more than one zones hold a fishing activity of the vessel using the fishing gear in request, we would like to know approximately how much each zone is important. This does not need to be exactly, and even fishing activity near 10% can be marked in the lowest group of 25%.

(Paper) Mark one choose each line if registered in question 3.2

(Online) Mark one choose each line if registered in question 3.2

*Table 11. Example of how this table can be marked in line with how it was registered in question 3.2*

| Zone | Approximately all or 100% fishing activity | Approximately ¾ or 75% fishing activity | Approximately 1/2 or 50% fishing activity | Approximately 1/4 or 25% fishing activity |
|---|---|---|---|---|
| 1 | | x | | |
| 2 | | | | x |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |

### 3.3 What depth ranges does your vessel operate?

Have one year of fishery activity in mind mark one option in each line. Note this is fishing depth! If using fishing gear at surface it is always 0-50 meters even over deep water.

We are asking for the Fishing depth not bottom depth. When fishing with fishing gears near or at surface it would always be the category 0-50 meters depth even over very deep water.

Have the fishing effort over one-year period in mind.

Note that the information provided here will be used again in question 5.6.

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

*Table 12 Example how this table can be filled out.*

| Fishing Depth Range | Mostly | Often | Sometimes | Never |
|---|---|---|---|---|
| 0-50 m depth | | x | | |
| 51 – 200 m depth | x | | | |
| 201 – 1000 m depth | | | x | |
| 1000+ m depth | | | | x |

## Part 4. Fishing gear operation, costs, and catches

### 4.1 Estimate the number of fishing trips your vessel makes in a typical year:

Please enter the estimated number (does not need to be precise, an approximation is sufficient). A fishing trip may be defined as the number of times vessel leaves the harbour or landing place.

The interviewer can ask if the fisher know how many trips was done last year and use that number.

There is a reason we ask only for average for one year. Many fishers go frequently at sea in a short period (fishing season) and little or never at other time of the year. If we ask for a short period like a month, the answer could easily be biased. (An extreme example; fisherman go 10 times one month but never all other months, it would simply be 10 trips per one year).

### 4.2 Estimate the number of days for a typical fishing trip:

Please enter estimated number (does not need to be exactly, approximation is sufficient) of days of each trip. This may be calculated from leaving harbour or landing place, to returning to harbour or landing place.

### 4.3 Estimate the importance of each month for this fishery over one typical year. Choose one option for each month.

The purpose of this question is to help identify possible correlations between season and gear loss. As the fishing season in the world is very different we ask for each month in four levels, Important, Sometimes, Few times and Never.

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

*Table 13 Example for mid-latitude four-season region*

| Fishing Month | Important month / always fishing at | Sometimes fishing at this month | Few time fishing at this month | Never fishing at this month |
|---|---|---|---|---|
| January | | | x | |
| February | | | x | |
| Mars | | x | | |
| April | | x | | |
| May | x | | | |
| June | x | | | |
| July | x | | | |
| August | | x | | |
| September | | | x | |
| October | | | | x |
| November | | | | x |
| December | | | | x |

### 4.4 Estimate of average soak time (setting to hauling/visit) of trap:

With soak time is defined as the period of time the gear is in the water from setting until hauling or checked with visiting the trap.

Some fishermen may use traps with a short soak time, possibly one hour or shorter, others may soak traps/pots for days before hauling. It is possible fishers lose more traps/pots when soak time is long but it might not be, that is why we ask.

This does not need to be exact, an approximation is good enough. Provide information either in hours or in days.

Please do not fill out both parts, chose only one.

(Paper) Insert hours or days in whole numbers.

(Online) Use dropdown list for 24 hours or if days chosen a dropdown list providing days.

### 4.5 How many traps are normally operated at the same time when actively fishing? Answer i or ii, as appropriate:

Traps/pots can be used in two ways, where many traps/pots are connected to make one set or where single trap or pot, are set one at the time. Therefore we need to choose if answered for single trap/pot in use or many in sets.

Interweaver must make sure what method is in use and only enter answer for one of the other.

If the responder is using traps/pots as single only choose to answer only:

#### i. Fishing with single traps:

Please insert numbers of total use of traps/pots at the time (could be 1 or more but always as single set), if the responder say it is variation between periods how many he use, try to give estimate to the near average.

#### ii. Fishing with traps in sets:

Here it is required to fill out two numbers.

First the average number of traps/pots joined to form one set.

Secondly the number of sets used, as it could be variations between periods try to choose number near the most common number.

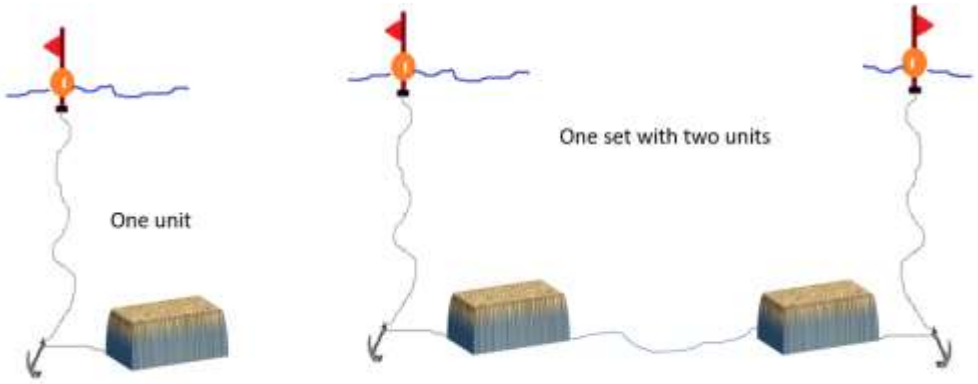


*Figure 7. The figure show example of trap/pot as one unit or with two units in one set.*

*Table 14* Example of fishing with trap/pots in sets. From above figure, the answer would be like this, 2 units in 1 set.

| | |
|---|---|
| Total number of single units in one set | 2 |
| Number of sets | 1 |

### 4.6 What is the approximate cost to construct/buy one trap/pot unit:

Here we ask simply for estimate on the cost to make one complete unit of trap/pot ready for use.

(Paper) Write in the amount of the whole cost of one unit (estimate). In the second field write in the letters used for the currency (example: USD)

(Online) Write in the amount of the whole cost of one unit (estimate). In the second field will be dropdown list with all possibly currency, chose one.

### 4.7 What is the estimated weight (kgs) of plastic components (synthetic material in nets, rope, floats) in one trap/pot unit in use on the vessel?

NOTE: Do not include metals such has chains, wire, anchors, or wood, bamboo or other natural materials. Estimated weight plastic components in one *Trap/pot* unit:

This will be difficult to estimate accurately, only an estimation by range as provided is required. Over time the interviewer may gain an understanding of average weights for different gear types and will be able to assist the interviewee with estimation, but be alerted to not make the answer for anyone. Keep in mind that we are only seeking for information about plastic only. Almost all ropes, nets, floats etc are made of plastic material.

Mark the weight group to the nearest estimate.

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

### 4.8 Target species group in your fishery are (if more than one, list in order of importance, 1 being most important):

Simply mark the most important group of the fishery with these traps/pots with "1" and the second one "2", if not fished at all leave it empty.

*Table 15* Example for any trap/pot.

| | |
|---|---|
| Demersal fish | 1 |
| Pelagic fish | - |
| Crustaceans (Prawn, scampi, lobster, crabs etc) | 2 |
| Cephalopods (Octopuses, cuttlefish, and squid) | - |

### 4.9 Average total catch landed per trip in kg?

Enter an estimation for average catch from one fishing trip, how much is landed after average trip.

### 4.10 Estimated value of an average day's catch?

Enter an estimation of average catch value for one day. This is to be based on the price received by the fisherman at first sale.

(Paper) Enter the estimated value of one days fishing. In the second field write in the letters used for the currency (example: USD)

(Online) Enter the estimated value of one days fishing. In the second field will be dropdown list with all possibly currency, chose one.

## Part 5 Gear loss and reporting

In this part we seek for information about how much *traps/pots* are lost annually, how, where, when it happens. Then we ask if it reported somehow or not.

### 5.1 When/If you lose a trap/pot or parts of it, which one of the following elements are lost? Please refer to manual section xxx for the description (drawings?) of each element.

*Table 16. Example how this answer can be answered.*

| Trap/pots elements | Very frequently | Sometimes | Rarely | Never |
|---|---|---|---|---|
| One entire set (with all elements) | | | | x |
| One unit | | x | | |
| Buoys | | | x | |
| Net cut-offs | x | | | |


*Figure 8. If all is lost mark how often, from "very frequently, sometimes, rarely or never". In the line "One enter set (with all elements)".*

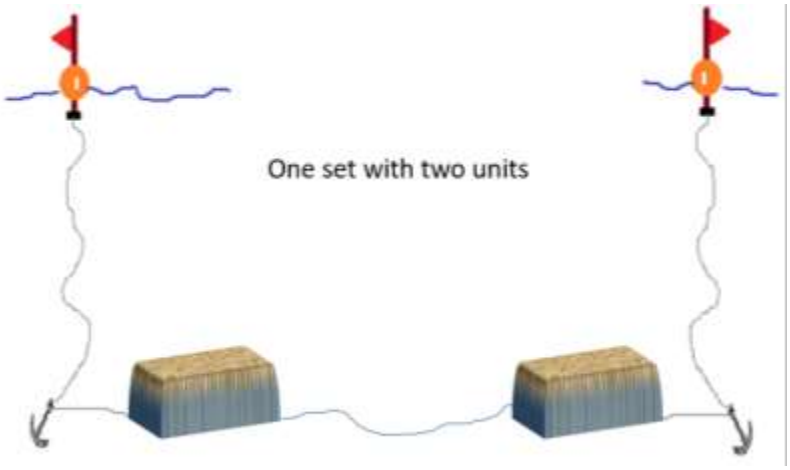


*Figure 3. If one unit is lost mark how often, from "very frequently, sometimes, rarely or never". In the line "One unit".*

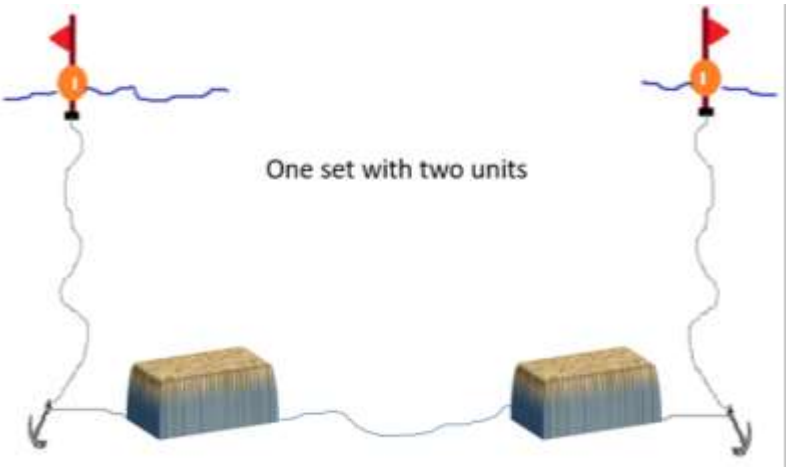


*Figure 4. If the buoys are lost, mark how often, from "very frequently, sometimes, rarely or never". In the line "Buoys".*

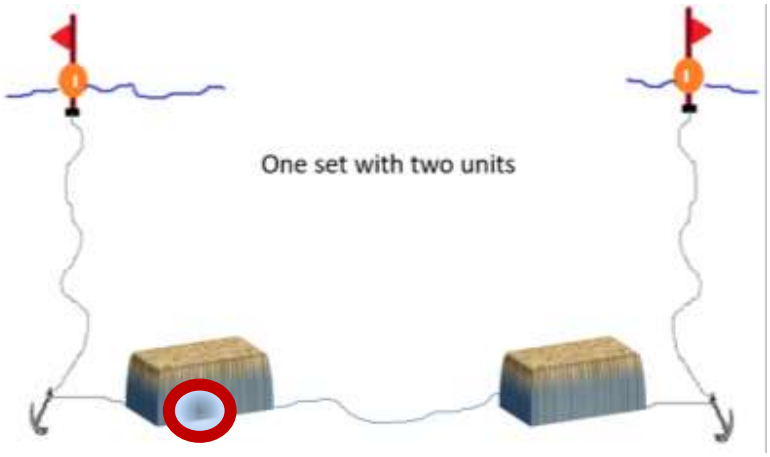


*Figure 9. If any Net cut-offs or part of the net panel are lost, mark how often, from "very frequently, sometimes, rarely or never". In the line "Net cut-offs".*

(Paper) Mark one choose each line.

(Online) Mark one choose each line.

### 5.2 Over a typical year estimate how many traps units could be lost?

We are asking for total loss of the fishing gear in last or one year expressed as whole units. For example, if a fisherman has 10 single units in one set and this fisherman lost 10% of net each time it would mean the fisherman lost 1 single unit of total each time. If the same fisherman go 10 time at sea with same results over one year he would lose 1 complete set (10 single units) on average.

Enter the best estimate of loss over one year period expressed in whole units.

### 5.3 In a typical year estimate how frequent it is to lose trap in each month of one year? Choose one option for each month

Even if rarely fishing in any month it could give higher frequent of loss of traps/pots for whatever reason.

The months marked as never fished in question 4.3 can be skipped here.

*Table 17. Example how this table could be filled out regarding to fishing month answered in question 4.3 no fishery is done in October to December.*

| Fishing Month | Very frequent | Sometimes | Rarely | Never |
|---|---|---|---|---|
| January | x | | | |
| February | x | | | |
| Mars | x | | | |
| April | x | | | |
| May | | x | | |
| June | | | x | |
| July | | | x | |
| August | | x | | |
| September | | x | | |
| October | | | | |
| November | | | | |
| December | | | | |

(Paper) Mark one choose each line. (Online) Mark one choose each line.

5.4 Estimate how frequent of this annual loss (provided in 5.2) is attributed to each fishing zone identified in part 3, question 3.2. (Only for zones registered before in 3.2).

For this question the interviewer must refer to the answers provided in question 3.2. If only one zone was registered in question 3.2 the answer need only be done in one line (1). If more Zone was put in the question 3.2 please answer in same line as the zone the answer is for.

(Paper) Mark one choose each line, for each zone registered in question 3.2, skip the others lines.

(Online) Mark one choose each line, for each zone registered in question 3.2, skip the others lines.

5.5 Estimate how frequently trap is lost when fishing at each one of the following depth ranges.

Have one year of fishery activity in mind mark one option in each line.

Note this is fishing depth! Mark at the ranges the gear used at.

For this question the interviewer must refer to the answers provided in question3.3 and 5.2. If some depth ranges are never fished at (marked in 3.3) the line can be skipped here. If responder register never losing any gear in 5.2 the whole question can be skipped.

Fishers are often fishing in different depth ranges. Remember this is a fishing depth not bottom depth! A fishing gears used at the surface over very deep water would be in the group 0-50m. The objective of this question is to gain an understanding if water depth may be a contributing factor to quantities of ALDFG.

(Paper) Mark one choose each line, for each depth ranges registered in question 3.3, skip the others lines.

(Online) Mark one choose each line, for each depth ranges registered in question 3.3, skip the others lines.

5.6 Are lost traps reported?

Select one.

In many countries there are no systems in place for registering lost gear, even if regulated it might not be practised.

(Paper) Choose/mark only one.

(Online) Use the dropdown list to choose only one.

5.7 If informed or reported, identify the person or agency to whom the loss is reported (*Select all relevant*):

If the answer in 5.6 was “never reported” this question can be skipped or mark “Not Applicable “. If “sometime reported” or “always reported” this question should be answered.

If there are difficult to find correct answer as it looks like missing a relevant option, choose the “Other”. It is possible to explain in the question 8.5 what “others” mean, but not needed.

(Paper) select all relevant.

(Online) use the drop-down list to select all relevant.

### 5.8 When vessel loses traps, what are the main causes of the gear loss?

Here are actually 16 options to choose "never, sometime, always or don't know". Try to avoid choosing "don't know" but it might be needed now and then. If the option given is not relevant for the fishing gear in use then the line can be left empty.

(Paper) select one answer for each possible cause listed.

(Online) Choose/mark one selection in each line.

| **Causes** | ***Possible examples/explanations*** |
|---|---|
| Net snagged on an obstruction, such as reef or rocky area | Gears used on or near bottom can frequently be snagged |
| Poor weather conditions | Bad weather is in some cases the main reason for losing gears |
| Damage or towed away by large animals | Entanglement with large animals may be the reason for losing fishing gears in some regions |
| Drifted out of area that cannot be accessed by the vessel | Gears not attached to vessel (driftnets or FAD's) can drift away |
| Faulty, old or damaged gear | This can frequently be the reason for losing gears in some regions |
| Operator error | Everyone can sometimes make a mistake and that can led to loss of gears |
| Strong currents | In some fishing grounds strong currents may be a cause of losing gears |
| Deep water (like to short line to buoy) | there may be a higher risk of losing gears when working in deep water |
| Gear not properly stored on-board | When not properly stowed, gear may be lost when sailing from or to fishing grounds, especially in rough seas |
| Conflict with other gear, e.g. trawls towing away other gear | In some regions, fishing gear conflicts may cause loss of gear |
| Vandalism, (stolen or destroyed) | May be a problem in some regions |
| The surface marking is lost, sunk or malfunctioned | In many cases the most common reason for loss of static fishing gears. |
| Gear intentionally discarded overboard | Possibly sometimes the only way to get rid of old fishing gears. Ensure that answers are treated anonymously. |
| Equipment failure (i.e hauler or location equipment) | All equipment will now and then have failure, possibly leading to gear loss. |
| High traffic of other vessels | Some fishing gears are set near ship lines or traffic areas. This may lead to loss marker buoys or the whole fishing gears |
| Lack of communications between fishing vessels | When no information's are given between vessels to avoid interaction leading to damages or loss of fishing gears. |
| Others | Other reasons may be entered in question 8.5 |

## 5.9 What practices are used to avoid fishing gear loss or damages?

Here are actually 16 options to choose "never, sometime, always or don't know". Try to avoid choosing "don't know" but it might be needed now and then. If the option given is not relevant for the fishing gear in use then the line can be left empty.

(Paper) select one answer for each possible good practice listed.

(Online) Choose/mark one selection in each line.

| Examples of possible good practices | Possible examples/explanations |
|---|---|
| Avoid setting the fishing gear in areas known for snagging | An easy practise if using good navigation equipment, but not always available. |
| Avoid fishing in poor weather conditions | Following weather forecast to avoid bad weather. |
| Avoid areas where animals likely to damage the gear | Could be a seasonal or known areas. |
| Avoid losing drifting gears out of reach | Possible for drifting gears and FAD's |
| Repair or replace worn fishing gear or parts | Fishers skills to repair the gears would be needed |
| Training of crew on gear handling and operation | It can be important to have properly trained crew |
| Avoid using the fishing gear in areas with strong currents | Knowing when and where the strong current are can avoid gear loss. |
| Know fishing depth and rig accordingly | Fishermen knowledge of the fishing ground important. |
| Securely stow fishing gear on board to withstand bad weather/sea conditions | Could be connected to vessel design and crew skills. Gears may be washed overboard by big seas |
| Communicate with nearby fishing vessels to avoid conflict | Could be lack of technology or willingness to communicate with other fishing vessels |
| Implement measures to avoid vandalism of gear by others | Good communication may help avoid conflict between fishers using different fishing gears on the same fishing ground. |
| Use good surface marking or electronic devices | Could be difficult or expensive to have adequate surface markers. |
| Instruct crew members not to discard fishing gear overboard | Captain forbidding such practice. |
| Make sure all equipment used with fishing gears is in good condition | If the equipment is not in good condition it may lead to problems including loss of gear. |
| Avoid areas of high vessel traffic/shipping lanes | Avoiding areas of high traffic make may reduce the risk of losing gears. |
| Cooperation with other fishers | Assist each other to retrieve gear |
| Others | Other answers may be provided in question 8.5 |

## 5.10 Do you use Fish Aggregating Devices (FADs) in addition to traps?

It is not common to use FADs with other fishing gears than Purse Seine but there are some examples for it. Only ask the extra FADs questions if responders say "Yes" with this question, if "No" then skip the FAD's questions.

In almost all cases for trap/pot fishery the answer here will be No! However, ask! We want to be sure!

In case the responder answer “Yes”, then ask the added questions for FADs (only 7 if all are answered).

## Part 6 End-of-life fishing gear and marine plastic waste management

This part is to collect information about how much and how the end of end-of-life of fishing gears are collected and processed. Make sure the fishers know we are only asking about synthetic material like plastic, we are not interested in any organic, meatal, or discarded fish.

### 6.1 Are damaged and unwanted plastic parts of fishing gear collected and stored on board and brought back to port/landing site?

Make it clear to the interviewee that we are only asking for plastic parts, not any other material. Most components of the fishing gears are made of plastic, like nets, ropes, floats etc.

(Paper) Select only one.

(Online) use dropdown list to select only one.

### 6.2 Is there a specific area/container on-board of your vessel to store off-cuts, damaged or worn fishing gear to dispose on shore?

(Paper) select “no” or “yes”.

(Online) use dropdown list to select “no” or “yes”.

### 6.3 Does your vessel recover marine plastic waste during fishing trips (e.g. Plastic items caught in fishing gear)?

Make it clear to the interviewee that we are asking for any plastic items other than from fishing gears being used by the interviewee. This could be fishing gears belonging to other fishers, or any non-fishing gear plastic waste.

(Paper) select “no” or “yes”.

(Online) use dropdown list to select “no” or “yes”.

### 6.4 If you bring marine plastic waste collected during fishing trips (including fishing gear plastic materials) to port/landing site, how much do you estimate this could be in one typical fishing trip?

Marine plastic can be of many kind like plastic bag, plastic can, or anything made of plastic, even part of others fishing gears.

The fishers can be asked how much believed was brought to land in last trip, was it a typical quantity or is it usually more or less?

This is only a rough estimate to gain some idea how much plastic waste in total may be brought back to land.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.4.1 How much of the weight of marine plastic waste (indicated in 6.4) brought back to port is not associated to fishing gear?

This is only a rough estimate to gain some idea how much non fishing gear plastic waste may be brought back to land.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.5 Are there facilities in or near the vessel's home port/landing site to dispose end-of-life fishing gear components/materials? Select "no" or "yes"

In many cases, anywhere in the world there are no facilities to discard old fishing gears in the harbour, or near the landing site and therefore gears are just accumulating near in the port/landing site. The objective of this question is to gain an understanding regarding the availability of facilities to dispose end-of-life fishing gears.

(Paper) select only "no" or "yes".

(Online) use dropdown list to choose "no" or "yes".

### 6.5.1 If Yes, is there a charge to use the facilities?

If the answer in 6.5 is "no" this question can be skipped.

Charges to dispose of used gears may encourage discarding at sea or using informal means of disposal on land.

(Paper) select only "no" or "yes".

(Online) use dropdown list to select "no" or "yes".

### 6.5.2 Do you know how the end-of-life fishing gear components/materials are treated?

If the answer in 6.5 is "no" this question can be skipped.

The objective of this question is to gain some insight regarding what proportion of unwanted fishing gear brought back to land is destined for recycling compared to being 'disposed of'.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 6.6 Are there facilities in or near the vessel's home port/landing site to dispose of non-fishing gear plastic waste? Select no or yes.

The objective of this question is to understand if separate facilities plastic waste facilities exist for fishing gear and other plastic waste.

(Paper) select only "no" or "yes".

(Online) use dropdown list to choose "no" or "yes".

### 6.6.1 If yes, is there a charge to use the facilities?

If the answer in 6.6 is "no" this question can be skipped.

The objective of this question is to understand if it costs fishers to dispose of plastic waste.

(Paper) select only “no” or “yes”.

(Online) use dropdown list to choose “no” or “yes”.

### 6.6.2 If yes, do you receive any payment for depositing your plastic waste?

If the answer in 6.6 is “no” this question can be skipped.

The objective of this question is to understand if it fishers receive payment for disposing of plastic waste.

(Paper) select only “no” or “yes”.

(Online) use dropdown list to choose “no” or “yes”.

### 6.6.3 Do you know how the waste plastic materials are treated?

If the answer in 6.6 is “no” this question can be skipped.

The objective of this question is to gain some insight regarding what proportion of non-fishing gear plastic waste brought back to land is destined for recycling compared to being ‘disposed of’.

(Paper) Please choose/mark only one.

(Online) will be dropdown list to choose only one.

## Part 7. Regulation of marking fishing gear

### 7.1 Are you aware of any laws or regulations for marking fishing gears in the fisheries where you operate?

This is a simple yes and no question. We are not asking the fishers if there is any regulations only if he know about that there are any. It might be or not. We will have information’s from the authorities about if any regulation occurs or not. This is to understand levels of awareness where regulation exists!

The answers could hitting one of following boxes:

| | | |
|---|---|---|
| Yes | The responder knows there are regulations at it is right | The responder thinks there are regulations but there are none |
| No | The responder thinks there are no regulations, but it is | The responder knows there are no regulations, and it is right |
| | There are regulations | There are no regulations |

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

### 7.2 Is the fishing gear in use marked?

Many fishers mark the gears even if it is not regulated others might not mark them even regulated. The objective of this question is to understand to what extent gear marking is used and if the gear marking allows the gear to be traceable to the owner or vessel.

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

#### 7.2.1 If yes, are the marks with name or number to be traceable to owner or vessel?

In some cases, fishers mark the gear so they know own gear, but no others would know the mark, or it will give the possible to trace it back to the owner or vessel. If the mark has number, name or anything making it possible to find the owner if anyone find it, the answer here would be YES. If the gear is marked but other than the owner / fisher them self would not be able to know who own the gear the answer is NO.

(Paper) select only “no” or “yes”.

(Online) use the dropdown list to choose “no” or “yes”.

## Part 8 Past and Future trends

This last part are questions where responders answer from his own feeling about how this matter have developed last years and what would be important to avoiding or reducing of ALDFG.

### 8.1 In your experience has the amount of abandoned, lost, or discarded fishing gears increased or decreased compared with 10 years ago?

Ask the responder to consider during the last 10 years if they have noticed any increase or decrease in the amount of ALDFG during this period.

(Paper) select only one.

(Online) use dropdown list to select only one.

### 8.2 Do you think ALDFG and issue of plastics at sea is a real problem?

Ask the responder what he/she think about this problem, is it a real problem or not?

(Paper) select only one.

(Online) use dropdown list to select only one.

### 8.3 In your opinion, do you think the quantity of fishing gear loss in this fishery will increase or decrease in the next 5 years?

Ask the responder to think about the fishery/fisheries they are familiar with and consider if during the next 5 years they may expect an increase or decrease in the amount of ALDFG.

### 8.4 How important are the following elements for avoiding or reducing quantities of abandoned, lost or otherwise discarded fishing gear (Select as appropriate).

Ask the interviewee to rate how important each of the 10 elements listed are in his/her opinion to avoiding or reducing ALDFG.

(Paper) Choose/mark one selection in each line.

(Online) Choose/mark one selection in each line.

| The elements | Further explanations |
|---|---|
| Vessel design | Can the vessel design cause lesser or more ALDFG, like secured space for fishing gears or make the operating with fishing gear more secured at sea. |
| Hauling equipment | Can the hauling equipment (if any) increase or decrease ALDFG |
| Quality of fishing gear material | Is the material important |
| Fishing gear marking | Is it marking of the gear important to avoid or reducing ALDFG |
| Gear location technology | GPS or similar theology to find and set gear on right places |
| Communication between vessels | For avoiding dangerous areas for snagging gears or cross over others gears |
| Accuracy and access to weather forecasting | Could the accuracy or access to weather forecast be better? |
| Fisher skills for handling vessel/gear | How is the crew, could better training of handling make things better |
| Knowledge/awareness of negative impacts of ALDFG | Possible this is just not any issues for the fishers as don't know the negative impacts of ALDFG |
| Payments for unwanted gears delivered for recycling | If getting some grands for deliver end-of-life-fishing-gears would it be important |

### 8.5 Do you have other ideas, or examples of good practice, you wish to share for avoiding or reducing abandoned, lost or otherwise discarded fishing gear?

This can be left blank; it is optional to write here. If there is any information that the interviewee wishes to share this can be included here.

Try to have the text very short, for example in bullet point form. Please provide in English where possible.


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