



Observer data analysis for the Eastern Pacific Ocean purse seine tuna FIP (Messinia G)

Version 1.0

November 2023

Project ref: 0077

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Glossary

Acronym	Explanation
IATTC	Inter American Tropical Tuna Commission
FIP	Fishery improvement project
EEZ	Exclusive economic zone
MSC	Marine Stewardship Council
ETP	Endangered threatened and protected
FAD	Fish aggregating device
EPO	Eastern Pacific Ocean
P2	Principle 2
CMS	Convention on Migratory Species
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
IUCN	International Union for Conservation of Nature and Natural Resources
TRP	Target reference point
LRP	Limit reference point

Executive Summary

This document presents the analysed catch data, retrieved from the observer data obtained from the Inter-American Tropical Tuna Commission (IATTC) on behalf of the Eastern Pacific Ocean purse seine tuna Fishery Improvement Project (FIP). The fishery targets bigeye (*Thunnus obesus*), yellowfin (*T. albacares*), and skipjack (*Katsuwonus pelamis*) tuna in the high seas of the eastern Pacific Ocean (EPO), and the exclusive economic zones (EEZs) of Nicaragua, Panama, and Ecuador. The fleet consists of five purse seine vessels flagged to Panama and Nicaragua, and the fishery is regionally managed by the IATTC.

The fishery is aiming to achieve certification by the Marine Stewardship Council (MSC) in 2025, but it must be able to evidence long-term observer data that is sufficient to meet the requirements of the MSC Fisheries Standard (version 2.01). The aim of this report is to analyse and describe the total observer data from all the purse seine vessels within the EPO purse seine tuna FIP to understand the impact the fishery is having on both target and non-target species, including ETP.

The data was collected by observers from 2018-to-early 2023 and analysis was conducted by consultants at Key Traceability Ltd.

The main findings from this report show that:

- Target species, yellowfin, skipjack, and bigeye tuna were caught in the highest abundance (98%);
- Seven incidents of common dolphin (*Delphinus delphis*) (ETP species) were reported during marine mammal sets;
- Elasmobranchs, including sharks and rays were the only ETP species recorded in this dataset.

There were several weaknesses of the observer data reports that limited the extent of the analysis able to be conducted on this catch data:

- The observer data did not report on the species fates if/when they were discarded, which limited the ability to fully demonstrate the potential impact the fishery has on non-target species. This will limit the fishery at the MSC Assessment level.
- The data also didn't describe the location where bycatch was caught, which is required at the MSC Assessment level and will also limit the fishery.
- More information is required about the extent of the interaction with the marine mammals used when setting the net. The MSC Assessment team will require information about the species, and number used per set/trip in order to understand more about the potential impact on the species regarding favourable conservation status.

Introduction

This report presents the results of an analysis conducted on the observer data from the EPO purse seine tuna FIP (Messinia G) fishing vessels within the eastern Pacific Ocean. The aim of this analysis is to provide critical information about the impact of the purse seine fishery on target catch rates of tuna, as well as bycatch rates of endangered, threatened, and protected (ETP) species, which is required to progress with Principle 2 actions of the workplan.

The fishery targets bigeye (*Thunnus obesus*), yellowfin (*T. albacares*), and skipjack (*Katsuwonus pelamis*) tuna in the high seas of the eastern Pacific Ocean (EPO), and the exclusive economic zones (EEZs) of Nicaragua, Panama, and Ecuador. The fleet consists of five purse seine vessels flagged to Panama and Nicaragua, and the fishery is regionally managed by the IATTC. The entire FIP scope can be found in Table 1 of this report.

Table 1: FIP Scope

Species	Bigeye (<i>Thunnus obesus</i>), yellowfin (<i>T. albacares</i>), and skipjack (<i>Katsuwonus pelamis</i>) tuna
Stocks	Eastern Pacific Ocean bigeye, yellowfin, and skipjack tuna stocks.
Fishing gear	Purse seine
Geographical area	Eastern Pacific Ocean (FAO 77), and the following EEZs: Nicaragua, Panama, Ecuador
Management	Inter American Tropical Tuna Commission (IATTC).
Number of vessels	5

1.1 Data collection

Observer data from 2018 to mid-2023 was obtained from the IATTC after advocacy to the regional fisheries management organisation (RFMO) and support from the national management of Panama, the Autoridad de los recursos acuaticos de Panama (ARAP), and Nicaragua, Instituto Nicaraguense de la Pesca (INPESCA). Representatives from both ARAP and INPESCA were consulted about this issue, and both provided their support to the IATTC to encourage the release of the observer data to Key Traceability (KT). Upon retrieval of the observer data, KT compiled the data and analysed it to understand the impacts that the fishery is having on non-target species, and especially those that are ETP.

Data Analysis

2.1 MSC Principle 2 definition summary

This section provides a short summary of how the MSC Fisheries Standard designates components for Principle 2 to provide context of the following species' category allocations and analysis.

Fisheries assessed against the MSC Fisheries Standard are evaluated against 28 Performance Indicators (PIs) within the three principles. Principle 2 has 15 performance indicators split into three components (outcome, management strategy, information) for primary species, secondary species, endangered threatened and protected species, habitats and ecosystem.

The fishery under assessment is within the scope of the MSC Fisheries Standard (7.4 of the MSC Certification Process v2.1):

- The target species is not an amphibian, reptile, bird or mammal.
- The fishery does not use poisons or explosives.
- The fishery is not conducted under a controversial unilateral exemption to an international agreement.
- The client or client group does not include an entity that has been successfully prosecuted for a forced labour violation in the last two years.
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery.
- The fishery is not an introduced species-based fishery (ISBF) as per the MSC FCP 7.4.7.
- The free-school UoAs in this fishery are not classified as enhanced, but the FAD UoAs are, as per the MSC FCP 7.4.6. See paragraph directly below.

The FAD component UoAs for this fishery are classified as enhanced fisheries, as FADs are classified by MSC scope criteria as habitat modified (see FCP v2.1 G7.4): "Habitat modifications in enhanced fisheries can include both physical changes to the sea bed or river course and the use of a range of man-made structures associated with the rearing or capture of fish that are not strictly 'fishing gear'. In the first case, modifications can range from the construction of simple ponds in intertidal areas or river floodplains through to watercourse management measures aimed at improving spawning habitats. Examples of the second case are fish attracting and/or aggregating devices (e.g. FADs), lobster casitas and mussel culture ropes (in CAG systems). Such artificial habitat modifications either enhance the productivity of the fishery or facilitate the capture or production of commercial marine species".

Under the MSC Fisheries Standard (version 2.01), Primary species are defined as:

1. Species in the catch that are not covered under P1 because they are not included in the UoA;
2. SA3.1.3.2 Species that are within scope of the MSC program as defined in FCP Section 7.4; and
3. SA3.1.3.3 Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.
 - a. In cases where a species would be classified as primary due to the management measures of one jurisdiction but not another that overlaps with the UoA, that species shall still be considered as primary.

Secondary species are defined as:

1. Not considered ‘primary’ as defined in SA 3.1.3; or
2. SA3.1.4.2 Species that are out of scope of the program, but where the definition of ETP species is not applicable. SA3.1.5

The team shall assign ETP (endangered, threatened or protected) species as follows:

1. SA3.1.5.1 Species that are recognised by national ETP legislation;
2. SA3.1.5.2 Species listed in the binding international agreements given below:
 - a. Appendix 1 of the Convention on International Trade in Endangered Species (CITES), unless it can be shown that the particular stock of the CITES listed species impacted by the UoA under assessment is not endangered.
 - b. Binding agreements concluded under the Convention on Migratory Species (CMS), including:
 - i. Annex 1 of the Agreement on Conservation of Albatross and Petrels (ACAP);
 - ii. Table 1 Column A of the African-Eurasian Migratory Waterbird Agreement (AEWA);
 - iii. Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS);
 - iv. Annex 1, Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS);
 - v. Wadden Sea Seals Agreement;
 - vi. Any other binding agreements that list relevant ETP species concluded under this Convention.
3. SA3.1.5.3 Species classified as ‘out-of scope’ (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

2.2 Data Review

Analysis of the observer data demonstrated that the vast majority of the catch derives from target species (98.4%). This is a combination of the yellowfin, bigeye, and skipjack tuna total catch weight (MT). A total of 141 MT of non-target species were caught by the fishing vessels in the EPO purse seine tuna FIP (Messinia G). Of these, primary species contributed the highest percentage (1.1%) of the catch. Secondary species contributed to 0.3% of the catch and ETP species contributed only 0.2% of the total catch (Table 2).

Table 2: Total mass of species recorded in observer data (Mt) and designated by MSC Fisheries Standard (v2.01) group

MSC Designation	Sum of Total Captured (metric tonnes)
Target	98.4%
Primary	1.1%
Secondary	0.3%
ETP	0.2%

Table 3: Total number of individuals from each species caught from observer data.

Species	Common name	Designation	Category	Justification	Total catch (MT)	% composition of total catch
<i>Thunnus albacares</i>	Yellowfin tuna	Target	Main	>5% total catch	7944	89%
<i>Katsuwonus pelamis</i>	Skipjack tuna	Target	Main	>5% total catch	479	5.9%
<i>Thunnus obesus</i>	Bigeye tuna	Target	Main	>5% total catch	330	3.7%
<i>Coryphaena hippurus</i>	Mahi mahi	Primary	Minor	<5% total catch	89.29	1.00
<i>Makaira nigricans</i>	Blue marlin	Primary	Minor	<5% total catch	3.28	0.04
<i>Makaira indica</i>	Black marlin	Primary	Minor	<5% total catch	0.64	<0.01
Makaira, Tetrapturus	Marlin	Primary	Minor	<5% total catch	0.14	<0.01
<i>Lobotes surinamensis</i>	Atlantic tripletail	Secondary	Minor	<5% total catch	0.15	<0.01
<i>Caranx sexfasciatus</i>	Bigeye trevally	Secondary	Minor	<5% total catch	0.06	<0.01
Istiophoridae, Xiphiidae	Billfish spp.	Secondary	Minor	<5% total catch	0.33	<0.01
<i>Kyphosus analogus</i>	Blue bronze sea chub	Secondary	Minor	<5% total catch	0.00	<0.01
<i>Kyphosus ocyurus</i>	Bluestriped chub	Secondary	Minor	<5% total catch	0.17	<0.01
<i>Kyphosus analogus</i>	Brassy chub	Secondary	Minor	<5% total catch	0.10	<0.01

<i>Balistes polylepis</i>	Finescale triggerfish	Secondary	Minor	<5% total catch	0.00	<0.01
Balistidae, Monacanthidae	Hogfish	Secondary	Minor	<5% total catch	0.01	<0.01
<i>Istiophorus platypterus</i>	Indo-Pacific sailfish	Secondary	Minor	<5% total catch	0.45	<0.01
<i>Seriola rivoliana</i>	Longfin yellowtail	Secondary	Minor	<5% total catch	0.05	<0.01
<i>Decapterus macarellus</i>	Mackerel scad	Secondary	Minor	<5% total catch	0.51	<0.01
Seriola, Caranx spp.	Mackerel spp.	Secondary	Minor	<5% total catch	0.02	<0.01
<i>Mola mola</i>	Ocean sunfish	Secondary	Minor	<5% total catch	5.11	<0.01
<i>Himantura pacifica</i>	Pacific Chupare	Secondary	Minor	<5% total catch	0.39	<0.01
<i>Naucrates ductor</i>	Pilot fish	Secondary	Minor	<5% total catch	0.01	<0.01
<i>Coryphaena equiselis</i>	Pompano dolphinfish	Secondary	Minor	<5% total catch	0.00	0.078
<i>Elagatis bipinnulata</i>	Rainbow runner	Secondary	Minor	<5% total catch	0.30	<0.01
<i>Canthidermis maculata</i>	Rough triggerfish	Secondary	Minor	<5% total catch	6.65	0.05
<i>Aluterus scriptus</i>	Scribbled leatherjacket filefish	Secondary	Minor	<5% total catch	0.47	<0.01
<i>Kyphosus elegans</i>	Sea chub	Secondary	Minor	<5% total catch	3.97	<0.01
Osteichthyes	Small fish	Secondary	Minor	<5% total catch	0.00	<0.01

<i>Kajikia audax</i>	Striped marlin	Secondary	Minor	<5% total catch	0.17	<0.01
<i>Xiphias gladius</i>	Swordfish	Secondary	Minor	<5% total catch	0.02	<0.01
Carangidae	Trevally	Secondary	Minor	<5% total catch	0.41	<0.01
<i>Aluterus monoceros</i>	Unicorn leatherjacket	Secondary	Minor	<5% total catch	0.19	<0.01
<i>Acanthocybium solandri</i>	Wahoo	Secondary	Minor	<5% total catch	0.30	0.09
<i>Uraspis helvola</i>	Whitetongue jack	Secondary	Minor	<5% total catch	0.04	<0.01
<i>Seriola rivoliana</i>	Yellowtail amberjack	Secondary	Minor	<5% total catch	8.35	<0.01
<i>Pteroplatytrygon violacea</i>	Pelagic stingray	Secondary	Minor	<5% total catch	0.00	<0.01
<i>Rhinoptera steindachneri</i>	Cownose ray	Secondary	Minor	<5% total catch	0.27	<0.01
<i>Alopias superciliosus</i>	Bigeye thresher shark	ETP	N/a	CITES Appendix II and CMS Appendix II, IUCN RedList VU. Did not meet modification criteria	0.10	<0.01
<i>Mobula tarapacana</i>	Chilean devil ray	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	0.12	<0.01
<i>Alopias vulpinus</i>	Common thresher shark	ETP	N/a	CITES Appendix II, CMS Appendix II,	0.13	<0.01

				IUCN Redlist VU. Did not meet modification criteria		
<i>Mobula mobular</i>	Giant devil ray	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	2.07	0.02
<i>Mobula birostris</i>	Giant oceanic manta ray	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	0.63	<0.01
Sphyrnidae	Hammerhead shark	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	0.32	<0.01
Mobulidae	Mobula spp.	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	1.18	0.01
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	ETP	N/a	CITES Appendix II, CMS Appendix I, IUCN Redlist CR	0.04	<0.01
<i>Alopias pelagicus</i>	Pelagic thresher shark	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	0.29	<0.01
<i>Sphyrna lewini</i>	Scalloped hammerhead	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist CR	1.79	0.02
Carcharhinidae	Shark	ETP	N/a	No species ID, precautionary scoring	0.98	0.011



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<i>Carcharhinus falciformis</i>	Silky shark	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist VU. Did not meet modification criteria	10.54	0.12
<i>Sphyrna zygaena</i>	Smooth hammerhead	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist CR	0.31	<0.01
Alopiidae	Thresher shark spp.	ETP	N/a	CITES Appendix II, CMS Appendix II, IUCN Redlist EN	0.11	<0.01
<i>Delphinus delphis</i>	Common dolphin	ETP	N/a	CMS Appendix I	0.49	<0.01

1. Catch data

The fishery sets on dolphins, which is an integral part of the fishing operations. Dolphins, and any other marine mammal, seabird, reptile, and amphibian are considered out-of-scope under version 2.01 of the Standard if the animals are listed as Critical, Endangered, or Vulnerable on the IUCN Red List for Endangered Species. The only species of dolphin that was caught and recorded by the observer data was the common dolphin, which is not featured on the IUCN Red List as any of the qualifying designations. However, it is featured on the CMS Appendix, which means the species is considered ETP.

The observer data also stated that dolphins were used as indicators of where tuna schools were situated and subsequently set upon. There was no indication of the species of dolphin used in this process, which in turn makes it challenging to categorise the species by MSC designation. Sets made on dolphins and whale by the fishery must be fully disclosed to include the species identity, the fate of the species and their condition upon release. In this set of observer data that was received, specific information pertaining to the species of the marine mammal that was set upon during operations was not included. Therefore, there is no way to identify the extent to which this fishery is impacting these species. All marine mammals that were set upon were released from the net, however, their conditions (dead or alive) upon release was not disclosed.

There was no information provided on the observer reports that described the location of bycatch incidents or where the vessels were operating when incidents occurred. This is important information that will be requested by the MSC Assessment team when they are identifying the overlap with critical ETP species.

3.1 Catch composition

The majority of the catch was derived from the target tuna species (98.4%), comprising yellowfin (89%), skipjack (5.3%) and bigeye tuna (3.7%). The remaining 1.6% of species that contributed to total catch composition were designated as primary (1.1%), secondary (0.3%), and ETP (0.2%) as required under the MSC Fisheries Standard version 2.01.

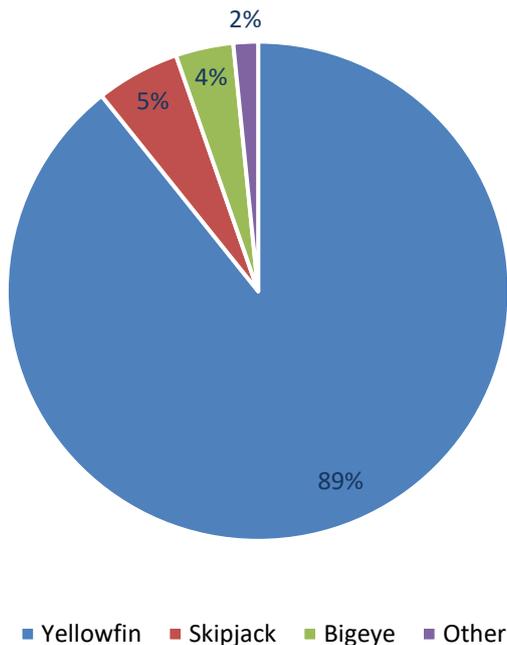


Figure 1: Total catch composition for the Eastern Pacific Ocean purse seine tuna FIP (Messinia G) demonstrating the percentage composition of target species (yellowfin, skipjack, and bigeye tuna), and other non-target (bycatch) species

3.2 Principle 2 species

Non-target species comprised 1.6% of the total catch composition for this fishery as demonstrated through the observer data. The majority of the P2 species were designated as primary under the MSC Fisheries Standard version 2.01 requirements (70%). Secondary species contributed to 16% of the total catch of bycatch, and 13.5% were designated as ETP (Figure 2). Further explanation of each designation can be found in the following part of the report.

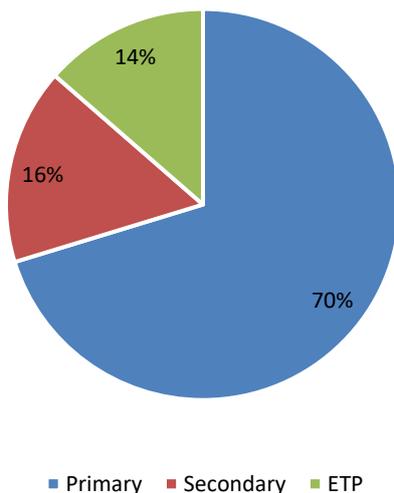


Figure 2: Percentage composition of Principle 2 species (Primary, Secondary, and ETP)

3.2.1 Primary species

Under the MSC Fisheries Standard version 2.01, any non-target species that are caught as bycatch are considered to be primary species if there is some regional management in place to protect the species. These species are also able to be sold by the fishery but are not the target species. The majority of primary species were derived from mahi mahi (*Coryphaena hippurus*) (1% of the total catch and 90% of the total primary species). Other species within the primary species designation included different marlin species and swordfish (*Xiphias gladius*).

Of the total primary species caught, 42% were retained onboard and 58% were discarded. There was no information available on the observer reports to identify the reason as to why species were retained or discarded.

3.2.2 Secondary species

Secondary species contributed to 0.3% of the total catch from the eastern Pacific Ocean purse seine tuna FIP and was mainly comprised of wahoo (*Acanthocybium solandri*) (36%), pompano dolphinfish (*Coryphaena equiselis*) (30%), and rough triggerfish (*Canthidermis maculata*) (17%). The majority of the secondary species caught were discarded back into the sea after catch (69%). 31% were retained on board.

3.2.3 ETP species

ETP species comprised the smallest contribution to total catch for this fishery (0.2%). In total, there were seven incidents of common dolphin (*Delphinus delphis*) bycatch in 2018 only. It is suspected that these incidents occurred during the setting of the net when a marine mammal was described being set upon. Nevertheless, there were other incidents of dolphin sets that did not lead to dolphin bycatch and the observer data did not describe the cause of the bycatch in the reports. All dolphins were said to be released but their condition (dead or alive) was also not described.

The ETP species ranged across different shark and ray species. The largest contribution to ETP species bycatch was from silky shark (*Carcharhinus falciformis*) (57%), spinetail devil ray (*Mobula mobular*) (11%), and scalloped hammerhead (*Sphyrna lewini*) (10%) (Figure 3).

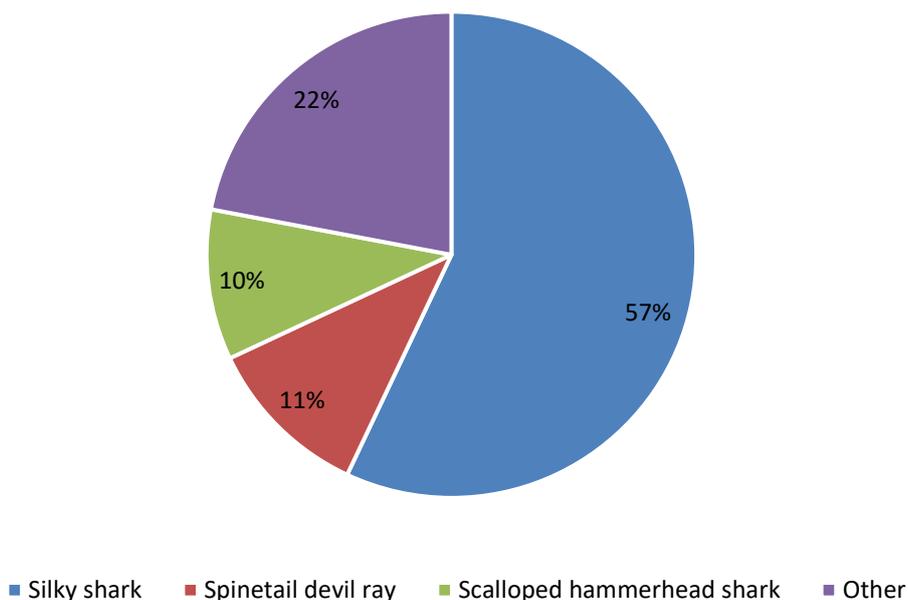


Figure 3: Percentage composition of all ETP species with reference to the three species that contribute to the highest proportion of catch, silky shark, spinetail devil ray, and scalloped hammerhead shark

There were only two individual shark species that were reportedly retained by one of the vessels in 2018. One of the sharks was an unidentified hammerhead shark species, and the other was a silky shark. There was no indication about what occurred in order for the vessel to retain these animals, and this will be required for the MSC assessment. There were no management measures in place in 2018 that outlined the requirement for discarding silky or hammerhead sharks, though Resolution C-05-03 does describe how all retained shark species should be fully utilised and that all parts of the shark excepting head, guts, and skins should be retained to the point of first landing. This prohibits shark finning. Resolution C-16-05 also requires that for silky and hammerhead sharks, fisheries provide the IATTC with the number of incidents and the fate (dead or alive) of these species if they occur. There was no information available from the observer data that was obtained from the IATTC regarding the status of the sharks when caught.

In 2023, Resolution C-23-08 prohibits the retention on board, transshipping, landing, or storing of silky sharks caught in the IATTC convention area. Therefore, the fishery will no longer be allowed to retain silky sharks onboard the vessels. However, apart from the two incidents onboard one vessel in 2018, there have been no subsequent retention incidents of silky sharks or hammerheads.

2.3 FAD usage

The fishery uses a combination of FAD fishing, dolphin sets, and free-school fishing. The majority of the sets made by the vessels in the fishery from 2018-2023 were on FADs (55%), followed by free-school sets (23%) and dolphin sets (21%).

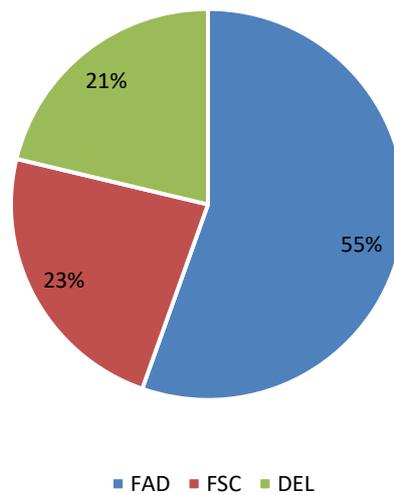


Figure 4: Percentage composition of the type of sets made across the fishing vessels and the fishery from 2018-2023 (FAD = FAD set, FSC = free-school set, DEL = dolphin set)

There was no information available in the current observer data that indicated towards the type of FADs being used by the fishing vessels (entangling, low-entangling, or fully non-entangling). However, Messinia G has a strict FAD management policy that describes the use of non-entangling materials in their FAD construction (Appendix), which has been in place since 2020. Further information from the observers will be required to verify that the materials used are non-entangling and comply with the requirements of the FAD management policy.

2. Conclusion

The information presented in this report outlines the observer data from the Eastern Pacific purse seine tuna FIP (Messinia G) from 2018 to mid-2023. As anticipated, the greatest proportion of the total catch was derived from target (principle 1) species, yellowfin, skipjack, and bigeye tuna. The subsequent catch was a combination of largely primary and secondary species, including mahi mahi and other finfish, and ETP species, which consisted of mostly elasmobranchs. The fishery operates using marine mammal sets, and there were seven incidents of common dolphin bycatch within these sets.

Overall, the data was consistent across the four years that was obtained and was useful in understanding more about the fishery's specific interaction rate with non-target, and in particular ETP species, which will be critical when considering applying for MSC assessment. The information obtained from this report will be used in ensuring that fishery-specific management practices are developed and relevant to the fishery itself. The very small numbers of ETP species interactions is positive for the fishery because it means that the potential interaction with these animals is minimal.

Regarding the fishery's aim of obtaining MSC certification within the next few years, the observer data was also assessed against the new MSC Fisheries Standard (version 2.01) to understand more about how it would be scored. The main issue found during the assessment of this data and the fishery is the lacking information about the fate of a species once discarded, especially those that are ETP. It is recommended that the fishery contact IATTC to learn more about the observer data that is being recorded by the allocated observers. If this data was not provided to the fishery but is available, then it needs to be requested. If the fate data is not available because it was not recorded, the fishery will need to conduct observer training to ensure that all discarded animals' fates are recorded.

Furthermore, the fishery will need to provide more information about the fate of the marine mammals upon which the sets are made. Currently, there is no information in the observer reports that describe the fate of these animals once setting has been conducted. Only seven incidents of common dolphin were described as bycatch in the observer reports when 38% of sets made by the fishery are done so on marine mammals. Again, this information may be available from the IATTC under specific request, however, if not, the fishery will need to improve their data collection to ensure that this information is being appropriately reported.

The observer data was lacking information about the location of ETP species bycatch which will be requested at the MSC Assessment when the team are understanding more about the potential impact of the fishery on migratory species, and if they vessels are operating in areas of high ETP concentrations.

The fishery has specific shark finning policies in place that prohibit the finning of sharks onboard the vessel. There were two incidents of sharks being retained on board the vessel in 2018. However, it was not clear about the fate of those individuals or whether shark finning occurred. Likewise, since these incidents, there have been no further reports of shark retention onboard the vessels. This will need to continue in order to demonstrate compliance with this policy.



Finally, in order to verify the use of non-entangling FADs by the fishery, observer data will need to be improved to include reference to the types of materials that have been used in the FAD construction. These details will then be able to clearly demonstrate the application and compliance with the FAD management policy of 2020.

3. Appendix

Non-Entangling and Biodegradable Fish Aggregating Devices Public Policy

Eastern Pacific Ocean tuna - purse seine (Marpesca) FIP

This fishery is the Eastern Pacific Ocean tuna - purse seine (Marpesca) fishery targeting bigeye (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*) and yellowfin (*T. albacares*) tuna. There are five purse seine vessels flagged to Ecuador, Nicaragua and Panama, fishing on the high seas in the Eastern Pacific Ocean (EPO) (and occasionally in national Exclusive Economic Zones (EEZs)). They are operated by Marpesca and are managed regionally by the IATTC. They fish both using Fish Aggregation Devices (FADs) and free school (non-FAD associated).

The fishery aims to improve its standard by working towards the objectives below:

- **Sustainable Fish Stocks** – To ensure tuna and other primary species catches across the Eastern Pacific Ocean do not exceed sustainable levels
- **Minimising Environmental Impacts** – To promote the ecosystem-based approach to fisheries management
- **Effective Management** – To strengthen governance systems in Flag States, RFMO and Eastern Pacific Purse Seine Tuna fishery.
- Be ready to enter MSC certification and the objectives above by 2025.

To ensure the participating vessels meet the above objectives the fishery has made this commitment to using only Non-Entangling Fish Aggregating Devices (NEFADs). NEFADs, as defined by the International Seafood Sustainability Foundation (ISSF) are constructed with no netting material to minimise ghost fishing (entanglement of fauna, primarily sharks and turtles). For a FAD to be completely non-entangling, it must use no netting materials either in the surface structure (raft) or the submerged structure.

By not using netting in FADs, tuna-vessel owners and fishers can prevent the entanglement and "bycatch" of sharks, sea turtles, and other non-target marine species. In addition, by choosing vegetal instead of plastic-derived materials for FADs, fishers can avoid contributing to the ocean pollution caused by ghost gear. The fishery intends to engage on minimizing habitat and ecosystem impacts by engaging on a number of related actions for Biodegradable FADs and recovery programs.

The fishery recognises this and adopts the following practices and commitments:

- To only deploy Low Risk Non-Entangling FADs, effective immediately and move towards only using Non-Entangling FADs during the lifetime of the FIP
- For all skippers to attend training to understand the reason for these changes and agree best practices.
- Develop a FIP strategy for FAD recovery to retrieve and replace any own or foreign entangling FADs when possible and safe to do so and engage with other FIPs for a harmonized implementation.
- Continuously improve procedures in line with best practices.
- All vessels will comply with ISSF Best Practices for FAD management Plans, including the ISSF Guide for Non-Entangling FADs and be listed on the ISSF Proactive Vessel Register (PVR).
- Pilot Biodegradable FADs with a plan for all FADs to eventually become biodegradable, these must adopt the following recommendations:
 - Reduce the use of plastics in the FAD structure and document FAD configurations in use

- Engage in trials for adoption of a FIP Biodegradable FAD configuration with the following guidelines based on ISSF's recommendations:

- Biodegradable materials to be used in FADs should be made of 100% sustainably harvested vegetal fibres and be sourced from areas close to the fishing ground.
- Biodegradable materials should allow a maximum lifetime of FADs of one year and then degrade as fast as possible.

Recommendations for Biodegradable FAD Configurations are as follows:

- **Raft:** Rafts should be constructed using bamboo, balsa wood or other natural materials that degrade without producing pollution on the marine environment. For FAD flotation, the use of plastic buoys and containers should be reduced as much as possible (e.g., reducing the weight and volume of the FAD structure would require less flotation).
- **Tail:** Only natural and/or biodegradable materials (cotton ropes and canvas, manila hemp, sisal, coconut fibre, etc.) should be used, so that they degrade without causing impact on the ecosystem.